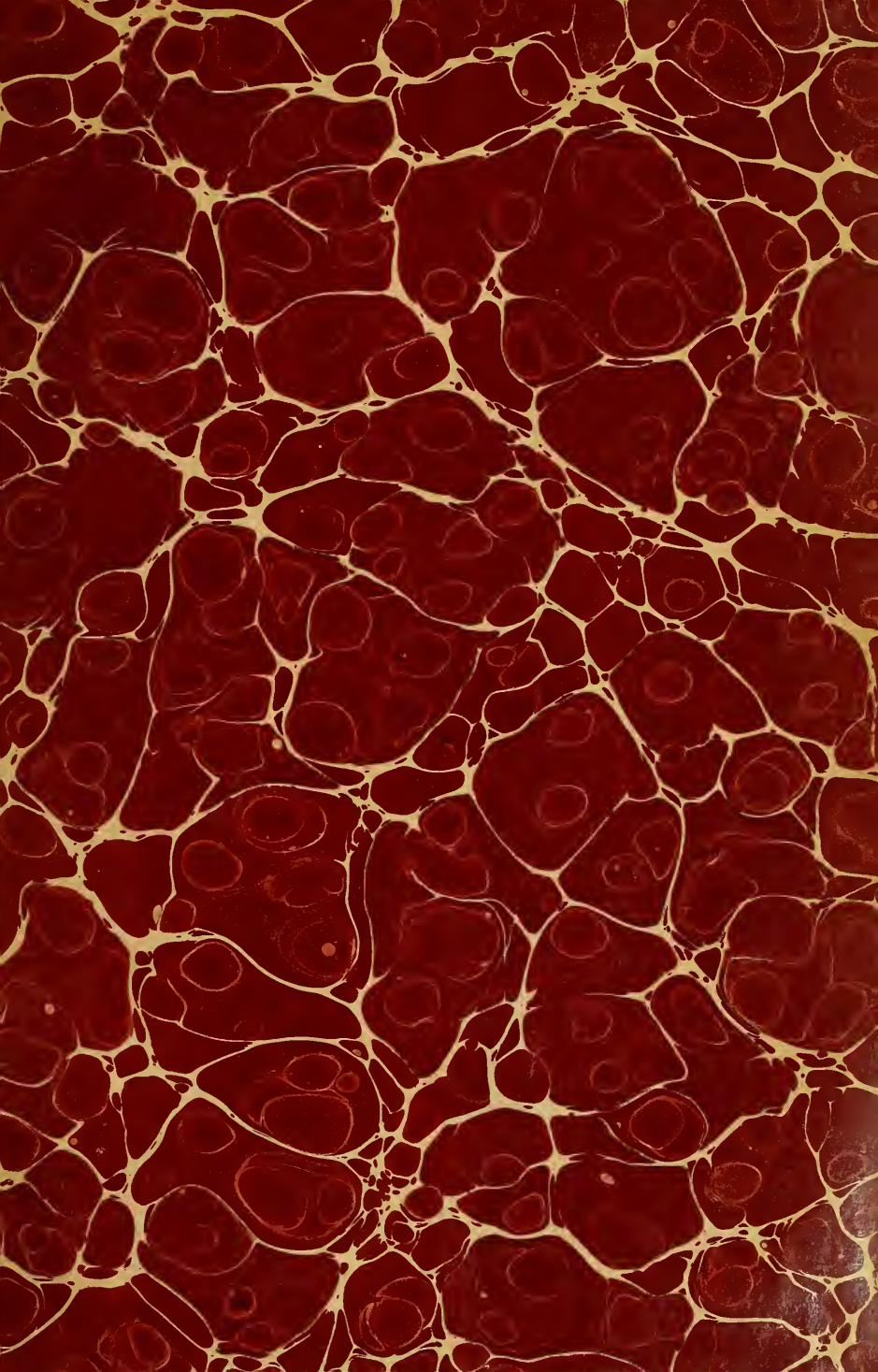




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W. W. FOWLER, D.Sc., M.A., F.L.S.

R. W. LLOYD, F.E.S. G. T. PORRITT, F.L.S.

J. J. WALKER, M.A., R.N., F.L.S.

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“J’engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise.”—*Laboulbène*.

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- „ III-VI.—Aedeagus, etc., of *Helophorini* (see Vol. LI, pp. 2-5, 27-30, 113-118, 130-138, 156-163, 199-204, 233-238, 270-277; and Vol. LII, pp. 83-86, 108-112, 125-130, 164-177, 193-200).
- „ VII.—New and little-known *Scraptiina* (see pp. 233-252 and 265-274).
-

E R R A T A .

- Page 19, bottom line, for "COLLINS" read "COLLIN."
- „ 30, line 5 from top, for "PALATORIA" read "PARLATORIA."
- „ 194, „ 9 „ bottom, for "Castlenau" read "Castelnau."
- „ 195, „ 9 „ bottom, for "rivalis" read "nivalis."
- „ 204, „ 25 „ top, for "tripudiens" read "tripudians."
- „ 208, „ 15 „ top, for "Stâhl" read "Stâl."
- „ 261, „ 7 „ top, for "Monochamus sartor L." read "Monochamus
sutor L."
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W. W. FOWLER, D.Sc., M.A., F.L.S.

R. W. LLOYD, F.E.S. G. T. PORRITT, F.L.S.

J. J. WALKER, M.A., R.N., F.L.S.

VOLUME LII.

[THIRD SERIES—VOL. II.]

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THE
ENTOMOLOGIST'S
MONTHLY MAGAZINE:

VOLUME LII.

[THIRD SERIES, VOL. II.]

NOTES ON MELANDRYIDAE (2).

BY G. C. CHAMPION, F.Z.S.

In Volume LI of this Magazine, April, 1915 (pp. 138-140), I published some brief notes on various genera of this family, based upon material in the British Museum. This paper gives a fuller account of the group *Eustrophina*, with descriptions of various new forms.

EUSTROPHUS Latr.

Seidlitz restricts *Eustrophus*, type *Mycetophagus dermestoides* F., to the species with the prothoracic episterna and epimera connate (a character overlooked by Horn and myself), the elytra punctate-striate or striato-punctate, the prosternal process abbreviated, and the posterior tibiae short and stout. The Central American forms referred by me to *Eustrophus* belong to his genus *Eustrophinus*. *E. tomentosus* Say, and *E. uiponicus* Lewis, however, belong here. *E. macrophthalmus* Reitt., from Japan, is the type of *Synstrophus* Seidl.

EUSTROPHOPSIS.

Eustrophopsis Champion, Biol. Centr.-Am., Coleopt. iv, 2, p. 77 (1889); Seidlitz, Naturg. Ins. Deutschl., v, 2, pp. 438, 440 (1898).

Six tropical American species were included by me under this genus, type *Orchesia 15-maculata* Cast. Seidlitz suggests (*loc. cit.*) that three of these would be better placed under his *Eustrophinus*, on account of their striato-punctate elytra, a character of no great importance; *Eustrophinus*, moreover, as defined by him, has the prosternal process unemarginate at the tip, whereas it is cleft or emarginate in all the species included by me under *Eustrophopsis*.

1.—*Eustrophopsis hieroglyphicus*, n. sp.

Oval, pointed behind, convex, shining; rufous or testaceous, the prothorax with four small oblong spots on the disc (two along the median line, one of them basal, and one on each side about midway between them), and the scutellum, black; the elytra yellow, with the suture, outer limb, and a broad, posteriorly attenuate stripe on the disc, partly enclosing a rather long, curved streak at the base, and a transverse fascia at the middle (formed by an inward extension of the yellow ground-colour), black; the antennae with joints 1-4 and the tip of 11 rufo-testaceous; the elytra thickly, the rest of the surface more sparsely, clothed with rather long, pallid pubescence. Eyes narrowly separated, strongly transverse, very deeply emarginate. Antennae widened outwards, joints 1-4 more slender than those following, 3 and 4 equal in length, 5-10 stout, gradually becoming shorter and wider, 11 ovate. Prothorax rather sparsely, minutely punctate, the basal foveae shallow. Elytra closely, finely, confusedly punctate, the rows of seriate punctures showing through from beneath, the epipleura hollowed. Beneath finely punctate. Prosternal process rather broad, notched at apex. Mesosternal keel very prominent. Length $5-7\frac{1}{2}$, breadth $3-4\frac{2}{5}$ mm.

Hab.: AMAZONS, Para, Ega (*Bates*).

Twelve specimens, varying in size, the elytral markings divided into streaks in one of them. Near *E. 15-maculatus* Cast., from Brazil and Peru.

2.—*Eustrophopsis decemguttatus*, n. sp.

Oval, pointed behind, convex, shining; testaceous or flavous, joints 6-10 of the antennae black, the elytra each with five spots or streaks—two, oblong, just below the base, another near the outer margin beyond the middle, one large, oblique, oval, on the disc before the middle, and one, oblique, elongate, towards the apex—and the suture to near the tip (more broadly so for some distance below the base, at the middle, and towards the apex) black or piceous; clothed with long, pallid, shaggy pubescence. Eyes narrowly separated, strongly transverse. Antennae widened outwards, joints 1-4 more slender than those following. Prothorax minutely punctate. Elytra finely striato-punctate, the interstices confusedly punctate. Beneath closely, finely punctate. Prosternal process rather broad, notched at apex. Mesosternal keel very prominent. Length $6-6\frac{1}{2}$, breadth $3\frac{1}{2}$ mm.

Hab.: AMAZONS, Ega (*Bates*); BRAZIL, Rio de Janeiro (*Fry*).

Three specimens. Near *E. 15-maculatus* Cast., differing from it in the immaculate prothorax and the ten-spotted elytra, the latter distinctly striato-punctate, the seriate punctures in the allied forms not reaching the outer surface, but showing through from beneath. In the Ega examples these seriate impressions are much finer on the disc, and scarcely distinguishable from those of the interstices. The widening of the dark sutural border tends to form three, common, oblong marks in one of the Rio de Janeiro insects.

3.—*Eustrophopsis bilunulatus*.

Eustrophopsis bilunulatus Pic, L' Echange, xxviii, p. 93 (1913).

Hab.: BRAZIL, Jatahy [type]; AMAZONS, Ega (*Bates*).

The type of this species was from Brazil. There are specimens of it from Ega in the British Museum. An oval, testaceous insect, with a black spot on the disc of each elytron before the middle, a space around the spot flavescent, and the apical declivity (the margin excepted) more or less infusate; the elytra are confusedly punctate, the seriate punctures, however, showing through from beneath; the prosternal process is very feebly notched at the tip.

EUSTROPHINUS.

Eustrophinus Seidlitz, Naturg. Ins. Deutschl., v, 2, pp. 433, 440 (1898).

Eustrophus Champion, Biol. Centr.-Am., Coleopt. iv, 2, p. 75 (1889) (*nec* Latr.).

The three Mexican or Central American species referred by me to *Eustrophus* in 1889, belong to *Eustrophinus* as defined by Seidlitz, and the N. American *E. bicolor* F., as well as various African and Madagascar forms described by Fairmaire and Gestro, must also be transferred to it.

1.—*Eustrophinus subaxillaris*.

Euclinetus subaxillaris Fairm., Ann. Soc. Ent. Fr., 1869, p. 224.

Eustrophus subaxillaris Fairm., *op. cit.*, 1886, p. 39; Champ. Ann. Soc. Ent. Belg. xlii, p. 65 (1898).

? *Eustrophus bimaculatus* Gestro, Ann. Mus. Genova, xvi, p. 663 (1881); Fairm., Ann. Soc. Ent. Belg. xl, p. 357 (1896).

Eustrophinus axillaris Seidl. Naturg. Ins. Deutschl. v. 2, p. 441 (1898).

Var. The elytra with the transverse, sub-humeral, rufous or rufo-testaceous spot angulate and extending inwards to the second striae, and with a second similar patch on the disc at about one-third from the apex.

Hab.: MADAGASCAR (*Coquerel*: type of Fairmaire); AFRICA, Zanzibar (*Raffray*: type of Gestro), Natal, Zululand, and Old Calabar (*Mus. Brit.*), N.E. Rhodesia—Serenje (*Neave*: xii.07) and Kashitu (*Dollman*: i and ii.15).

There is a long series of this species in the British Museum, including one from Madagascar (*Coquerel*, ex coll. *F. Bates*) labelled "*subaxillaris*, type," many from Natal (the locality given by *Seidlitz*), and several captured by *Mr. Neave* in the Serenje district of N.E. Rhodesia. The quadrimaculate variety is represented by a single example from Natal, and another from Kashitu, received with others of the normal form. In this insect the elytra are finely punctate-striate, the interstices flat and closely punctate. The prothorax is in great part rufescent in one of the specimens of the 4-spotted variety. *E. cuneatus* *Fairm.*, from the French Congo, must be a very nearly allied form.

2.—*Eustrophinus substriatus*.

Eucinetus substriatus *Fairm.*, Ann. Soc. Ent. Fr., 1869, p. 224.

Eustrophus substriatus *Fairm.*, op. cit., 1886, p. 39; *Champ.*, Ann. Soc. Ent. Belg. xlii, p. 65 (1898).

Hab.: MADAGASCAR (*Coquerel*, *Mocquerys*).

There are five specimens of this species in the British Museum, including one labelled "type," taken by *Coquerel*; the others were received from *M. Mocquerys* in 1899. These latter have a more or less distinct, oblong (not transverse), rufous or rufo-testaceous sub-humeral spot, wanting in the type and only just indicated in one of those captured by *Mocquerys*. The rather coarsely punctate-striate elytra separates *E. substriatus* from the very closely allied, widely distributed, *E. subaxillaris*, of which it may be an extreme form. *E. punctolineatus* *Fairm.*, is probably the same species, the presence of a humeral spot being of no value as a specific character.

3.—*Eustrophinus circumcinctus*, n. sp.

Oblong oval, much narrowed posteriorly, shining; nigro-piceous or black, the anterior half of the prothorax indeterminately rufous, the antennae with joints 1-4 and the tip of 11, and the elytra with the margins and base rather broadly, and the suture wholly or in part, testaceous, the legs and under surface piceous or brown, the tarsi paler than the tibiae; thickly clothed with coarse pubescence. Head small; eyes approximate; antennae rather stout, joints 7-10 transverse. Prothorax densely, finely punctate, with shallow coarsely punctured basal foveae. Elytra long, rapidly narrowed from near the base, conspicuously striato-punctate, the interstices flat and closely punctate, the epipleura excavate. Beneath densely punctate. Prosternal process narrow, unnotched at tip. Mesosternal keel very prominent. Length 6-6½, breadth 2¾-3 mm.

Hab.: N.E. RHODESIA, Serenje district, alt. 4,500 feet (*Neave*: xii.07), Kashitu (*Dollman*: xii.14).

Four specimens, from localities also producing *E. subaxillaris* Fairm. Compared with the latter, the general shape is a little more elongate and more cuneiform, and the coloration of the prothorax and elytra (suggestive of that of various Erotylids) very different. In one example the long black discoidal patch on each elytron extends to the suture posteriorly. The elytra are longer and more rapidly narrowed behind than in the American *E. marginatus* Champ.

4.—*Eustrophinus cuspidatus*, n. sp.

Oval, moderately convex, much narrowed posteriorly, shining; the upper surface, femora, and tibiae nigro-piceous or piceous, the antennae black, with joints 1-4 testaceous and 11 yellow, the tarsi testaceous, the under surface reddish-brown; thickly clothed with long brown pubescence. Eyes subcontiguous. Antennae moderately long, joints 5-10 rather broad, sub-triangular, 2 and 4 equal in length, 3 longer than 2. Prothorax arcuately narrowing from the base, closely, minutely punctate, the basal foveae shallow. Elytra rapidly narrowing from a little below the base, sharply margined laterally, shallowly punctate-striate, the interstices closely, finely punctate, the epipleura excavate. Beneath very finely, the abdomen densely, punctate. Prosternal process acuminate. Mesosternal keel moderately prominent. Length $5\frac{1}{2}$, breadth 3 mm.

Hab.: AMAZONS, between Para and Santarem (*H. H. Smith*). One specimen, received in 1875. Near *E. striatus* Seidl., but much broader anteriorly, and more pointed behind, the elytra with a more prominent marginal carina, the seriate punctures fine, and the interstices flat.

5.—*Eustrophinus striatus*.

Eustrophinus striatus Seidl., Naturg. Ins. Deutschl., v. 2, pp. 441, 442 (1898).

Hab.: BRAZIL [type], Espirito Santo (*Fry*).

Two specimens (length $5\frac{1}{4}$ - $5\frac{1}{2}$ mm.) from the Fry collection doubtless belong to this species. They are oblong-oval in shape, blackish brown above, paler beneath, the elytra coarsely punctate-striate, with convex interstices, the prothorax with faint basal foveae, the prosternal process narrow, entire, the mesosternal keel depressed. *E. striatus* might easily be mistaken for a Cistelid.

6.—*Eustrophinus biguttatus*, n. n.

Eustrophinus bimaculatus Pic, L'Echange, xxviii, p. 93 (1913), (nec Gestro, 1881).

Hab.: BRAZIL [type], Santa Catharina, Espirito Santo, Rio de Janeiro (*Fry*).

An oblong, rufo-testaceous or reddish-brown insect, with a black spot on the disc of each elytron before the middle, the elytra themselves striato-punctate, and the prothorax with conspicuous basal foveae; the posternal process is unnotched at the tip. A new specific name is required.

7.—*Eustrophinus bombinus*.

Eustrophinus bombinus Seidl., Naturg. Ins. Deutschl., v. 2, pp. 441, 442. *Orchesia* (?) *flavida* et var. Buq. in litt.

Hab.: BRAZIL [type], Rio de Janeiro (*Fry*).

There are several specimens of this species in the British Museum, including an immature pallid form, with the body (the metasternum, antennae, and tarsi excepted) flavo-testaceous. The antennae are almost wholly infusate or black (the tip excepted) and rather slender; the abdomen is lighter in colour in the dark individuals, and the legs are more or less infusate. The length varies from 8–9½ mm. This insect, in regard to the colour of the under surface, agrees better with the incomplete description of *E. ochraceus* Motsch., than the Central and South American specimens referred to it by myself in the "Biologia"; these latter, therefore, may require a new name.

8.—*Eustrophinus bombycinus* n. sp.

Elongate oval, attenuate posteriorly, convex, moderately shining; nigropiceous or piceous, the head above, the antennae with the four basal joints and the tip of the eleventh, the prothorax (two very large subconfluent patches on the disc excepted), the elytra with a marginal stripe and a transverse space extending inward from it before the middle (enclosing a transverse black spot), and the abdomen (except at the base), testaceous or rufous; thickly clothed with long, shaggy, fulvous pubescence. Antennae with joints 1–4 more slender than those following, 5–10 broad, triangular, gradually decreasing in length, 11 oval. Eyes very large, approximate. Prothorax closely, minutely punctate, the small basal foveae sharply defined. Elytra long, somewhat flattened on the disc, coarsely striato-punctate, the interstices flat, closely punctate, the epipleura moderately excavate. Beneath closely punctate. Prosternal process rather broad, truncate at the tip. Mesosternal keel very prominent. Length 8½–9, breadth 4–4½ mm.

Hab.: BRAZIL (*Mus. Brit.*), Rio de Janeiro (*Fry*).

Three specimens. This insect is so like *E. bombinus* Seidl., that it might almost be treated as a colour-variety of that species; the antennae, however, have joints 5–10 a little broader, and 1–4 wholly testaceous. One of the examples in the Museum is labelled with the MS. name *Orchesia bombycina*.

9.—*Eustrophinus ovatus*.

Eustrophus ovatus Champ., Biol. Centr.-Am., Coleopt. iv, 2, p. 76, pl. 4, fig. 3.

Hab.: GUATEMALA [type]; BRAZIL, Rio de Janeiro (*Fry*).

A specimen from Rio de Janeiro in the British Museum agrees very nearly with the Guatemalan type. The former has an indeterminate common dark patch on the elytra towards the apex.

10.—*Eustrophinus peruvianus*, n. sp.

Oblong oval, pointed behind, shining; nigro-piceous, with the anterior and lateral portions of the prothorax, the sides of the elytra, and the abdomen reddish-brown, or entirely piceous above; thickly clothed with long, shaggy reddish-brown hairs. Antennae rather long, moderately stout. Eyes approximate. Prothorax somewhat sparsely, minutely punctate, the oblique shallow basal foveae with three or four coarser punctures. Elytra long, somewhat flattened on the disc, narrowing from a little below the base, faintly striato-punctate, the seriate punctures becoming finer and scarcely distinguishable from those of the interstices towards the suture, the interstices flat and closely, confusedly punctate, the epipleura excavate. Prosternal process unnotched at the tip. Mesosternal keel very prominent. Length $8\frac{1}{2}$, breadth 4 mm.

Hab.: PERU (*ex coll. F. Bates*).

Two specimens. Near *E. bombinus* Seidl., but with the elytra more acuminate behind and faintly striato-punctate. The entire disc of the prothorax and elytra is piceous in one example.

11.—*Eustrophinus seidlitzii*, n. sp.

?*Eustrophinus marginatus*, Seidl. Naturg. Ins. Deutschl., v, 2, p. 441 (*nec* Champ.).

Oblong oval, pointed behind, shining; nigro-piceous, the prothorax (two black spots on the disc excepted) and outer margins of the elytra rufous, the abdomen reddish-brown; thickly clothed with rather long brown hairs. Head small; eyes approximate; [antennae wanting]. Prothorax strongly transverse, the sides rapidly converging from the base and forming a continuous outline with those of the elytra; closely, minutely punctate, the shallow basal foveae with about four rather coarse punctures. Elytra long, rapidly narrowing from a little below the base, somewhat flattened on the disc, closely, confusedly punctate, obsolete striato-punctate towards the sides, the fine seriate punctures not traceable on the disc, the epipleura deeply excavate. Beneath sparsely, minutely, the abdomen densely, punctate. Prosternal process truncate at the tip. Mesosternal keel very prominent. Length $6\frac{3}{4}$, breadth $3\frac{1}{2}$ mm.

Hab.: PERU (*ex coll. F. Bates*); ? BRAZIL.

One specimen. Smaller than *E. peruvianus*; the prothorax rufous, with two black spots, the sides more rapidly convergent from the base, and the basal foveae much shallower; the elytra more finely punctate, without trace of seriate punctures on the disc; the head smaller. The finely, confusedly punctate, incompletely striato-punctate elytra, the less rounded sides of the prothorax, and the very prominent mesosternal keel, separate the present species from the similarly coloured Central American *E. marginatus* Champ. These characters indicate that the Brazilian insect referred by Seidlitz to *E. marginatus* must have been wrongly identified, and it possibly belongs here.

SYNSTROPHUS.

Synstrophus Seidlitz, Naturg. Ins. Deutschl., v, 2, pp. 438, 442 (1898).

Seidlitz gives *Eustrophus macrophthalmus* Reitt., from Japan, as the type of this genus, and correctly states that the N. American *E. repandus* Horn must be included in it. An insect from Burma in the British Museum is congeneric with them, the principal characters being the non-crenulate posterior tibiae, the fusion of the episterna and epimera of the prothorax, and the large, contiguous eyes. In *E. macrophthalmus* and *E. repandus* the prosternal process is unemarginate at the tip, whereas in the new species now added the process is triangularly notched, showing that this character, used to separate *Eustrophinus* from *Eustrophopsis*, cannot always be relied upon for generic diagnosis. *Eustrophus rollei* Pic, from Formosa, is said to be related to *E. macrophthalmus*, and it therefore probably belongs here.

1.—*Synstrophus ater*, n. sp.

Elongate oval, acuminate posteriorly, moderately shining; black above and beneath, thickly pubescent, the hairs on the prothorax reddish-brown, those on the rest of the surface much darker. Head small; eyes contiguous; antennae rather short, joints 5-10 stout, triangular. Prothorax arcuately narrowed from the base, closely, very finely punctate, the almost obsolete basal foveae bearing three or four coarser punctures, which are longitudinally confluent in one example. Elytra long, rapidly narrowed from the base, finely striato-punctate, the interstices flat, closely punctate, the epipleura slightly hollowed anteriorly. Beneath sparsely, finely, the abdomen densely, punctate. Prosternal process rather broad, emarginate at tip. Mesosternal keel very prominent. Length $8\frac{1}{2}$ - $8\frac{3}{4}$, breadth $3\frac{1}{2}$ - $3\frac{3}{4}$ mm.

Hab.: BURMA, Ruby Mines (*Doherty*).

Two specimens, males. Separable from the Japanese *E. macrophthalmus* by the very finely striato-punctate elytra, with flat interstices, the minutely punctate prothorax, and the wholly black body. The reddish-brown vestiture of the prothorax modifies its dark ground-colour.

HOLOSTROPHUS *Horn.*

The species of this genus have the epimera and episterna of the prothorax connate, the elytra confusedly punctate, the eyes small and distant, the prosternal process long, and the posterior tibiae narrow and unnotched on the upper edge. *Holostrophus* is represented in North America, Japan (*H. dux*, *orientalis*, *unicolor*, and *4-maculatus* Lewis), Formosa (*H. multinotatus* Pic), Java (*H. fruhstorferi* Pic), Borneo, etc.

1.—*Holostrophus borneensis*.

Holostrophus borneensis Pic, L' Echange, xxviii, p. 94 (1913).

Hab.:—BORNEO [type], QUOP (*Bryant*); SUMATRA (*Doherty*); JAVA; SINGAPORE.

There are four specimens of *H. borneensis* in the British Museum from the above mentioned additional localities, and Mr. Bryant has taken it in Borneo. This species has the elytra black, each with four spots and the tip testaceous, and the prothorax red, with dark markings on the disc.

2.—*Holostrophus philippinus*, n. sp.

Oblong oval, acuminate posteriorly, convex, shining, thickly pubescent testaceous or rufescent, the prothorax with a large hieruciate patch on the disc, the scutellum, and the elytra, two broad transverse patches on the disc of each excepted (one a little below the base, sometimes extending obliquely forward near the suture to the base, the other sub-apical), nigro-piceous or piceous; antennae with joints 1-4 and the tip of 11 rufo-testaceous, for the rest nigro-piceous. Antennae rather short, joints 7-10 transverse, 11 longer than 9 and 10 united. Prothorax rapidly, arcuately narrowing from the base, the sides forming a continuous outline with those of the prothorax; very finely, closely punctate, the basal foveae shallow and bearing a short longitudinal sulcus. Elytra narrowing from the base, densely, confusedly punctate. Beneath very finely punctate. Prosternal process rather broad, extending beyond the anterior coxae, immarginate laterally, rounded at the tip. Mesosternal keel moderately prominent, sloping anteriorly. Length $4\frac{1}{4}$ - $5\frac{1}{2}$, breadth 2 - $2\frac{1}{2}$ mm.

Hab.: PHILIPPINE IS. (*Wood*).

Seven specimens, all in a very bad state of preservation. These were acquired by the British Museum in 1845, and have thus remained for 70 years unnamed. One only of them has the testaceous post-basal patch on the elytra extending obliquely forwards on each side of the suture to the base. This insect resembles the N. American *H. bifasciatus* and the Japanese *H. dux*, differing from the former in the much smoother, less densely punctate upper and under-surfaces, and from the latter in its smaller size, less ample prothorax, etc.

NOTES OF A VOYAGE TO AUSTRALIA, CEYLON, AND THE
MALAY ARCHIPELAGO, JULY—NOVEMBER, 1914.

BY F. A. DIXEY, M.A., M.D., F.R.S.

Gibraltar was reached on July 7th. Very few insects were seen; a hot walk up the slopes at the back of the town resulted only in the capture of *Ganoris rapae* Linn., ♀; a wasp, *Polistes gallicus* Linn., ♀; and a bee, *Halictus* sp., ♀. *Colias edusa* Fabr. was seen, but not taken. The Alameda, or public garden, displayed a wealth of brilliant flowers: oleanders, *Hibiscus*, *Ipomoea*, *Plumbago*, and tree-geraniums. Here, however, no butterflies were observed except a few more specimens of *G. rapae*, and the only other insect secured was the fine long-waisted wasp, *Sceliphron spinifex* Linn., ♀. Some members of the landing party encountered one of the monkeys that inhabit the rock. The unfortunate animal was being stoned by a number of men from the town. Our friends interfered, and the monkey made his escape.

In the Suez Canal, on July 16th, *Danaida chrysippus* Linn. was observed flying close to the ship; and in the Red Sea, on the following day, a rather worn *Pyrameis cardui* Linn. came on board.

The next entomological event of the voyage took place on July 19th, in the Gulf of Aden. Here a swarm of locusts invaded us at about 8 p.m., dispersing themselves over the decks, thronging the gangways, making their way into the state rooms, and causing much annoyance by clinging to the clothes and hair of the passengers. Members of this aerial raid continued for some days afterwards to turn up in the most unexpected quarters. The species was *Schistocerca peregrina* Oliv. It is a beautiful insect, creamy pink in colour, with the forewings prettily mottled. The expanse of wing in an average specimen is fully five inches. It may be noted that those specimens

observed in 1905 by Dr. Longstaff and myself in South Africa, were of a much darker colour, their hue being perhaps best described as mahogany red.

On July 25th we had a day ashore at Colombo. In the early morning the rain came down in torrents, but this soon cleared off and the heat became intense. I walked southwards along the sea-front, admiring the immense breakers raised by the S.W. monsoon which we had experienced on the way from Aden. At Galle Face, where there is a picturesque grove of coco-nut palms on the very verge of the sea, I turned inland and continued my walk along the side of a lagoon edged with palm trees and reflecting the lines of a Buddhist Temple. The shallows were thronged with water-tortoises, which sank as one approached. Impudent crows were everywhere, looking out keenly for anything dropped. Halting beside an enclosure between the lagoon and the beach, I made a few captures. They would have been more numerous but for the tiresome attentions of importunate natives, mostly children.

Dragon-flies, especially *Brachythemis contaminata* Fabr., were abundant, as also were great dark-blue bees of the genus *Xylocopa*; one brought home is *X. fenestrata* Linn. ♂. *Terias hecabe* Linn. was present in large numbers; the only one taken is a wet-season male. *Telchinia violae* Fabr. was fairly common; two males had a slight odour of straw, in two others no scent was detected. Many males of *Hypolimnas bolina* Linn. were observed; no female put in an appearance. *Catopsilia pyranthe* Linn. frequented the sunny sides of the enclosure. The males were noted to possess a strong odour like that of jasmine. In one of these, a somewhat worn specimen, the scent was easily perceptible on the following day, when the observation was confirmed by a lady fellow-passenger. A somewhat ragged male of *Zizera gaika* Trim., noted as "odourless," and a small green Hemipteron completed the bag.

On July 30th we passed the Cocos or Keeling Islands. The Commander of R.M.S. *Orvieto* obligingly brought the ship in near enough for us to see men on the beach, and to appreciate the striking contrast between the blue waters of the outer ocean and the vivid green expanse within the encircling coral-reef. A white-sailed yacht made its way slowly across the calm lagoon, and with the yellow sands and verdant palm-trees of the island shores, made a charming picture. We little thought that this peaceful spot was shortly to become the scene of the discomfiture of the famous cruiser *Edmen*, with its attendant fire and slaughter.

On August 4th we landed at Fremantle and went on by train to Perth. Here we were met by the disquieting news of the outbreak of war, the sense of which calamity was to haunt us during the rest of our journey. Embarking again at Fremantle, we steamed across the great Australian Bight, receiving on Aug. 6th, by wireless, orders to cover our lights. Neither at Adelaide (Aug. 8th-12th), nor Melbourne (Aug. 13th-19th), were insects much in evidence; but at Marysville, some 50 miles N.E. of Melbourne, a man came over on horseback to tell us that he knew of a lyre-bird's nest. A few of us started off to see it; we were led in single file through the bush. Having been told that the bird was not sitting, we naturally went up close to the nest, which was a large, round, covered-in structure, two or three feet from the ground. A lady of our party stooped to look in; there was a rush and a scramble; out flopped the lyre-bird; struggling through the scrub, it came to a small torrent, across which it flew. Alighting on the other side it ran swiftly up a fallen tree trunk on the sloping bank, and finally disappeared in the bush. The nest contained a single egg: large, smoky-brown, with a tinge of green. It was rapidly examined and carefully replaced.

At Sydney (Aug. 20th-26th) a species of *Euploea*, probably *Chanapa* (*Euploea*) *corinna* McLeay, was to be seen occasionally in the University precincts. These were the first butterflies I had met with in Australia.

At Brisbane (Aug. 27th-Sept. 3rd) matters entomological showed a decided improvement. Many butterflies, including *Papilio sarpedon* Linn. and *Precis velleda* Fabr., were to be seen in the town itself; while in the outskirts *Acraea andromache* Fabr. was abundant and *Delias nigrina* Fabr. common. The former of these two species had the slow, deliberate flight characteristic of the genus, and was often observed to settle on the ground; the latter, also with a slow flight, kept mostly out of reach, haunting the tops of trees and passing from one to another with a sailing motion that displayed the dark ground-colour and brilliant red band of the under surface.

Passing up inside the Great Barrier Reef, and within sight of some delightful-looking islands, the S.S. *Montoro* reached Townsville on September 6th. Here I spent most of the day in the scrub among the hills at the back of the beach. Butterflies were fairly numerous, but, owing to the rough nature of the ground, by no means easy to catch. *Tirumala hamata* McLeay was abundant in places, flying round trees and occasionally settling on twigs. In one male I detected a

slight odour like that of old straw, and in another a faint flowery odour on detaching scales from the fold on the underside of the hindwing. *Chanapa (Euploea) corinna* McLeay was also locally abundant; two males, one of which extruded yellow tufts, were tried for scent with a negative result. Satyrids were conspicuous by their absence, but a specimen of *Ypthima arctous* Fabr. was secured. Perhaps the most striking insect seen was *Eurycus cressida* Fabr. This was fairly common, not constantly visible like the Danaines, but every now and then attracting attention by its slow flight from tree to tree. A specimen of the male sex was noted as having a distinct acrid smell. No odour was detected in a worn and rather ragged example of the female. *Terias lineata* Misk. was abundant, *T. hecabe* Linn. quite common. Two males of the latter both showed the wet-season coloration. Other captures in the scrub near Townsville were *Eumecopus armata* Fabr., a quietly-coloured but very handsome Hemipteron; and a reddish-grey immature grasshopper, at present undetermined.

On the following day (Sept. 7th) I crossed over to Magnetic Island, which lies north-east of Townsville, in Halifax Bay. Here again the roughness of the ground and the character of the undergrowth made collecting difficult, and the number of insects caught bore a somewhat slender proportion to the number of those seen.

(To be continued.)

ANDRENA TRIMMERANA K., AND ITS ALLIES.

BY R. C. L. PERKINS, M.A., D.Sc.

In this Magazine, 1913, pp. 10, 11, I gave a table of the characters of the races of *Andrena rosae* Panz., as distinguished by Herr J. D. Alfken, and also an account of the variation exhibited by some of these forms in this country.

Further study has convinced me that our three forms (two of which are seasonally dimorphic) are specifically distinct and more than mere races, and may be separated as follows.*

MALES.

- 1 (4) Face beneath the antennae, and sometimes the whole face, clothed with black or sooty hairs, the cheeks always with a long spine.
- 2 (3) Mandibles simple, very long and falcate, without a definite antepical tooth *spinigera* K.

* Styloped examples are not considered in this Table.

- 3 (2) Mandibles very long and curved, but with a definite tooth on the inner edge before the apex.
 (3rd abdominal segment viewed in profile clothed above with excessively short bristly black hairs, instead of the softer longer ones of *spinigera*, the whole head clothed with black hairs, sometimes a little cinereous on the vertex, many black hairs on the thorax) *eximia*, Sm
 (= *teutonica* Alfk. = *rosae* 1st gen.).
- 4 (1) Face beneath the antennae generally mostly or altogether clothed with brown, cinereous, or ochreous hairs; if with black, there is no long genal spine.
- 5 (8) Abdomen with distinct red or yellowish bands or markings, either above or below, or on both surfaces.
- 6 (7) Hind tibiae with pale apices, not concolorous throughout, and the thorax more hairy above *anglica* Alfk.
 (= *spinigera* 2nd gen.).
- 7 (6) Hind tibiae concolorous and the thorax less hairy *rosae* Panz.
- 8 (5) Abdomen at most with the thin apical margins of the abdominal segments appearing more or less obscurely testaceous.
- 9 (10) Lower half of the face (*i.e.*, beneath the antennae) clothed at least for the most part with brown hairs, fading to cinereous or pale ochreous *trimmerana* K.
- 10 (9) Lower half of face wholly or for the most part clothed with black hairs *trimmerana* var. *scotica* n.

FEMALES.

- 1 (4) Abdomen above or beneath, or on both surfaces, with some red or yellow markings. In the most highly coloured varieties the 2nd and 3rd segments above may be wholly, or for the most part, red; in the least coloured, only the apices of one or two segments, either above or beneath, or the plenum of the 1st segment, or sometimes two spots at the base of the 2nd ventral may be red or yellow. Scopa beneath yellow.
- 2 (3) 2nd and 3rd abdominal segments, viewed in profile, bare, or almost so, on its dorsal surface medially *eximia* and *rosae*.
- 3 (2) 2nd and 3rd abdominal segments, viewed in profile, well clothed with erect hairs medially *spinigera* and *anglica*.
- 4 (1) Abdomen black, not notably marked with red or yellow; scopa generally white or silvery beneath.
- 5 (6) Abdomen with pale hairs on the third and following segments; face generally clothed largely with brownish or ochraceous hairs.
 ... *trimmerana* K.
- 6 (5) Abdomen on the 3rd and 4th segment clothed with erect black hairs, as viewed in profile; face for the most part black-haired.
trimmerana v. *scotica* n.

The females of the second generation, *rosae* and *anglica*, can in most cases, but not, I believe, in all, be distinguished from those of the first by the paler hairing of the face and other slight characters. Nevertheless on account of the great differences between the males of the 1st and 2nd generation in each case, it is not advisable that the spring and summer forms should be mixed in collections, nor that the names *eximia* and *anglica* should be dropped.

The remarks made by Edward Saunders in his "Hym. Acul. of the British Islands" under *A. rosae* are rather unsatisfactory and not altogether correct, and this is also the case with some parts of his description. Thus the critical joints of the antennae in true *rosae* ♀ are not like those of *trimmerana* in any of my specimens.

On April 15th, 1914, I was able to pay very special attention to the three spring species on Dartmoor, as they frequented the same bushes, and again on the 18th, the only days on which the locality was accessible to me until the 22nd, when the rarer species were already past. *A. spinigera* was numerous and frequently seen *in cop.*, and two pairs of the rarer *A. eximia* were taken in the same situation. *A. trimmerana* ♂ was numerous, but no ♀ was seen, yet no ♂ was seen to pair with either of the other species. This year I took a ♂ and several ♀ of true *rosae* in company on white *Umbelliferae*, no *anglica* (= *spinigera* 2nd brood) occurring in the locality. In many parts of Devon *A. spinigera* is abundant and occurs regularly each spring, quite unmixed with *A. eximia*, while the latter is much more local and much more uncertain, frequently failing altogether in its known localities.

Mr. F. Smith's collection contains only three males of true *rosae*, but whether these are the three taken at Shirley with 12 ♀ in 1844, as recorded in his "Bees of Great Britain" (1855), p. 52, there are no labels to show. His other ♂♂ are *anglica*, not true *rosae*. The ♀♀ of his series of *rosae* (or *austriaca* as he latterly called it) consist of about half-a-dozen true *rosae* and some sixteen examples of *anglica*, the latter mostly from Sidmouth. The var. *scotica* of *trimmerana* is from Loch Rannoch, and a similar form occurs in Ireland.

Park Hill House,

Paignton, South Devon:

November 2nd, 1915.

"*Coleoptera Illustrata*," Vol. I, No. 1: by Howard Notman: H. Notman, 136, Joralemon Street, Brooklyn, N.Y.—Part I of this new work contains 50 plates, illustrating various Palaearctic species of the genera *Carabus*, *Calosoma*, *Callisthenes*, *Damaster*, *Procerus*, and *Procrustes*. The plates each contain one enlarged drawing, of uniform size, showing the insect in its natural attitude. The text is restricted to a list of the species or varieties figured, their respective localities being given on the plates themselves. The price of this new venture is \$1 per part, which works out at about 1d. per plate.—EDS.

Philonthus varius v. shetlandicus Poppius, and *Philonthus varius v. nitidicollis* Boisd.—Attention was drawn to var. *shetlandicus* by Mr. Fergusson, in a note he contributed to the June, 1913, issue of this Magazine (Vol. 24, second series, p. 136); it is quite distinct from the other named varieties, the elytra being entirely dark red in colour. I spent a few days on the Mainland of Orkney in September, 1910, and recently, on looking over my captures, I found I took one specimen of the var. in moss. I have one specimen of var. *nitidicollis* Boisd., found at the roots of grass at Southsea. As this variety is recognised as distinct from *v. bimaculatus* Grav., in the latest European Catalogue, and by such authorities as Reitter (Fauna Germanica, Vol. 2, p. 128), and Ganglbauer (Die Käfer von Mitteleuropa, Vol. 2, p. 448), it should, I think, be given a place in the British List.—T. HUDSON BEARE, 10, Regent Terrace, Edinburgh: December. 1915.

Bembidium quinquestriatum Gyll., near Edinburgh.—On February 20th last I was having a walk in the late afternoon in the Mid-Calder district, about ten miles from Edinburgh, when I noticed that on my left hand the road was bounded by a sandstone wall, very similar in appearance to a wall at West Derby, Liverpool, from which I secured this species (under moss growing on the wall). I broke off some of the moss on the Mid-Calder wall and shook it over paper, and out tumbled a specimen of the desired insect; half-an-hour's work secured a nice series. This insect is so very local and peculiar in its habits that I thought it desirable to put this capture on record; since I came to Edinburgh in 1901 I have repeatedly searched for it, but in vain, until this occasion.—T. HUDSON BEARE: December, 1915.

Granary beetles at Cothill, Berks.—In an old water-mill at Cothill, near Abingdon, Berks., to which I have access, some sacks of damaged maize were recently found to be swarming with *Calandra oryzae*, as well as with other *Coleoptera* usually found in company with this destructive weevil. These included our two species of *Palorus*—*ratzeburgi* Wiss., and *subdepressus* Woll.*—in equally large numbers; *Tenebroides mauritanicus*, *Laemophloeus ferrugineus*, *Tribolium ferrugineum*, *Silvanus surinamensis** and *Alphitobius diaperinus*,* all plentiful except the two last mentioned. *Laemophloeus pusillus* Sch.,* easily picked out from among the swarms of *L. ferrugineus* by its shorter form and the very long antennae in the ♂, was also fairly common on my first examination, but on a second visit by Mr. Tomlin and myself we could only meet with

* Not included in the "Victoria County History" list of Berkshire *Coleoptera*.

dead specimens. Among the beetles taken by me in the mill at various times, I may mention *Oligota granaria*,* sifted out in numbers from old meal, etc., accumulated in the corners; *Heterothops praevia** and *Quedius mesomelinus*, occasional; *Homalium concinnum** abundant, often quite black; *Mycetaea hirta*, common; *Gnathoncus nannetensis* and *Dendrophilus punctatus*, occasional; *Aglenus brunneus** and *Atomaria munda*,* frequent; *Cryptophagus saginatus*, *distinguendus*, *cellaris*, *affinis*, *bicolor*, and *acutangulus*, all common except the last; *Mycetophagus quadriguttatus*, in considerable numbers; *Ptinus fur*, fine specimens of both sexes, and *P. pusillus* Boield.,* nearly all ♀'s; and *Niptus crenatus*,* frequent. I have also taken two or three of a small bright-looking *Hypocyptus* which appears to be referable to *H. apicalis* Bris.*—JAMES J. WALKER, Oxford: Dec. 17th, 1915.

Depressaria hepatariella Zell., a species new to Britain.—Amongst some specimens recently sent me by Mr. C. G. Clutterbuck for determination was a fine example of *Depressaria hepatariella*, taken in Scotland by the Rev. J. W. Metcalfe. Since it was accompanied by a suggestion that it might be "the Scotch form of *ciliella*," of which it has the size and general form, I give a description of the specimen (which is somewhat darker in general colouring than my Continental examples), as the species may be found in other collections. Exp. 25 mm. Antennae of ♂ moderately ciliated (1). Terminal joint of palpi about half second, whitish irregularly sprinkled with dark fuscous. Forewings reddish-fuscous suffusedly strigulated with dark grey, costa suffusedly spotted with dark grey, base of wing narrowly irrorated with whitish; discal stigmata minute, blackish, second with a minute whitish dot adjacent, space between second and costa forming a faint blotch of darker suffusion. Hindwings grey.

Its nearest British ally is *enicella*, but it is easily recognised from all similar species by the relatively short terminal joint of the palpi, without distinct dark bands, and the well-developed antennal ciliation of the ♂, the latter character being altogether exceptional in the genus, in fact directly opposed to its normal group-structure. The species appears to be of rather wide but local distribution, occurring from the summits of the Carinthian Alps to Lapland, so that its occurrence in Scotland is reasonable; Snellen records it from Holland, but I should suspect an error. I am not aware that the food-plant is known, but it would almost certainly be a Composite or an Umbellifer.—EDWARD MEYRICK, Thornhanger, Marlborough: December 9th, 1915.

Occurrence of a New Zealand Tineid in Britain.—In the same box with the above was a specimen of *Dryadaula pactolia* Meyr., a New Zealand species belonging to the *Erechthias* group of the *Lyonetiadae*. It is a small insect of 8-10 mm. expanse, with much the structure of a true *Tinea*, but apex of forewings upturned in repose, dark fuscous with somewhat tessellated whitish markings, and a yellowish head. The larva is unknown, but species of allied genera usually feed on dead vegetable fibre, such as bark or stems or refuse, and some species have certainly been artificially distributed, and maintain

themselves readily in new countries. Mr. Clutterbuck took this specimen in his own house at Gloucester, and cannot explain its introduction, but informs me that there is a nursery garden opposite; if New Zealand ferns are imported to this country, they would provide an easy means of transmission. The species is not very common in its own home.—EDWARD MEYRICK: *December 9th, 1915.*

P.S.—Since writing the above, I have seen a second specimen taken by Mr. Clutterbuck in a previous year “in his cellar”; this would seem to show that the species has already established itself.—E. M.

Pairing of Lissonota sulphurifera Grav.—On August 10th of this year, I was fortunate enough to meet with a pair of this Ichneumon *in cop.* They were on bramble leaves in the ditch of one of my fields. They were sitting there quite quietly, and I was able, by using great caution, to get a bottle to the edge of the leaf and capture them. In the male I find some slight differences from the typical description. The clypeus alone is reddish, the mouth, palpi, head, antennae, thorax and abdomen are all quite black; the front coxae are red from the middle to junction with trochanters; the trochanters and the intermediate and hind coxae are entirely red; the legs are red with the hind tarsi infuscate.; the petiolar area is striate throughout; the length is $6\frac{1}{2}$ mm.

At the same place, a few days before, I had observed another pair *in cop.*, I think a *Pimpla*. In this case there were three on a bramble leaf; ♀ ♂ united, and ♂ fussing round to the disquietude of the others; the moment I attempted their capture, all rushed off the leaf and disappeared in the tangled mass below. As it is very rare to observe Ichneumons paired, I make no apology for bringing forward so common a species. That the same event should have occurred in the same place within a few days is, I think, very remarkable.—W. F. JOHNSON, Acton Glebe, Poyntzpass: *December 10th, 1915.*

Note on the swarming of Chloropid flies, Psocidae, &c., in houses.—It is well known that certain kinds of *Chloropidae* have the habit of occasionally entering houses in autumn in such numbers that many thousands of individual flies may be found in a single apartment: and, moreover, that such swarms sometimes recur for a number of years in succession in the same room. The matter is one which has been referred to often in entomological literature. In the Cambridge Natural History, Vol. VI, pp. 504–505, Dr. Sharp states that cases have been recorded both in France and in England, and he mentions specially several swarms that have taken place in Cambridge.

Recently I had an opportunity of seeing one of these fly-visitations on a large scale. On October 15th, 1915, I accompanied Dr. A. E. Shipley to Babraham House, the home of Mr. and Mrs. Adeane, about six miles from Cambridge, our object being to see the swarm and to consider what could be done to remove the hosts of flies, which were causing great annoyance. The swarm occurred in two rooms facing south-east—the drawing-room on the ground floor, and a room immediately above. It was very much worse in the first-floor room, where it formed a truly astonishing sight. In the large bay-window every pane of glass was densely covered with countless myriads of small

flies: on the upper sides of the projecting cross-pieces of wood between the panes the flies rested in masses, literally crawling over each other, while all the part of the ceiling near the window was almost as thickly covered as the window itself.

Samples of the swarm were submitted to Mr. C. G. Lamb, who reported as follows on its composition:—The two principal constituents were a little yellow Chloropid, *Chloropisca ornata* Meigen, and a slightly larger, dull greyish Anthomyiid, probably *Spilogaster* sp.,* but not determinable with exactitude, since all the specimens collected were females. About a week before my visit a large sample of the swarm had been sent to the Cambridge Museum, and the *Chloropisca* was then found to be a very big factor in its composition. But on October 15th this species seemed to be proportionately less numerous, so that while the *Chloropisca* was still much in evidence, the *Spilogaster* appeared to be the dominant component. Mingled with these small insects several larger species were also present, though in comparatively small quantity; *Musca corvina*, *Pollenia rudis*, *Calliphora*, various other Anthomyiids, as well as minute Chalcidids and a few wasps. A remedial measure suggested by Dr. Shipley was carried out with success. The window-panes were painted with a transparent mixture composed of commercial glucose and glycerine. The flies on the windows were soon caught, while those on the ceiling were purposely disturbed, and, making straight for the light, immolated themselves in large numbers.

An interesting part of the matter relates to the reiterated occurrence of the swarm in these rooms, and I am much indebted to Mrs. Adeane for supplying me with the following particulars. The invasion has taken place for at least five or six years in succession, varying somewhat in intensity, and being especially large this year, but always reaching its maximum, not in the ground-floor, but in the first-floor room. Apart from these immense hosts, which may be definitely called "swarms," Mrs. Adeane tells me that there has been a great quantity of flies in the sunny rooms every year, from at least as far back as 1888 onwards, the largest number always being found in this same first-floor room. Rooms facing south-west are infested by considerable numbers of flies, but not by anything to be described as a swarm; while in the rooms facing north-east flies are scarce. The house is surrounded only by lawn and gardens; rubbish-heaps, etc., are at a distance and on the opposite side to the windows frequented by the fly-myriads. Dr. Sharp remarks (*loc. cit.*): "No clue whatever can be obtained as to their origin; and the manner in which these flies are guided to a small area, in numbers that must be seen to be believed, is most mysterious. These swarms always occur in the autumn, and it has been suggested that the individuals are seeking winter quarters." I am not aware that any other explanation has since been put forward.

It will be noted that among the invading hosts of flies was a small number of examples of *Pollenia rudis*. Though relatively scarce in the case under review, yet this species does, by itself, produce immense swarms at certain times and places. Its general habit of entering dwelling-houses in numbers in autumn was noted long ago by Robineau-Desvoidy and others: while Dr. D. Keilin, who

* From my knowledge of the constituents of similar swarms, this species should be *Limnophora septemnotata* Zett.—J. E. COLLINS.

is now carrying on dipterological researches at Cambridge, has called my attention to records of its autumnal invasions of houses in New York State and Maine, invasions made in enormous numbers and in such a manner as to earn for it the name of "cluster-fly." [See W. H. Dall, Proc. U.S. Nat. Mus., Vol. 5, p. 635, 1882: B. P. Mann, Psyche, Vol. 3, p. 378, 1882: C. V. Riley, Amer. Nat., Vol. 17, p. 82, Jan., 1883]. Dall describes how these flies congregate in clusters and accumulate behind pictures, under table cloths, etc. They prefer clean rooms which are seldom used. It is also stated that "they like new houses": [compare the record, below, of a swarm of winged *Psocidae* in an absolutely new house in England]. Riley remarks that the *Pollenia* do not enter houses in a single swarm, as Chloropids have been observed to do, but gradually accumulate. Such swarming of *Pollenia rudis* is not confined to America, for Keilin has been informed that at the Château de Commanderie, near Orleans, certain rooms seldom used have been invaded in autumn for a number of years in succession by immense hordes of this fly. He regards the habit as being simply for the purpose of hibernation. In this French château very many of the insects die during the winter. To Keilin is due the interesting discovery that *Pollenia rudis* passes its larval existence as an internal parasite in the body-cavity of the earthworm *Allolobophora*. He has published a preliminary note on this (C.-R. Soc. Biol. (Paris), Vol. 67, p. 201, July, 1909), and has a full account of the life-history now in the press.

The present is an opportunity for putting on record a swarm of a totally different kind of insects, namely, winged *Psocidae*, which occurred in 1913, in the small house which I occupy on the outskirts of Cambridge. This building was then quite new, having been commenced in the spring of 1913, and first inhabited at the end of September. It stood on a plot of open grass-land, but with trees and shrubs at a distance of about 20 yards in two directions. I first observed the Psocid swarm on September 13th, when it was thickest on the ceiling of a small porch, numbers of the creatures being also present in the rooms. I was told that they had already been in evidence for some time, causing much annoyance to painters inside the house by sticking in quantities to fresh white paint. The swarm lasted through most of October, its numbers gradually dwindling towards the end of that month, though some of the insects continued present even into November. On October 6th I recorded that the swarm had existed almost continuously since September 13th, the insects disappearing temporarily from some rooms, only to re-appear in vast numbers elsewhere. Unlike the flies they seemed to congregate more on ceilings than on windows, forming dusky patches in particular parts of rooms. On October 19th I noted that they were still numerous about the house, but much more scattered. Specimens submitted to Mr. K. J. Morton were determined as belonging to two species: *Pterodela pedicularia* Linn., and *Ectopsocus briggsi* M'Lach. "The former," wrote Mr. Morton to me, "is a well-known inhabitant of houses and warehouses, sometimes appearing in great numbers; but it is certainly curious that it should have occurred in such quantity over a rather long period in a new house." One may refer to Ent. Mo. Mag., 1900, p. 43, where M'Lachlan, under the heading "*Psocidae* on the wing: a query," wrote thus concerning *P. pedicu-*

laria: "On calm hot days in autumn this may be seen almost anywhere in countless myriads, rivalling swarms of *Aphidae*." It was the only Psocid which he could recall ever to have seen *voluntarily* on the wing. I cannot remember seeing any of the Psocids in my house in the act of flight.

From about October 5th to October 19th, 1913, the fly *Stomoxys calcitrans* was present in considerable quantity in the house, along with the Psocids. Several dozen specimens at least were collected off the window-panes. Neither this insect nor the Psocids have recurred in the two succeeding years in numbers in the least approaching a "swarm."—HUGH SCOTT, University Museum of Zoology, Cambridge: *November 24th*, 1915.

Obituaries.

Professor Raphael Meldola, D.Sc., F.R.S., whose sudden death on Nov. 16th, at the age of 66, we announce with profound regret, was perhaps best known to the public as the Professor of Chemistry in Finsbury Technical College since 1885, and as one of the most eminent chemists of our time, in particular our chief authority on the colouring matters derived from coal-tar, just now so much under discussion. But very few men have had a wider range of interests in science, and as a biologist, more especially in the questions of Mimicry and Protective Resemblance in the animal Kingdom, his reputation stands at least as high. His greatest service to modern Natural History is perhaps his admirable translation of Weismann's epoch-making work, "Studies in the Theory of Descent," which appeared, with copious notes by the translator, in 1882-3, and was the means of bringing into prominence in our country the "Mullerian" theory of Mimicry very shortly after its inception by its author. In his biological work, Meldola was associated with Charles Darwin and other pioneers of evolution, Wallace, Bates, and Trimen, and later more especially with his "brother in Science," Professor Poulton. As far back as 1868 we find him writing on Entomological subjects, and occasional notes from his pen appear in some of our early volumes. In 1872 he became a Fellow of the Entomological Society of London, and for five years (1876-80) held the post of Secretary: and in 1896-7 he occupied the Presidential Chair with special distinction. His name is also intimately associated with the Essex Field Club, now largely owing to his influence one of the leading local Natural History societies, and of which he was the first President (1880-83) and again at the "coming of age" of the Club in 1901-2. He formed a considerable collection of insects, chiefly *Lepidoptera*, which we understand will shortly find a home in the Oxford University Museum.

Whether as teacher, colleague, or friend, few men have commanded more unqualified esteem and affection than Raphael Meldola. His merit was recognized by many honours in the gift of Science, culminating in 1913 in the award of the Davy Medal of the Royal Society. In 1886 he married the daughter of the late Dr. Maurice Davis, J.P., who survives him, and to whom we tender our sincere sympathy.

Thomas P. Newman died with tragic suddenness at Haslemere Station on the morning of November 10th. Mr. Newman, who was born in 1846, was the son of the well-known Entomologist Edward Newman, F.L.S.; and as the head of the artistic and publishing firm of West, Newman & Co., he continued up to his death to publish the two valuable Natural History periodicals, the "Zoologist" and the "Entomologist," founded many years ago by his father, whose scientific tastes he inherited to a considerable extent. From 1878 to 1895 he was a Fellow of the Entomological Society.

Society.

ENTOMOLOGICAL SOCIETY OF LONDON: *Wednesday, Oct 20th, 1915.*—The Hon. N. C. ROTHSCHILD, M.A., F.L.S., F.Z.S., President, in the Chair.

Mr. Charles Ernest Stott, Woodcroft, Eglington Road, Chingford, Essex, was elected a Fellow of the Society.

The Hon. N. Charles Rothschild exhibited some examples of an *Anthrocerus* (*Zygaena*) bred from cocoons found in a marsh near Camberley, which, though found in a marshy situation, apparently resembled in all respects the "dry" chalk-down form of *A. trifolii*. Mr. H. J. Turner expressed the belief that the specimens were ordinary *A. trifolii* and not var. *palustris*; other Fellows concurred, and several instances were mentioned of ordinary *trifolii* being found in damp localities. Prof. Poulton brought forward an account, written by Dr. Carpenter, of the life-history of *Papilio hesperus* Westw., and the resemblance of its larva to that of *P. nobilis* Rog. Prof. Poulton also brought forward some observations, recorded in a letter dated September 1st, 1915, by Mrs. D. R. Fyson, on the proportions of the female forms of *Papilio polytes* L., in the neighbourhood of Madras city. The Rev. G. Wheeler exhibited British Lyeaenids, taken in July and early August this year:—(1) *Polyommatus icarus* Rott., from the Durham coast, remarkable for their large size and the brilliant tint of the ♂♂. (2) *Plebeius aegon* var. *masseyi* Tutt, the form from the northern moorlands, the ♂♂ bright blue, with very narrow black border and conspicuous black marginal spots on the hind-wing, the ♀♀ strongly suffused with blue. (3) *Aricia medon* Hüfn., from the Durham coast, including almost typical specimens, also var. *salmacis*, as described by Stephens, the ♂ with a black discoidal spot on the upper-side of the fore-wing, the ♀ with a white one, ab. *similis* Tutt, ab. *albiannulata* Harr., ab. *vedrae* Harr., with its extreme form ab. *obsoleta* Obth., ab. *semivedrae* Harr., and ab. *inclara* Harr., this specimen being also somewhat striated. To these were added a few var. *artaxerxes* F., from Kinghorn. Mr. E. E. Green, a specimen of a Mantis from Ceylon, together with a *Gordius* worm that had emerged from it; also specimens of the re-discovered British Coccid *Gossyparia ulmi* Geoffr. (or *spuria* of Modeer—according to the American authorities), collected by Mr. J. C. F. Fryer, on a Cornish elm at Farnham, Surrey. Mr. Donisthorpe, two remarkable mixed gynandromorphs of *Myrmica scabrinodis* taken in the same colony at Weybridge, July 30th, 1915. Dr. F. A.

Dixey, specimens of *Nychiton* 1 and *Leuceronia*, remarking on their resemblance extending to habits and flight. Mr. R. Adkin, a 5-spotted specimen of *Anthrocera filipendulae*, captured in a field at the top of the downs near Otford, Kent. Mr. E. A. Butler, a series of *Brachyarthrum limitatum* Fieb., a Capsid new to the British list, taken in Epping Forest, July 3rd, 1915, on aspen; also a specimen of *Timarcha violaceo-nigra* De G., with the left intermediate leg furnished with two tarsi, placed upon a much broadened tibia.

Wednesday, November 3rd, 1915.—The President in the Chair.

Messrs. H. C. Tytler, Vacoas, Mauritius, and Albert F. Winn, 32, Springfield Avenue, Westmount, Montreal, Canada, were elected Fellows of the Society.

Mr. S. A. Neave exhibited a remarkable and unrecognised species of *Acræa*, which was described and figured by Lathy, in the Transactions of the Society for 1903, as a Lycaenid, and placed in the genus *Telipma*. The name for this species will therefore stand as *Acræa actinota* Lathy. Mr. Donisthorpe, a series of *Scymnus arcuatus* Rossi, a bit of a leaf of ivy with the pupal skin of the beetle on it, and larvae of the *Aleurodes* on which it preys, also the *Aleurodes* and a Chalcid (*Encarsia* sp. ? ♂ and ♀) and a Neuropteran parasitic on the *Aleurodes*, all taken at Stonor Park, August 6th, 1915. He also communicated a paper descriptive of the life-history of the *Scymnus*, sent to him by Mr. J. F. Perry. Prof. Poulton, a collection of insects, captured February 20th, 1915, at the flowers of a Eucalyptus, at Healesville, Victoria, by Mr. R. Kelly. Mr. Arrow, specimens of a new species of *Thaumaglossa*, bred from the egg-clusters of Mantidae, and read notes. Mr. G. Talbot, on behalf of Mr. J. J. Joicey, a number of new *Lepidoptera* from Dutch New Guinea, and read notes. Mr. Stanley Edwards, aberrant butterflies taken by Mr. Dawson, viz., an albinistic specimen of *Epinephele jurtina* (ab. *semialba*); melanic specimens of *Brenthis pales*, *Melitæa dictynna*, and *M. didyma*, a striated specimen of *Agriades escheri*, and a specimen of *Polyommatus hylas* with obsolescent spotting. The specimen of *M. didyma* was taken at Digne, the others in Switzerland.

The following paper was read:—"On new and little-known species of *Xylophilidae*," by G. C. Champion, A.L.S., F.E.S.—GEO. WHEELER, *Hon. Sec.*

ON TWO NEW BRITISH COCCIDAE,

WITH NOTES ON SOME OTHER BRITISH SPECIES.

BY E. ERNEST GREEN, F.Z.S., F.E.S.

During the past summer, I have been fortunate in the discovery of two more Coccids that are not only new to the British list, but new to Science. They were both found on grasses, in rough, uncultivated meadows on the outskirts of Camberley.

One of them—the more remarkable of the two—occurs in some abundance, and it is somewhat surprising that it has hitherto escaped observation. This insect attains a length of rather more than 6 mm.,

or approximately a quarter of an inch, and its glistening white nacreous covering, in strong contrast with the rich green of the blades of grass upon which it rests, renders it a comparatively conspicuous object. The covering scale—as may be seen from the accompanying illustration (fig. 1)—is divided into distinct polygonal plates, like the carapace of a tortoise. A similar structure is noticeable in the Australasian genus *Inglisia*, and I was at first inclined to refer my discovery to that genus. There are, however, certain minor characters

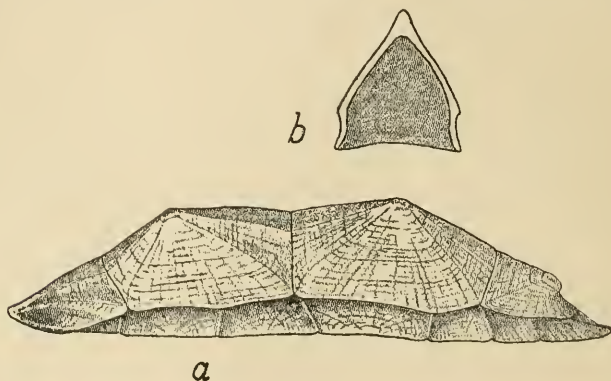


FIG. 1.

of the insect itself that differentiate it from typical members of that genus. I am now of opinion that it is more correctly referable to Signoret's genus *Fairmairia*, erected for the single European species—*F. bipartita*. The name *Fairmairia* being pre-occupied by that of a genus of *Diptera*, L. Cockerell (Can. Ent., XXXI, p. 332, 1899) has suggested the name *Parafairmairia* which has now been adopted for the species described by Signoret. I accordingly propose for my new species the name of

PARAFAIRMAIRIA GRACILIS, *nov.*

Adult female completely covered above with a narrow, elongate, white glassy test, which is divided up into dorsal and lateral series of polygonal plates (fig. 1-a). The lateral plates form a low, almost vertical, wall enclosing the sides of the insect. The dorsal plates slightly overlap the laterals and rise from each side to a sharp median ridge (vide fig. 1-b, which gives a diagrammatic view of a transverse section through the highest part of the test and insect). The anterior plate is pointed in front and its sides are curved sharply downwards, entirely covering the cephalic area of the insect. A few raised lines radiate from the apex to the sides and base. The following two dorsal plates are by far the largest of the series, covering the greater part of the body. They are sub-conical or pyramidal in form, with strongly compressed sides, each with a slight central raised prominence, from which many rather indefinite

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THE LONDON NATURAL HISTORY SOCIETY which meets at 7 p.m., on the 1st and 3rd Tuesdays in each month, at Room 20, Salisbury House, Finsbury Circus, E.C., will be glad to welcome at its Meetings any French or Belgian entomologists now staying in this country, and to give them the benefit of its library and collections. Communications should be addressed to the Secretary, Salisbury House, E.C.

February 1st—Pocket Box Exhibition. February 15th—"Regional Survey," C. C. Fagg. Exhibition of "Tigers" and "Ermines," arranged by the Lepidoptera Committee. March 7th—"A Visit to Tunis and Carthage," R. ARMSTRONG-JONES, M.D. Exhibition of "Hawk Moths," arranged by the Lepidoptera Committee.

Hon. Sec.: J. Ross, 18, Queen's Grove Road, Chingford, N.E.

Arrangements have been made by the Lepidoptera Committee of the above Society for a Member of the Committee to attend at Salisbury House at 6.30 p.m. on Meeting Nights (1st and 3rd Tuesdays in each month, except July and August), for the purpose of giving advice and assistance to young entomologists, whether members of the Society or not. A cordial welcome will be extended to any who care to avail themselves of this arrangement.

Woodford Branch. Meetings are held at the Wilfrid Lawson Hotel, Woodford Green on the last Friday in the month, and commence at 8 p.m. The Meeting Room is open at 7.30 p.m.

Chingford Branch. The Chingford Local Branch meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the 2nd Monday in each month.

lines radiate to the circumference, those directed to the angles of the plate being the more strongly marked. These radiating lines are crossed by numerous finer transverse lines, arranged concentrically to the circumference of the plate. The fourth plate is of smaller size but is of similar structure to the previous two. It slopes sharply downwards behind the central prominence, which is directed backwards. The fifth and terminal plate of the dorsal series is a narrow, flat, acutely triangular piece, extending to the posterior extremity and covering the post-anal area of the insect. The lateral plates, of which there are seven on each side, are much smaller: the anterior and posterior plates sub-triangular, the remaining five irregular quadrilateral. They are not so conspicuously striated as are the dorsal plates, but some of them show traces of lines radiating from a point near the centre of the outer margin of each. The greater part of the test is rendered opaque either by the surface sculpturing or by the inclusion of minute air spaces, except upon the central area of the anterior plate, where the covering is transparent, revealing the reddish colour of the contained insect. Length, 5 to 6 mm. Greatest breadth approximately 1 mm.

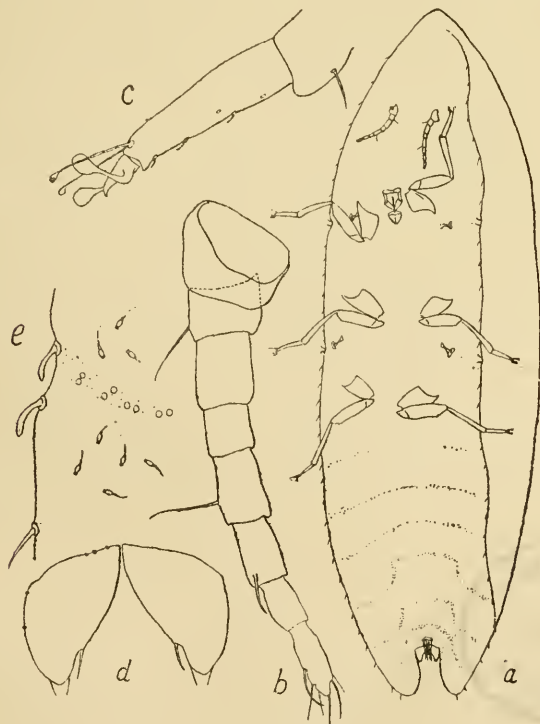


FIG. 2.

Female insect (fig. 2-a), reddish; conforming to the shape of the test which it at first more or less completely fills. Anterior extremity acutely pointed. Antenna (fig. 2-b) well developed, 8-jointed; 3rd, 5th and 6th joints

approximately equal and longest; 4th usually shortest, but occasionally equal to 2nd and 7th. Rostral apparatus rather small. Legs well developed; foot (fig. 2-c) with a stout claw; unguinal digitules broadly spatulate, tarsal digitules slender but conspicuously knobbed at extremity. Valves of anal operculum (fig. 2-d) irregularly triangular, divergent; apices with 3 or 4 stout spines near the extremity. Anal ring with 6 stout setae. Stigmatic clefts obsolescent or very shallow; each with two small club-shaped spines (fig. 2-e). A series of small circular pores, usually in pairs, extends from the margin to the opening of the spiracles. Marginal hairs simple, pointed, small and inconspicuous. Derm with numerous tubular pores of the form represented at fig. 2-e, and with transverse series of minute circular pores across the abdomen, marking the junctions of the segments. Length, 3.50 to 4.50 mm.

Male puparium resembling that of the female, except that the marginal area is flatter and the median ridge more sharply compressed. Length 2.25 mm.

On the leaves of various grasses and sedges. Camberley, Surrey.

The mature insects were first observed in July. At that time they were only just commencing to deposit their eggs. A specimen found on the 10th November had the test packed with pinkish eggs; the insect itself, contracted to a fourth of its original length, occupying the anterior extremity of the test.

This species differs from *P. bipartita* in its more slender form, and in the greater number of plates that are comprised in the test. I have had no opportunity of examining actual examples of Signoret's species, but from his description and figure, it would appear that the test of that species consists solely of two large pyramidal plates.

The second species, of which I have been able to obtain three examples only, is a more obscure insect. Though of a somewhat different facies and habitat, it clearly falls within the genus *Lecanopsis* of Targioni-Tozzetti, as extended by Newstead. My insect, being characterised by well-developed antennae, I propose to call it *Lecanopsis longicornis*, in contradistinction to Newstead's *L. brevicornis*.

LECANOPSIS LONGICORNIS, *nov.*

Adult female (fig. 3-a), elongate, rounded in front, bluntly pointed behind; flattish; segmentation inconspicuous. At first naked or slightly pulverulent; afterwards more or less completely covered with loose white woolly secretion. Antenna (fig. 3-b) 8-jointed: 3rd and 4th longest, approximately equal; 6th and 7th shortest; 8th equal to 2nd in two examples, to 5th in one example. Limbs well developed; tibia and tarsus rather long and slender, tarsus rather less than half the length of the tibia. Foot (fig. 3-c) with stout falcate claw; unguinal digitules stout, rather broadly expanded at extremity; tarsal digitules slender, each with a small knob at extremity. Mentum very short, consider-

ably broader than long. Valves of anal operculum acuminate. Anal cleft approximately one-eleventh of the length of the insect. Anal ring with six stout setae. No stigmatic clefts or spines. A crowded sub-marginal series of circular multilocular pores (figs. 3-a and 3-d) extends the full length of the body, on each side, interrupted only at the anterior and posterior extremities. A large group of similar pores surrounds the genital orifice, on the venter. There is a loose series of short curved hairs, placed just within the margin, immediately outside the lateral series of pores, these hairs becoming marginal at the two extremities of the insect. A pair of longish hairs is situated between the bases of the antennae, with a pair of smaller hairs slightly posterior to them. Immediately anterior to the base of the anal cleft are two pairs of longish hairs, on the venter, and a group of four similar hairs on the preceding segment. Other minute hairs are sparsely scattered over the surface of the venter which is also closely studded with minute tubular pores. Length 3.50 to 4.75 mm. Greatest breadth 1.25 to 2.0 mm.

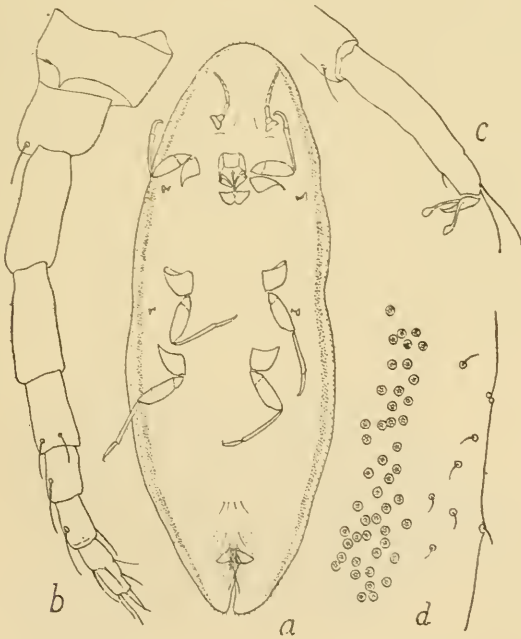


FIG. 3.

Other stages not observed, but ovisacs—probably of this species—were found on November 10th. They are white, elongate, stout, roughly cylindrical, and are packed with rosy pink eggs. They are very easily detached from their support, and most of them were found lying loose at the base of the grass stems. They are considerably larger and stouter than ovisacs of *Luzulaspis luzulae* found at the same time. The eggs are of a more pronounced red and are more evenly dusted with mealy powder.

Described from three examples found on blades of grass. Camberley, July, 1915.

Differs from *L. brevicornis* in its exposed habitat, its woolly (instead of glassy) covering, its more elongate form, and its well-developed limbs and antennae.

Gossyparia ulmi Geoffroy.

Prof. Newstead, in his "Monograph of the British *Coccidae*," makes no reference to this species, and it has not generally been accepted as a British insect. The late J. W. Douglas, however, remarks (*Ent. Mo. Mag.*, Vol. XXII, p. 159, December, 1885), that "Stephens, in his 'Catalogue of British Insects,' gives the name of many species of *Coccidae*, of which no recent record of their occurrence in Britain exists, and it is very desirable that the statement should be verified." Amongst the names specified is "*Gossyparia ulmi*."

I am now able to re-instate this species as a British insect, on the strength of specimens received from Mr. J. C. F. Fryer, who collected them on a Cornish elm at Farnham, Surrey.

Though a very distinctive one, the insect is inconspicuous, and might be easily overlooked. It might even be mistaken for the pupa of a Coccinellid beetle, the curious upturned fringe of secretory matter (*vide* fig. 4) being suggestive of the remains of the larval skin that



FIG. 4.

surrounds the pupae of certain *Coccinellidae*. I give an enlarged figure of the insect, as it appears on the rough bark of the elm, in the hope that it may be recognised in other localities.

Of other British *Coccidae* that have come under my notice during the current year, the following observations may be recorded.

ASPIDIOTUS HEDERAE *Vallot.*

This species (perhaps better known as *A. neri*) is a common greenhouse pest throughout the British Isles, infesting more particularly various kinds of Palms, *Dracaena*, *Citrus*, and Oleander. It is a sub-tropical species and is usually considered to be unable to withstand the winter in more northern countries. In April last, I received examples of this species from Torquay, where they were found to be infesting the foliage of *Aucuba* growing in the open. The leaves were thickly covered with the male puparia of the insect, amongst which were a few dead females. I thought it probable that they had infected the plant during the previous summer but had failed to survive the winter. But fresh material from the same locality (received early in November) included a considerable number of living females. It is evident, therefore, that the insect can—under favourable conditions—become established in this country. In warmer climates the insect is more or less omnivorous, so it is unlikely to confine its attentions to *Aucuba* here. It should accordingly be regarded (and treated) as a pest of some importance.

My correspondent informs me that “this shrub (*Aucuba japonica*) forms part of a tall hedge in a protected position in the garden. The shrub is from 7 to 8 feet high, by about 3 feet wide, and over 90 per cent. of its leaves and branches have withered under the attack of the pest.”

ASPIDIOTUS OSTREAEFORMIS *Curt.*

Mr. Fryer has sent me examples of *Asp. ostreaeformis*, found on the stems and branches of young poplars at Farnham. Most of the insects are in the second or nymphal stage, at which period they may be readily mistaken for young adults of the notorious *Aspidiotus perniciosus*. They also bear a very close resemblance to *Aspidiotus transcaspianensis*, described by Marlatt, from material, “on old dried poplar bark from Transcaspian Russia.”

MYTILASPIS FICUS *Sign.*

I recorded, last year, the presence of male puparia of this species on the young twigs of edible fig, at Wisley, Surrey. On visiting the plant houses at Wisley, in September last, I found living male puparia in countless numbers on the foliage and fruit of the figs. Adult males emerged during the following month.

PARLATORIA PERGANDEI *Comst.*

Mr. J. C. F. Fryer has sent me living examples of this species, on branches of Japanese maple. They were collected in an auction room in London.

PALATORIA PROTEUS *Curtis.*

Plants of *Vanda teras*, in an orchid house at Wisley, were found to be thickly infested by this species.

LECANIUM CILIATUM *Douglas.*

This fine endemic species is far from common, and has hitherto been recorded from three counties only: Devonshire, Cheshire, and Kent. These three points enclosing, as they do, a huge triangle, occupying practically the whole of England, it is probable that a careful search would show that the insect is widely distributed throughout the intervening counties. I have now to add Camberley (Surrey) to the list of localities.

LECANIUM PERSICAE *Geoffroy.*

In August last I received from Mr. Hugh Scott specimens of a *Lecanium* upon leaves of an *Aralia*, said to be "growing permanently out of doors." I am unable to separate it from *L. persicae*, though (probably owing to its habitat on the leaves of the plant) these examples are of an unusually flattened form. Some of them show a tendency for the antennae to become 8-jointed, through a more or less complete separation of the terminal part of the 4th joint.

ERIOPELTIS FESTUCAE *Fonse.*

I was surprised to find examples of this species on November 10th that had not yet deposited their eggs. Ovipositing usually takes place early in July and continues through August, by the end of which month most of the females have deserted their ovisacs. The examples found in November may possibly represent a second brood.

LUZULASPIS LUZULAE *Duf.*

The same remarks apply to this species, of which fresh gravid females were found on the same date.

PSEUDOCOCCUS WALKERI *Newst.*

I have found this interesting species somewhat commonly in the Camberley district, and can confirm Prof. Newstead's observation (*Mon. Brit. Cocc.*, Part II, p. 171) that "on the slightest disturbance they fall to the ground, and are then very active."

PSEUDOCOCCUS, *sp.*

A window pane is not a situation in which one would expect to collect *Coccidae*; but Mr. Hugh Scott has sent me specimens of the minute winged males of a species of *Pseudococcus* (possibly *citri*)—"part of a large number of individuals which appeared on the window of a house (at Torquay) in September, 1913." The room was on the ground floor, and the window opened on to the garden.

EXPLANATION OF FIGURES.

Fig. 1.—*Parafairmairia gracilis*.

- a*, adult female, side view, $\times 13$.
- b*, diagrammatic transverse section.

Fig. 2.—*Parafairmairia gracilis*.

- a*, female insect, ventral aspect, $\times 22$.
- b*, antenna, $\times 186$.
- c*, foot, $\times 186$.
- d*, valves of anal operculum, $\times 186$.
- e*, stigmatic cleft and spines, $\times 186$.

Fig. 3.—*Lecanopsis longicornis*.

- a*, female insect, ventral aspect, $\times 22$.
- b*, antenna, $\times 186$.
- c*, foot, $\times 186$.
- d*, submarginal pores $\times 280$.

Fig. 4.—*Gossyparia ulmi*.

- adult females and larva, on bark of elm, $\times 6$.

NOTES ON MELANDRYIDAE (3).

BY G. C. CHAMPION, F.Z.S.

ORCHESIINA.

ORCHESIA Latr.

One or more of the numerous small Chilean forms referred by Solier, and Fairmaire and Germain, to this genus will probably have to be removed from it, but the available material (single specimens of two or three species) is insufficient for the proper study of them. In the Museum there is also an example of a minute, undescribed Microscaphiform Orchesiid (smaller than *O. minuta* Lea) from N. S. Wales (*ex coll. F. Bates*), but as the antennae are broken the insect cannot be described. An *Orchesia*, closely related to the Palaearctic and Nearctic forms, is known from Guatemala, and one from Brazil is now added, the first to be recorded from Tropical South America.

1.—*Orchesia brasiliensis*, n. sp.

Cuneiform, brown or reddish-brown, the antennae and palpi ferruginous; densely, somewhat roughly punctate, clothed with rather long, coarse, adpressed, reddish-brown hairs. Antennae moderately long, joints 3-7 oblong, sub-equal in length, 3 a little longer than 2, 8-11 stouter, forming an elongate 4-jointed club, 8-10 slightly longer than broad. Eyes very narrowly separated. Prothorax transverse, semi-circular, the basal foveae faintly indicated. Elytra long, narrowing from a little below the base, the sutural stria deep. Length $4\frac{1}{2}$ -5, breadth $1\frac{1}{2}$ - $1\frac{2}{3}$ mm.

Hab.: BRAZIL, Rio de Janeiro (*Fry*).

Four specimens, sex not ascertained. More elongate and larger than *O. guatemalensis*, the antennal joints 3-7 much longer, and 8-10 about as long as broad. These species belong to the sub-genus *Orchestera* Guill., the type of which, *O. luteipalpis* Muls., has a shorter antennal club, but is otherwise very similar to the American insects.

MICROSCAPHA Lec.

G. Horn, in his remarks on the two N. American species of *Microscapha* (Trans. Am. Ent. Soc., xx, p. 144, 1893*), suggested the name *Crioscapha* for his *M. arctica*, in the event of the two species having to be separated generically. *M. arctica*, if I have identified it correctly, can quite well be placed under *Lederia* Reitt. (1879), the

* Misprinted and indexed under the name *Mecoscapa* in this work.

latter including one European and various Asiatic forms. *Microscapha* would thus be restricted to *M. clavicornis* Lec., the Central American *M. minuta* Champ. (the two perhaps being conspecific), and a closely allied species from Brazil here described. These insects differ from *Lederia* in having the posterior coxae much less widened outwards, the metathoracic episterna elongate-triangular and completely separated from the sternum, the base of the prothorax bisinuate, and the scutellum visible. A minute Orchesiid recently found by Mr. Bryant at Penang, can be included under *Microscapha* for the present.

1.—*Microscapha pulicaria*, n. sp.

Elliptic, convex, shining; black, the antennae and legs testaceous; very minutely, somewhat closely punctate, clothed with fine greyish pubescence. Antennae short, joints 1 and 2 oblong, stout, sub-equal, 3-8 very closely articulated, short, slender, widening outwards, 9-11 dilated into a moderately stout club, 9 and 10 transverse, 11 longer, acuminate-ovate. Prothorax bisinuate at the base. Scutellum minute, triangular. Elytra narrowed from a little below the base, somewhat pointed behind. Posterior tibial spurs nearly as long as the first tarsal joint. Length $1\frac{1}{2}$, breadth $\frac{1}{2}$ mm.

Hab.: BRAZIL, Rio de Janeiro (*Fry*).

One specimen. Narrower and more acuminate posteriorly than *M. minuta*, the antennae and legs more slender, the former wholly testaceous and with the eighth joint transverse. *M. clavicornis* must be a considerably larger insect, length $2\frac{1}{4}$ mm.

2.—*Microscapha malayana*, n. sp.

♂. Elliptic, narrow, transversely convex, shining, finely pubescent; reddish-brown, the antennae and legs testaceous; rather closely, extremely minutely punctate. Antennae short, joints 1 and 2 oblong, stout, 3-7 slender, short, closely articulated, 8 a little stouter, about as long as broad, 9-11 thickened, together forming an elongate club. Prothorax short, rapidly narrowed from the base forwards, completely margined laterally, the base bisinuate. Scutellum minute, scarcely visible. Elytra oblong, slightly rounded at the sides, narrowing from a little below the base, transversely gibbous anteriorly, the disc (as seen in profile) appearing flattened thence to the apex. Posterior tibial spurs nearly as long as the basal joint of the tarsus, pectinate. Posterior coxae widened outwards, their anterior margin oblique. Metathoracic episterna elongate-triangular, not connate with the posterior coxae, the suture complete. Length $1\frac{1}{2}$, breadth $\frac{1}{2}$ mm.

Hab.: PENANG (*G. E. Bryant*: 5.xi.13).

One specimen, agreeing sufficiently well with *M. minuta* to be included provisionally in the same genus; the general shape, however, is more like that of *Orchesia*, and the antennal club is less pronounced. There is no trace of a sutural stria.

LEDERIA Reitt.

? *Stauropus* Fairmaire et Germain, Ann. Soc. Ent. Fr., 1863, p. 227 (*nec* Germar, 1812).

To judge from the description, *Stauropus* F. and G., type *S. oviformis* F. and G., from Chile, must be very closely related to, if not identical with, *Lederia* Reitt., type *L. suramensis* Reitt., from the Caucasus, the difference of locality notwithstanding. The Japanese insects referred by Lewis and Seidlitz to *Microscapha* would be better placed here. *Euclinetomorphus* Perris, including two or three species from Spain and Algeria, is separated from *Lederia* by Seidlitz mainly on account of the connate metathoracic episterna and posterior coxae, and the incompletely margined prothorax.

1.—*Lederia arctica*.

Microscapha (Crioscapha) arctica Horn, Trans. Am. Ent. Soc., xx, p. 144 (1893). *Euscaphurus saltator* Keen, Canad. Entom., 1895, p. 220 (*nec* Casey, in error).

The types of this species were from Fort Wrangel, Alaska. Numerous examples in the Museum from Massett, Queen Charlotte Island, received from the Rev. J. H. Keen, evidently belong to the same species. They differ from *M. clavicornis* (and *M. minuta*) in having no visible scutellum, the base of the prothorax simply arcuate, the elytra more distinctly punctate, and the eyes coarsely granulate. The Massett specimens, too, have the metathoracic episterna broad, parallel-sided, and fused posteriorly with the metasternum, and the posterior coxae so much widened outwards as to appear triangular.

DIRCAEINA.

ANISOXYA Muls.

1.—*Anisoxya conicicollis*, n. sp.

Fusiform, convex, moderately shining; piceous or brown, the antennae testaceous at the base; densely, finely punctate, clothed with rather long, adpressed, greyish pubescence. Antennae with joint 3 triangular, 4-10 subequal in length, broader than long, 11 short-ovate. Prothorax broader than long, rapidly narrowed from near the base, unimpressed, completely margined at the sides. Elytra narrowed from a little below the base. Intermediate legs elongated in ♀. Anterior tarsi slender, very slightly widened in ♂. Length $2\frac{1}{2}$ -3, breadth $1-1\frac{1}{5}$ mm.

Hab.: JAPAN, Kurigahara (*Lewis*).

Two specimens, assumed to be ♂ and ♀, the latter with the intermediate legs considerably elongated. Near the European *A. fuscata* Redt., but more narrowed anteriorly and posteriorly, and with the antennal joints 4-10 broader than long. The N. American *A. glaucula* Lec., is a much smoother insect.

ABDERA Steph.

In Lewis's Japanese collection there is a species allied to the European *A. triguttata* Gyll., his *A. scriptipennis* belonging to *Carida*. The Californian *Hypulus (Dirvaea) bicinctus* Horn, a specimen of which from Lake Eleanor, Yosemite (captured by my son in July, 1915), is before me, is an *Abdera* nearly related to *A. quadrifasciata* Steph.; the genus, therefore, is an addition to the American list. *Spilotus* Lec., type *A. pustulatus* Melsh., is very similar to these insects, but it has a long, cultriform, apical joint to the maxillary palpi.

1.—*Abdera trisignata*, n. sp.

Oblong, convex, shining; pale testaceous, the head (the mouth parts and palpi excepted), the antennal joints 3-11, the prothorax with a transverse fascia on the disc (in one specimen divided down the middle, and in another so extended as to leave the margins only pale), the elytra with a common, transverse or triangular, patch at the base and an angulate median fascia (of variable extent and not reaching the suture), and the under-surface in part, piceous or nigro-piceous, the femora and tibiae sometimes slightly infuscate; closely, the elytra rather coarsely, punctate, clothed with long, decumbent, pallid hairs, with scattered erect hairs intermixed. Antennae slender, joint 3 a little longer than 2 or 4, 4-10 obconic, longer than broad in ♂, shorter in ♀, 11 slightly longer than 10. Eyes small. Terminal joint of maxillary palpi ovate, obliquely truncate. Prothorax short, nearly as wide as the elytra, margined at the sides posteriorly and at the base, arcuately narrowed anteriorly, the hind angles rounded. Elytra comparatively short. Legs slender: posterior tarsi with joint 1 as long as 2-4 united. Length $2\frac{1}{10}$ - $2\frac{3}{4}$, breadth 1-1 $\frac{1}{2}$ mm.

Hab.: JAPAN, Nikko and Kioto (*Lewis*: vi and viii, 1881).

Three specimens, varying in the development of the dark markings, one with longer antennae assumed to be ♂. Shorter and broader than the European *A. triguttata* Gyll., the prothorax nearly as wide as the elytra, the latter less parallel-sided, the antennae more slender, the markings different. Both species belong to the sub-genus *Caridina* Seidl.* *A. triguttata* lives in fungoid growth under the bark of pines.

* Renamed *Wanachia* by Schultze, Intern. ent. Zeitschr. VI, p. 11 (1912).

DIRCAEA Fabr.

The characters used by Seidlitz (Naturg. Ins. Deutschl., v, 2, 1898) to separate *Dircaea* from *Phloeotrya* are the non-serrate maxillary palpi, with the apical joint broader than the others, and the short antennae, with joints 3-10 sub-triangular. *Dircaea* is thus restricted to two European species and the N. American *D. liturata* Lec., all of which have flavo-maculate elytra; *D. mexicana* and *piliventris* Champ., from Central America, *D. velutina* Champ., from Australia, and the seven Japanese forms described by Lewis in 1895, belonging to *Phloeotrya*. *D. validicornis* Lewis approaches *Dircaeomorpha* Fairm. (1896), type *D. clavicornis*, from Pedong. *D. longicornis* Champ., from Mexico, would be best placed in *Serropalpus*, owing to its long, slender antennae, the substriate elytra, the simple penultimate joint of the posterior tarsi, the unnotched posterior tibiae, and the absence of the sharp oblique ridge on the front of the propleura; the type, ♂, however, cannot be said to have strongly serrate maxillary palpi. *D. (Hypulus) bicincta* Horn, from California, as already stated, is an *Abdera*. *D. venusta* Champ. (= *liquivora* Lea), from Australia and Tasmania, must be referred to a separate genus, with some allied tropical S. American forms. In the "Biologia," *Phloeotrya* was treated as synonymous with *Dircaea*, but the name is here used for the various S. American forms described below, all of which are related to the European *P. vaudoueri*. No important sexual difference has been observed in the form of the maxillary palpi, except that the apical joint is in some species more elongate in ♂ than in ♀.

PHLOEOTRYA Steph.

? *Megapalpus*, Montrouzier, Ann. Soc. Ent. Fr., 1860, p. 295.

According to Fauvel (Rev. d'Ent., xxiv, p. 237, 1905), *Megapalpus* (type *M. sexguttatus* Montr., from Lifu) = *Phloeotrya*, under which he described two new species from New Caledonia. This identification seems to me to be extremely doubtful, but it is not improbable that the genus here named *Callidircaea* (*infra*) is synonymous with it.

1.—*Phloeotrya vaudoueri* Muls.

P. rufipes Steph. (*nec* Gyll.) (= *stephensi* Jacq. Duv.) should bear the name *P. vaudoueri* Muls. (1856). Gyllenhal's species, two specimens of which are before me, is a smoother, smaller insect, with shorter antennae, the third joint of which is very little longer than the second.

G. Horn, in 1888, after examining a European example of

P. vaudoueri, sunk *Dircaea fusca* Lec. (1878) as a synonym, and gave its American range as "Nova Scotia to California, and as far south as N. Carolina." I have not as yet seen an American example of it.

2.—*Phloeotrya mexicana*.

Dircaea mexicana Champ., Biol. Centr.-Am., Coleopt. iv, 2, p. 83, pl. 4, fig. 12 (excl. var. 2) (1889).

Hab.: MEXICO; GUATEMALA; NICARAGUA; VENEZUELA; BRAZIL, Bahia, Rio de Janeiro (*Fry*); DOMINICA (*Mus. Brit.*).

Additional specimens of this species are now available for examination, showing some variation in the elytral sculpture, scattered, intermixed, slightly coarser punctures being plainly visible in the two Brazilian examples before me. The sharp marginal carina of the prothorax, as already stated, is sometimes (two specimens from Nicaragua) extended forwards to the anterior edge. The abdomen is margined laterally.

3.—*Phloeotrya murina*, n. sp.

♀. Extremely elongate, robust, fusiform, opaque, very densely clothed with greyish brown pubescence; dark brown, the antennae and palpi ferruginous; above and beneath densely, finely, uniformly punctate. Eyes very large. Antennae slender, short, extending a little beyond the base of the prothorax, joints 3–10 obconic, and gradually decreasing in length, 2 about one-third the length of 3. Maxillary palpi serrate, joints 2 and 3 triangular, 2 as broad as long, wider than 3, the latter transverse, 4 long, stout, cultriform. Prothorax broader than long, obliquely narrowed from about the basal third forwards (as seen from above), and also narrowed before the obtuse hind angles, the base bisinuate, the sides sharply margined in their basal half, the oblique propleural ridge also very prominent. Elytra extremely elongate, narrowed almost from the base, acuminate at the apex, the disc non-costate. Abdomen margined at the sides. Legs rather stout; posterior tibiae simple. Length 24, breadth 5½ mm.

Hab.: BRAZIL, Rio de Janeiro (*Fry*).

One specimen. Very like *P. mexicana*, but with more acuminate, extremely elongate, subcuneiform elytra, the vestiture denser. The rather strongly serrate maxillary palpi are suggestive of *Serropalpus*.

4.—*Phloeotrya goudoti*, n. sp.

Dircaea mexicana, var. 2, Champ., Biol. Centr.-Am., Coleopt., iv, 2, p. 83 (♀) (1889).

♀. Elongate, opaque, thickly clothed with fine sericeous pubescence; reddish brown, the palpi, antennae, and legs ferruginous; densely, finely punctate, the punctures on the elytra becoming transversely confluent towards the base, the prothorax densely, rather coarsely granulate. Antennae short,

rather slender, joints 3–10 obconic, sub-equal in length, 2 short, about half the length of 3. Maxillary palpi not serrate, joint 2 long, obconic, 3 much shorter, 4 cultriform, not longer than 2. Prothorax transverse, convex, almost gibbous on the disc, arcuately narrowed anteriorly, the sides margined to near the apex, sub-parallel behind, the hind angles obtuse, the base feebly bisinuate, and with the oblique foveae very shallow, the propleura sharply margined in front. Scutellum strongly transverse. Elytra long, as wide as the prothorax, gradually narrowed from about the middle, obsolete costate. Abdomen incompletely margined at the sides. Posterior tibiae simple. Posterior tarsi with joint 1 very elongate, much longer than 2–4 united. Length 14, breadth $3\frac{3}{4}$ mm.

Hab.: NICARAGUA, Chontales (*Belt*); COLOMBIA, Rio Magdalena (*Goudot*).

Two specimens, one from Nicaragua doubtfully referred by me to *D. mexicana* in 1889, the other from Colombia acquired by the Museum in 1846. A close ally of *P. mexicana* Champ., differing from it in the somewhat gibbous, closely granulate prothorax. The maxillary palpi are not serrate, and have a comparatively long second joint. These examples agree very nearly with the description of *Dircaea prona* Lec. (an insect recorded as having been found rarely in dead oaks at Enterprise, Florida), except that the latter is said to be sub-cuneiform in shape, and to have the prothorax longer than wide, and the basal margin of the elytra raised and scabrous. *P. granicollis* Seidl., from Sicily, seems to be another allied form; *P. rugicollis* Lewis, from Japan, has the prothorax still more coarsely granulate.

5.—*Phloeotrya scabricollis*, n. sp.

♀. Moderately elongate, somewhat shining, thickly clothed with fine reddish-brown pubescence; piceous above, the antennae, palpi, and legs, and the under-surface in part, ferruginous. Head densely granulato-punctate; antennae short, rather stout, joints 3–10 sub-equal in length, 2 about half the length of 3; maxillary palpi not serrate, the cultriform apical joint very little longer than 2. Prothorax much broader than long, somewhat gibbous, the sides rounded from the base and with the marginal carina complete, the base feebly bisinuate, the hind angles deflexed and obtuse; densely, coarsely granulate, the propleura sharply margined in front. Elytra moderately elongate, of about the same width as the prothorax, sub-parallel in their basal half; densely, very finely punctate, granulate at the base, obsolete unicostate on the disc. Beneath densely, finely, the propleura and sides of the metasternum coarsely, punctate. Abdomen obsolete margined at the sides. Length 10, breadth 3 mm.

Hab.: BRAZIL, Rio de Janeiro (*Fry*).

One specimen, imperfect. Less elongate than *P. goudoti*, the prothorax shorter, more rounded at the sides, and more roughly granulate, the elytral sculpture finer, becoming granulate at the base.

P. rugicollis Lewis, from Japan, is a somewhat similar insect, with a more coarsely granulate prothorax, and quadricostate, rougher, shining elytra.

6.—*Phloeotrya tumidicollis*, n. sp.

Elongate, robust, opaque, densely, very finely pubescent; blackish-brown, the antennae, palpi, and tips of the tarsi ferruginous, the femora reddish. Head densely, coarsely, confluent punctate, the antennary orbits somewhat prominent; antennae short, rather slender, joint 2 short, half the length of 3. 3-10 obconic, sub-equal in length; maxillary palpi long, joints 2 and 3 triangular, 4 cultriform, curved, in ♂ distinctly longer than 2 and 3 united, in ♀ a little shorter. Prothorax slightly broader than long, convex, rounded at the sides anteriorly, and obliquely narrowed behind, the base feebly bisinuate, the sides sharply margined from the base to beyond the middle, the hind angles obtuse: closely granulate, the disc tumid on each side of the two short median sulci, the space between the latter forming an indefinite central ridge. Scutellum strongly transverse. Elytra very elongate, sub-parallel in their basal half, in the ♀ a little wider than the prothorax, densely, very finely punctate, quadricostate (the third costa evanescent), the suture also somewhat raised. Beneath densely, finely punctate, the propleura granulate, the latter sharply, obliquely margined anteriorly. Abdomen margined at the sides. Posterior tibiae simple. Anterior tarsi dilated, and the rather short fifth ventral segment feebly arcuato-emarginate at apex, in ♂. Length $14\frac{1}{2}$ - $18\frac{1}{2}$, breadth 4 - $4\frac{1}{2}$ mm.

Hab.: BRAZIL (*Lacerda*).

One pair. Similar to *P. mexicana* Champ., but with the prothorax rather coarsely granulate, tumid and bi-impressed on the disc, the elytra quadricostate.

7.—*Phloeotrya alutacea*, n. sp.

♀. Elongate, opaque, glabrous above; ferruginous, the prothorax in part, and the elytra from a little below the base, infuscate; above and beneath alutaceous, the upper surface impressed with fine scattered punctures, these latter shallow on the under surface, and extremely fine on the abdomen. Eyes prominent. Antennae short, rather slender, joints 3-10 obconic, about equal in length, 2 short, half the length of 3. Maxillary palpi serrate, joints 2 and 3 triangular, broad, 4 long, cultriform. Prothorax uneven, nearly as long as broad, compressed at the sides anteriorly (so as to appear obliquely narrowed from about the basal third forwards), the sides sharply margined to beyond the middle, and obliquely, sinuously convergent before the hind angles, the latter rectangular, the base bisinuate and trifoveate, the propleura sharply margined anteriorly. Scutellum strongly transverse. Elytra long, a little wider than the prothorax, parallel in their basal half, acuminate posteriorly, obsolete costate, the humeri foveate within. Abdomen margined at the sides. Posterior tibiae widened towards the apex, simple. Posterior tarsi with joint 1 longer than the rest united. Length 15, breadth 4 mm.

Hab.: BRAZIL, Rio de Janeiro (*Fry*).

One specimen, perhaps slightly immature. The sparsely, conspicuously punctate, alutaceous, glabrous upper surface distinguishes this species from all the allied forms, the following excepted. It is possible that the vestiture of the upper surface is abraded.

(To be continued.)

A short criticism of a paper on Bornean Rhopalocera by Mr. J. C. Moulton.—Mr. Moulton has kindly sent me a copy of a paper published in the Sarawak Museum Journal, Vol. ii, No. 6, 1915, entitled “The Butterflies of Borneo, with notes on their geographical distribution, and keys for identification.” The first three pages, numbered 197–199, contain many inaccuracies, and to prevent entomologists interested in the butterflies of the country from being misled as to facts, I think it well to make the following corrections and remarks. Mr. Moulton commences with “The earlier lists of Bornean butterflies appeared between 1887 and 1896” This is not the case. The first list of Bornean butterflies was published by Mr. Herbert Druce in Proc. Zool. Soc. Lond., 1873, and contained an account of a portion of the large collections sent to this country by Mr., afterwards Sir, Hugh Low, with descriptions of new species and two coloured plates. A few lines further on Mr. Moulton writes: “The present writer [Mr. Moulton] continued the work by publishing a part on the *Lycaenidae*, 300 species” thus entirely ignoring two previously published papers by myself, Proc. Zool. Soc. Lond., 1895 and 1896, on the same subject—the first bringing the number of Bornean species of this family [71] as recorded by Mr. Herbert Druce to about 220, and the second increasing this total to about 262. The 1895 paper consists of pages 556–627, and four coloured plates; the 1896 paper, pp. 650–683, with three coloured plates. The first paper includes descriptions and coloured figures of some 58 new forms, whilst the second contains descriptions and figures of some 19 new forms—the *Arhopalae* by Mr. G. T. Bethune-Baker. On p. 199 Mr. Moulton writes: “More general works, like . . . and Staudinger’s ‘Schmetterlinge das Inseln Philippinischen,’ etc., contain references to Bornean species, but they are too well known to need mention.” Staudinger never published a book with such a title. Mr. Moulton probably intends to refer to the work of that name published by G. Semper, 1886–1892. Mr. Moulton then proceeds to give what he calls the “Bibliography,” which is, of course, very incomplete, and principally enumerates papers by J. C. Moulton and R. Shelford.

I have not seen the lists published by Messrs. W. B. Pryer and D. Cator in the British North Borneo Herald in 1894, and by Mr. E. Bartlett in the Sarawak Gazette, 1896. Both these publications appear to be newspapers, and it is to be regretted that any entomologist at the latter end of the nineteenth century should publish descriptions of new insects in periodicals of this kind.

Mr. Moulton would deserve the gratitude of his fellow-workers if he would either re-publish these lists in some entomological magazine, or collect and

distribute to museums and societies copies of these newspapers, if any exist, as I venture to suggest that very few libraries possess copies.*

The remaining pages, 200-266, I have not read, and am unable to make any comments thereon.

Under the dates 1904 and 1906, Mr. Moulton refers to a "List of the Butterflies of Borneo," published in Journ. Str. Branch Roy. Asiatic Society by a predecessor in the Curatorship of the Sarawak Museum, and surely no more ludicrous example of an entomological paper was ever printed. The title of Part ii is "A List of the Butterflies of Borneo, and *Nymphalinae*."!! On nearly every page are glaring errors, specific and generic names, incorrectly spelt, and in some cases entirely changed [p. 110, sub-genus *Cynitia* is given as *Cognitia*], [p. 125 genus *Rhinopalpa* is printed *Rhinopæpa*]. Author's names mutilated [p. 90, line 7 from bottom, "de Nias," should be "de Nicéville"], and perhaps, most laughable of all, when we notice one of the localities from which the insects are stated to have come, we read of Mr. Kina Balu! Of course, these errors clearly show the lack of any care in correcting the proofs.—HAMILTON H. DRUCE, Trefusis Lodge, 3, Norfolk Road, Regent's Park, N.W.: December 23rd, 1915.

Fire insects in Finland.—The following extract from a letter from the veteran Professor Dr. John Sahlberg of Helsingfors, will interest the readers of this Magazine:—

"I have been reading in a recent number of the 'Entomologist's Monthly Magazine' an account of the capture of *Anchomenus quadripunctatus* in England, and you will be interested to learn that in my own country this species is one of several that are almost or entirely peculiar to burnt woods and marshes. We found it at a distance of about 12 kilometres from the capital, ten or fifteen years ago, on a spot that had been burned black shortly before, on quite a small area, and for four or five years in succession quite a number of this nice little Carabid were taken in spring and autumn. Then it completely disappeared. In 1914, another little wood near the same spot was burned, and in the month of October the same year I again found this insect on the scorched trees, and in the spring and autumn of 1915 my pupils captured numerous examples.

"There are other insects that make an abrupt appearance on these scorched places, e.g., *Stephanopachys elongatus* and *substriatus*, *Laemophloeus muticus*, *Coninomus carinatus*, *Sphaeriestes ater*, and the much prized *Phryganophilus ruficollis*; on the ground under *Marchantia*, *Helophorus tuberculatus*, *Micropeplus tessera* and *Stenus bilineatus*; also in a small *Agaricus* springing up on the spots that have been soaked with exudation from the trees we find *Oxyporus mannerheimi*. Amongst *Hemiptera* from these burned trees, we find *Aradus laeviusculus*, and the very rare *A. signaticornis* and *anisotomus*."

Possibly Dr. Sahlberg's information may lead to the discovery of some of these species here. In the New Forest burned trees are usually cleared off very soon after the fire.—D. SHARP, Brockenhurst: January 8th, 1916.

* According to Mr. Shelford, Journ. Str. Branch Roy. Asiatic Soc., No. 41, p. 81, Mr. Bartlett reprinted his list in the "Zoological Note Book of Sarawak." Neither the library of the Entomological Society of London, nor that of the British Museum [S. Kensington], contains a copy of these publications.

*Further note on *Plinus pusillus* Boield.*—In my note in the Ent. Mo. Mag., December, 1915, p. 328, I relied too much upon a statement (Coleopt. Brit. Isl., Suppl., Vol. VI, p. 146) that M. Boieldieu described the species on a single specimen from Brazil in M. Chevrolat's collection. What M. Boieldieu really said was that *P. pusillus* is common in granaries in France and Germany, and that he had seen a single specimen from Brazil in M. Chevrolat's collection. This very different statement makes it clear that the author was not without sufficient material to work upon, and it is only in our own works and collections that *P. pusillus*, ♀, had been confounded with any other species. Another error is that I distributed *P. testaceus* as *P. brunneus*, which should read *P. pusillus*, ♀ ♀, as *P. brunneus*. Since September last, when I wrote my note, I have captured great numbers of *P. pusillus*, including both sexes, so there is no doubt of the correctness of my connection of the two forms as stated in my first note. I have examined many specimens from various localities where both sexes have been captured in granaries. As regards *P. brunneus* Duft. = *testaceus* Boield., and the various records of their capture, Fowler, "Coleopt. Brit. Islands," Vol. IV, p. 182, gives Bermondsey; Birdbrook and Mickleham (*Power*); Small Heath and Knowle, near Birmingham (*Blatch*). Mr. H. Willoughby Ellis very kindly sent me the Blatch specimens for examination, and I found they consisted of *P. pusillus*, ♂, and *P. fur*, ♀. Of the Power specimens at the Nat. Hist. Mus., S. Kensington, only two from Mickleham are *P. testaceus* Boield., the others being *P. pusillus*, ♀ ♀. In "Coleopt. Brit. Islands" Suppl., Vol. VI, p. 278, under the heading of additional localities, *P. brunneus* and *P. testaceus* are treated as different species, and recorded from the following localities:—Édmonton (*Pool*); Oxford district (*Walker*); Reading (*Joy*); and Purley Downs (*Donisthorpe*). Of these records, only the last mentioned is correct, and the others must all stand for *P. pusillus*, purely a granary pest. Mr. Donisthorpe informs me that his specimen was taken by sifting dead leaves, and far away from any houses. This record, taken in conjunction with Mickleham (*Power*), would seem to show that *P. testaceus* = *brunneus* is a very rare indigenous species, and must not be sought for in corn shops or similar situations, as in the case of *P. pusillus*, *P. fur*, etc., which must be regarded as cosmopolitan pests. I have a number of unset specimens of *P. pusillus*, which I shall be pleased to send to anyone on application.—CHARLES J. C. POOL, Insect House, Zoological Society's Gardens, Regent's Park: December 9th, 1915.

Depressaria hepaticella Zell.: a British insect.—Last autumn Mr. F. C. Woodbridge gave me a *Depressaria*, which has now been identified by Mr. E. Meyrick as *D. hepaticella*, and which is therefore an addition to the British list.* The specimen was taken by Mr. F. Pennington in August last, at sugar, at Aviemore, N.B. Mr. H. Woodbridge can claim the first capture of this interesting species in Britain, as he possesses a second specimen taken by himself at the same place on August 6th, 1914, and he also reports that he missed another. He sends the following note on the nature of the locality:—"Both insects were taken on the same sugared posts, which run up-hill and divide a heathery grouse moor from a rough pasture field, with scattered birches about it,

* Cf. Ent. Mo. Mag., anteà, p. 17.

a large fir wood above, and a small stream not very far off. The field is scattered all over with large rocks, and there is a considerable variety of plants in the field, alders and bog-myrtle along the stream, and patches of bog-myrtle amongst the heather on the moor."—JOHN W. METCALFE, Ottery St. Mary: Dec. 13th, 1915.

Psocidae on the wing.—Mr. Hugh Scott's note in the January number of the Ent. Mo. Mag., and his reference to the note by McLachlan, Ent. Mo. Mag., 1900, p. 43, induces me to relate my experience with these interesting insects during 1915, when I collected a small lot, chiefly whilst walking to and from my work in the Oxford University Museum. In the mornings I have to leave home at 6.50 a.m. to arrive at my work at 7.30 a.m., and during this 40 minutes' walk I frequently saw numbers of Psocids flying, and might have added many more to my list, if at that time I had been aware of the various papers on this group by McLachlan; but hope to remedy this another season. June was the first month in which I took any on the wing, when I captured *Elipsocus unipunctatus* Müller, and *Peripsocus phaeopterus* Steph. In July, *Psocus sexpunctatus* L., was taken, and in September, *Stenopsocus stigmaticus* Imhoff and Labram, with a species of *Caecilius*, which as yet I am unable to place. I have specimens bearing the legend "flying" on the cards of all the above species, with the actual dates, all having been taken during the morning walk. When returning in the evening, although I was always on the look out, I never saw them on the wing, but frequently took them on the tops of the fences, between 5.30 p.m. and 6.30 p.m. McLachlan, in Ent. Mo. Mag., Vol. v, p. 196, states that November 5th was a very late date to find such fragile insects as *Caecilius atricornis* McLach., in the open. On December 26th, 1915, I captured three examples of *Ectopsocus briggsii* McLach., on a newly erected wooden shed at Thame Park, Oxon. In a hothouse at the same place a species of *Caecilius* was seen in all stages on crotons, apparently feeding on the exuviae from a species of Coccid, with which these plants were infested, and there were numerous examples on the wing in the hothouse.—H. BRITTON, Myrtle View, Windmill Road, Headington, Oxford: January, 1916.

Semidalis (Coniopteryx) aleurodiformis Steph., on the wing.—From the last week in June until the end of July, *Semidalis aleurodiformis* Steph., swarmed on the wing in the early morning, flying in and out of a hawthorn hedge, in a lane about a hundred yards in length. It would have been possible to have taken a score of these insects with one stroke of a net at this particular place. At other parts of my walk a few specimens were seen on most mornings, but they were never in large numbers.—H. BRITTON: January, 1916.

Another swarm of Chloropid flies.—In the January number of this Magazine p. 18, I recorded the occurrence of an immense swarm of Chloropid and other flies at Babraham House, Cambs., and mentioned the general supposition that this habit is for the purpose of finding winter quarters. This seems to be borne out by the fact that another great swarm has just been found in the very act of hibernation at Shouldham Hall, Shouldham, Norfolk. Information of it was

received from Major O. Kentish Wright, through Dr. A. E. Shipley. Major Wright sent samples of the flies (which Mr. Collin has kindly named) accompanied by a letter, of which the following is an extract:—"I moved yesterday [December 22nd, 1915] into the above house [Shouldham Hall]. It is a good-sized country house which has been empty for about 18 months. The larger specimens were found in large numbers in the rooms, the smaller ones by millions in a room over the stables, all in the corners or under the wall-paper. They all seem very lethargic but wake up with warmth. I visited this house earlier in the year, I think it was early in September, and at that time I only noticed the larger flies. They were quite lively and swarmed in some of the empty and closed rooms, where there did not appear to be any food for them." Only one example of the "larger specimens" was sent here, and this proves to be *Musca corvina*. The "smaller ones," which occurred "by millions," are *Chloropisca circumdata* Meig. (= *ornata* Loew nec Meig.), i.e., the same species which swarmed at Babraham (referred to in my previous note as "*ornata* Meig."). Mr. Collin tells me that he has seen no other species of *Chloropisca* besides this in house-swarms. It may be added that the small greyish Anthomyiid spoken of in my previous note, stated by Mr. Collin in a footnote to be probably *Limnophora 7-notata* Zett., has proved, on examples being examined by him, to be actually that species.—HUGH SCOTT, University Museum of Zoology, Cambridge: *January 10th, 1916.*

Society.

ENTOMOLOGICAL SOCIETY OF LONDON: *Wednesday, November 17th, 1915.*—The Hon. N. C. ROTHSCHILD, M.A., F.L.S., F.Z.S., President, in the Chair.

Messrs. John Wesley Carr, M.A., F.L.S., F.G.S. Professor of Biology in University College, Nottingham, and Albert Harry Hamm, 22, Southfield Road, Oxford, Assistant in the Hope Department, Oxford University Museum, were elected Fellows of the Society.

The President said he was sure the Fellows would wish, without passing any formal vote, to express their regret at the death of Professor Meldola, formerly President of the Society.

The Secretary announced that the Council had nominated all the Officers for re-election, and proposed the following Fellows to act as the Council for 1916:—Messrs. A. Bacot, E. A. Butler, B.A., B.Sc., T. A. Chapman, M.D., F.L.S., F.Z.S., E. A. Cockayne, M.A., M.D., J. C. F. Fryer, M.A., C. J. Gahan, M.A., E. E. Green, F.R.S., G. B. Longstaff, M.A., M.D., G. Meade-Waldo, M.A., S. A. Neave, B.A., H. Rowland-Brown, M.A., A. E. Tonge.

Mr. O. E. Janson exhibited, on behalf of Mr. L. H. Bonaparte Wyse, a number of *Coleoptera* taken by him in Ireland this year. Dr. Cockayne, a series of *Dysstroma concinnata* Steph., taken by Mr. R. Y. Horn at Tarbert, Argyllshire, July, 1915. For comparison, *D. concinnata*, Arran, and the two Irish specimens taken by Capt. Gwatkin-Williams, R.N., on Achil Island; also *D. citrata* ab.

pythonissata (*immanata*), Shetlands, and *D. truncata*, Sutherland; also a melanic aberration of *D. concinnata* taken by Mr. Horn on Arran Island. The Rev. G. Wheeler, a series of *Pieris napi*, from Kinghorn on the coast of Fife, taken on August 4th, 1915, the ♂♂ being remarkable for the extent of the black markings on the fore-wings, the ♀♀ for the extent of the grey suffusion along the costa inner margin and nervures of the same wings. Dr. Guy A. K. Marshall, a specimen of a Noctuid moth, *Arcyophora longivalis* Guen., forwarded from Rukuba Hill, 4000 ft., East Africa, by Mr. W. F. Poulton, a veterinary officer of the Uganda Protectorate, who found it feeding in numbers on the moisture from the eyes of mules. Prof. Poulton, two examples of a Pentatomid bug, *Zicrona coerulea* L., also a freshly emerged male *Agriades coridon*, which was taken at Royston, Hertfordshire, July 25th, 1915, by Dr. E. A. Cockayne. The two bugs were sucking the butterfly, one attacking the thorax, the other the abdomen. Mr. W. J. Kaye, ova of *Pyrrhopyge charybdis*, a skipper belonging to the wholly Neotropical sub-family *Pyrrhopyginae*. The eggs, for the size of the butterfly, are enormous. Also a number of species of the *Pyrrhopyginae* illustrative of the different genera of the sub-family: *Pseudosarbia phoenicicola*, a mimic of *Sarbia ranthippe*, and *Pyrrhopygopsis socrates*, a mimic of *P. pelota*; and *Phocides pygmalion* mimicking *Jemadia hospita*. Mr. G. T. Porritt, a form of *Cymatophora or*, entirely black with the exception of the pale stigmata, taken at Sunderland this year, several of the form having been taken there during each of the past four or five years. Mr. G. Talbot, on behalf of Mr. J. J. Joicey, a number of new butterflies from Biak; also cells of a mud-wasp (*Odynerus* ? sp.) formed in the groove of an insect store-box in the Witley Museum; the mud having been collected and brought into the Museum by the wasp.

The following paper was read:—"On the Biology of *Sphodromantis guttata*," by C. B. Williams, B.A., F.E.S., and P. A. Buxton, B.A., F.E.S.

Wednesday, December 1st, 1915.—The President in the Chair.

Mr. K. S. Padmanabha Aiyar, Trivandrum, Travancore, India, and Major Harry Diamond Peile, I.M.S., Bannu, North-West Frontier Provinces, India, were elected Fellows of the Society.

Signor A. Berlese, Italy, and Mr. L. H. Howard, U.S.A., were elected Hon. Fellows to fill the vacancies caused by the death of M. J. H. Fabre and Baron Brunner von Wattenwyl.

Mr. A. H. Jones exhibited, on behalf of Mrs. Walsh, a number of insects from Java, nearly all of which were taken by her in her garden and grounds at Soekaboemi. Mr. C. B. Williams, a series of coloured drawings of the pupa cases of the British Aleurodidae executed by Mr. H. G. Osterstock. Mr. R. Adkin, several families of *Boarmia gemmaria*, and gave explanatory notes on breeding from a melanic race.—GEO. WHEELER, *Hon. Secretary*.

NOTES OF A VOYAGE TO AUSTRALIA, CEYLON AND THE
MALAY ARCHIPELAGO, JULY—NOVEMBER, 1914.

BY F. A. DIXEY, M.A., M.D., F.R.S.

(Continued from page 13.)

Tirumala hamata was locally abundant. Its gregarious habit was especially noticeable; large numbers were seen swarming round a mango tree near the settlement. A female specimen taken showed a symmetrical injury to the two hind wings. Satyrids were plentiful; those captured included the soberly-coloured *Ypthima arctous* Fabr., a male specimen of which yielded a very distinct smell of vanilla, *Hypocista irius* Fabr., and *H. adiante* Hübn. In each of the latter species the forewings are somewhat sharply pointed for a Satyrid, and the underside of the hindwings is ornamented with a large and very conspicuous ocellus. *Y. arctous* was noted as common; *H. adiante*, which somewhat recalls our familiar "small heath," as abundant. The only Lycaenid brought away was a male specimen of *Candalides erinus* Fabr. *Eurycus cressida* Fabr. was again in evidence; a good specimen of the semi-transparent female was secured. This butterfly, from its conspicuous aspect and deliberate flight, looks as if it ought to be easy to catch. But it has a tantalising way of keeping just out of reach, and its pursuit through the thick undergrowth interspersed with loose granite blocks, which are the prevailing features of the uncultivated part of Magnetic Island, was not unattended with risk to one's ankles. Its appearance was intermittent; every now and then *cressida* would come suddenly into view, and after a short flutter would be lost to sight amid the foliage of a tree at a height just too great to be reached with the net. The male especially is a striking object; its semi-transparent forewings and the vividly contrasted red, white, and black of the densely scaled and opaque hindwings give it a character which is quite distinct from that of any other inhabitant of these regions. As before noted, the worn female captured at Townsville appeared to be scentless; but the female taken on the present occasion, which was in good condition, emitted a distinct and strong odour, noted in the field as "ammoniacal," and at home as exactly that of musk.* The same specimen was observed to be tenacious of life. An interesting capture was that of a pair of *Delias argenthona* Fabr. This species was not uncommon, and with its slow flight and bright coloration beneath,

* In my diary for June 29th, 1890, at Port Darwin, North Australia, I find noted under the capture of *Eurycus cressida* ♀, that "this butterfly emits when caught a strong and not unpleasant odour of musk."—J. J. W.

presented a conspicuous appearance. The male was tested for scent with no perceptible result. A single specimen of *Catophaga ega* Boisd., ♀ fell to the net, but no corresponding male was seen. Small yellow butterflies of the genus *Terias* abounded in the undergrowth. These belonged to two distinct groups or sections, *T. lineata* Misk., the predominant form, being a member of the assemblage represented by *T. laeta*, Boisd., while the other species present was the widely distributed *T. hecabe* Linn. Fresh specimens of the latter appeared to be generally of the dry-season form, but the wet and intermediate phases were also to be met with. A male *T. lineata* yielded a faint flowery odour in scrapings of the scent glands; in two males of *T. hecabe* a slight but distinct flowery perfume was detected. In one of these, a dry-season male, the "dog's head" was feebly developed. The delicate-looking dragonfly, *Neurothemis stigmatizans* Fabr., ♂, and an unnamed Hemipteron near *Riptortus fuscus* Fabr. completed the catch on Magnetic Island, from which place we returned in the evening to Townsville, across a sea which the sailors themselves acknowledged to be exceptionally rough.

We had expected to clear from Townsville on the evening of September 7th, but were detained by order of the Naval authorities. At 3 a.m. on the 8th we were told to dismantle our wireless apparatus and stay where we were until further notice. We were kept in uncertainty about sailing all day long, but I found it possible to go ashore for an hour or two in the afternoon and to do a little collecting in a steep and stony gully north of Townsville. The President of the British Association and Mrs. Bateson, who also landed, drew my attention to a tree where *Tirumala hamata* and *Chanapa corinna* were going to roost in extraordinary numbers. *C. corinna* has usually seemed to me to be odourless in both sexes, but on this occasion a captured male appeared to emit a snuffy odour, which was, however, very slight. Mr. Bateson found a spider engaged in devouring a male *T. hamata*; both these specimens he gave to me. A male example of *Precis albicincta* Butl. was captured, which had on the underside the whole of the posterior border of the hind-wing, and the greater part of that of the fore-wing, sheared off as if by a straight cut from a moderately sharp instrument.

At midnight the embargo on our voyage was removed, and by 9 a.m. on September 9th we had started. Passing during the day some fine bits of rocky, forest-clad coast, we arrived late at night at Cairns. Next morning (September 10th) a party of us landed and proceeded

by train to the Barron Falls and Kuranda, about 22 miles off. The train winds in and out of mountain gorges through splendid tropical scenery. As the track ascends, bananas, pineapples, and oranges are left behind; but the forest trees are green and luxuriant over the whole distance. Rain fell both on the way up and down; but at the Falls and at Kuranda the sun shone brightly, and we saw in the valleys below us great butterflies on the wing, flashing with satiny green; these were *Papilio (Ornithoptera) priamus euphorion* Gray. The Falls themselves are marvellously beautiful, but we had little time for admiration either here or at Kuranda. For the same reason captures were few, but a certain number of specimens were secured at the latter halting-place. Among these were two males of the dark chestnut-coloured Satyrine *Mydosama terminus* Fabr. Both of these gave an odour of chocolate, noted in one case as "strong," and in the other as "distinct." This observation was confirmed by Prof. H. E. Armstrong, F.R.S., and by Dr. J. W. Scharf, the former of whom thought that the scent of vanilla was also present. The small *Zizera alsulus* Herr.-Sch. ♂ (*Z. lulu* Math.) represented the Lycaenids, and three specimens of *Terias*, belonging to three different sections of the group, were the only Pierines that fell to my net. These were a wet-season female of *T. zoraide* Feld. (noted as having no distinct odour), an intermediate male of *T. hecabe* Linn., which yielded a very slight flowery scent, and an intermediate or wet-season male of *T. lineata* Misk., which likewise had a slight flowery perfume, noticed in the field and confirmed later on board ship. A pretty little Pyralid, *Lygropia quaternalis* Zett. (*amoenalis* Walk.) closes the list.

September 11th found us steaming along close within the Great Barrier Reef, off the northern extremity of the Cape York Peninsula, under a blue sunny sky and over a smooth sea streaked with wonderful shades of blue, green, purple and lilac. The navigation here is said to be very difficult, and our Commander assured us that if we were chased he would undertake to run the pursuing vessel on the reef in a few minutes. Early next morning we were in Torres Strait, and put in for a short time at Thursday Island—one of the most delightful places I have yet seen in the tropics. Bugle calls proceeding from a military camp just above the beach provided a reminiscence of Aldershot, but the wooded hills behind were as different as could be from anything at home. Here, as in Magnetic Island, the ground conditions made collecting difficult; a few specimens were taken and many were missed. Among the former were two males of the fine black and pale green

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The Chair will be taken at 8 o'clock in the evening precisely.

The Library is open daily from 9 a.m. to 6 p.m. (except on Saturdays, when it is closed at 2 p.m.), and until 10 p.m. on Meeting nights.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 8 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

THE LONDON NATURAL HISTORY SOCIETY which meets at 7 p.m., on the 1st and 3rd Tuesdays in each month, at Room 20, Salisbury House, Finsbury Circus, E.C., will be glad to welcome at its Meetings any French or Belgian entomologists now staying in this country, and to give them the benefit of its library and collections. Communications should be addressed to the Secretary, Salisbury House, E.C.

March 7th—“A Visit to Tunis and Carthage,” R. ARMSTRONG-JONES, M.D.
Exhibition of “Hawk Moths,” arranged by the Lepidoptera Committee. March 21st—“Fifty Years’ Reminiscences and Contrasts,” A. W. MERA. April 4th—“Plant Galls,” H. J. BURKILL, M.A.

Hon. Sec.: J. ROSS, 18, Queen’s Grove Road, Chingford, N.E.

Arrangements have been made by the Lepidoptera Committee of the above Society for a Member of the Committee to attend at Salisbury House at 6.30 p.m. on Meeting Nights (1st and 3rd Tuesdays in each month, except July and August), for the purpose of giving advice and assistance to young entomologists, whether members of the Society or not. A cordial welcome will be extended to any who care to avail themselves of this arrangement.

Woodford Branch. Meetings are held at the Wilfrid Lawson Hotel, Woodford Green on the last Friday in the month, and commence at 8 p.m. The Meeting Room is open at 7.30 p.m.

Chingford Branch. The Chingford Local Branch meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the 2nd Monday in each month.

Papilio aegus aegus Don.; both specimens were ragged and yielded no recognisable odour. *Terias herla* McLeay was abundant; a captured male was of the dry-season form. Specimens of *T. lineata* Misk. were dry or intermediate; on scraping the scent-patches of a male, a faint flowery perfume became evident; after a few hours' interval this had ceased to be perceptible. The female was tried for scent, with a negative result; and the same remark applies to *Catophaga ega* Boisd. ♀, which again, as in Magnetic Island, put in an appearance unaccompanied by the male. The absence of scent in these two instances was only in accordance with expectation; but it would not have been surprising to find an odour present in *Danaida affinis* Fabr. ♂; this, however, appeared to be scentless. I failed also, as on previous occasions, to detect any scent, agreeable or otherwise, in *Chanapa corinna* McLeay ♀. Other captures included the only specimen seen of *Neptis consimilis* Boisd., a small Nymphaline marked with two shades of brown—pale and dark; a female *Zizera alsulus* Herr.-Sch., caught and given to me by Professor Armstrong; and two males of *Hypolycaena strabo* Fabr. The latter species was to be seen in some numbers flying about and settling on low bushes which crowned the high slopes overlooking the intensely blue waters of a charming inlet of the sea. Tested for scent, both specimens of *H. strabo* yielded a strong fruity odour, somewhat like that of a very ripe pear; this was confirmed on return to the ship. Dragonflies were numerous everywhere; two males and two females of the dainty *Neurothemis stigmatizans* Fabr. were secured, together with a single specimen of *Orthetrum sabina* Drury, the latter noted as not common. The handsome grasshopper *Gastrimargus pictus* Leach, was plentiful; it is active, and a specimen was captured with some difficulty. *Stropis brunnea* White was also common.

Collecting on Thursday Island, though in most respects delightful, had, besides the roughness of the ground, another slight drawback, viz., the annoying attacks of a large light-green ant, which swarmed in the trees, and was only too ready to drop off on to the passer-by and inflict a sharp and rather painful bite.

Soon after leaving Thursday Island we entertained two visitors in the shape of a pair of pretty little bee-eaters. They flew on board in the afternoon, and roosted at night in the rigging, closely huddled up together. In the morning they had disappeared, having, I hope, found their way back to land. Once more we had to travel at night with few lights, and those covered; the portholes being all shut and blackened on the outside, it may be imagined that the warmth below was con-

siderable. It was known that a German cruiser was not far off. However, we crossed the Gulf of Carpentaria without mishap. The weather continued to be fine and warm as we entered the Arafura Sea. Here we passed through a quantity of yellowish-brown scum, which lay in streaks, and at a little distance imparted a fulvous or almost reddish hue to the surface of the water. This was said to be due to the same organism as that which gives its name to the Red Sea. According to Prof. Seward, F.R.S., it is an Alga, very likely mixed up with diatoms.*

Running past Melville Island on a smooth, pale chalky-green sea, we put in at Port Darwin late in the afternoon of September 15th. Smart ladies and men in white drill came on board to welcome us, and we were forthwith taken in motors to the Botanic Gardens, where we were hospitably received by the Administrator and his wife, and entertained at a delightful open-air tropical tea. Here I had the pleasant experience of meeting with an old pupil, who supplied me with many interesting mementoes of the visit in the shape of shells and crocodile's eggs, together with native implements of war and peace. I was also presented by Mr. Bleeser, a resident, with a few butterflies which had been taken by him in the neighbourhood at various times. These included *Hypocista antirius* Butl., *Atella phalantha* Drury, *Cethosia cyane* Drury ♂, and *Hypolimnas bolina* Linn. ♂.

Next day we were off again, gliding over smooth and almost oily seas on our way to Java. The sun shone in a cloudless sky, and the weather was decidedly warm, though to my mind not unpleasantly so. Sea-snakes were much in evidence, basking at the surface of the calm water.

On September 18th we were passing Timor, and early on the 19th we sighted Lombok. Later in the day we traversed the famous strait between Bali and Lombok, having in sight the two great volcanoes, 10,500 and 12,460 feet high respectively. The Bali mountain was still in view at sunset, and the impression made by the wonderful scenery along "Wallace's Line" is likely to be permanent.

Next morning, as soon as it was light, we found ourselves surrounded by crowds of sampans under sail. These are curiously painted boats with raised and pointed bow and stern, and a very large

* This Alga (*Trichodesmium* sp.) is a characteristic feature of the tropical oceans at moderate distances from land. In my voyages I have observed it off the coast of Brazil in the region where Charles Darwin described it so graphically in his "Journal of Researches" (pp. 11-15); also in the Red Sea, and especially near the south coast of Ceylon and in the Timor Sea off North-West Australia. Dr. G. B. Longstaff also met with it in the Indian Ocean off Goa (*cf.* "Butterfly Hunting in Many Lands," p. 389). The sailors' name for this plant, "sea-sawdust," gives a very good idea of its appearance.—J.J.W.

triangular sail stretched, apex downwards, between two masts, one on each side. A brief visit to the public garden at Sourabaya, our first port of call in Java, resulted in the capture of two males of *Delias periboea* Godt., a species hitherto unrepresented in the Hope collection. Several of these were seen flying high among trees. The two that came within reach of the net had a slight but unmistakable flowery odour, reminding one of wallflower.

A fine bit of coast was passed one day, backed by great ranges of jagged mountains. Arriving off Samarang, we came to a stop in a heavy sea about three miles from land. No going ashore was permitted, and the only example of the local fauna secured was the pretty little "yellow underwing," *Hyblaea puera* Cram., which came to light as we lay at anchor.

September 23rd we put in at Batavia, or rather Tanjong Priok, the port. A hurried visit to the world-famed Botanic Garden at Buitenzorg, about 45 miles inland from Batavia, resulted in the capture of a few insects, including *Ypthima philomela* Joh., noted as moderately common; *Precis ida* Cram., and *Neptis leucothoe* Cram., the latter remarkable for its slow, skimming flight near the ground. A beetle, *Galeruca* sp., was taken on the wing. The butterflies seen here were mostly in poor condition.

The speed at which we were obliged to travel prevented any close observation of the country passed through. I retain, however, the impression of an interesting drive through a fertile and highly-cultivated region, thickly populated by a gentle, pleasant-looking, brown-skinned race. The banks of the canal at Batavia were thronged by picturesque groups of women washing clothes, and occasionally themselves, in its limpid if somewhat sluggish waters.

On the way to Singapore, within view of the mysterious heights of Sumatra, we were held up by shots fired across our bows from a big liner armed for war service. She turned out to be the "Empress of Japan," and after boarding us and examining our papers, she allowed us to proceed. At Singapore, reached on September 25th, I was lucky enough to fall in with my sailor son, whose ship had been unexpectedly detained at Hong Kong in consequence of the war. Otherwise he would have missed me, but as it was we were together both at Singapore and Penang.

(To be continued.)

NOTES ON MELANDRYIDAE (3).

BY G. C. CHAMPION, F.Z.S.

(Continued from page 40.)

8.—*Phloeotrya gounellei*, n. sp.

♂. Elongate, opaque, almost glabrous; nigro-piceous, the mouth parts, palpi, antennae and legs ferruginous; above and beneath densely, very finely alutaceous (the surface appearing sericeous), and impressed with extremely minute scattered punctures, the ventral segments 2-5 smoother and shining. Eyes prominent. Antennae moderately long, slender, joints 3-10 obconic, gradually becoming shorter and wider, 2 about as long as 10, 3 nearly twice as long as 2. Maxillary palpi serrate, joints 2 and 3 broad, triangular, 4 long, curved, cultriform, longer than 1-3 united. Prothorax uneven, about as long as broad, compressed at the sides anteriorly, the latter sharply margined to beyond the middle, and obliquely convergent before the hind angles, the latter obtuse, the base bisinuate and shallowly trifoveate, the propleura sharply margined anteriorly. Scutellum strongly transverse. Elytra long, a little wider than the prothorax, gradually narrowed from near the base, acuminate at the apex, obsolete costate. Abdomen margined at the sides; fifth ventral segment closely punctate posteriorly, arenato-emarginate at the apex. Legs slender; anterior tarsi moderately dilated; posterior tibiae somewhat curved, widened towards the apex, simple; posterior tarsi with joint 1 very elongate. Length $11\frac{1}{2}$, breadth 3 mm.

Hab.: BRAZIL, Itatiaya, alt. 2,400 metres, Rio de Janeiro (*E. Gounelle*: 2.99).

One male. Near *P. alutaceu*; the body nigro-piceous, and the surface so finely alutaceous as to appear sericeous, the scattered punctures extremely minute; the prothorax (which is similarly obliquely depressed on each side of the disc) not sinuate at the sides behind, and with the hind angles obtuse; the ventral surface smoother and shining.

AMOMPHOPALPUS.

Amomphopalpus, Fairmaire et Germain, Coleopt. Chil., ii, p. 5 (1860)*; Ann. Soc. Ent. Fr., 1863, p. 231.

Dentipalpus, Philippi, Stett. Ent. Zeit., 1863, p. 133, pl. 3, figs. 2, 2a-e.

The types of these genera are *A. quadriplagiatus* F. and G., and *D. pictus* Philippi, respectively, both from Chile, and, to judge from the descriptions, apparently the same species. In the Fry collection at

* This reference is given by Fairmaire and Germain in their later paper; the publication has not been seen by me.

the British Museum, there is a specimen received from Reed, agreeing with Philippi's figure of *D. pictus*. This insect, apparently ♂, has long, slender antennae, with joint 2 nearly as long as 3, the prothorax about as long as broad, immarginate laterally, and without sternal suture; the elytra elongate, cuneiform, and serrulate along the sutural and outer margins (except towards the base); the intermediate coxae contiguous posteriorly; the legs long and slender; the intermediate and posterior tibiae serrulate along their upper edge; the hind joint of the posterior tarsi simple; the anterior tarsi undilated. In the "Munich" Catalogue *Amomphopalpus* is sunk as a synonym of *Serropalpus*, while *Dentipalpus* is retained as distinct; the holarctic genus *Serropalpus*, however, has been recorded from Chile, as well as from Japan, Madagascar (*S. madecassus* Fairm.), etc.

CALLIDIRCAEA, n. gen.

? *Megapalpus* Montrouzier. Ann. Soc. Ent. Fr., 1860, p. 295.

Maxillary palpi long, serrate, joint 4 elongate, cultriform; antennae long, slender, sub-filiform; prothorax sharply margined laterally, transverse; elytra confusedly punctured, the suture unnotched; anterior portion of the prosternum short, connate with the propleura; anterior coxae very large, exerted, contiguous; intermediate coxae contiguous posteriorly; anterior tarsi broadly dilated in ♂; intermediate and posterior tibiae compressed, notched or serrulate along their upper edge, the spurs moderately long, unequal in length, simple; posterior tarsi with joint 1 very elongate, 3 simple.

Type: *C. sexnotata*.

Two closely allied Brazilian insects belong to this genus, and the Australian *Dircaea venusta* Champ. (*lignivora* Lea), referred by Seidlitz to *Amomphopalpus*, can also be included in it. All three have sharply maculate elytra. The transversely notched, sub-serrate, intermediate, and posterior tibiae, the simple penultimate joint of the posterior tarsi, the connate prosternum and propleura, and the long, slender antennae, distinguish these insects from *Dircaea* and *Phloeotrya*; the non-striate elytra and contiguous intermediate coxae separate them from *Serropalpus* and *Cuphosis*, and the sharply margined prothorax, etc., from *Amomphopalpus* F. and G. (= *Dentipalpus* Philippi). As stated above, under *Phloeotrya*, it is not impossible that *Callidircaea* may prove to be synonymous with *Megapalpus* Montr. The Chilean genus *Mallochira* F. and G., type *M. subfasciata*, is said to have pectinate tibial spurs.

1.—*Callidircaea sexnotata*, n. sp.

♂. Elongate, narrow, opaque; nigro-piceous, the mouth parts, basal joint of the antennae, anterior and basal margins of the prothorax in part, a large humeral patch on each elytron, and legs testaceous or rufo-testaceous, the elytra also with an angulate oblique streak before the middle (extending from near the suture to the outer margin) and a transverse sinuous sub-apical fascia (not quite reaching the suture) flavous; the entire surface very densely, minutely punctate, and clothed with fine, sericeous, greyish pubescence. Antennae slender, moderately long, joint 2 short, not half the length of 3, 3-11 sub-cylindrical, gradually decreasing in length. Maxillary palpi long, serrate, joint 3 transverse, hollowed anteriorly, 4 cultriform, about as long as 2 and 3 united. Prothorax convex, transverse, rounded at the sides, about equally narrowed in front and behind, completely margined laterally, the base feebly arcuate and hollowed for the reception of the base of the elytra, the hind angles rectangular and projecting obliquely backward, the disc obsoletely canaliculate in the middle behind, the basal foveae indefinite. Scutellum in great part covered, the exposed portion transverse, small. Elytra very elongate, narrower than the prothorax, acuminate posteriorly, flattened on the disc, the humeri rounded and coarsely, transversely asperate. Legs rather stout; tibiae and posterior tarsi compressed; anterior tarsi broadly dilated. Length 7, breadth (elytra) $1\frac{1}{2}$ mm.

Hab.: BRAZIL, Espirito Santo (*Fry*).

One male, in good condition. Very like the Australian *C. (Dircaea) venusta* Champ., but with a shorter second joint to the antennae, more rounded sides to the prothorax, flatter, differently marked elytra, etc.

2.—*Callidircaea flavomaculata*, n. sp.

Very like *C. sexnotata*, and with similarly coloured elytra (except that the oblique flavous mark is less elongate and the sub-apical fascia is wider), the prothorax black in ♂, rufescent down the middle and along the anterior and basal margins in ♀; the prothorax not so convex, less rounded at the sides and broader behind; the scutellum broader; the elytra in ♀ rapidly, in ♂ gradually, narrowed from a little below the base; anterior tarsi dilated in ♂; antennae slightly shorter and stouter in ♀ than in ♂. Length 6-7½, breadth $1\frac{1}{2}$ -2 mm. (♂ ♀.)

Hab.: BRAZIL, Rio de Janeiro (*Fry*).

One pair, the ♂ much smaller, with the prothorax and base of the elytra darker, and the elytra much less narrowed posteriorly, than the ♀. These Brazilian insects were at first placed by me under one name, but they cannot be treated as conspecific, even if allowing for a greater development of the prothorax in the male of one of them.

TALAYRA Champ.

The type of *Talayra* is *Orchesia elongata* MacI. (= *orchesioides* Champ.), from Australia and Tasmania. The two species now added agree very nearly with this insect, except that they have the elytra distinctly striate, and the pectinate spurs of the intermediate and posterior tibiae unequal in length, the upper one half the length of the first tarsal joint. The slender antennae, serrate maxillary palpi, striate elytra, notched intermediate and posterior tibiae, simple penultimate joint to the posterior tarsi, connate prosternum and propleura, and non-contiguous intermediate coxae, are characters common to *Serropalpus* and *Talayra*, the latter being distinguishable by the long, pectinate spurs of the posterior tibiae. The Chilean genus *Mallochira* agrees with *Talayra* in having pectinate spurs, but differs from it in various particulars.

1.—*Talayra sericata*, n. sp.

Very elongate, narrow, somewhat flattened above, dull, clothed with extremely fine, sericeous, greyish pubescence; dark brown, paler beneath, the antennae, mouth parts, and legs obscure testaceous; above and beneath densely, extremely minutely punctate, the metasternum and abdomen with scattered, intermixed, slightly coarser punctures, the rather long ante-coxal portion of the prosternum sparsely punctate. Antennae moderately long, slender, joint 2 short, 3 and those following long, sub-cylindrical, sub-equal in length. Prothorax about as long as broad, arcuately narrowed anteriorly, the sides sub-parallel at the base, and sharply margined to near the apex, the hind angles rectangular, the base so feebly sinuate as to appear sub-truncate, and with two oblique, deep, impunctate foveae. Elytra very elongate, of the same width as the prothorax, sub-parallel in their basal half and narrowing thence to the apex, with numerous fine impressed lines on the disc and a complete sutural stria. Length $8\frac{1}{2}$, breadth $1\frac{1}{5}$ mm. (♀ ?.)

Hab.: TASMANIA (*ex coll. F. Bates*).

One specimen. Narrower, flatter, and less cuneiform than *T. elongata*, the sculpture and pubescence much finer, the prothorax longer, and with deep, oblique basal foveae, the elytra distinctly striate. This species was not represented amongst the Tasmanian Melandryids described by myself in 1895. It approaches *Serropalpus*,

2.—*Talayra africana*, n. sp.

Elongate, sub-fusiform, rather convex, slightly shining, iridescent in certain lights; dark brown, the antennae, palpi, and legs ferruginous or obscure ferruginous; densely, finely punctate, the rather long, ante-coxal portion of the prosternum shining and a little more coarsely punctured. Antennae moderately

long, slender, joint 2 short, 3-11 elongate, sub-cylindrical, about equal in length. Prothorax transverse, convex, arcuately narrowed anteriorly and slightly narrowed behind, the hind angles sub-rectangular, the sides sharply margined to near the apex, the base deeply bisinuate, the foveae very shallow and only just indicated. Elytra long, not wider than the prothorax, narrowed from a little below the base, finely striate, the sutural stria well marked. Anterior tarsi slightly dilated in ♂. Length 7-8½, breadth 1⅔-2¼ mm.

Hab.: NATAL (*Mus. Brit.*); E. AFRICA, Valley of the Ruaha River (*Neave*: xii, 1910); ASHANTI, Obuasi (*Dr. W. M. Graham*: 1908).

Five specimens, the two from Natal received by the Museum in 1855 and 1858 respectively. Shaped like the Australian *T. elongata*, but with the prothorax strongly bisinuate at the base, the elytra distinctly striate, and the lower spur of the posterior tibiae much shorter than the upper. *T. africana* might easily be mistaken for a Eucnemid. The only described Melandryids of this group from S. Africa are two species of the genus *Daemon** *Motsch.*, both of which are unknown to me.

DAPSILODERUS Fairm.

The greatly developed, contiguous anterior and intermediate coxae, the very short ante-coxal portion of the prosternum, the long second joint and narrower apical joint of the maxillary palpi, and the broadly sulcate genae distinguish *Dapsiloderus* from the allied genus inhabiting the same regions.

1.—*Dapsiloderus terminalis*.

Hylotastes terminalis Pasc., *Ann. and Mag. Nat. Hist.* (5), ix, pp. 25, 26 (1882) (sub Eucnemidae); *Waterh., Aid ident. Ins.* ii, p. 8, pl. 103 (1882).

Dapsiloderus costipennis Fairm., *Notes Leyd. Mus.* ix, p. 157 (1887).

Hab.: BORNEO; SUMATRA; MALACCA.

In *Ent. Mo. Mag.*, LI, p. 140† (April, 1915), attention was called to the possible identity of the insects described by Pascoe and Fairmaire. A third specimen, from Malacca, has since been detected in the British Museum, with the head red on each side behind the eyes, and the black marginal stripe on the prothorax wanting. There can be no doubt that they all belong to one species. Pascoe's Bornean type and the Malaccan example have a large, oval, depressed area on

* A preoccupied name: Laporte, 1836.

† Erratum: *for* "Tenebrionidae, but" read "Eucnemidae, and."

the propleura densely clothed with brownish pubescence, and the base of each elytron set with transverse asperities; the first-mentioned character may be peculiar to the male (?). The short ante-coxal portion of the prosternum is very little produced between the coxae. The basal joint of the antennae is received in repose in the broad genal sulcus.

2.—*Dapsiloderus miniaceus*, n. sp.

Very elongate, sub-cylindrical; black, the head on each side, the prothorax (a narrow black median stripe excepted), and the elytra carmine-red, the upper surface thickly clothed with fine, similarly-coloured, velvety pubescence, the clothing of the under surface blackish-brown; very densely, minutely, reticulato-punctulate. Antennae long, joint 2 short, small, 3-10 very broad, serrate, strongly compressed, 6-10 becoming gradually narrower, 11 about half the width of 10, appendiculate. Prothorax transverse, uneven, the sides rounded anteriorly and sub-parallel at the base, the latter bisinuate, the hind angles directed backward; the disc obsoletely canaliculate, and transversely nodose and sinuato-excavate on each side at about the middle, the excavation extending downward to the basal margin, the base also with a median fovea. Scutellum large. Elytra very long, quadri-costate, the third costa becoming obsolete towards the base, the humeri and the first costa transversely asperate for some distance below the base. Anterior tarsi slightly widened. Fifth ventral segment sub-truncate and feebly excavate in the middle at the apex. Length 13, breadth, 3 mm. (♂ ?)

Hab.: TENASSERIM, Tavoy (*Doherty*).

One specimen, somewhat immature. This insect, at first sight, looks like an almost immaculate variety of *D. terminalis*, from which, however, it is readily separated by the bisinuate base of the prothorax, the sides of which are also less rounded. The uneven surface of the prothorax may be partly due to immaturity, but this is hardly likely to be the case. The transverse asperities at the base of the elytra are also differently placed, the ante-coxal portion of the prosternum is more produced in the middle behind; and the maxillary palpi are shorter than in *D. terminalis*. The genal sulci are broad and shining in both species.

DAPSILODERINUS n. gen.

Antennae with joint 2 minute, 3-11 greatly dilated, compressed, and serrate, 11 appendiculate; maxillary palpi broad, serrate, joint 2 triangular, 3 strongly transverse, 4 cultriform, longer in ♂ than in ♀; head vertical, rather small; eyes transverse, emarginate; prothorax margined at the sides posteriorly; scutellum triangular, depressed, almost covered by the basal lobe of the prothorax; elytra very elongate, parallel, confusedly punctured, the suture

transversely notched posteriorly; prosternum well developed in front, the suture distinct; anterior coxae moderately large, conical, contiguous; intermediate coxae narrowly separated; legs long, slender; tibiae each with two long, sub-equal, simple spurs, the intermediate and posterior pairs notched along their upper edge; penultimate joint of the anterior and intermediate tarsi short, bilobed, that of the posterior pair long, simple; anterior tarsi feebly dilated in ♂; body sub-cylindrical.

Type: *D. quadricostatus*.

The two Eastern species referred to this genus are very closely related to *Dapsiloderus* Fairm., but differ from it in the serrate maxillary palpi, with cultriform apical joint, and the second joint much shorter, the narrowly sulcate genae, the smaller anterior coxae, the greater development of the ante-coxal portion of the prosternum, the long mesosternal process, and the non-contiguous intermediate coxae. These insects superficially resemble various Eucnemids (*Hylotastes*), Lycids and Clerids, though they are really very nearly allied to *Dircaea*. The greatly widened, compressed, serrate antennae, and general coloration, give these insects a Lycid appearance. The sexes are scarcely distinguishable by external characters.

1.—*Dapsiloderinus quadricostatus*, n. sp.

Very elongate, narrow; black, the prothorax and elytra wholly or in part brick-red or fiery-red, the prothorax usually with a narrow median vitta (sometimes much widened anteriorly or extending to the greater part of the surface), and the elytra with the apex, to a greater or less extent (and, rarely, also the suture to the base), black, the palpi (except in one specimen) flavous; very densely, minutely punctulate, and thickly clothed with fine pubescence, the latter partaking of the ground-colour, sometimes brownish-cinereous on the sides of the prothorax and on the head. Antennae long, reaching to the second or third ventral suture, joints 3-10 very broadly serrate, 11 narrower than 10. Prothorax broader than long, the sides somewhat compressed at the middle and sub-parallel at the base, the latter bisinuate, the disc canaliculate posteriorly. Elytra quadricostate, the outer sub-marginal ridge just traceable, the base strongly, transversely asperate, the suture also asperate beyond the middle. Length 7-10½, breadth 1½-2½ mm.

Hab.: ASSAM, Patkai Mts. (*Doherty*); PENANG [type] (*Lamb, Bryant*); JAVA (*Horsfield*); BORNEO, Martapura (*Doherty*), Mt. Matang (*Bryant*); SINGAPORE (*Ridley*); MALACCA (*ex coll. Sharp*); "E. INDIES" (*Mus. Brit.*).

Represented by numerous examples in the British Museum, and met with in Borneo and Penang in 1913 by Mr. Bryant. The strongly serrate maxillary palpi, the smaller scutellum, the bisinuate base of

the prothorax, the smaller size, etc., separate the present species from *Dapsiloderus terminalis*. The specimens with very slightly widened anterior tarsi and a longer apical joint to the maxillary palpi are assumed to be males. The palpi are wholly flavous in all but one of the examples before me. The Penang examples are taken as the types.

2.—*Dapsiloderinus notaticollis*, n. sp.

Very elongate, narrow, opaque; black, the prothorax with a transverse rufous spot or patch on each side of the disc before the base, the elytral humeri indeterminately rufescent, the palpi flavous, the tips of the tarsi testaceous; clothed with extremely fine pruinose pubescence; the entire surface very densely, minutely punctulate, the minute punctures on the elytra transversely confluent, the base of the latter strongly transversely asperate. Antennae long, joints 3-10 extremely broad, serrate, sub-equal in length, 11 narrower than 10. Prothorax broader than long, the sides rounded anteriorly and sub-parallel towards the base, the latter bisinuate, the hind angles rather obtuse, the disc foveate in the middle before the base. Elytra without definite costae, the suture closely, transversely asperate towards the apex. Length $6\frac{1}{2}$ - $7\frac{1}{4}$, breadth $1\frac{1}{2}$ - $1\frac{3}{8}$ mm. (♀?)

Hab.: BORNEO, Mt. Matang, W. Sarawak (*G. E. Bryant*).

Two specimens: one captured in December, 1913, the other in February, 1914. Separable from the variable *D. quadricostatus*, which has been taken by Mr. Bryant at the same locality, by the non-costate elytra and the entirely black body—the two red spots on the prothorax and the faint reddish humeral patch excepted. It is scarcely possible that *D. notaticollis* can be the ♀ of *D. quadricostatus*?

(*To be continued.*)

ON THE CORRECT NAMES OF SOME COMMON

BRITISH DIPTERA.

BY F. W. EDWARDS, B.A., F.E.S.

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In studying the works of the older entomologists, one cannot but be struck by the contrast between the two schools: the real naturalists, such as Réaumur and De Geer, and the mere nomenclators, such as Linné, Fabricius, and Meigen. The latter, no doubt, did a most useful work, but it is to the former that we have to turn for information concerning the life-histories of insects. The latter do not seem to have been interested in these aspects of their science, and although they frequently adopted the names of the former, they were often, through

insufficient knowledge or mere carelessness, incorrect in their application of them; not a few of these mistakes have been handed down for generations until some person has been enterprising enough to consult the original author's work.

In *Diptera* there are a number of such instances. Thus De Geer's *Tipula culiciformis* was for long assumed to be a species of *Corethra*, but is now known to be the same as *Mochlonyx velutinus*. The purpose of the present note is to call attention to three more cases which have apparently been overlooked. Unfortunately, these affect the names of four of our commonest British *Diptera*, but as the changes will have to be made some day, they had better take place now. It is, moreover, some compensation for the inconvenience caused, to reflect that for once the Law of Priority has brought belated justice to a really sound naturalist.

I.—*TIPULA FUNGORUM* De Geer. (Mém., Tome VI, p. 361).

De Geer found some Dipterous larvae, in a fungus (*Boletus luteus*), which he described and figured, but failed to rear. In the following year he found larvae again in the same species of fungus, and hatched flies from them. Naturally he assumed that he had dealt with only one species, to which he gave the name *Tipula fungorum*. Later on Meigen had an insect which he thought to be the same as De Geer's, but for which he proposed the name *Mycetophila fusca*. Fifty years later Winnertz included what he considered to be the same species in the genus *Exechia*, restoring to it De Geer's name of *fungorum*, and recently *E. fungorum* has been selected by Johannsen as the type of the genus *Exechia*.

Now in the light of our present knowledge, it is clear that (a) the larva figured by De Geer is that of a *Bolitophila*, as shown unmistakably by the large antennae; (b) the fly described by De Geer is our *Mycetophila punctata*, as shown both by the general description, and the figure (quite recognisable) of the male genitalia; (c) Meigen's *M. fusca* was a totally different insect, he being apparently misled by an inaccuracy in De Geer's figure of the wing: *M. fusca* is doubtless an *Exechia*, perhaps, as Meigen describes the thorax as having three black stripes, the same as the species we know as *E. trivittata*, though only an examination of the type can settle this; (d) Winnertz's *Exechia fungorum* was a different insect again, clearly not the same as Meigen's *M. fusca*, since the thorax is unstriped, and certainly not at all related to De Geer's *T. fungorum*.

The first question which arises is whether De Geer's name should be used for his larvae or for his adults. The former were, no doubt, described first, but as he was unable to assign them definitely to a genus without rearing them, and as his diagnosis is based on the adult, I consider that the name must apply to the latter. Our *Mycetophila punctata* Mg. (1804) must therefore be known in future as *Mycetophila fungorum* (De Geer, 1776).

With regard to our *Exechia fungorum*, according to the views of some writers, the fact that this name has been used for the type-species of *Exechia* should now necessitate the placing of *Exechia* as a synonym of *Mycetophila*. I cannot agree with this view, however, and consider that the species which should be regarded as the type of *Exechia* is the one which Winnertz actually had under the name *fungorum*, not the one to which this name was originally applied. As stated above, the name *M. fusca* is not applicable to this species, although it is usually placed as a synonym; nor according to our catalogue is there any other name which can be used for it. I do not, however, think it is necessary to propose a new name, as I believe Meigen's *Mycetophila guttiventris* is really our species. This has usually been classed as a synonym of *Exechia lateralis*, and so it may possibly be, the females of the two, which were all that Meigen possessed, being very difficult to distinguish. However, unless or until Meigen's type can be examined, I think it will be best to follow Lundstroem's interpretation of *M. lateralis*, and to use the name *guttiventris* for the *Exechia fungorum* of Winnertz and later writers.

2.—*TIPULA STERCORARIA* De Geer (Mém., Tome. VI, p. 388).

De Geer, who bred this species from larvae found in horse-dung, described it as follows: "Entirely a beautiful dull black, but the wings are milk-white, and the anterior barbs of the beautiful plumose male antennae are whitish, while those nearest the head are black." He also gave figures which showed the species to belong to the *Orthocladius* group of the Chironomidae, and stated that it was only $1\frac{1}{2}$ lines long.

T. stercoraria has for long been regarded as a species of *Orthocladius*, Schiner being apparently the first to describe the venation, and all subsequent authors have followed his interpretation. But no common species of *Orthocladius* has the outer part of the male antennae whitish, and so far as I am aware no one has ever found *Orthocladius* larvae in dung, or indeed out of water. On the other

hand, De Geer's description applies very well indeed to our *Camptocladius byssinus*, and to no other Chironomid, while several species of *Camptocladius* are known to be dung or soil feeders in the larval state.* If we suppose that De Geer's measurement of length included the antennae, the only apparent discrepancy practically disappears.

The name *Camptocladius stercorarius* (De Geer, 1776), must therefore replace that of *C. byssinus* (Schrank, 1803). I cannot say at present what name should be used for the species which is widely known as *Orthocladius stercorarius*, but it would appear that several closely allied species have been confused under this designation; two such are *O. novatus* (Walker) and *O. oblidens* (Walker), but older names probably exist for both of these.

The remarks made above concerning the status of the genus *Exechia* apply also to *Orthocladius*, since *O. stercorarius* Auct. (*nec* Deg.) was selected by Coquillett in 1910 as the generic type.

3.—*CULEX COMMUNIS* De Geer (Mém., Tome VI, p. 316).

De Geer gives quite respectable figures of the larvae, pupae, and adult of a mosquito which he found near Leussta (? in Sweden). He thought his species was the same as Linnaeus' *C. pipiens*, the life-history of which had been worked out by Réaumur, but he was not quite certain as he had noticed some differences in the larvae, and probably on this account he proposed the name *communis* as an alternative to *pipiens*. All subsequent writers down to Theobald have sunk *communis* as synonymous with *pipiens*. But it is perfectly evident from De Geer's figures, as well as from the fact that he found full-grown larvae in May, that he was not dealing with *C. pipiens* at all, but with a species of *Ochlerotatus*,† almost certainly our common British *O. nemorosus* Mg.

There is one point of difference, according to De Geer's figures, between his species and our *O. nemorosus* Mg. He represents the penultimate joint of the male palpi as being considerably longer than the terminal, whereas in *nemorosus* the two are almost equal in length. Although I believe this apparent difference is probably due to an error on De Geer's part, it will perhaps save us from the necessity of sinking the name *nemorosus*, as it is of course possible that there may be in Sweden a species which answers exactly to De Geer's figures.

* On account of its larval habits, Malloch (Bull. Illinois State Lab. Nat. Hist., X, art. VI, May, 1915) has already suggested that *C. byssinus* is a *Camptocladius* and not an *Orthocladius*.

† Attention has been called to the true generic position of *C. communis* by Howard, Dyar and Knab (Mosq. of N. and C. Amer. and W. Indies, Vol. 3, p. 368, Oct., 1915).

4.—*MUSCA AUTUMNALIS* De G. (Mém. Tom. VI, p. 83, 1776).

De Geer gives a short and rather incomplete description of this species, which is nevertheless quite recognisable as applying to the fly generally known as *Musca corvina* Fab. Fabricius' name, however, was not published until five years after De Geer's (*Species Insectorum*, II, p. 440, 1781); he not only quotes De Geer's diagnosis and name, but has apparently based his own short description on De Geer's, and is in fact only re-naming the species. He gives no reason for this change, and yet his name has been used by practically every subsequent author, without any question as to its validity. There being no earlier homonym of *Musca autumnalis* De Geer's name ought to be used, as has been done recently by Howard in his book on the house-fly. Fortunately, *autumnalis* is an appropriate name for this fly, which *corvina* is not. The term "raven-fly," which has recently been invented as a popular name, should be dropped; it is merely a translation of the name *corvina*, and is neither in common use, nor has it any relevance.

British Museum (Natural History):

November 11th, 1915.

British Fossil insects.—In the "Proceedings of the U. S. National Museum," Vol. 49, pp. 469-499, pls. 60-65, dated December 11th, 1915, Mr. T. D. A. Cockerell gives a brief summary of our knowledge of British fossil insects up to the date of writing. The total number of species is 368: Carboniferous 27, Lias 82, Oolite 209, Tertiary 42, Post Tertiary 8. This number includes various (44) new forms described in the same paper, all obtained many years ago, from the Lias or Oligocene, by the Rev. P. B. Brodie, in the Isle of Wight. The duplicates only of this collection (from that of Lacoe) have been examined by Mr. Cockerell, the first set being contained in the British Museum. The new genera and species described are as follows: LIAS INSECTS—ORTHOPTERA [*Eospilopteron* (n. gen., with n. fam. *Eospilopteronidae*) *ornatum*, *Locustopsis lacoei*, *Haglopsis brodiei*]; NEUROPTERA [*Nematophlebia* (n. gen. *Sialidae*) *plicata*]; PALAEOHEMIPTERA [*Meshemipteron* (n. gen.) *incertum*]; COLEOPTERA [*Protocuneus* (n. gen., ? *Rhynchophora*) *punctatus*, *Elaterophanes acutus*, *Pseudotelephorus punctulatus* and *grandis*, *Phanerogramma* (n. gen., ? *Tenebrionidae*), for *Akicera heeri* Giebel, *Holcoptera confluens*, *Glaphyoptula anglica*]; OLIGOCENE INSECTS—HYMENOPTERA [*Philoponites* (n. gen. *Philanthidae*) *clarus*, *Aneurhynchus* (n. gen. *Diapriidae*) *conservatus*, *Ponera hypolitha*, *Dolichoderus britannicus*, *anglicus*, *ovigerus*, *Leptothorax gurnetensis*, *Oecophylla atavina*, *perdita*, *megarche*]; HOMOPTERA [*Necropsylla anglica*, *Psylla exhumata*, *Schizoneurites* (n. gen. *Aphididae*) *brevirostris*]; DIPTERA [*Culex protolepis*, *protorhinus*, *petrifactellus*, *Pallostomopsis*

(n. gen. *Elepharoceridae*) *ciliatus*, *Mycetophila vectensis*, *Sciara gurnetensis*, *lacoeci*, *protoberidis*, *Tipula liniformis*, *Atarba vectensis*, *Bibiodites* (n. gen. *Bibionidae*) *confluens*, *Psychoda primaeva*, *Protoberis* (n. gen. *Stratiomyidae*) *obliteratus*, *Stratiomys brodiei*, *Ephydra oligocena*, *sepulta*, *Hippelates brodiei*, *Sphaerocera sepultula*, *Stenomyites* (n. gen. *Ortalidae*) *fuscipennis*]; ODONATA [*Megalestes* (?) *anglicus*]. Mr. Cockerell's paper also contains notes on various forms previously named by Giebel, Brodie, Westwood, and Handlirsch, and he gives figures of some of them.—EDS.

Philonthus varius v. *nitidicollis* Boisd., a distinct species.—The note on the above supposed variety by Prof. T. Hudson Beare, in the January number of this Magazine, p. 16, recalled to my mind that I had proved this to be a distinct species. It can be separated from *P. varius* Gyll., by the following characters:—



P. varius.

- I. Impressed line at base of 3rd and 4th dorsal segments distinctly angled in middle; 1st joint of posterior tarsi not as long as the next three joints.

...*varius* Gyll.

- II. Impressed line at base of 3rd and 4th dorsal segments straight; 1st joint of posterior tarsi longer than next three.

...*nitidicollis* Boisd.



P. nitidicollis.

There are also slight differences in sculpture, the antennae are thinner and slightly shorter in *P. nitidicollis*, and the aedeagus is not alike in the two insects, as the accompanying figures of the amalgamated lateral lobes will show.

In all probability the forms with red elytra will prove to be varieties of one species, but as I have not seen either *bimaculatus* Grav., or *shetlandicus* Poppus, it is impossible for me to clear up this point.—H. BRITTON, Myrtle View, Windmill Road, Headington, Oxon: *January 27th*, 1916.

Bembidium quinquestriatum Gyll., in the Edinburgh district.—As Prof. Hudson Beare's interesting note in the January number testifies, this is undoubtedly an uncommon beetle in the Edinburgh district. In the course of the past twenty-seven years I have met with it, so far as my register shows, on scarcely a dozen occasions. The records are as follows:—Comiston, December 6th, 1888, and July 16th, 1896; Lothianburn, March, 1893; Colinton, October, 1893; Fairmilehead, in moss at foot of wall, February 27th, 1896; Falkland, August, 1895; Aberdour, March 4th, 1896 (on wall), and March 16th, 1900; Luffness Links, August 5th, 1896; Isle of May, July 14th and September 23rd, 1910. Unfortunately, the nature of the habitat has been noted in only two instances. In Murray's "Coleoptera of Scotland" (1853) the localities given

for this species are "near Edinburgh, Fife, Dollar, etc.;" and Kirkcaldy is mentioned as a locality for it in Fowler's book (Vol. I, p. 104).—WILLIAM EVANS, 38, Morningside Park, Edinburgh: *February 1st, 1916.*

On the distribution of Miris holsatus F., in Britain.—In Saunders' "Hemiptera-Heteroptera of the British Isles," this Capsid is described as "common and generally distributed." This statement, however, has been shown by later investigation to be in need of some qualification, for there is a large area in the East of England from which the insect appears to be altogether absent. I have been for some years collecting localities for our British *Heteroptera*, and I find that so far as *Miris holsatus* is concerned, there are no records of its occurrence in the large strip of country lying between the Humber and the south coast of Kent, and extending inland to the western borders of Lincolnshire, Rutland, Northants, Beds, Herts, Middlesex, and Kent. This is an enormous area containing 12 counties, and extending about 200 miles in length, with a breadth in some places of about 150 miles. To the absence of records from a few of these counties, it is true, little importance must be attached; Hemipterists themselves seem to be absent from Rutland, Northants, Hunts. and Beds., and very few observations have in consequence been made upon the hemipterous fauna of these counties. But the others are in a different category. J. E. Mason left on record long lists for Lincolnshire; J. Edwards and C. Morley have very thoroughly worked Norfolk and Suffolk respectively; W. H. Harwood has given a long list for the east of Essex, and I have myself thoroughly worked much of the western part, especially the Epping Forest district, while W. West and many other entomologists have provided an excellent list for Kent; the Fryers, father and son, have supplied me with a long list for Cambridgeshire, and I have myself worked both Herts and Middlesex. It is scarcely credible that, considering the diligence with which these counties have been searched, in some cases from end to end, the insect, though present, has eluded observation, and the only conclusion that seems warranted is that it does not exist at all in the well-worked coast-counties, and there are strong probabilities as to its entire absence from those forming the row immediately succeeding them inland.

Outside the limits of this district the insect occurs freely. It is common in some parts of Surrey and Sussex; I have found it in great abundance in N.E. Yorkshire, where it is the predominating species of the genus, the other two, *M. laevigatus* and *M. calcaratus* being comparatively scarce; Prof. Carr speaks of it as common in some parts of Nottinghamshire; and Marshall records it for Leicestershire. It occurs abundantly in many parts of Wales; F. Buchanan White says, "it abounds throughout Scotland up to at least 1200 feet above sea level." It is also very common in such parts of Ireland as have been examined.

It should perhaps be remarked that in Edwards' list of the *Hemiptera* of Norfolk contained in the Transactions of the Norfolk and Norwich Naturalists' Society, Vol. iii, 1884, the name of this insect does occur, and it is said to be

very local; but in a subsequent issue (*Id.*, 1894) the author points out that this is an error for *Acetropis gimmerthali* and that *M. holsatus* does not occur in Norfolk.

It is difficult to conjecture the reason for this peculiarity in distribution. The insect usually occurs in damp, grassy places or amongst bracken growing in shady woods, and as there are plenty of such localities in the avoided counties, the absence of the insect can scarcely be due to botanical causes; moreover, in N.E. Yorkshire I have found it abundantly in the open and also on roadside banks. Nor does it seem likely to be due to geological features, for many different formations, both secondary and tertiary, are represented in the area, which they cross diagonally, and they are continued into counties where the insect occurs commonly. Nor can the proximity to the North Sea, with the special climatic conditions it produces, be the efficient cause, seeing that the species occurs abundantly in N.E. Yorkshire and throughout Scotland and even the Orkneys, which are equally exposed to the E. and N.E. blasts that sweep across the waters of that inhospitable sea.—E. A. BUTLER, 56, Cecile Park, Crouch End, N: *February*, 1916.

Cumberland Hemiptera—Heteroptera.—The year 1915 was a good one for *Hemiptera* in this district; a mild winter, followed by a dry and prolonged summer without any great heat, evidently suiting these insects. The larger Pentatomids were rare, my only new capture being *Acanthosoma interstinctum* Linn. (*dentatum* De G.), at Orton and Burgh. *Berytus minor* H. S., rare at roots of rushes, at Newby Cross. *Stygnocoris pedestris* Fall., common on heather, Castle Carrock Fell, etc. *S. rusticus* Fall., by sweeping a hedge at Burgh. *S. fuliginus* Geoffr., rare, in Gelt Woods. *Trapezonotus arenarius* Linn., also rarely, in Gelt Woods. *Drymus brunneus* Sahlb., common in moss, Orton, etc. *D. piceus* Flor, rare, under stones among heather on Castle Carrock Fell. *Scolopostethus thomsoni* Reut., odd specimens at Cummersdale and Orton. *Acalypta parvula* Fall., *Dictyonota strichnocera* Fieb., and *Derephysia foliacea* Fall., were all swept in the lane at Prior Rigg. *Gerris lateralis* var. *costae* H. S., was not rare on Orton pond in July. *Nabis flavomarginatus* Scholtz, not uncommon on Castle Carrock Fell. *Salda pilosa* Fall., a few on Burgh Marsh, near the water. *Lyctocoris campestris* Fab., Gelt Woods, in June, where I also took *Calocoris ochromelus* Gmel., by sweeping. *Lygus pratensis* Linn. was common and variable; I have taken this species in moss in winter. *L. contaminatus* Fall. and *L. viridis* Fall. were both uncommon at Orton. *Phytocoris longipennis* Flor, odd specimens at Orton and Burgh. *Pocilloscythus gyllenhalii* Fall., not uncommon on Foxglove at Orton and Port Carlisle. *Rhopalotomus ater* Linn. and *Strongylocoris leucocephalus* Linn., were both common in the sweep-net at Port Carlisle. *Dicyphus epilobii* Reut., was swept in Gelt Woods. *Heterocordylus tibialis* Hahn was abundant on broom at Orton in July. *Plagiognathus arbutorum* Fab., common on nettles, etc., everywhere. *Corixa geoffroyi* Leach was common at Cummersdale in April, with *C. nigrolineata* Fieb. *Micronecta minutissima* Linn. was fished from the River Caldew.—JAS. MURRAY, 2, Balfour Road, Carlisle.—*January 21st*, 1916.

Early appearance of Halictus morio L., after hibernation.—On January 28th, an unusually bright and warm day, I took a special look around to see if any of the earlier spring bees had been tempted out by the mildness of the weather. I quite expected to see *Anthophora* in the garden about the numerous flowers of crocus, violet, primrose, etc., but was disappointed in this. In a lane near by, however, I found a ♀ *Halictus morio* assiduously working the flowers of a yellow composite. This is by far the earliest date on which I have observed *Halictus* to leave its winter quarters.—R. C. L. PERKINS, Park Hill House, Paignton : January 31st, 1916.

Flies in houses.—I have read Mr. Hugh Scott's note about flies swarming in houses with much interest, and am prompted thereby to relate my own experiences with these insects. Every year in late autumn flies begin to come into this house, but they particularly favour one room, a bedroom on the first floor—a large, lofty room, facing nearly due south. Their favourite resting place, when once winter has come on, is behind the shutters, for being an old house every window is provided with shutters ; they also affect the backs of pictures.

Mrs. Johnson, having discovered their habit, goes round with a dust-pan and brush, sweeps them off, and destroys them. I have seen the back of a large shutter completely covered with them. This happens every year, but I did not pay any particular attention to them, not having any knowledge of *Diptera*. The inquiry which arose about the hibernation or otherwise of the house-fly caused me to observe things a little more closely. Last October was a rather cold month and there were several sharp frosts, the thermometer falling to 28° F. I noticed the flies coming into the house in considerable numbers. They collected in bunches along the moulding of the ceiling of their favourite room, and if the day was bright and sunny, the large window which faces south was black with them. I got a lot of them into a box and sent them to Mr. J. E. Collin, who most kindly examined them, and informed me that three species were represented, viz. : *Polyetes lardaria*, *Pyrellia lasiophthalma*, and *Limnophora septemnotata*, of which the last named was most numerous.

In December, my attention was again called to the flies by Mrs. Johnson bringing me to look at one of the window blinds in the same room. In the deep hem of the blind a hole had been torn, and through this aperture the flies had entered, and the whole hem was full of them. I thought this so curious that I cut off the hem and sent it to Mr. Collin, who again most kindly examined the flies, and informed me that the majority of those sent were *Limnophora septemnotata*, and along with them were three *Pollenia rudis* and one *Chloropisca circumdata*.

This house stands on a hill, with falling ground to south, east and north ; on the west the ground dips and then rises again. The room in which the flies were taken faces south and east, with a very large window to the south, and another not so large to the east. The east wall is covered with golden ivy, which has grown round on to the south wall as far as the window ; on the south wall there are roses and a *Clematis montana*. At a little distance on the south there are several large beech trees and a large pine tree ; behind these are larch, pine,

lime, oak, and holly trees; nearer to the house is a broad hedge of laurel, rhododendron, and mahonia, being the hedge of the flower garden. The flies occur all through the house, but the large room is their special haunt, perhaps because of the very large window and the south aspect, which causes it to get all the autumn sunshine. We are not troubled with flies in the summer; though, as I farm the glebe land and keep horses, cows, and pigs, there is necessarily a quantity of manure about, they might be expected to abound. I am far more bothered with flies on a warm summer's day in the fields than I ever am in the house, though the windows are always open and the flies have free ingress if they like.

I think it is pretty evident that the flies entered the house for the purpose of hibernating.—W. F. JOHNSON, Acton Glebe, Poyntzpass: *January 11th, 1916.*

Additional notes on Mr. J. C. Moulton's paper on Bornean Rhopalocera.—The publication of my short criticism on Mr. Moulton's paper in the February number of this magazine has brought me letters from several entomologists. Mr. C. O. Trechmann has kindly given me a copy of Messrs. W. B. Pryer and D. Cator's "Preliminary List of the *Rhopalocera* of Borneo" from the "British North Borneo Herald," October 1st, 1894, which is neatly cut from the newspaper and mounted in a book, by the late L. de Nicéville, whose property it formerly was. On looking through it I find that no less than 19 new species of butterflies are described in its columns. Most of the descriptions are quite useless, and consist only of the generic and specific names and the expanse of the wings. When we come to the end of the list of the group *Nymphalina* we find a note: "Owing to an unfortunate want of type the habitats of many of the above are not given"!!

In the fam. *Lycæniidae*, No. 230, is described "*Poritia dorothisiana*, n. sp. Upper-side bright green with a broad black border. Exp. wings 27 mm. Hab. Sandakan." Although the description is brief, I have not a shadow of a doubt that it is the insect described by me, P. Z. S., 1895, p. 565, as the ♂ *Cyaniriodes libna* Hew., and referred to in P. Z. S., 1896, p. 653, pl. xxix, f. 3.

When Mr. Cator lent me his specimen he did not mention that he and Mr. Pryer had described it as a new species in 1894. When we come to the end of the fam. *Hesperiidæ* we read that "Owing to *great press of business*.* it is regretted that the concluding portions of the above paper are little more than a mere list of names, etc."!!

Dr. D. Sharp has written me from Brockenhurst: In 'Zool. Rec.' 1894, p. 248, Pryer and Cator's list of Bornean butterflies is mentioned, but I did not accept the new species. Bartlett's paper I think I mentioned under some other name, but I don't see it in the 'Record.' The papers were sent to me with a view to their being recognised, but it appears to me very doubtful whether an appearance in such a medium amounts to publication. It appears to me that if the practise is recognised as legitimate it is likely to extend, and as there is no language limit it will not be possible to do the Record satisfactorily. Who is to look through the daily papers of Peru and Patagonia, say?"

* The italics are mine.—H. D.

I do not know what authority, if one exists, can decide on the validity of these 19 new species, and suggest that Mr. Moulton should without delay examine the types, redescribe them carefully, and correct their synonymy. The nomenclature of the Bornean butterflies is probably in a worse state of chaos than that of any other country, and this fact is due to the writings of gentlemen who have lived in this island at various periods during the last 22 years. I can find no reference to these 19 new species in Mr. Moulton's latest paper.—
HAMILTON H. DRUCE, 3, Norfolk Road, Regent's Park, N.W.: *February 11th, 1916*

Review.

“THE EMBRYOLOGY OF THE HONEY BEE.” BY J. A. NELSON, PH.D. With five Plates and 95 Text-figures; pp. 1-282. Princeton University Press, 1915.

A cursory glance at any bibliography of the Honey-bee would probably convince the reader that little or nothing remained to be recorded of this wonderful insect, yet a closer investigation shows that an account of the Embryology, at any rate, has not up to the present been published as a whole. From the Historical Review in the present volume (Chapter 1) it appears that some seven more or less important papers have been published on the embryology, the first recorded observations being those of Professor Weismann, which were transmitted to Metschnikoff and published by him in 1866. Two important papers followed these observations, the first by Otto Bütschli, who studied only the living egg (1870), and the second by Kowalewski, a Russian, who has the distinction of being the first insect embryologist to cut sections of the tissue, fixed and embedded in paraffin (1871).

Other important papers are by the following authors:—Grassi (1884); Blochmann (1889); Petrunkevitch (1901 and 1903); and Dickel (1903); but all these papers are limited in their scope.

In the present volume the whole subject seems to have been dealt with in a thorough manner. Commencing with an account of the organization of the egg, the author gives in sequence an account of the formation of the germ layers, the amnion and cephalo-dorsal body, and a general account of the development of the embryo, with the nervous and tracheal systems. It is interesting to note that there are 21 segments in the bee embryo, and that appendages were observed on the antennal segment, the three gnathal segments, and the three thoracic segments; no abdominal appendages were found. As is usual in insect embryos, the second maxillae fuse to form the labrum. The total time normally required for the development of the egg is 76 hours. The short chapter on technique should prove useful to other workers. The book is well illustrated, the series of 5 plates containing 15 figures of the egg, taken in sequence at frequent intervals, from fig. 1, when the cleavage cells form only a small group at the anterior end of the egg, to fig. 15, showing the newly hatched larva, being quite first rate. The numerous text-figures of sections are very clear, while the bibliography gives references to many important papers on insect embryology.

Obituary.

Edward Alexander Waterhouse was born at Bayswater on November 27th, 1849, and was the youngest son of the late George Robert Waterhouse of the British Museum. At an early age he took to his father's pursuit, and collected British *Coleoptera*. Soon after leaving school he went to Yorkshire, as Curator of the Museum of the Earl de Grey (afterwards the Marquess of Ripon) at Fountains Hall. Here he naturally had to collect and study insects of all Orders, thus gaining a knowledge of British insects generally, becoming at the same time most skilful in mounting and setting them, perhaps to a degree rarely equalled. After a few years, as he saw no opening for advancement, he returned to London, and joined a firm of discount brokers. Here he was engaged for many years, until the failure of certain Australian banks broke up the firm, threw him out of employment, and involved him at the same time in heavy pecuniary loss. The Natural History Museum had at this time recently acquired the Power collection of British *Coleoptera*, and Mr. Waterhouse was employed (with Mr. Bertram Rye) to re-mount and arrange them. From this time forward he was regularly engaged in similar work, and when the Trustees determined to employ additional persons to cope with the setting of the ever increasing accessions, Mr. Waterhouse was appointed to superintend the work. Besides the Power collection above referred to, he mounted and arranged the Cameron collection of Saw-flies, the British *Hemiptera*, and, when the disease from which he died stopped his work in October, he had nearly finished preparing the collection of British *Homoptera* (including the Douglas, Scott, Norman and Jennings collections) for arrangement. This work, it is hoped, will be completed by his brother. Mr. Waterhouse never claimed great scientific attainments, and his writings were confined to short notices in various magazines. His first article in this journal appeared in May, 1865, and his last in August, 1915. He will be much missed by many entomologists, whom he used to aid in determining their insects. His large collection of British *Coleoptera* he amalgamated with his father's. The arrangement of this collection in his usual beautifully neat style he had fortunately recently completed. He died in a nursing home in Fulham, on February 2nd. He leaves a widow, one daughter and two sons, the elder of whom is in the Royal Engineers, and the younger has done good service in the Queen Victoria Rifles in France for more than twelve months.

Society.

ENTOMOLOGICAL SOCIETY OF LONDON: *Wednesday, January 19th, 1916*: ANNUAL MEETING.—The Hon. N. CHARLES ROTHSCHILD, M.A., F.L.S., F.Z.S., President, in the Chair.

The Balance Sheet was read by Mr. C. J. Gahan, one of the Auditors, and adopted on the motion of Mr. Stanley Edwards, seconded by Mr. Frisby.

The Rev. G. Wheeler, one of the Secretaries, then read the Report of the

Council, which was adopted on the motion of Mr. W. J. Lucas, seconded by Mr. C. B. Williams.

No other names having been received by the Secretaries in addition to those nominated by the Council as Officers and Council for the ensuing year, the latter were declared by the President, with the consent of the Meeting, to be elected.

The President then delivered an Address, illustrated by slides shown in the Epidiastroscope, after which a vote of thanks to him was proposed by Lord Walsingham, seconded by Mr. W. J. Kaye, and carried unanimously, with the request that the Address might be published as a part of the Proceedings of the Society.

The President having shortly replied, Mr. J. Hartley Durrant proposed a vote of thanks to the Officers of the Society for their services during the past year; this having been seconded by Mr. A. W. Bacot and carried, the Treasurer and both the Secretaries said a few words of thanks in reply.—GEO. WHEELER, *Hon. Secretary.*

HELP-NOTES TOWARDS THE DETERMINATION OF BRITISH
TENTHREDINIDAE, &c. (35).

BY THE REV. F. D. MORICE, M.A., F.E.S.

ERRATA AND ADDITIONS.

The following corrections are required in my Table of Generic Characters (*Ent. Mo. Mag.*, 1903, p. 187), besides the alterations of names proposed in No. 34 of these papers (June, 1915).

On p. 188, lines 3 and 4 should read thus:—

6 (15). Intercostal vein branched, one branch running into the costa, the other into the sub-costa.....*Pamphilus*.

— Intercostal vein simple; or, if branched, the upper branch breaks off without reaching the costa*Neurotoma*.

On p. 189, for lines 3-6 read:—

18 (16). Radial cell undivided, but sometimes with a small appendicular cell at its apex. Antennae multiarticulate, with short, broad, subtriangular joints in the ♀ ♀, and pectinated joints in the ♂ ♂18a.

18a (18). Humeral area with a cross nervure; ♂ antennae pectinated on both sides*Pteronus* (= *Lophyrus* auctt.)

— Humeral area contracted; ♂ antennae pectinated *only on one side* ...*Monoctenus*.

On p. 189, between lines 14 and 15, insert another line as follows:—

— Humeral area neither contracted nor petiolate, but either open or with perpendicular cross nervure*Rhogogaster*.

On p. 191 for line 17 read :—

- Either the two medial *nn.* are received in different cells, or the humeral area is not petiolate43.

Same page, lines 30 and 32 :—

For “gradually tapers to a point at apex,” read “cultriform. broad at base and short, constricting rapidly to a sharp point at apex.”

And for “suddenly acuminate at apex,” read “elongate, tapering gradually towards the pointed apex.”

Same page, for the last line of page substitute the following :—

- Praesterna not defined (a) Hind wing without a medial nerve...51.
(b) H.w. with a medial n....*Monophadnus*.

On p. 192, add as a footnote to line 24 :—

Aberrant specimens of *Rhogogaster aucupariae* frequently have an “open” humeral area, as in *Selandria*, *Thrinax*, etc. Such specimens are quite unlike any *Selandria*, but might be mistaken for examples of *Thrinax*, which they resemble, at least superficially. Their antennae, however, will distinguish them, the 3rd joint being considerably longer than the 4th. They could hardly be mistaken for any species of *Strongylogaster* or *Stromboceros*.

On p. 193, at the end of line 18, add :—

except in *Macrophya punctum album*, where they are short, stout and subfusiform.

cf. Ent. Mo. Mag., 1911, p. 103.

On p. 193, line 21 :—

For “tarsal” read “dorsal,”

And at end of line 34 :—

After “normal length,” add “humeral area always with short perpendicular *n.*”

On p. 193, the footnote as to *Allantus maculatus* should be cancelled, since I now follow Dr. Enslin in referring this species not to *Allantus*, but to *Tenthredella* (= *Tenthredo* Knw.).

I have now to correct errors and supply omissions in the separate accounts I have given of our various genera and the species contained in them. In each case I will begin by mentioning the number of “Help-Notes” in which the genus has been discussed, and the date of its appearance in Ent. Mo. Mag.

1.—No. 5 (October, 1903).

Neurotoma. Besides *flaviventris* we have another species, viz., *mandibularis* Zadd., which I have fully described in Ent. Mo. Mag.,

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By HOWARD NOTMAN.

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<i>sycophanta</i> Linn.	<i>pyrenaicus</i> Dej.	<i>montivagus</i> Pall.
<i>denticolle</i> Gebl.	<i>irregularis</i> Fabr.	<i>nitens</i> Linn.
<i>auropunctatum</i> Herbst.	<i>creutzerii</i> Fabr.	<i>maeander</i> Fisch.
<i>reticulatum</i> Fabr.	<i>intricatus</i> Linn.	<i>auratus</i> Linn.
Callisthenes.	<i>croaticus</i> Dej.	<i>clathratus</i> Linn.
<i>eversmannii</i> Chaud.	<i>violaceus</i> Linn.	<i>granulatus</i> Linn.
Damaster.	<i>v. crenatus</i> Sturm	<i>cancellatus</i> Illig.
<i>blaptoides</i> Kollar	<i>exaratus</i> Quens.	<i>arvensis</i> Herbst.
Procerus.	<i>variolosus</i> Fabr.	<i>catenatus</i> Panz.
<i>gigas</i> Creutz.	<i>hispanus</i> Fabr.	<i>christoforii</i> Spence
Procrustes.	<i>auronitens</i> Fabr.	<i>obsoletus</i> Sturm
<i>coriaceus</i> Linn.	<i>adamsii</i> Adams	<i>v. euchromus</i> Pall.
<i>impressus</i> Klug	<i>v. armeniacus</i> Mannh.	<i>monilis</i> Fabr.
Carabus.	<i>melancholicus</i> Fabr.	<i>maurus</i> Adams
<i>hemprichii</i> Klug	<i>v. costatus</i> Germ.	<i>scabriusculus</i> Oliv.
	<i>rugosus</i> Fabr.	<i>hortensis</i> Linn.
	<i>morbillosus</i> Fabr.	<i>guadarramus</i> Laff.
	<i>numida</i> Casteln.	<i>stahlinii</i> Adams
	<i>convexus</i> Fabr.	<i>alpestris</i> Sturm
	<i>marginalis</i> Fabr.	<i>bertolinii</i> Kr.

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G. C. CHAMPION, F.Z.S. J. E. COLLIN, F.È.S.

W. W. FOWLER, D.Sc., M.A., F.L.S.

R. W. LLOYD, F.E.S. G. T. PORRITT, F.L.S.

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VOLUME LII.

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Arrangements have been made by the Lepidoptera Committee of the above Society for a Member of the Committee to attend at Salisbury House at 6.30 p.m. on Meeting Nights (1st and 3rd Tuesdays in each month, except July and August), for the purpose of giving advice and assistance to young entomologists, whether members of the Society or not. A cordial welcome will be extended to any who care to avail themselves of this arrangement.

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Chingford Branch. The Chingford Local Branch meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the 2nd Monday in each month.

July, 1910. Its colour distinguishes it at once from *flaviventris*: dark metallic blue, with yellow mandibles, and the hind tibiae partly white.

Pamphilius. Two species have to be added to my Table, viz., *gyllenhali* Dhlb., and one which I believe to be *vafer* L.

P. gyllenhali has been described in Ent. Mo. Mag., March, 1905. It comes next to *betulae*, having—like that species—the “frons” strongly bituberculate, but the head in the ♀ is black, with yellow markings (not red as in *betulae*), the scutellum is yellow, and the abdomen has only a narrow (yellow) central band.

P. vafer comes next to *depressus*, from which it differs chiefly by its smoother and more shining head, with a much feebler and less close puncturation (especially in the ♀). It is also less copiously marked with yellow, but the sculpture of the head is a more reliable character. Of this species I have a ♂ from Sherwood Forest (Donisthorpe, June, 1907); another ♂, with no stated locality, from Dr. Capron's collection, and a ♀ taken by myself at Woking, on June 9th, 1914.

P. pallipes, which I doubtfully included in my Table, is certainly British. Mr. Atmore has taken it more than once near King's Lynn.

P. balteatus and *hortorum* were stated by me to differ in the comparative lengths of the 3rd and 4th antennal joints. That character is given by Konow, but I am unable to recognise it in my own specimens. The 3rd joint appears to me more than twice as long as the 4th in both!

However, the two species are so differently coloured that there can be no difficulty in separating them.

No. 6 (November, 1903).

Hartigia (= *Macrocephus*) *linearis*. Mr. Sheldon has kindly given me many fine ♂♂ and ♀♀ of this sp., which he bred in June, 1915, from stems of *Agrimonia eupatoria*.

H. satyrus. This species is called in several old collections “*niger* Harris,” and if the identification be correct, *niger* is the older name. But Harris's figure does not seem to agree with his description, and I cannot recognise the characters of *satyrus* in either. On the whole, I think that “*Syrex niger* Harris” must remain a mystery. The species referred to it by Konow belongs to a genus (*Eumetabolus* Schulz = *Astatus* Knw., nec Jur.) which, to the best of my belief, has no claim to a place in the British fauna; nor have I ever understood on what grounds Konow decided that this species was the true *niger*. (It is figured by Panzer as “*Astatus troglodytus*.”)

Astatus Jur. nec Knw. (= *Cephus* auctt.) *pilosulus* Th. Dr. Perkins has taken, last summer, in S. Devon a number of ♂♂ and ♀♀ which he refers (I believe quite rightly) to this species. Owing to their unusually dark coloration, I was inclined at first to identify them with *brachycercus* Th., but the ♀♀ certainly have not the very short terebra which seems to be a conspicuous character in that species. Some of the ♂♂ have the bases of the hind-legs immaculate, and Thomson uses this character to separate *brachycercus* from *pilosulus*; but in others they are distinctly spotted with yellow. Again, one ♀ has no entire yellow bands on the abdomen, only small lateral spots as in *brachycercus*; but in another (and, in fact, in most of the specimens both ♂♂ and ♀♀) the bands are well developed. It seems just possible that they may belong to a "new species," but I think it is safer at present to treat them as a form of *pilosulus*, to which, according to my Tables, they should belong.

Janus cynosbati. Following, or possibly misunderstanding, a MS. communication from Konow, I referred this species to "F. nec L.," but later Konow definitely accredited the species to Linné. (In v. Dalla Torre's Catalogue it is called *cynosbati* F. with *cynosbati* L. as a doubtful synonym). In any case *cynosbati* F. is either a later equivalent of *cynosbati* L., or a "homonym" of it and consequently invalid. Therefore, for "F. nec L." read "L." simply!

J. luteipes, according to Konow's latest view, is a "good species," vide Ent. Mo. Mag., May, 1908.

No. 7 (February, 1903).

Page 34, line 6. Besides *gigas* and *noctilio* a third form of *Sirex*, the true *juvencus*, occurs, though rarely, in this country (cf. Ent. Mo. Mag., May, 1908). In this insect the antennae are more or less widely rufescent at the base. Both *noctilio* and *juvencus* differ from *gigas*, besides the characters given by me, in an important point of neuration, the two former having the brachial area in the forewing crossed by two nervures, while in *Sirex* it is only crossed by one. On this ground Konow removes *noctilio* and *juvencus* into a new genus, *Paururus*, which contains one other Palaearctic (but not British) species, and several from America. One of the latter (viz., *Paururus cyaneus* F.) has been taken in several specimens (♀♀) by Mr. Harwood at Colchester, no doubt imported in timber. It looks like a remarkably large and brilliant form of *noctilio*, but can be readily separated from that species by its long ovipositor—hardly shorter than that of *gigas*, and much longer than those of *noctilio* and *juvencus*.

[Since writing the above, I have seen in the late Dr. Mason's collection, now at Cardiff, several other ♀ ♀ of *cyaneus* F., without date or locality stated, but supposed to have been taken in Britain.]

Oryssus abietinus (cf. Ent. Mo. Mag., March, 1904) certainly occurs at times in these islands, and may possibly be indigenous. But it seems more probable that it is merely a chance visitor, imported in timber from the Continent.

(To be continued.)

NOTES ON MELANDRYIDAE (3).

BY G. C. CHAMPION, F.Z.S.

(Continued from page 59.)

EUDIRCAEA, n. gen.

Antennae with joint 2 small, not half the length of 3, 3-11 longer than broad, greatly dilated, and compressed, 7-11 tapering, 11 feebly constricted at the middle; maxillary palpi long, joint 2 elongate-triangular, about as long as 4, 3 transverse, 4 elongate, cultriform; head rather small, vertical; eyes transverse; prothorax subtruncate at the base, leaving the scutellum exposed, margined laterally from about the middle backward; scutellum flattened, transverse, trapezoidal; elytra very elongate, parallel; prosternum with the ante-coxal portion short, triangularly extended backward between the very large, conical, contiguous coxae, the pleural suture obsolete; intermediate coxae separated by a lanciform mesosternal process; tibiae each with two long, subequal, simple spurs, the intermediate and posterior pairs notched along their outer edge; anterior tarsi broadly dilated in ♂; posterior tarsi with joints 1 and 2 compressed, much widened in ♂; penultimate joint of each tarsus short, small, bilobed.

Type: *E. laticornis*.

This genus, including two species, is the Tropical American representative of *Dapsiloderus* Fairm., and *Dapsiloderinus* Ch., differing from these Eastern forms in the non-serrate, more tapering antennae, with almost simple terminal joint, the transverse scutellum, the unnotched elytral suture, the compressed first and second joints of the posterior tarsi, the short, bilobed third joint of the latter, the relatively larger second joint to the antennae, etc. The contiguous anterior coxae are as large as in *Dapsiloderus*, the intermediate coxae separated by a narrow mesosternal process as in *Dapsiloderinus*; the terminal joint of the maxillary palpi is cultriform, and much larger than in *Dapsiloderus*. The ♂ tarsal characters, too, are very pronounced in the American insects.

1.—*Eudircaea luticornis*, n. sp.

Very elongate, opaque; black, the apical joint of the antennae, two spots on the head in front (sometimes indistinct or obsolete), and a broad, posteriorly widened, sub-marginal vitta on each side of the prothorax, ochreous; the elytra variable in colour—in one specimen black, with a ferruginous humeral patch extending downwards along the outer margin, in the others ochreous, with a large common patch on the disc, extending forwards along the suture to the base, and the apex very broadly, black (leaving an angulate post-median fascia, the base and sides ochreous); very densely, minutely, reticulato-punctulate, the elytral humeri transversely asperate; clothed with fine sericeous pubescence. Antennae with the third and following joints broad, longer than wide, 7–11 gradually becoming narrower, 11 elongate-oval. Prothorax transverse, rounded at the sides, sub-truncate at the base, the hind angles directed backward; obsoletely canaliculate and foveate in the middle behind, and with a rather large, oblique, triangular depression on each side before the base midway between this and the outer margin. Elytra quadricostate, the first ridge prominent, the third evanescent anteriorly, the fourth sub-marginal. Anterior tarsi broadly dilated, and posterior tarsi with joints 1 and 2 much widened, in ♂. Length $7\frac{1}{2}$ – $12\frac{1}{2}$, breadth 2 – $3\frac{1}{4}$ mm. (♂ ♀.)

Hab.: BRAZIL, Rio de Janeiro (*Fry*).

Described from a pair in good condition, the female wanting the angulate post-median ochreous fascia on the elytra. Two other females, resembling the ♂ in colour, have been injured by pinning.

2.—*Eudircaea xanthura*, n. sp.

Very elongate, opaque; black, the elytra with nearly the apical third or more, the prothorax (♂) with a sub-marginal sinuous stripe on each side extending on to the base of the elytra, and the apical two (♂) or three (♀) joints of the antennae, ochreous; very densely, minutely, reticulato-punctulate, the minute punctures on the elytra transversely confluent, the humeri transversely asperate; clothed with fine sericeous pubescence. Antennae with the third and following joints broad, longer than wide, 7–11 gradually becoming narrower, 11 elongate-oval. Prothorax transverse, rounded at the sides, sub-truncate at the base, the hind-angles rather sharp and directed backward; obsoletely canaliculate and foveate in the middle behind, and with a shallow, oblique depression on each side before the base midway between this and the outer margin. Elytra each with three faint costae—two on the disc near the suture, the other sub-marginal, the suture also raised posteriorly, the space between it and the first costa deeply excavate from about the middle to near the tip in ♂. Anterior tarsi broadly dilated, and posterior tarsi with the strongly compressed joints 1 and 2 much widened, in ♂. Length $10\frac{1}{2}$ – $12\frac{1}{2}$, breadth $2\frac{1}{2}$ –3 mm. (♂ ♀.)

Hab.: COLOMBIA (*Mus. Brit.*).

One pair, the two sexes differing in the colour of the prothorax and in the number of ochreous terminal joints to the antennae. The more feebly tricostate elytra separates *E. xanthura* from *E. laticornis*, apart from differences in colour, etc.

SCOTOCHROA Lec.

In my remarks on *Xylita* (Ent. Mo. Mag., LI., p. 139), it was stated that the Canadian *X. buprestoides* of Kirby (Faun. Bor.-Am., IV., p. 240) could not be identified. Fresh examination, with a specimen of *S. basalis* Lec., captured by my son at Mt. Manitou, Colorado Springs, on Aug. 31st, 1915, for comparison, shows it to be almost certainly *S. atra* Lec., the type of which was from the White Mts.; but the Canadian insect seems to be more roughly sculptured and lighter in colour.

SYMPHORA Lec.

A genus based on two N. American forms, seven having been subsequently added by myself from more southern regions. Two from Brazil and one from Mexico are contained in the Fry Collection at the Museum. The species here described are so like Anaspids that they might readily be mistaken for such.

1.—*Symphora infuscata*, n. sp.

Moderately elongate, narrow (δ), broader (♀), shining, finely pubescent; piceous or nigro-piceous, the four basal joints of the antennae testaceous; the head sparsely, the prothorax and elytra densely, finely punctate, the punctures on the elytra a little coarser and less closely placed than those on the prothorax. Head with a deep frontal suture; antennae (δ) long, slender, filiform, joint 2 short, less than half the length of 3, 3-5 sub-equal, 6-10 shorter, decreasing in length, 11 oval—(♀) much shorter, extending very little beyond the humeri, joint 3 elongate, 4-10 rapidly decreasing in length, 4 about half as long as 3; terminal joint of maxillary palpi stout, oval, obliquely truncate at apex. Prothorax short, trapezoidal, shallowly transversely grooved before the base. Elytra slightly wider than the prothorax, moderately long, sub-parallel in their basal half. Legs slender; penultimate joint of tarsi simple. Length $2\frac{1}{5}$ - $3\frac{1}{4}$, breadth $\frac{7}{8}$ - $1\frac{1}{4}$ mm. (δ ♀).

Hab.: BRAZIL, Rio de Janeiro (*Fry*).

One pair, the female considerably larger than the male, and with much shorter antennae. Less convex than the Guatemalan *S. ruficeps* Champ., wholly infuscate (the bases of the palpi and antennae excepted), the head smoother, the elytral punctuation less dense.

2.—*Symphora longicornis*, n. sp.

♂. Elongate, narrow, somewhat fusiform, moderately shining, finely pubescent, obscure testaceous; densely punctate, the punctures on the head and prothorax more or less confluent (their sculpture thus appearing granulate or rugose). Head with distinct frontal suture; eyes deeply emarginate, separated by a little less than their own width; antennae very long, filiform, slender, joint 2 short, one-third the length of 3, 3-11 elongate, sub-equal in length. Prothorax strongly transverse, convex, trapezoidal, slightly compressed towards the sides, without trace of foveae, the hind angles rather sharp. Elytra long, very gradually narrowed from the base, and there very little wider than the prothorax. Legs long, slender; tarsi with a small, narrow penultimate joint, joint 1 of the posterior pair longer than the others united, feebly curved. Length $2\frac{1}{2}$ -3, breadth $1-1\frac{1}{10}$ mm.

Hab.: BRAZIL, Rio de Janeiro (*Fry*).

Described from three males, a single imperfect, darker example, with shorter and more slender antennae, smaller eyes, and a blackish prothorax, doubtless belonging to the same species. The very long, filiform, unicolorous antennae of the male, the coarser surface-sculpture, and the pallid coloration, separate *S. longicornis* from *S. infuscata*. The Guatemalan insect described by myself under the name *Microtonus gracilis* is also very similar.

3.—*Symphora lanceolata*, n. sp.

♀. Elongate, narrow, convex, lanceolate, feebly shining; brown, the head rufescent in front, the antennae and palpi testaceous; the entire upper surface densely scabroso-punctate, finely pubescent. Antennae very slender, sub-filiform, moderately long, joints 3-10 gradually decreasing in length, 3 twice as long as 2, 11 longer than 10. Eyes distant. Prothorax transverse, gradually narrowing from the base, and there as wide as the elytra, the sides forming a continuous outline with those of the latter, unimpressed. Elytra very long, rapidly narrowed from about the middle, the sculpture transversely reticulate. Legs long; tarsi with a small, narrow penultimate joint, joint 1 of the posterior pair longer than the others united. Length $3\frac{1}{4}$, breadth 1 mm.

Hab.: MEXICO (*Truqui, ex coll. Fry*).

One female, very different from any of the Mexican forms previously described, the elytra being unusually elongate, and at the base of the same width as the prothorax. The resemblance to *Anaspis* is intensified by the transverse reticulation of the elytra.

MICROTONUS Lec.

This genus, type *M. sericans* Lec., was included by Leconte and Horn in the Oedemeridae, and the same position was given it in the "Biologia." *Microtonus*, it seems to me, would be better placed in

Melandryidae, near *Symphora*, with which it is connected by intermediate forms. Some of these latter, however, require further study, but the available material is much too scanty for the purpose. *M. nitidulus* Champ., superficially resembles the N. American *Mallogrya subaenea* Horn, except that it is very much smaller and more slender, and has a narrower prothorax. The genus has been recorded from Japan, and an insect found by Mr. Andrewes in the Nilgiri Hills, India, too imperfect to describe, may belong here.

MELANDRYINA.

PROTHALPIA Lec.

In Ent. Mo. Mag., LI, pp. 139, 140, the N. American *Dircaea holmbergi* Mann. (= *Hypulus fulminans* Lec.), was stated to be a *Marolia*, on the authority of Hamilton (Canad. Entom., 1892, p. 299). Since the above remark was written, I have been able to examine a specimen of *Prothalphia undata* Lec., and find that Mannerheim's insect undoubtedly belongs to the same genus, and is, indeed, extremely closely allied to *P. undata*. *Marolia*, therefore, unless *H. fulminans* has been wrongly identified with *D. holmbergi*, will have to be erased from the American Catalogues; the type of *Marolia*, *M. variegata* Bosc, is an apterous insect, with a comparatively long prothorax and ovate elytra. Specimens of *P. holmbergi* from Metlakatla and Queen Charlotte Island have been presented by the Rev. J. H. Keen to the Museum. The genus *Diegoa*, type *D. picta*, from Madagascar, is compared by Fairmaire with *H. fulminans* Lec.

PENTHINA.

PENTHE Newm.

The seven known species of this genus are from N. America, Japan, Sumatra, Java, and the E. Indies. An undescribed form in the British Museum is so different from the others that it seems advisable to name it, though the insect has no locality label attached.

1.—*Penthe metallica*, n. sp.

Oblong-oval, broad, rather convex, shining; nigro-caeruleous above, brilliant bluish-green beneath, the scutellum cupreous; head, prothorax, and scutellum densely, finely, confluent punctate, the elytra closely impressed with intermixed rather coarse, and very small, punctures, the larger punctures sub-seriately arranged on the outer part of the disc and becoming much finer towards the apex; the scutellum thickly clothed with adpressed ochreous hairs, the rest of the upper surface with darker hairs, the under-surface cinereo-pubescent. Head

small, sharply sulcate down the middle anteriorly; antennae long, slender, joints 7-11 flattened, and very broadly, obliquely dilated, 3 elongate, as long as 4 and 5 united. Prothorax more than twice as broad as long, rounded at the sides anteriorly, the hind-angles rectangular, the base sinuate, the basal foveae rather deep. Scutellum very large. Elytra moderately long, broad, very much wider than the prothorax, sub-parallel in their basal third, compressed at the sides behind the tumid humeri. Beneath closely, finely, the metasternum very sparsely, punctate; prosternal process rather broad, abruptly declivous behind. Length 9, breadth 5 mm.

Hab.: ? INDO-CHINA (*ex coll. Bowring*).

One specimen, acquired in 1871. Easily recognised by the very broad, flattened, 5-jointed antennal club, the metallic-blue upper surface, and the large, ochreo-pubescent, cupreous scutellum. *P. obliquata* F. has a similarly clothed scutellum.

SYNCHROINA.

SYNCHROA Newman.

Synchroina Fairmaire, Ann. Soc. Ent., Fr., 1898, p. 399.

The type of the genus *Synchroina*, *S. tenuipennis*, Fairm., from Sumatra and Perak, differs from the N. American *Synchroa punctata* Newm., and the very closely allied *S. melanotoides* Lewis, from Japan, in having the raised anterior portion of the mesosternum horizontal and more deeply sulcate for the reception of the prosternal process; but these characters are insufficient for generic separation, the mesosternal sulcus being quite obvious in *Synchroa*. Fairmaire was doubtless unaware that two species of *Synchroa* had been recorded from Japan in 1895. A fossil from the Colorado Miocene was described by Wickham (in 1911) under the name *S. quiescens*.

1.—*Synchroa cuneata*, n. sp.

Elongate, narrow, fusiform, shining, thickly clothed with long, decumbent, fulvous hairs; fusco-castaneous, the elytra with a broad, common, attenuate sutural stripe, and the antennae, femora, and tibiae, piceous. Head short, strongly transverse, closely punctate; antennae slender, not half the length of the body. Prothorax transverse, arcuately narrowed anteriorly, bisinuate at the base, completely margined at the sides; rather coarsely punctate, the punctation finer and more diffuse on the disc, the basal foveae deep. Elytra not wider than the prothorax, moderately elongate, rapidly narrowed from a little below the base, rather sparsely, confusedly, aciculato-punctate, the punctures moderately coarse at the base, becoming much finer towards the apex, the sutural stria deeply impressed along the apical third. Beneath coarsely, closely, the ventral surface finely, punctate. Mesosternal process horizontal, deeply sulcate anteriorly for the reception of the prosternal piece. Length 8, breadth $2\frac{1}{10}$ mm.

Hab.: S. E. BORNEO, Martapura (*Doherty*).

One specimen, captured in 1891, from the Sharp Collection. Apparently very near the Malayan *Synchroina tenuipennis*, but with the elytra so rapidly narrowed from a little below the base as to appear cuneiform, the suture broadly infusate, and the sutural stria deeply impressed along the apical third.

ISCHYOMIINA.

ISCHYOMIUS Chevrolat.

When my remarks on this monotypic Tropical American genus were written (*B. C.-Am.*, Coleopt., IV, 1 pp. 258, 259, 1886), a single species only was known to me, this being a common insect in Chiriqui. Three others have recently been detected in the Museum, one of which, from Colombia, agrees better with Chevrolat's very brief diagnosis of *I. singularis* than the Chiriqui specimens referred by me to his species. These latter, therefore, require a new name. The characters of *Ischyomius* were given in detail (*l.c.*). The genus was at first placed under Tenebrionidae, and subsequently transferred (*op. cit.* iv, 2, p. 97) to Melandryidae, on account of the open anterior coxal cavities.

1.—*Ischyomius singularis*.

Ischyomius singularis Chevrolat. Mittheil. Münch. ent. Ver. ii, p. 98 (1878) (nec Champ.). *Amphora complanata* de Brême in litt.

Hab.: COLOMBIA, Honda and Bogota.

Two specimens from Colombia (one of which was received by the Museum in 1846, under the MS. name of *Amphora** *complanata* de Brême, the other acquired with the Bowring Collection in 1871) are doubtless referable to *I. singularis* Chevrolat, from the same country, as they show a definite angulation at the sides of the prothorax above the deflexed anterior angles, which is altogether wanting in the long series of the Chiriqui insect identified by me as that species. The definition of the prothorax as having "angulis quatuor rectis, acutis" must have been inaccurate as regards the anterior angles, and the same remark applies to "scutellum rotundatum."

2.—*Ischyomius denticollis*, n. sp.

Very elongate, shining, testaceous, the elytral suture slightly infusate; the punctuation of the upper surface moderately coarse, scattered, and irregular;

* This generic name was used for a Curculionid by Wollaston in 1854.

prothorax flattened, transversely quadrate, a little narrowed posteriorly, the sides parallel at the base, the anterior angles dilated into an oblique, laterally projecting, triangular tooth, the hind angles sharply rectangular, the basal foveae large, rounded, deep. Elytra very long, wider than the prothorax, rapidly narrowing from about the basal third, the spine at the outer apical angle elongate, the inner angle angulate, the sutural stria extending to about the apical half. Length (excl. spine) $10\frac{1}{2}$, breadth 3 mm. (♀?).

Hab.: ? COLOMBIA (*ex coll. Bowring*).

One specimen, certainly from Tropical America, acquired with *I. singularis* by the Museum in 1871. Distinguishable from *I. singularis* by the laterally projecting, dentiform, non-deflexed anterior angles of the prothorax, and the more elongate elytra, with longer apical spines.

3.—*Ischyomius chevrolati*, n. sp.

Ischyomius singularis, Champ., B. C.-Am., Coleopt., IV, I, p. 259, pl. 11, figs. 17 & 17 *a, b, c* (1886).

Castaneous or rufo-testaceous; prothorax slightly narrowed posteriorly, with rather stout, strongly reflexed lateral margins, which are sinuate behind the middle, the anterior angles rounded, without trace of angulation above, the hind angles acutely rectangular, the basal foveae large and deep; the puncturing of the upper surface coarse, scattered, and irregular, becoming more diffuse on the prothorax and fine towards the apex; the spine at the outer apical angle of the elytra long in ♀, shorter in ♂, the sutural stria extending to about the apical third. Length 7-11, breadth $2-3\frac{1}{2}$ mm. (♂ ♀).

Hab.: PANAMA, Chiriqui.

A common insect in withered banana leaves in Chiriqui.

4.—*Ischyomius bicolor*, n. sp.

Elongate, fusiform, shining; castaneous, the head (the mouth-parts excepted), antennae, and prothorax black, the tibiae more or less infusate. Head sparsely, irregularly, the vertex closely, punctate, the transverse interocular groove almost smooth; eyes large; antennae with joints 4-10 more or less serrate. Prothorax transverse, somewhat convex, sharply margined, the sides parallel at the base, sub-angularly dilated at a little beyond the middle, and arcuate thence to the deflexed, obtuse, anterior angles, the hind angles acute and rectangular, the base sinuate; sparsely, rather coarsely, irregularly punctate, the basal foveae large, rounded, and very deep. Elytra long, about as wide as the broadest part of the prothorax, rapidly narrowing from about the basal third, somewhat broadly margined at the sides, the apices obliquely truncate, the outer apical angle obtuse, the inner one sharply rectangular; sparsely, rather coarsely, irregularly punctate, the abbreviated sutural stria deeply impressed towards the apex, the humeri depressed within. Ventral

segments closely, the sides of the metasternum coarsely and more sparsely, punctate. Length 11, breadth $3\frac{1}{4}$ mm.

Hab.: ECUADOR, Sarayacu (*Buckley*).

One specimen. Differs from its unicolorous allies in the black head, antennae, and prothorax, serrate antennae, larger eyes, and unarmed apices of the elytra, the prothorax more convex and sub-angularly dilated at the sides at a little beyond the middle, the anterior angles deflexed as in *I. chevrolati*.

(*To be continued.*)

STUDIES IN HELOPHORINI.

BY D. SHARP, M.A., F.R.S.

9.—*HELOPHORUS* (*continued from Vol. LI, p. 277*).

13.—*Helophorus exasperatus*, sp. n.

H. mulsanti persimilis. Color sordidus, capite aeneo-nigro, thorace fusco-testaceo, latera versus dilutiore, dorso subaenescente, elytris fusco-testaceis vage maculatis; fortiter sculpturatis, elytris interstitiis alternatis subelevatis, seto-sellis; antennis, palpis pedibusque testaceis. Long. 4 mm.

Quite similar in appearance to the smaller, darker variety of *mulsanti*, but with the sculpture of the head and thorax rather coarser, and the thorax a little differently shaped: in *mulsanti* the greatest width is before the middle; in *exasperatus* it is almost in the middle, and the lateral margin is broader. The legs are scarcely so stout.

Hab.: Marocco, Esmir and Tetuan, 3 specimens (*Walker*).

I have seen no specimens of *mulsanti* except from Britain. As it is variable it is not improbable that examples from southern Europe may connect *exasperatus* with it. (Aedeagus, fig. 35.)

14.—*Helophorus arabicus*, sp. n.

Convexus, niger, elytris brunneis, antennis, palpis pedibusque rufis, capite thoraceque vix metallescentibus, hoc obsolete sculpturato, versus latera rufescente; elytris fortiter profundeque punctatis, interstitiis sub-elevatis. Long. 3-4 mm.

In the colour, the convex form, and the sculpture of the elytra, this insect bears some resemblance to small *H. laticollis*. Palpi short, the terminal joint a good deal thickened, so as to approach the shape of that of *Atracthelophorus*. Channel of the vertex wider in front. Thorax broad, rather short and convex, median groove moderately broad and deep, sub-median a good deal sinuate, sculpture obsolete, even the granulation at the sides being indistinct. Elytra not elongate, lateral margin rather strongly outstanding in the middle. Beneath black, flanks of elytra moderately visible.

Hab.: Hedjaz (Millingen), a small series varying a good deal in size, but not in other respects.

The aedeagus (fig. 36) differs but little from that of *H. fryanus* q.v. It is slightly smaller and the lateral lobes perhaps straighter externally.

15.—*Helophorus infelix*, sp. n.

Sat convexus, niger, elytris bruanis, capite thoraceque obscure metallescentibus, palpis, antennis pedibusque rufis; thorace obsolete granulato, latera versus pallidior; elytris fortiter punctatis, interstitiis angustis sat convexis. Long. 2 $\frac{3}{4}$ mm.

Palpi moderately long, terminal joint a little thickened, not black at the tip. Thorax distinctly emarginate behind the eye, short, the sides but little rounded, middle groove rather large, median interval distinctly angulate externally, sub-median groove rather broad, lateral margin very little set out, flavescent; the sculpture an effaced granulation. Elytra rather short and convex, punctures large, as broad as the intervals. On the under-surface the flanks of the elytra are visible.

Hab.: Hedjaz (Millingen).

Though I have seen only one specimen there can be no doubt it is a species closely allied to *H. arabicus*, but distinct, being narrower, less convex, and with the thorax a little different in form, colour and sculpture. Though probably a male, I have not ventured to examine the aedeagus.

16.—*Helophorus spinifer*, sp. n.

Angustus, subparallelus, parum convexus, capite thoraceque nigro-submetallicis, elytris testaceo-obscuris, antennis, palpis pedibusque testaceis; fortiter sculpturatus. Long. 2 $\frac{1}{2}$, lat. 1 mm.

Hab.: Russia or. (Orenburg, Faust).

A very distinct little insect, distinguished by its small size, narrow, parallel-sided form, and slight convexity, with rather coarse sculpture, and the quite visible flanks of the elytra (fig. 71). The surface of the thorax is granulate even on the median intervals, the sub-median groove is only very slightly sinuous, and the lateral margin is fine, with very little trace of any yellow colour. The punctures of the elytra are large, and the interstices narrow; there is a slight post-basal depression, and the dark yellow, or brown, colour is very little variegate. The legs are slender. Wings long, slightly tinged with yellow.

I received three specimens from the late Herr J. Faust, of Libau, as No. 52, labelled "*H. granularis* vel sp. n." They are in a rather decayed state so that the natural colour of the elytra is a little doubtful. There is no nearly allied species known to me; the aedeagus (fig. 37)

is somewhat of the type found in *H. minutus*, but the struts of the median lobe are definitely longer, and the anterior extremity of the basal piece is remarkably spine-shaped, whence the name of the species.

17.—*Helophorus fausti*, sp. n.

Latus, convexus, fortiter sculpturatus; antennis, palpis pedibusque flavis; capite thoraceque metallicis, elytris testaceis, parum maculatis. Long. 2 $\frac{3}{4}$ mm., lat. 1 $\frac{1}{4}$.

Hab.: Russia or. (Orenburg, Faust).

Resembling *H. granularis*, but a little larger, more brightly coloured, and differing in the form of the epipleuron, which is formed much as in *H. spinifer*, from which species *fausti* departs strongly in shape. Palpi, antennae and legs pale yellow, the palpi rather slender, the terminal joint of the labial pair specially long and thin. Head and thorax cupreous rather than brassy. Thorax shaped much as in *granularis*, but with the median intervals a little depressed in front. Elytra with sculpture rather stronger than in *granularis*, without post-basal depression; the flanks distinctly visible on the underside, the true epipleuron being very narrow at the level of the hind-coxae.

This species also bears some resemblance to *H. dorsalis* Marsh. (= *quadrisignatus* Bach in Cat. Zaitzev), but it is a considerably smaller insect, differently coloured, with very strong differences in the thorax.

I have seen only two specimens, received from Herr J. Faust as "*granularis* var.?" One is certainly, the other probably, a female.

The Champion collection contains a very similar form from Pomerania sent by Reitter as "*pumilio*"; it is allied to *fausti*, but has a short, thick terminal joint to the labial palpi, and a somewhat different thorax. This insect probably represents another nondescript species.

H. similis, described by Kuwert from Orenburg, is based on imaginary characters, but the subsidiary points he mentions show that it is neither *fausti* nor *spinifer*.

18.—*Helophorus dorsalis* Marsh., Steph.

H. quadrisignatus Bach, Zaitzev Cat. Hydroph.

This species is usually easily recognisable by the existence of several large paler marks on the elytra. These marks are variable however, and sometimes can be hardly detected. In that case the more than usually smooth or shining thorax, and the large punctures of the elytra permit of its identification. It is a rare species everywhere, so that I have seen but few specimens, but these indicate it as very variable in

colour. An example from Vienna (coll. Champion ex Reitter) has the elytra entirely of a deep black colour. The aedeagus is remarkable on account of its short broad form; unfortunately I have been able to examine it in only a single and immature specimen.

There has been great confusion as to the name of this species, owing to mistakes made by Mulsant and Rey. Marsham's description of "a large, dark, common mark on the elytra, in which dark mark are placed two pale spots," agrees well with specimens of the insect in which the anterior marks are rather indefinite, and is not applicable to any other British *Helophorus*. Add to this that Stephens (who acquired Marsham's collection) described and figured *H. dorsalis*, and that his *dorsalis* is certainly the species under consideration, it must be admitted that there is no doubt as to this name. Mulsant appears to have at first identified the insect with the species I have below named *H. illustris*, while subsequently it was confused with *H. mulsanti* q.v.

I can say but little as to the distribution of the species, as I have seen but few examples, and the records appear to be not trustworthy. A specimen from East Siberia (Irkutsk, coll. Fry) appears to be certainly *H. dorsalis*.

(To be continued.)

NOTES ON THE COLEOPTERA OF CROWTHORNE

(A PARISH OF BERKSHIRE).

BY W. E. SHARP, F.E.S.

The village, or rather settlement, of Crowthorne, for it owes its quite recent origin to the immediate proximity of a large Government institution on one side, and that of a well-known public school on the other, lies so closely in the south-eastern angle of the county of Berks, that from its centre a walk of some three miles southward will take one into Hampshire, while westward, Surrey lies not more than five miles distant.

The cottages and small houses which form the nucleus of this village, lie enveloped by the wide-spread woods of Scots pine of what was once the Royal Park of Windsor. The soil of the whole region is that soft grey sand known to geologists as the "Bagshot beds," one of the components of our Eocene Tertiary, as ill suited for agriculture as it is good for *Coleoptera*. Northward these sandy beds run nearly to the

Thames, where they meet the London clay, while in other directions they are terminated at a greater or less distance by the surrounding chalk. Formerly, and that not more than a century ago, the whole country, at the south-western edge of which Crowthorne now stands, must have been a barren and inhospitable waste. Here it was that the guard of the Bristol coach used to look well to the priming of his pistols, for the notorious Bagshot Heath formed part of the district in question. Indeed, these great stretches of woodland, which to-day form the salient feature of the locality, are but of quite recent growth. A Government Report before me gives their planting as not more than 30, 40, or, in the case of the oldest woods, 80 years ago; and there still remain evidences of its former condition—a few very aged beeches and occasional oaks among the pine trees, while the mossy hollows and abundantly scattered birches testify to a state of things more like a Lancashire “moss” than really old forest land. These hollows have been, in many cases, deepened and banked up, so that the numerous “meres” and pools, which form so attractive a feature in the scenery of the district, are mostly artificial.

Hence it comes that there is a distinct dualism in its flora and fauna. There are the plants, the birds, and the insects of the old heaths and mosslands, and even of the scattered genuine woodland which, two centuries ago, had preceded them; and then there is the fauna, especially the Entomological fauna, which has been introduced, or at any rate stimulated and extended, by the arrival in predominating numbers of the Scots firs on the scene; and it is the attempt to distinguish or disentangle these separate elements in the fauna of our district that makes its study so interesting.

Now it is far from my purpose to tabulate here all that is known of the *Coleoptera* of the country immediately round Crowthorne, or to make any record of its species. Abler pens than mine have contributed to the pages of this Magazine, during recent years, many and interesting records of the fauna of “Wellington College” (which, however, is a building and a station, and not a locality). Moreover, much of this district is so near, and corresponds so closely with (to the Coleopterist) the almost classic field of Woking, Horsell, and Chobham, and West Surrey generally, that their recording from Crowthorne would appear to be little better than repetition. Yet a few notes, due to the continuous attention given to some special element in the fauna of even the most limited area, are sometimes of interest, and this must be my excuse for the fragmentary observations which follow. The phenomenon

which, perhaps, first arrests one's notice in such a survey is the striking disparity between the predominance of species during two successive years in the same locality. Take a few instances, drawn from an area of not more than one square mile of pine wood, broken by open heath, where broom, furze, and small birches grow luxuriantly. In 1914 it was impossible to break up any of the scattered dead twigs and small branches of the pine without disclosing *Pityogenes bidentatus* in profusion, accompanied occasionally by *Hypophloeus linearis*, which is in some way dependent on it; later on, *Sphaeriestes (Salpingus) aeneus (aeratus olim)* was almost equally abundant, and through all that long rainless summer we could be pretty sure, on any evening, of sweeping up at least one or two *Triarthron mürkeli*, or perhaps *Amphicyllis globus*, with occasionally its var. *ferruginea*. *Liodes scita (nigrita olim)*, too, was quite frequent, and in places where the grass was mixed with ling, those two minute *Hypocypti*, *H. seminulum* and *H. punctum*, were common. It was easy to select individuals of these which would seem to represent series of two distinct species, but intermediate forms were so common that I am disposed to agree with the conclusion suggested by the Rev. W. W. Fowler (Col. Brit. Isls., Vol. II, p. 187) that they are probably forms of one species. During the present year, 1915, however, *Scolytidae* of all species have been remarkably scarce, and I have not seen a single *P. bidentatus*, still less its associated *Hypophloeus*. No *S. aeneus* have been observed, and sweeping as persistent as that of last year has resulted in the capture of one *Triarthron* only, less than a dozen *Liodes*, no *Amphicyllis*, and but an occasional *Hypocyptus*.

Such differences between the specific abundance of certain species during successive years in the same locality is, of course, well within the experience of all Entomologists; its cause, often indirect, is usually far too complex for us to unravel or appreciate, but I think in the present instances much may be attributed to the long drought of the late summer of 1914, which, in a dry sandy district such as this, is felt with exceptional severity.

On the other hand, the present year (1915) has produced in abundance species unnoticed, or rare, during its predecessor. Of these, *Thanasimus formicarius*, which appeared abundantly in April, and again more sparingly in September, and *Tychius venustus*, common on the broom, are examples; and although the *Scolytidae* were generally very deficient, yet *Eccoptygaster (Scolytus) rugulosus* occurred in abundance in the dead boughs of a plum tree, accompanied scantily by *Laemophloeus ater*, an association which seems hitherto unnoticed, for this species is

usually beaten out of the dead stems of broom or furze, where it doubtless lives on similar terms with another Scolytid—*Phloeophthorus rhododactylus*. Turning, however, to a more general survey of the *Coleoptera* of this district, it may be said that nearly all the *Geodephaga* the region yields probably belong to conditions anterior to the planting of the pine woods, which seem to have discouraged their spread rather than added to their numbers. Two of our most interesting records are due to the good fortune of the Rev. W. W. Fowler, who has, as already recorded by him, recently taken single specimens of both *Agonum sexpunctatum* and *A. quadripunctatum*, the former by the side of one of the meres, and the latter among *debris* where the “tops” of a recent large felling had been burnt.

A pleasing capture was *Dromius angustus*, which I took under loose pine bark, a species of *Geodephaga* whose presence here might be attributed to the advent of these trees. The genera *Stenolophus* and *Acupalpus* are well represented in certain sandy hollows and by the side of the meres. Of the first *S. teutonius* and *S. mixtus* occur, while of the latter every species except *A. elegans* has been taken. Among our most abundant spring beetles running about on roads, and pathways, and in gardens, are *Pterostichus coerulescens*, *Amara fulva*, and *Anisodactylus binotatus*, and I have also taken *A. nemorivagus* occasionally. Our best *Bembidion* is undoubtedly *B. obliquum*, which sometimes occurs in profusion at the edges of the meres, accompanied by *B. doris* and *B. assimile*. *Notiophilus rufipes* is quite frequent among the fallen leaves of the scattered oaks, and I have occasionally beaten *Lebia chlorocephala* from the broom. Among the *Hydradephaga*, although common things are abundant, the only species worth noting is *Coelambus 9-lineatus*, which insect, distinctly northern and western as is its range, was taken in some numbers by Mr. Tomlin in the residual pools of one of the meres during a dry season. Of the *Palpicornia*, *Laccobius regularis* Rey (= *scutellaris* Motsch.) is also an interesting occurrence, since the species has only been recorded otherwise from Chobham, Newbury, and the New Forest. Dealing with this group, it may be worth while mentioning that I have found *Helochaeres lividus* pupating in the excavations made by *Pissodes notatus* under the bark of a fallen pine log which had slipped into the water.

(To be continued.)

Coleoptera of Northumberland and Durham.—A revision of Bold's list of the *Coleoptera* of Northumberland and Durham is being undertaken by Mr. R. S. Bagnall and myself, and we shall be grateful if Coleopterists who have collected in the two counties will kindly let us have lists of their captures, of which due acknowledgment will be made. In addition, we shall be glad of information of the present whereabouts—if, indeed, it is still in existence—of the collection of *Coleoptera* formed by the late Mr. J. Hardy, who collaborated with Mr. Bold in the compilation of the first list.—GEO. B. WALSH, 166, Bede Burn Road, Jarrow-on-Tyne: *March 14th*, 1916.

Habitat of Bembidium quinquestriatum Gyll.—In reference to the notes on this subject by Prof. Beare (*antea*, p. 16), and Mr. Evans (*l.c.* p. 64), it may be noted that the insect occurs under seaweed on the Tees marshes, where it has been taken in small numbers on the Yorkshire side by my friend Mr. M. L. Thompson and myself.—GEO. B. WALSH: *March 14th*, 1916.

Bembidium varium Ol., in County Durham.—This species has occurred to me on the north side of the Tees estuary in Grentham Marsh. This is apparently a new record for the County of Durham, and in addition carries the known distribution of the species about eighty miles further north on the east coast. In Yorkshire, so my friend Dr. Fordham tells me, the only known locality is the Humber shore, where it has occurred at Hull (Russell, Walsh), and at Spurn commonly (Hey, Stainforth, Bayford, Walsh). On the west coast, as frequently happens (probably because of the milder climate, and conceivably in this case, because of different ocean currents, both tidal and drift), the species is found farther north than on the east coast, and occurs on the shores of the Solway Firth (Fowler, *Col. Brit. Is.*, VI, 209).—GEO. B. WALSH: *March 14th*, 1916.

A further note on the Life-History of Methoca ichneumonides Latr.—In connection with earlier notes on the life-history of *Methoca ichneumonides* Latr. published by my brother, H. G. Champion, and myself in previous volumes of this Magazine (*Ent. Mo. Mag.*, 1914, pp. 266–270, and 1915, pp. 40–42), it may be of interest to record the fact that we succeeded in breeding both sexes from the ovum. Unfortunately, neither of us was in England during the summer of 1915, but, on my return from France in September last, I found, on examining the observation jars, that a single specimen of each sex had emerged and died. The female was perfect but shrivelled up, whereas the male was in good condition, except that about half of the right antenna was missing. The fact that only two specimens emerged was probably caused by the earth in the breeding jars becoming far too dry.—R. J. CHAMPION, Horsell: *March 13th*, 1916.

Aculeate Hymenoptera and Chrysididae at Wicken.—Wicken and the adjoining Fens have been so thoroughly worked for most orders of insects, and the captures recorded, that a list of the Aculeates found there may be of interest. The undermentioned were taken by me during the months of June and July, and

the beginning of August, on short visits paid within the last few years, so the list must not be considered complete:—*Sapyga 5-punctata*, *Pompilus nigerrimus* (*niger* Fab.), *Agenia hircana*, *Ceropales maculatus*, *Trypoxylon figulus*, *clavicerum*, *attenuatum*, *Stigmus solskyi*, *Pemphredon lugubris*, *shuckardi*, *Ceratophorus carinatus* (*morio* V. d. Lind.), *Diodontus luperus*, *Passaloecus corniger*, *gracilis*, *monilicornis*, *Psen unicolor*, *Psenulus pallipes*, *Gorytes quadrifasciatus*, *Crabro clavipes*, *leucostomus*, *pubescens*, *cetratus*, *capitosus*, *podagricus*, *gonager*, *palmipes*, *varius*, *4-maculatus*, *vagabundus*, *cavifrons*, *chrysostomus*, *vagus*, *lituratus*, *interruptus*, *brevis*, *Odynerus callosus*, *parietum*, *pictus*, *trifasciatus*, *parietinus*, *sinuatus*, *Prosopis dilatata*, *communis*, *kriechbaumeri*, *signata*, *hyalinata*, *confusa*, *brevicornis*, *pictipes*, *Sphecodes rubicundus*, *similis*, *Halictus rubicundus*, *villosulus*, *tumulorum*, *Andrena labialis*, *chrysoseles*, *coitana*, *niveata*. *wilkella*, *Macropis labiata*, *Nomada obtusifrons*, *furva*, *Chelostoma florissomme*, *Coelioxys rufescens*, *acuminata*, *Megachile willughbiella*, *ligniseca*, *centuncularis*, *versicolor*, *Osmia rufa*, *coerulescens*, *leaiana*, *spinulosa*, *Stelis phoeoptera*, *Anthidium manicatum*, *Melecta armata*, *Podalirius pilipes*, *furcatus*, *Psithyrus rupestris*, *vestalis*, *barbutellus*, *Bombus muscorum* (*smithianus* White), *helferanus* (*venustus* Saund.), *agrorum*, *latreillellus*, *hortorum*, *pratorum*, *sylvarum*, *derhamellus*, *runderatus*, *soroensis*, *lupidarius*, *lucorum*.

The large amount of rotten wood, trees, and posts account in great measure for the fact that *Crabro* and *Prosopis* are so well represented, the sedge Fen itself being unproductive, compared with the portions near Burwell Fen.

The following Chrysidids were also caught at Wicken: *Ellampus auratus*, *aeneus*, *Chrysis cyanea*, *pustulosa*, *ruddii*, and *ignita*, all fairly common. *Chrysis fulgida* occurred in some numbers in June, 1906, Mr. Le Marchant, the late Mr. Chitty, and myself securing over 20 specimens of this beautiful and rare species.—E. B. NEVINSON, Morland, Cobham: *March 16th*, 1916.

Additional localities for some recently recognised Homoptera.—On Aug. 23rd, 1912, I captured a very distinct looking *Typhlocyba* from sycamore, at Great Salkeld, Cumberland, but as the specimen was a female, I did not think it wise to endeavour to get it identified until a male had been obtained. In 1915 Mr. Bagnall's example of *T. callosa* Then,* also a female, was handed to me and it was at once recognised as the species captured by myself in 1912. Whilst examining the *Typhlocybas* in the Hope Collection, I came across another female of it, ex coll. E. Saunders, mixed with *gratiosa* Boh., this example having been captured at Margate in October, 1904. Amongst some *Psyllopsis fraxini* L., obtained by beating ash saplings at Thame Park, Oxon, on August 6th, 1915, there were one male and two females of *P. discrepans* Flor, and no doubt had the latter been recognised in the field I could have obtained it in numbers, as *Psyllopsids* were in abundance in the wood. There is also a nice male of this species amongst *P. fraxini* L., in the Hope Collection, ex coll. E. Saunders, from Woking, but with no date. I am indebted to Professor Poulton for allowing me to include these records from the Hope Collection.—H. BRITTON, Myrtle View, Windmill Road, Headington, Oxon: *March 9th*, 1916.

* Cf. Ent. Mo. Mag., LI, p. 209 (July, 1915).

The late Mr. G. Meade-Waldo.—We regret to announce the death of this entomologist, which took place on March 11th, aged 32. He had charge of the *Hymenoptera* in the Natural History Museum for some years past. A detailed notice will appear in our next number.—Eds.

Abstracts of Recent Literature.

BY HUGH SCOTT, M.A., F.L.S., F.E.S.

EVANS, W. "LEPIDOPTERA (MOTHS) AND OTHER INSECTS AT SCOTTISH LIGHTHOUSES, CHIEFLY IN THE FORTH AREA." *Scottish Naturalist*, 1914 (March, June, October, November, December); 1915 (January, February, April, June).

This paper is intended to be the first of a series of reports on a matter in which its writer first became interested in 1885, when visiting the Isle of May, at the mouth of the Firth of Forth, to see migrating birds at the lighthouse lantern. From that time onwards he occasionally received samples of material collected at lighthouses, and during the last few years has obtained specimens with tolerable regularity. One of the main points in such a study lies in the fact that, while the majority of insects attracted to a lighthouse may be indigenous to the immediate vicinity of the coast on which the lighthouse is situated, a certain proportion may be migrants from far across the sea. The phenomenon of locust-migration is well known, but it is perhaps not so generally realised that movements of a similar nature occur in other groups of insects. As Mr. Evans says, it is a matter for regret that entomologists as a whole have not hitherto taken up the subject of insect-migration in the systematic manner in which bird-migration is being studied by ornithologists. It is to be hoped that his valuable records may stimulate concerted endeavour in this direction.

Naturally the term "migration," as applied to insects, cannot denote regular half-yearly journeys to and fro as it often does in the case of birds. The life of adult insects is far too short to admit of the existence of such a habit. What have been supposed to be return migrations of insects are on record, but it is by no means proved that they are actually such. The more or less irregular migrations of insects resemble more closely the "eruptions" to which certain species of birds are occasionally liable. Presumably, failure of food-supply is at the root of both bird- and insect-migration.

Reference is first made to a number of recorded cases illustrative of insect-migration in general, examples being given of movements among butterflies and moths, dragon-flies, locusts, *Coccinellidae*, and *Diptera*. Many of these are taken from J. W. Tutt's articles on "Migration and Dispersal of Insects" (*Ent. Record*, 1898-1902). The writer next summarises the published records of occurrence of insects at the lighthouses of Great Britain and Ireland. Hitherto nothing under this head seems to have been published in a systematic manner; therefore this gathering together of scattered notes and observations is of considerable value.

Then follows the main part of the paper: the lists of species collected, during the course of the present inquiry, by the keepers of a number of Scottish lighthouses, and by Mr. Evans himself when visiting some of these. The records are arranged in four groups: (i) much the largest series, from lighthouses in the Forth area; (ii) from Killantringan lighthouse, coast of Wigtownshire; (iii) from the Butt of Lewis, Outer Hebrides; (iv) from Orkney and Shetland. About 6000 moths have passed through Mr. Evans' hands, 4000 of these being from the Isle of May light alone. The greatest number taken in one night was from the Isle of May in the third week of July, when about 400 moths belonging to 30 species were secured. Catches almost equally large were made on several other occasions. As is usually the case with "mothing," mild, overcast nights, with little or no wind, are best. The actual direction of the wind does not appear to matter very much, but moths frequently come with north-easterly winds to the Isle of May. Up to the end of 1914 the number of individual insects obtained from a dozen lighthouses was about 7500. This does not include over 2000 specimens, all female, of a Chironomid fly (*Orthocladius sordidellus* Zett.) taken at two lighthouses in the Firth of Forth about August 17th, 1911. The list includes 241 species: 161 *Lepidoptera* (the occurrence of two butterflies, *Vanessa urticae* and *Lycaena icarus*, at the Isle of May is interesting), 18 *Trichoptera* and *Neuroptera* (Hemerobiids and Chrysopids), 40 *Diptera*, 10 *Coleoptera*, and 12 of other Orders. Both sexes come to the lanterns, but in most cases males predominate, the proportion in some of the moths being two or three males to one female. Whether the males are actually more numerous, or whether they merely fly more than the females, is not known.* Only two of the species obtained so far are regarded as certainly immigrants—namely, *Acherontia atropos* and *Sphinx convolvuli*. But though the others are all indigenous to Scotland, many may not be inhabitants of the immediate neighbourhood of the lights. For instance, the food-plants of a great number are absent from the Isle of May, to reach which the insects must fly over at least several miles of sea. The captures at the lantern at this place include a pine-weevil (*Hylobius abietis*) and a *Corixa*, and four species of the latter rapidly colonised a new water-catch made on the island. But the author does not draw conclusions prematurely in what is only intended as a first report. Moreover, he considers that the North Sea opposite Scotland is too wide for many immigrants to cross, and that a similar investigation on the south-east coasts of England would be much more richly rewarded in this respect.

[NOTE.—Attention may be called here to an isolated record of the capture of a moth at sea, which is likely to escape notice through being included in a large systematic and faunistic paper on the *Macrolepidoptera* of the Seychelles and other islands of the western Indian Ocean, collected by the Percy Sladen Trust Exp. in 1905 and 1908-9. Fryer records (Tr. Linn. Soc., Zool, xv, 1912, p. 11) that a single specimen of the large Noctuid, *Ophideres materna* (Linn.), flew on board the schooner "Charlotte" when about 40 miles S.W. of Platte Island. There was a light wind from N.W. after 10 days' calm. This moth is

* It is well known that male moths fly far more freely to light than the females which actually do exist.—G.T.P.

known from India, Ceylon, Andaman Islands, Burma, and Java; but it has not been recorded from the Seychelles or any of the other groups of islands in the vicinity, and no other specimen of it was obtained by the Percy Sladen Trust Expedition. Platte Island is a small coral-island about 80 miles due S. of Mahé, Seychelles, and the latter group are 1500 miles S.W. of India].

Review.

“COMMON BEETLES OF OUR COUNTRY-SIDE,” by W. E. SHARP, F.E.S. London: S. W. Partridge & Co., Ltd., Old Bailey.

The beginner in the study of our native *Lepidoptera* is more fortunate than the “incipient” Coleopterist in having the choice of a much larger number of cheap and often well-written books dealing with the rudiments of his subject; and the attractive little work now under notice will be welcomed by the latter class of Entomologists as being exactly adapted to their needs. The name of our valued correspondent is a guarantee of the soundness and accuracy of the work, wherein he takes us into the haunts of his favourite Order of Insects—the country lane, the fields, the woods, the downs, the moorlands, the waters, the mountains, and the sea-coast—and in a pleasant and gossipy style discourses of the characteristics and habits of such of their beetle inhabitants as may be found by a beginner with ordinary good luck. The more advanced collector will find much that will interest him, especially in the excellent chapters on “Beetles dependent on other Insects,” and “Beetles dependent on Mammals and Birds.” The sixteen photographic plates (four in colour) are on the whole good as regards the larger forms represented, but the process fails to some extent with the more minute species. The figures of many of these are quite inadequate, and such insects would have been much better represented by good outline figures suitably enlarged and reproduced as line blocks in the text. Apart from this slight drawback, we may with confidence recommend this unpretending little book, which is published at a very low price, to all who are interested in the study of our native *Coleoptera*.

Society.

ENTOMOLOGICAL SOCIETY OF LONDON: *Wednesday, February 2nd, 1916.*—The Hon. N. CHARLES ROTHSCHILD, M.A., F.L.S., F.Z.S., President, in the Chair.

Messrs. Frederick Laing, Natural History Museum, Cromwell Road, S.W.; Robert Latta, D.Phil., Professor of Logic, University of Glasgow; Arthur Raymond Palmer, Ingleholme, Norton Way, Letchworth, Herts, and Yelseti Ramachandra Rao, M.A., Assistant Govt. Entomologist, Agriculture College, Coimbatore, India, were elected Fellows of the Society.

The President announced that he had nominated Dr. T. A. Chapman, Dr. C. J. Gahan, and Commander J. J. Walker as the Vice-Presidents for the current year.

The Secretary read a notice, signed by the President and six Members of the Council, that a Special Meeting should be called to consider alterations in the Bye-laws.

Mr. G. T. Bethune-Baker proposed the following Resolution with regard to the closing of the Natural History Museum during the war :—

“That this Society would view with deep regret the closing of the Natural History Museum.”

This was seconded by Mr. H. Rowland-Brown, and carried unanimously.

Mr. E. B. Ashby exhibited a beautifully illustrated book entitled “Moths of the Limberlost,” by Mrs. Gene Stratton Porter. The illustrations were from photographs and water-colours. Dr. H. Eltringham, a new mechanical stage for examining pinned insects. Mr. G. T. Porritt, the three forms of *Cidaria suffumata*, as it occurs in south-west Yorkshire. Mr. Donisthorpe, two ants taken at the front—*Myrmica ruginosa* Nyl., ♂, found by Mons. Bondroit at Ramscapele (Yser), December 14th, and *Messor barbara* var., winged ♀, caught in the fire trenches at Gallipoli on December 21st, 1915, by Lieutenant Noel S. Sennett. Also specimens of the “Argentine Ant,” *Iridomyrmex humilis*, taken at Enfield and Eastbourne. Mr. A. W. Bacot, specimens of the butterfly *Libythea labdacca* and read notes on its migration in vast numbers at Freetown, Sierra Leone, on May 6th, 1915. Also a box containing recently hatched lice resulting from a pairing between *Pediculus capitis* ♂, and *P. humanus (vestimenti)* ♀, and remarked that there was no difficulty in obtaining pairings between the two insects, in either direction.

The following paper was read: “On the Pairing of the Plebeiid Blue Butterflies,” by T. A. Chapman, M.D., F.Z.S., F.E.S.—GEO. WHEELER, *Hon. Secretary*.

BRITISH ICHNEUMONS:

AN ADDITION AND THREE CONFIRMATIONS.

BY CLAUDE MORLEY, F.Z.S.

In working out our indigenous species of Parasitic *Hymenoptera*, the first essential is, as I stated in my “British Ichneumons,” Vol. i, 1903, to accumulate all that is already known upon the subject, rather than strive after novelty. Thus there will, no doubt, from time to time appear a great number of species not yet known to occur in these Islands; and as the study becomes more popular among our Hymenopterists I anticipate that the whole of those species at present regarded as of doubtful British origin (mainly on account of the older writers’ misidentification, through the difficulty of the study and lack of a text-book) will receive confirmation. These are best brought forward in periodical literature as they come to hand; otherwise such un-

connected items of additional knowledge are apt to become unavailable. The four following species may already be presented, since the fifth and last volume of my "British Ichneumons" is now published.

1.—POLYBLASTUS BREVISETA Ratz.

Pimpla breviseta Ratz., Ichn. d. Forst. iii, 1852, p. 97. ♀. *Tryphon aberrans* Ruthe, Stett. Ent. Zeit. xvi, 1855, p. 85, ♀. *Polyblastus senilis* Holmgr. Sv. Ak. Handl. 1855, p. 219; Brisch. Schr. Ges. König. xi, 1871, p. 94; Schr. Nat. Ges. Danz. iv, 1878, p. 100, ♂ ♀.

A stout and black species, with the mouth-parts flavescent; mandibles bidentate and towards their apices narrow, their base discally convex and glabrous; face discreted from clypeus, not scutiform nor convex throughout; frons not concave. Flagellum neither centrally dilated nor white-banded. Epicnemial interrupted above; mesosternum and pleurae usually, though not always, sanguineous red; scutellum black, simply convex and not quadrate. Abdomen not red-marked; first segment short, broadly sessile and not smooth, its base sub-auriculate; central segments distinctly trans-impressed; venter stramineous with valvulae large, vomeriform and black-pilose; hypopygium not retracted but broadly concealing base of the terebra, which is one-sixth the abdominal length. Legs neither short nor abnormally stout, red with only the hind tibiae and their tarsi nigrescent, joints of the latter basally white; hind calcaria strong but not elongate; apical hind tarsal joint stout, hardly double the length of the penultimate; tarsal claws strongly pectinate. Areolet wanting; basal nervure arcuately vertical; stigma basally and the tegulae entirely white. Length, 6-7 mm. ♂ ♀.

Placed in his sub-genus *Ctenacmus* by Thomson (Opusc. Ent. 901); I have not found it to be larviferous. It differs from the nineteen already known British species in its black abdomen and white-banded hind tarsi, the strongly trans-impressed second segment, and elongate terebra, which is structurally quite distinct from that of any Pimplid.

Ratzeburg in 1852 first described the ♀ as a German *Pimpla* on account of the "Bohrer kaum $\frac{1}{3}$ der Hinterleibslänge. Areola fehlt." And upon precisely these two characters I placed it in the genus *Polysphincta*, though I could find then no such insect described, in my collection. He says Brischke bred it from [? a species of *Nematus* in] rose-galls on April 14th. Three years later Ruthe also described the ♀ as new under the genus *Tryphon*, from Iceland; I have examined his type and a ♀ co-type in the British Museum. The same year Holmgren described both sexes as new under *Polyblastus*, from Sweden, but, curiously enough, he makes no mention of the peculiarly exerted terebra. Brischke synonymises these names in both his papers and states that he bred it from *Nematus* larvae (his var. i is probably

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MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W.—Wednesday, May 3rd, 1916.

The Chair will be taken at 8 o'clock in the evening precisely.

The Library is open daily from 9 a.m. to 6 p.m. (except on Saturdays, when it is closed at 2 p.m.), and until 10 p.m. on Meeting nights.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 8 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

The Meeting of the Society, to be held on Thursday, May 11th, will be devoted to a Special Exhibition of objects other than *Lepidoptera*.

The Chair will be taken punctually at 8 o'clock.

THE LONDON NATURAL HISTORY SOCIETY which meets at 7 p.m., on the 1st and 3rd Tuesdays in each month, at Room 20, Salisbury House, Finsbury Circus, E.C., will be glad to welcome at its Meetings any French or Belgian entomologists now staying in this country, and to give them the benefit of its library and collections. Communications should be addressed to the Secretary, Salisbury House, E.C.

Hon. Sec.: J. Ross, 18, Queen's Grove Road, Chingford, N.E.

Arrangements have been made by the Lepidoptera Committee of the above Society for a Member of the Committee to attend at Salisbury House at 6.30 p.m. on Meeting Nights (1st and 3rd Tuesdays in each month, except July and August), for the purpose of giving advice and assistance to young entomologists, whether members of the Society or not. A cordial welcome will be extended to any who care to avail themselves of this arrangement.

Woodford Branch. Meetings are held at the Wilfrid Lawson Hotel, Woodford Green on the last Friday in the month, and commence at 8 p.m. The Meeting Room is open at 7.30 p.m.

Chingford Branch. The Chingford Local Branch meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the 2nd Monday in each month.



✧ II

1.—*ANCHONIDIUM UNGUICULARE*.



✧ 4

A.—Dead leaf buds of *POPULUS TREMULA*. B.—*DORYTOMUS TORTRIX*. C.—*D. DEJEANI*.



✧ $\frac{1}{2}$

D.—*DORYTOMUS TORTRIX* and husks of leaf buds, persisting on the stalks of *POPULUS TREMULA*.

P. scutellaris Thoms.). It was unknown in France in 1908, and does not appear to have been noticed elsewhere.

From Britain I have seen five females: One was swept from rank herbage in Tuddenham Fen in Suffolk on Sept. 26th, 1907 (Morley); one taken at Hastings during the same month (W. Ollis); one at King's Lynn on August 19th, 1908 (E. A. Atmore); one at West Stow in Suffolk on July 24th, 1913 (Col. Nurse); and one near Nottingham (Prof. Carr). It remains with students of the Tenthredinidae to discover its exact hosts.

In the British Catalogue of 1915 this species should be placed as 1141a.

2.—*ICHNEUMON MILITARIS* Grav. (Ichn. Brit. i, p. 134).

I have at length had the pleasure of seeing an indigenous specimen of this insect, not recorded hence since Stephens' days. Wesmael alone has told us anything reliable respecting its relationship, and this is stated in Ichn. Brit. Both Berthoumieu and Schmiedeknecht continued to regard it as distinct from *I. extensorius* Linn., because they considered it probable that the hind coxæ bore no scopulae. This, however, is not the case; the scopulae are precisely as in the Linnean species, from which it differs solely in having the mandibles, palpi, and whole hind legs black. I can even discount Gravenhorst's disparity of four lines, for the present example is fully 10 mm. in length. It has the front tibiae internally pale. We must, consequently, consider this form no more than a dark variety of *I. extensorius* Linn.

The Rev. W. F. Johnson, M.A., captured a single female in a field at Poyntzpass in Co. Armagh, on August 15th, 1914.

3.—*DICAELOTUS PUSILLATOR* Grav. (Ichn. Brit. i, p. 277).

Gravenhorst brought forward a new species of Ichneumon under the name *I. pusillator*, with no sex stated, in the Vergl. Übers. Zool. Syst., 1807, p. 260, and assigned both sexes to it in his Ichn. Europ., 1829, p. 605. [His description is copied by Ratz. Ichn. d. Forst. as representing both sexes of an Ichneumonid bred by him from the same host as Gravenhorst's var. 3 ♀, namely *Cossus ligniperda*—*Bombyx cossus* at vol. iii, p. 257—but I have no faith in the synonymy of his with the original species.] In 1859, Wesmael examined the types of Gravenhorst's sexes and assigns (Mém. Couron. Ac. Belg., p. 75) the ♂ to a species earlier described by the same author; but retains the ♀ as a good species, with the single remark "Quant à la femelle, je suis

porté à la regarder comme un *Dicaelotus* ; la face postérieure du métathorax est en pente un peu oblique, avec l'aréole médiane fortement concave." A couple of years later, Brischke (Schr. Ges. König., ii, 1861, p. 35) claims, but with a query, to know both sexes of the var. 3 ; and gives the same structural details as Wesmæl—"area supero-media länglich, area posteromedia vertieft, Postpetiolus glänzend"—adding that Ratzburg's ♀ *I. suspicax* (Ichn. d. Forst., iii, p. 166—*nec* Wesm.) may well be synonymous. This latter was bred from *Cerambyx populneus*, and is placed as a distinct, though inadequately described, species by Dalla Torre. But, since Brischke places his *pusillator* in the genus *Diadromus* and entirely omits it in his 1878 paper, it can hardly have been the original species.

No author has referred to the structure of the head, which is strongly buccate with very broad vertex, and this feature (strictly) excludes it from *Dicaelotus* as at present constituted, though in every other way it agrees entirely with the generic characters. From our other species it is distinguished by the very oblique declivity of the metathorax, the strongly discreted and trans-aciculate petiolar area, deplanate scutellum, subparallel-sided abdomen, and glabrous postpetiole, with the rest of the abdomen finely and obsoletely punctate.

So far we have no reliable records but the two original ♀ ♀ from Finland and Sickershausen, with the vars. 1-3 from Silesia, Germany and Piedmont ; and Rondani's breeding from *Notodonta* sp. was also pretty surely in Italy. Neither Berthoumieu, in 1896, nor Schmiedeknecht, in 1904, knew the insect ; none of the Swedish authors have met with it ; and it was unrecorded from France in 1908.

Two females occurred to me on September 16th, 1914, by sweeping reeds in the salt marshes of the Buss Creek at Southwold in Suffolk. Unfortunately no male was seen.

4.—*Misetus oculatus* Wesm. (Ichn. Brit., i, p. 293).

In 1903 I was unable to confirm Dr. Capron's tentative determination of a ♂ that he ascribed to this species, though I could with certainty repudiate a ♀ he had placed with it. Since that time two ♂ ♂ have occurred to me at the Wilverley Inclosure and Queen Bower in the New Forest, on June 14th, 1907, and July 11th, 1909 ; and a comparison shows Capron's specimen to be correctly named. Hence it is now known from both Surrey and Hampshire, and must be allowed a permanent position in the British list. I have seen no female yet.

Misetus, with its single species, differs from all other *Phaeogenini* in the conspicuous procumbent central clypeal tooth, not to be seen in carded specimens; the metathorax slopes gradually from base to apex, with petiolar area reaching its centre, and areola longer than broad, though sometimes apically indistinct; the petiole is slender and the second segment scabrous, with nearly circular thyridii and no gastro-coeli; it is at once known from all *Phaeogenes* species by the abruptly declivous occiput, rendering the vertex strongly transverse and the temples almost as narrow as in the Tryphonid genus *Polyclistus*.

The species is wide-spread in Belgium, Prussia, central and southern Sweden, Lapland and France; but seems to be nowhere common, and has not yet been bred.

In the British Catalogue of 1915 it should be placed as 272a.

Monks Soham House, Suffolk:

November 20th, 1915.

NOTES ON MELANDRYIDAE (3).

BY G. C. CHAMPION, F.Z.S.

(Continued from page 83.)

OSPHYINA.

OSPHYA Illiger.

A holarctic genus, extending to Syria, Japan, Formosa, and Guatemala. Three from Assam or India are now added, one of them having the facies of a *Conopalpus*.

1.—*Osphyia vandalitiae*.

Nothus vandalitiae Kraatz, Berl. ent. Zeitschr., 1868, p. 335.
Osphyia vandalitiae Seidl. Naturg. Ins. Deutschl., v. 2, p. 667.

Hab.: SPAIN; PORTUGAL.

In the Museum there is a ♂ of this species from Portugal coloured like *O. aeneipennis* Kriechb., var. *maculicollis* Pic, i.e., the prothorax is rufo-testaceous, with two black spots, and the elytra are metallic green. It has the vestiture dense and coarse, and the puncturing of the elytra closer and finer than in *O. aeneipennis*; the legs testaceous (a spot on the posterior knees excepted); the intermediate and posterior trochanters each armed with a small tooth or spine; and the femora much thickened, the posterior pair curved and clavate.

2.—*Osphya nilgirica*, n. sp.

♀. Moderately elongate, shining; testaceous, the antennae (except the basal joint beneath), eyes, a faint, indeterminate, interrupted, transverse mark on the disc of the prothorax, the apices of the femora above, the tibiae (except at the base), and tarsi (the claws excepted), nigro-piceous or black; densely, finely, the prothorax a little more diffusely, punctate, closely pubescent. Head broad, nearly as wide as the anterior part of the prothorax, foveate in the middle between the eyes; antennae slender, moderately long, joint 2 short, less than half the length of 3, 3-6 elongate [7-11 wanting]. Prothorax transverse, rounded at the sides, a little narrowed in front, bifoveate and feebly trisinate at the base, and with an indication of a smooth median line, narrowly margined. Elytra moderately long, wider than the prothorax, narrowing from about the middle. Legs rather stout; basal joint of posterior tarsi not longer than the others united. Length 6, breadth 2 mm.

Hab.: INDIA, Nilgiri Hills (*Andrewes*).

One specimen. Very like a small pallid female of the variable *O. bipunctata* F., but with a much broader head, a narrowly margined prothorax, and more finely sculptured elytra. The elytral punctuation is dense and transversely confluent in both these insects.

3.—*Osphya albofasciata*, n. sp.

♀. Moderately elongate, shining; nigro-piceous, the prothorax (a broad space on the anterior part of the disc excepted) rufo-testaceous, the antennae with joints 1-3 and the tip of 11, the palpi, and the femora and tibiae in great part, testaceous; clothed above and beneath with rather coarse, decumbent, pubescence, that on the elytra brown, variegated with white on the disc and along the sutural and apical margins (the white hairs condensed into a line down the suture, a short oblong streak on the disc at the base, an angulate fascia below this, and a narrow transverse fascia at about one-third from the apex), the hairs on the rest of the surface whitish; closely, finely, the elytra a little more coarsely and densely, punctate. Antennae slender, not reaching the middle of the elytra, joint 2 short, about as long as 5, 3 much longer than 2, 3-5 slightly decreasing in length, 6-11 elongate. Prothorax strongly transverse, rounded at the sides, narrowed anteriorly, feebly explanate laterally, the latero-basal depressions rather deep, the hind angles obtuse. Elytra wider than the prothorax, narrowed from about the middle. Basal joint of posterior tarsi slightly longer than the others united. Length 5, breadth 2 mm.

Hab.: ASSAM, Patkai Mts. (*Doherty*).

One specimen. An insect easily recognisable by the albo-variegate, nigro-piceous elytra, and the shortened antennal joints 4 and 5. *O. trilineata* Pic, from Formosa, is described as having albo-lineate elytra, but it cannot be very nearly allied to the present species.

4.—*Osphya melina*, n. sp.

Moderately elongate, shining, luteous, the eyes black, thickly pubescent; closely, finely, the elytra a little more coarsely, punctate. Head much narrower than the prothorax, the eyes large; antennae very long, reaching to about the apical third of the elytra, joint 2 short, not half the length of 3, 3-11 elongate. Prothorax transverse, rounded and narrowly margined at the sides, narrowed in front, the hind angles obtuse, the latero-basal depressions very shallow. Elytra moderately long, widened to the middle and arcuately narrowing thence to the apex, transversely depressed below the base, the punctures separate one from another. Legs slender; basal joint of posterior tarsi longer than the others united. Length $4\frac{1}{2}$, breadth 2 mm. (♀?).

Hab.: TENASSERIM, Victoria Point (*Doherty*).

One specimen. A small, unicolorous, luteous insect, with very long antennae, a narrowly margined prothorax, and the elytral punctuation a little less dense than in *O. bipunctata*, etc. The American *O. lutea* Horn, and *O. pallida* Champ. are somewhat similarly coloured insects. The 11-jointed antennae separate *O. melina* from *Conopalpus*.

MYCTERINA.

In the "Biologia," in 1889, *Polypria*, *Eurypus*, and various other Tropical American genera, were provisionally referred to *Melandryidae*. A recent study of these insects, with the additional material in the Museum from other parts of the world, has convinced me that they are nearly related to *Mycterus*, which also, but as a separate group, was included by me under the same family. The anteriorly elongated, subrostrate head in certain European and N. American species of *Mycterus*, like that of various *Cucujidae* and *Pythidae*, is of little value for taxonomic purposes, and the chief characters of the above mentioned genera are:—the lobed or lamellate penultimate joint of the tarsi, the basally dilated or appendiculate tarsal claws, the laterally immarginate prothorax,* the confusedly punctured elytra, the open anterior coxal cavities, the large, rounded, entire or feebly emarginate eyes, and the short, often serrate, antennae. A common ♂ character, too, present in many of these insects, viz., a densely pubescent, oval or rounded, pad or tuft of hairs, on the middle of the second ventral segment (so well shown in *Mycterus curculionoides* F.), clearly indicates their general affinity. The *Pythidae*, s. str., have the penultimate tarsal joint narrow and unlobed, the tarsal claws simple, and the second ventral segment of ♂ invariably without tuft or pad. *Mycterus* and the genera here associated with it must therefore be placed in a separate

* Obsolete margined in *Polypria*.

family of equivalent value to *Pythidae*, or as a group of *Melandryidae*. The *Mycterina* include, in addition to various new genera here described*, *Mycterus* Clairv. [with *Cyclops* Muls., and *Cyclopidius* Seidl.†] —referred by Seidlitz and Reitter to *Pythidae*—*Lacconotus* Lec., *Euryptus* Kirby, *Polyptria* Chevr., *Conomorphus*, *Oleodaeus*, *Physcius*, and *Thisias* Champ., *Loboglossa* Solier, and *Trichosalpingus* Blackb. (= *Tellias* Champ.). Two Australian genera of doubtful position, *Temnopalpus* and *Paromarteon* Blackb., possibly belong here. *Neogonus* Hampe (= *Opsigonus* Baudi) seems to me to be out of place in Seidlitz's section "*Hypulina*," and to agree better with the *Mycterids*. *Lagrioida*, Fairm. and Germ., a littoral genus confined to Australia, New Zealand, and Chile, has simple claws, a strongly bilobed penultimate tarsal joint, and the intermediate coxal cavities open externally, leaving the trochantin exposed; it may be an aberrant *Oedemerid* (?). *Falsomycterus* and *Boliviomycterus* Pic, both of which are unknown to me, are referred by the author (*Mélanges exot.-entom.*, viii, p. 16, 1913) to *Tenebrionidae*.

MYCTERUS Clairv.

The described species of *Mycterus* (including the section *Cyclops* Muls. = *Cyclopidius* Seidl.) are all Palaearctic or Nearctic, with one exception, *M. depressus* Champ., from Northern Mexico. An insect from the Nilgiri Hills is so nearly related to them that it can be placed under the same genus for the present.

1.—*Mycterus variegatus*, n. sp.

Broadly obovate, robust, slightly shining, obscure ferruginous, darker beneath, the upper surface mottled with black, the prothorax with a black median line, the legs and antennae ferruginous, the palpi and a broad patch on the femora infuscate; variegated above with fine, adpressed, ochreous and whitish pubescence, the latter condensed on the elytra into small patches, which become larger and more crowded just before the apex, the under-surface with fine, intermixed, ochreous and whitish hairs; head and prothorax densely, finely punctate, the elytra rather closely, confusedly, asperato-punctate, the interspaces densely, very minutely punctulate, the under-surface also densely, minutely punctate with slightly coarser punctures intermixed. Head flattened and broadly subrostrate in front, angularly dilated on each side above the points of insertion of the antennae; eyes extremely large, coarsely faceted; palpi rather slender, the last joint of the maxillary pair elongate-triangular; antennae slender, serrate from joint 4 onwards, 3 elongate, the others shorter, 2 nearly as

* Two others from the Seychelles are known to me.

† Both names pre-occupied in Zoology.

long as 3. Prothorax transverse, sub-campanulate, bisinuate and trifoveate at the base, immarginate laterally, the hind angles rather sharp. Scutellum small. Elytra broad, moderately long, widened to near the apex, then abruptly narrowed, at the base not much wider than the prothorax, the epipleura complete, the sutural angle rectangular. Fifth ventral segment short, simple. Legs short; tibiae without visible spurs; penultimate joint of tarsi broadly lobed, the claws broadly dentate at base. Length 8, breadth 4 mm. (♀?).

Hab.: INDIA, Nilgiri Hills (*Sir G. Hampson*).

One specimen, presented to the Museum in 1894. Compared with the Palaearctic *M. (Cyclopidius) umbellatarum* F., the present species has the head a little more produced in front, the antennae longer, more slender, and serrate, the eyes very much larger and coarsely faceted, the scutellum small, the tibiae unarmed at the apex, etc.

EURYPUS Kirby.

The type of *Eurypus*, *E. rubens*, from Brazil, described and figured by Kirby in his "Century of Insects," in 1818, still remains unique in the Museum; but a nearly allied form from the Rio Grande do Sul came to hand in 1886. The affinities of this genus were noticed by myself when dealing with the "Mycterides" in the "Biologia," in 1889. Kirby associated it with the Clerid-genera *Tillus* and *Azona*, overlooking the heteromerous tarsi, figuring the posterior pair as 5-jointed (now wanting in the type); moreover, he incorrectly described and figured the labial palpi as 2-jointed. The characters given by him may be amended thus:—

Head short, slightly narrowed behind the eyes, without frontal suture; eyes distant, large, rounded, convex, entire; antennae inserted beneath the sub-angularly raised sides of the front, short, serrate from the fourth joint; mandibles emarginate at tip; apical joint of maxillary palpi stout, sub-triangular; labial palpi 3-jointed; prothorax sub-quadrangle, without lateral carina, margined at the base to near the hind angles; elytra confusedly punctate; anterior coxae small, exerted, contiguous, the cavities open behind and closed by the mesosternum; intermediate coxal cavities closed by the sterna; legs short; tibiae with minute spurs; tarsi 5-, 5-, 4-jointed, stout, widened outwards, the very broadly lobed penultimate joint spongy-pubescent beneath, the claws dilated or appendiculate in their basal half; ventral segment 5 shorter than 4, 2 (in the known males) with a pubescent spot in centre.

Three species of this genus are represented in the Museum material, all from Brazil, one having metallic blue elytra. The small, tuberculiform, densely pubescent spot on the second ventral segment in the ♂ is a character common to some of the species of the allied genera.

1.—*Eurypus kirbyi*, n. sp.

♂. Elongate, flattened above, shining; testaceous above, ferruginous beneath, the eyes, the antennae (joints 1 and 2 excepted), and the suture (narrowly), sides, and epipleura of the elytra, black; somewhat thickly clothed with long, decumbent, whitish hairs, the elytra with scattered erect hairs intermixed. Head closely, coarsely punctate, longitudinally grooved on each side between and before the eyes, the antennary orbits prominent; antennae short, about reaching the humeri, joints 4-10 strongly serrate, 3 nearly twice as long as 2, 4-11 a little shorter. Prothorax transversely quadrate, slightly sinuate at the sides, the angles sub-rectangular, the base bisinuate, the two foveae connected by a deep groove before the margin; closely, coarsely punctate. Elytra long, subparallel to about the middle, much wider than the prothorax; closely impressed with irregularly distributed, moderately coarse and fine punctures, and with rows of rather coarse punctures showing through from beneath, the suture grooved before the apex, the humeri impressed within. Beneath closely punctate; ventral segment 2 with a longitudinal, oval, densely pubescent, tuberculiform spot in the centre. Length $10\frac{1}{2}$, breadth $3\frac{2}{3}$ mm.

Hab.: BRAZIL, Rio Grande do Sul (*Dr. Ihering*).

One specimen in perfect condition. Narrower than *E. rubens*; the prothorax more coarsely punctate on the disc and strongly transverse; the elytra sub-parallel, without trace of seriate punctures, the suture narrowly and the outer limb more broadly black. *E. kirbyi* cannot be the sexual complement of the differently marked *E. rubens*, the type of which (now without abdomen) must be ♀.

2.—*Eurypus cyanipennis*, n. sp.

Oblong-oval, broad, very shining; rufo-testaceous, the eyes and antennae (the basal 1-3 joints excepted) black, the elytra cyaneous; sparsely punctate and clothed with fine, decumbent hairs, those on the elytra fuscous. Head grooved on each side anteriorly; antennae extending very little beyond the base of the prothorax, joints 4-10 strongly serrate, 5-10 transverse, 3 much longer than 4, 11 ovate, blunt at the tip. Prothorax transversely sub-quadrate, narrowed anteriorly, a little wider than the head, bisinuate at the base, with two large, deep, transversely placed foveae on the disc, and the two basal foveae connected by a deep groove. Elytra long, oval, very much broader than the prothorax, at the middle about twice its width, transversely depressed on the disc near the base, hollowed at the sides below the humeri, the latter excavate within, the suture also depressed before the apex; the scattered irregularly placed punctures becoming coarser towards the sides, the interspaces smooth. Beneath somewhat closely punctate. ♂.—Ventral segment 2 with a small, longitudinal, oval, densely pubescent, tuberculiform prominence in the centre, and 3 and 4 each with a similar smaller tubercle towards the apex. Length $6\frac{1}{3}$ - $9\frac{1}{2}$, breadth 3-4 mm.

Hab.: BRAZIL, Bahia (*Reed*), Espirito Santo (*Descourtils*).

Two males and three females, all from the Fry collection, and labelled by him as belonging to a genus near *Lacconotus* Lec. (?). This insect is coloured like a European Pythid, *Rhinosimus* (*Vincenzellus**) *viridipennis* Steph., and therefore very different from *E. rubens* and *E. kirbyi*.

POLYPRIA ChevR.

Three species of this genus were recognized by Pic in 1902, and he added another in 1909.† The descriptions of the two Brazilian forms in the Museum were drawn up before his papers had been seen by me. A variety of *P. crux-rufa* ChevR., from Jatahy, Brazil, is named by him *incruciata*.

1.—*Polyppria lateralis*.

Polyppria lateralis Pic, Bull. Soc. Ent. Fr., 1902, pp. 166, 167.

Elongate, shining; head, prothorax, basal joints of the antennae, outer limb of the elytra wholly or in part (sometimes at the apex only), and under surface, black or piceous, the rest of the antennae and elytra, and the legs, reddish-brown or testaceous; above and beneath closely, coarsely punctate, clothed with long, intermixed, decumbent and erect cinereous hairs. Eyes extremely large, coarsely faceted, separated by less than half their own width. Antennae moderately serrate, considerably longer in ♂ than in ♀. Prothorax transverse, about as wide as the head, sub-angularly dilated at the sides before the middle, and narrowed thence to the base and apex, the hind angles sub-rectangular; the disc with three large, very deep foveae (the anterior one transverse), the groove within the basal margin also deep. Elytra much wider than the prothorax, very long, sub-cylindrical, with a short, deep sutural stria before the apex. Length 8–9½, breadth, 2½–3½ mm. (♂ ♀).

Hab.: BRAZIL (*Leséleuc*: type in coll. Pic), Bahia (*Fry*), Espirito Santo, Parana (*Mus. Brit.*).

Four specimens, two in bad condition. Larger and more elongate than the Central American *P. crux-rufa* ChevR., the black marking of the elytra reduced to a narrowed marginal stripe, the antennae longer in ♂ and much less strongly serrate, the three dorsal foveae of the prothorax larger and deeper. *P. zigzaga* Pic, from Jatahy, Brazil, must be an allied form; it is described as having the elytra testaceous, with two longitudinal dark bands, these varying in development, and sometimes united anteriorly.

* Reitter, Fauna Germanica, iii, p. 222 (1911).

† Placed under *Oedenmeridae* in Zool. Record, 1902, and under *Othniidae* in 1909.

2.—*Polypria brevipennis*.

Polypria brevipennis Pic, Bull. Soc. Ent. Fr., 1902, pp. 166, 167.

Elongate, shining; brown or ferruginous, the eyes black, the prothorax and the lateral portions of the elytra sometimes infusate, the under surface piceous in the darker individuals, the antennae and legs ferruginous or testaceous; above and beneath closely, moderately coarsely punctate, thickly clothed with rather long, decumbent, cinereous hairs. Eyes very large, coarsely faceted, narrowly separated in ♂. Antennae strongly serrate from joint 3 in ♂, serrate from joint 4 in ♀. Prothorax transverse, rounded at the sides anteriorly, the latter converging and slightly sinuate posteriorly, the three foveae on the disc large, shallow, the anterior one strongly transverse, the narrow space between the two basal impressions sometimes with a short, smooth longitudinal carina in the centre. Elytra moderately elongate, sub-cylindrical, much wider than the head and prothorax, the suture depressed near the apex. Beneath closely, the propleura densely, punctate. Length $4\frac{3}{4}$ –7, breadth $1\frac{1}{2}$ – $2\frac{1}{4}$ mm. (♂ ♀.)

Hab.: BRAZIL (*Dollé*: type in coll. Pic; *Lacerda*, Mus. Brit.), Pernambuco (*Gounelle*), Bahia, San Antonio (*Fry*), Rio Grande do Sul (*Dr. Ihering*); ARGENTINA, Ocampo on the Rio Las Garzas (*Wagner*).

Ten specimens, varying a good deal in size and colour: the two from Bahia have the antennae (the third joint included) more strongly serrate than the others, and the eyes more approximate, and are therefore assumed to be males. More closely and less coarsely punctate above than *P. lateralis* and *P. crux-rufa*, the three prothoracic foveae shallower and the elytra much less elongate than in *P. lateralis*, the elytra without definite markings, this last-mentioned character separating the present species from the three other members of the genus. Pic mentions a variety from Jatahy with the punctuation more scattered on the disc of the prothorax: this he names *brunnescens*.

LACCODERUS, n. gen.

Head short, deeply inserted into the prothorax, obliquely narrowed behind the eyes, with distinct frontal groove, the epistoma very little longer than the labrum, the antennae inserted beneath the sub-angularly raised orbits, short, sub-serrate or serrate; eyes large, distant, rounded, entire; maxillary palpi stout, the terminal joint sub-triangular, that of the labial pair oblong-oval, truncate at tip; mandibles cleft at apex; prothorax short, sub-quadrate, without lateral carina, margined at the base, with two large foveae on the disc; scutellum small; elytra long, confusedly punctate, widened posteriorly in ♀, the epipleura not reaching the apex; anterior coxae conical, exerted, contiguous, the cavities open behind; intermediate coxae narrowly separated; legs rather short, slender; tibiae with minute spurs; tarsi narrow, the penulti-

mate joint lobed and wider than the preceding joint, the elaws appendiculate; ventral segments 1 and 2 sub-equal in length along the median line, 2 with a pubescent pad in ♂.

Type: *L. chilensis*.

Three S. American species are referred to *Laccoderus*. These insects are closely related to the imperfectly known N. American genus *Lacconotus* Lec.,* differing from it (*L. pinicola*) in the stouter maxillary palpi, large eyes, deeply bifoveate disc of the prothorax, etc. Compared with *Euryypus*, the tarsi are narrower, and have a much less dilated penultimate joint, and the antennae are not so strongly serrate. The ♂ of *L. chilensis* has a large pad on the second ventral segment, much as in the same sex of the Palaearctic *Mycterus curculionoides* F., the corresponding pad in *Lacconotus pinicola* ♂, being oblong, instead of transverse. According to both Leconte and Horn the first ventral segment in *Lacconotus* is shorter than the second, but this is not the case with *L. pinicola*.

1.—*Laccoderus chilensis*, n. sp.

Elongate, depressed, sub-parallel (♂), widened posteriorly (♀), shining; piceous or fuscous, the head and a space down the middle of the prothorax usually reddish or rufo-testaceous; the elytra testaceous, with the sides, an oblique streak or angulate fascia extending thence to near the suture at about the middle, and an oblong mark along the suture before the apex, piceous or fuscous, the dark markings sometimes so extended as to leave only an oblong spot on the anterior part of the disc and an oblique sub-apical fascia testaceous; the antennae towards the tip, and the femora, usually testaceous or reddish; densely, finely punctate and somewhat thickly pubescent. Head broad, sulcate down the middle; eyes large, convex, separated by about their own width; antennae reaching to a little beyond the humeri, joint 3 longer than 2 or 4, the latter sub-equal in length, 4-10 sub-triangular, about as long as broad, 11 acuminate-ovate. Prothorax transverse, narrower than the head, slightly narrowed in front, feebly sinuate at the sides before the sub-acute hind angles, the base bisinuate and conspicuously margined, the two dorsal foveae large. Elytra long, rounded at the tip, obsoletely grooved, the punctures equal in size, the suture depressed before the apex. Ventral segment 2 with a rather large, oval, transverse, densely pubescent, raised pad in the middle, and 5 broad and transversely grooved towards the apex, in ♂. Length $4\frac{3}{4}$ - $6\frac{1}{2}$, breadth $1\frac{2}{3}$ - $2\frac{1}{3}$ mm.

Hab.: CHILE (*Reed*), Valdivia (*ex coll. Bates*).

Nine specimens, including four males, varying greatly in the development of the elytral markings, according to the predominance

* I am greatly indebted to Mr. H. F. Wickham for a ♂ of the rare *L. pinicola* Horn, for comparison. *L. punctatus* Lec., the type of the genus, is unknown to me.

of the testaceous or fuscous coloration. This insect cannot be identified with any of the Chilean *Heteromera* described by Fairmaire and Germain, nor is it the *Physcius maximus* of Pic, from the same country. It is therefore assumed to be new.

(To be continued.)

STUDIES IN HELOPHORINI.

BY D. SHARP, M.A., F.R.S.

10.—*HELOPHORUS* (continued from p. 86).

19.—*Helophorus walkeri*, sp. n.

Sat elongatus, antennis palpis pedibusque flavis, thorace margine laterali plus minusve late flavescente; elytris fortiter profunde punctatis, ante medium depressis, epipleuris rufis, minus angustis. Long. 3¼–4¼ mm.

Mas, aedeago brevi et lato, pallescent.

Hab.: Europa.

An extremely variable species, not uncommon in England and Scotland, but mixed with others in our collections, especially with *aeneipennis*. It is so variable in the minor characters that it is almost useless to describe these; but it may be roughly divided into two forms, which I have in vain endeavoured to separate by any characters at all stable. First, there is a shining form with a peculiar varnished appearance, having a metallic shimmer on the elytra which appear dark in colour, the sculpture of the thorax rather fine.

The second form is more flavescent in the colour of the elytra, which are also not so shining, and the sculpture of the thorax is usually very coarse, sometimes remarkably so.

Various combinations of the minor characters occur, but it is scarcely possible to obtain two or three that quite agree, and as this variation may be found amongst individuals found together, I believe there is but one species among the two or three hundred specimens before me. Some of the exponents resemble varieties of other forms so greatly, that, in view of the general instability, conviction as to the species will only be obtained by a study of the aedeagus (fig. 38), which I have examined in upwards of fifty specimens. It is always short and broad, with short basal piece, and is pallid in colour, never tinged with black pigment. In this species the aedeagus never becomes hard, but is always more or less elastic and flexible. The basal piece is peculiarly liable to shrivelling: sometimes it is quite flattened out, while in other cases it resumes the curved form which is natural to it, as a portion of a tube of which the other half is membranous: it is the anterior part of the basal piece that is most subject to this contraction, and therefore this part sometimes looks much narrower, and the basal piece less parallel-sided. The struts are always remarkably elongate.

H. walkeri is peculiarly liable to be covered with a sludge that obscures its characters, and is very difficult to remove; in some cases this substance eats into the interior of the elytron through the punctures and cannot be removed, even by a sharp knife, without destroying the surface of the elytron; sometimes when dry this forms a glaze on the surface.

In our own country the species occurs from the North of Scotland to the South of England, and I expect will prove to be a fairly common insect. I have named it in honour of Commander Walker who sent me from Sheppey specimens of it that looked, he thought, different from ordinary *aeneipennis*. It has also been found at Epping by Mr. Pool, and stands in the Champion collection from Woking, Guildford, and Christchurch. I have myself found it in various localities in England and Scotland, and at Brockenhurst it is abundant in the drying-up ditch that I have mentioned as producing *H. laticollis* and *ytensis*, and in which *Meghelophorus aquaticus* and *aequalis* occur together in plenty.

The females of *H. walkeri* appear to vary even more than the males, and are consequently difficult of certain identification; they are as a rule larger than the male, and in some cases become more elongate and pointed behind; and if the punctuation is at the same time more reduced, the resemblance to the large female *aeneipennis* is very great. The visibility of the flanks of the elytra is not a very satisfactory distinction, as it varies somewhat in *walkeri*, and occurs to a slight extent in some examples of *aeneipennis*.

Although few specimens other than British have come under my observation, and not many of these are with certainty referable to the species, it is necessary to make some remarks about them:

An example from La Vendée (ex coll. Laferté) has the elytra almost without depression and coloured very much as in the *minutus-affinis* group. As the aedeagus and epipleura apparently agree with those of *H. walkeri* I have placed it therewith, though the specimen being very old and bad there is doubt about it; the punctuation too is less coarse than is normal in *walkeri*. It was mixed with *H. illustris* and *aeneipennis* in the Laferté collection under the name of *H. dorsalis*.

Normandy (Lyons-la-Forêt, H. G. Champion), one male has the sculpture of the upper surface finer than in British examples, and the aedeagus narrower. If the Mediterranean examples to be subsequently mentioned, should be considered distinguishable, this might almost go with them.

Lozère (R. Tarn, H. G. Champion), one female, fairly in agreement with British examples.

Silesia (Altvater Gebirge, v. Bodemeyer), one male, differing little from the Normandy example, but having a rather larger and broader aedeagus. This specimen was sent to Mr. Champion by Reitter as "*H. obscurus* Muls." "Germany," four examples, one of them male, agreeing with the British specimens that approximate *H. aeneipennis*.

North Africa, Batna (Champion), Algeria (Rippon, also Mt. Edough, A. Théry, Blidah, and coll. Castelnau). A very miscellaneous lot of about twelve examples, all having a much less coarse sculpture, but showing great variation; the aedeagus scarcely differs from that of our British forms. It would seem that N. African examples may possibly connect *aritzuensis* (q.v.) with *walkeri*.

H. obscurus Muls., may probably have included some individuals of *walkeri*, but it was merely a name without definite characters, and has no claim to recognition.

20.—*Helophorus aritzuensis*, sp. n.

Sat convexus, obscurus, capite thoraceque nigris, plus minusve metallescentibus, hoc margine laterali anguste testaceo, elytris sordide testaceis, nigro-variegatis, antennis palpis pedibusque testaceis; thorace dorso subtiliter punctato; elytris ante medium impressis, fere subtiliter punctato-striatis, interstitiis latis, interdum aurato-micantibus. Long. 3-3½ mm.

Hab.: Sardinia (Baudi), Aritzu and Golfo Aranci (Champion); Hispania (Sharp); Algeria (Rippon).

The alliance as shown by the aedeagus is with *H. walkeri*, but the sculpture of the surface is much finer than in that species, and the palpi are a little shorter with thicker apical joint. The tips of the maxillary palpi and of the claw joints of the tarsi are a little blackened. The lateral margin of the elytra stands out but little, and beneath, the flanks are but little visible. The aedeagus (fig. 39) is very like that of *walkeri*, but the apical section (=lateral and median lobes) is always narrower.

These characters seem to distinguish this form satisfactorily from British *walkeri*, but the North African individuals of the latter seem, on the other hand, to connect the two, so that until we know more about these Southern forms the status of *aritzuensis* remains doubtful. Two immature females from the Escorial may be a var. of *aritzuensis*, but the colour is brighter, and the palpi more slender. Three individuals from Madrid (River Manzanares) agree pretty nearly with the Sardinian examples, so that Sardinian *aritzuensis* may be a form of a

Spanish species. Algeria is given as a locality only because of a single female, which comes very near the North African form I refer to *walkeri*. One specimen from Besika Bay (Walker, in coll. Champion) is a female that probably may be a distinct form: more elongate and parallel, with stronger sculpture, and reminding one of small *H. illustris*.

21.—*Helophorus syriacus* Gautier des Cottes.

A specimen from the Javet collection labelled as above, without more definite indication of locality, appears to be a distinct species allied to *aritzuensis*. It is in very decayed condition, and scarcely good enough to be an unique type, though it appears never to have been described. It has very slender legs and palpi, and fine sculpture on the thorax.

22.—*Helophorus laucifer*, sp. n.

Parvus, parum convexus, obscurus, capite thoraceque nigro-cupreis, palpis pedibusque sordide testaceis, illis crassiusculis; elytris sordide testaceis, obscure variegatis, ante medium impressis, subtiliter punctato-striatis. Long. 2¼–2½ mm.

Hab.: Sardinia (Terranova, Champion).

One of the smallest species; of very obscure coloration, with the terminal joint of the palpi thicker than usual; this joint is dark at the apex and there is even a blackening of the front margin of the penultimate one. The sculpture of the head is very fine and indistinct. The thorax is brassy-black, the sides straight but distinctly converging behind, very obscurely yellow; the grooves moderately deep, the median and juxta-median intervals very finely punctate, the outer interval granulate. Elytra brown, with indistinct black marks, the discal depressions well marked, the series of punctures fine. Legs sordid yellow, claw-joint strongly blackened at tip. Flanks of elytra only very slightly visible. The aedeagus (fig. 40) is slender and not likely to be mistaken for that of any other species except *aritzuensis*; basal piece short, lateral lobes long, with slender acuminate apical parts; median lobe long, slender, and much detached; struts elongate, almost without shoulders, so as to be unusually approximate and parallel.

Three males from Terranova in the Champion collection; the aedeagus alike in all three. Also two specimens labelled Golfo Aranci.

23.—*Helophorus carpetanus*, sp. n.

Parvus, angustus, capite thoraceque aeneis, nitidulis, subtiliter sculpturatis; antennis, palpis pedibusque flavis; elytris sordide testaceis, obscure variegatis, minus subtiliter punctato-striatis, ante basin depressis. Long. 2½ mm.

Hab.: Hispania (Guadarrama, Sharp).

This very small insect appears to be distinct from *lancifer*; the aedeagus being only one half the size it is in that species, and shaped like that of *aritzuensis*.

The thorax is brassy, the sides scarcely visibly yellow, the sculpture is fine and the grooves shallow. The palpi are rather long and slender. The elytra strongly impressed in front of the middle, the moderately large punctures appearing crowded, and giving a somewhat rough appearance to the surface. Legs long, pale yellow, claw-joint obscurely darkened at the tip. Flanks of elytra scarcely, if at all, visible. Aedeagus (fig. 41) very small, with short basal piece, apical section not broad, lateral lobes slender and acuminate.

Five specimens.

(To be continued.)

ANCHONIDIUM UNGUICULARE AUBÉ: A GENUS AND SPECIES OF
COLEOPTERA NEW TO THE BRITISH LIST.

BY JAMES H. KEYS, F.E.S.

* PLATE I, FIG. 1.

The type of *Anchonidium* is *Styphlus unguicularis* Aubé, and is described in the Ann. Soc. Ent. Fr., 1850, p. 340, as follows:—

“Oblongus, piceo-ferrugineus, leviter pubescens; rostro apice, antennis tarsisque dilutioribus; thorace ad apicem valde constricto, media carinato, dense et confuse punctato; elytris punctato-striatis, interstitiis alternis elevatis. $3\frac{1}{2}$ mm.”

Bedel, Faune Col. du Bassin de la Seine, Vol. VI, p. 111, records the transference of the insect to the genus *Anchonidium*, and on p. 92 of the same volume, mentions that it occurs in the “Environs de Chinon (de la Ferté), Environs de Châteauroux (Aubé), départements de l'Ouest à partir du Morbihan,” etc. He notes that it is not found in the Seine Valley, and remarks further that “Le *Styphlus rotundicollis* Fairm.,” 1881 . . . ne m'a pas paru distinct de l'*A. unguiculare*.” The beetle is figured by Jacquelin-Duval, Gen. Coleopt. Europ., IV, t. 23, fig. 110, who says it occurs in the Pyrenees (Kiesenwetter). Mr. Champion (to whom I am much indebted for determining my specimen, as well as for supplying me with references to the literature on the subject) has two examples from Limoges which he has very kindly given me the opportunity to examine.

In *A. unguiculare* the opening of the scrobes is visible in front if viewed from above, a character which places it, according to Fowler's arrangement (Col. Br. Isls., Vol. v, p. 215), amongst the *Curculionina*,

and the long first joint of its antennal club assigns it to the section with *Plinthus*.

I have seen but three examples of the insect, all of which had more or less incrustated integuments. My own specimen was particularly "dirty," so I partially cleansed it before taking the photograph. On examining under a $\frac{1}{6}$ inch objective the "dirt" so obtained, it was quite certain that the matter was not of an earthy character. Probably the incrustation is a natural exudation? Moreover, the "pubescence" in the cleansed individual presented the appearance of short, bristly hairs, curved for nearly their entire length, thereby causing their distal ends closely to approach the integument; whilst on the anterolateral part of the thorax the hairs were unciform. May it not be that the function of these hairs is to help retain the exudation? The sculpture of the thorax consists of deep, round punctures, varying in size and irregular in arrangement, with the interspaces very finely punctured; the punctures in the elytral striae are bold and saucer-like. The words in the original description, "thorace ad apicem valde constricto," seem scarcely apt, as the front of the disk of the thorax in my example is not at all constricted, whilst in Mr. Champion's two specimens a constriction is hardly traceable. In all three of them the sides of the thorax for about the anterior fourth are strongly and suddenly narrowed in such a way that suggests the effect that would be produced by compression by square-jawed forceps, or the scoop-out of an angular gouge, rather than that which would result from constriction. The three examples are not, however, absolutely identical in appearance in this respect, and they also vary considerably in degree in the distinctness of the median carina, so that some allowance must apparently be made for variation in the subordinate characters of the species.

I regret being able to record the capture of one example only, which I obtained so long ago as July, 1893, near the mouth of the River Yealm, Plymouth. It has been resting since then with my specimens of *Orthochaetes setiger*, till I recently had occasion to examine the whole of them.

7, Whimble Street, Plymouth:

March, 1916.

NEUROPTERA (IN THE LINNEAN SENSE) FROM
INVERNESS-SHIRE.

BY KENNETH J. MORTON, F.E.S.

In the summer of 1915, *Neuroptera* (in the Linnean sense), were collected in the Lochaber District of Inverness-shire in the sector whose radii are the rivers Tieg and Spean. Our time was from 1st to 26th July. Rain (or on one or two occasions, blinding hail-showers) fell I believe every day, fortunately varying as regards quantity, time, and duration, the result being that practically no day was throughout too bad for collecting work. The change was interesting and almost refreshing after several summer holidays spent in Provence, Spain, and elsewhere, with almost unbroken sunshine. Mr. William Evans joined us towards the end of our stay, and his enthusiasm and wider outlook often took us out of our Neuropterous groove into other fields of observation.

The locality, which lies to the north-east of the Ben Nevis range, is a good one, and no doubt harbours practically all that is most interesting in our alpine and sub-alpine insect fauna. Our collecting was mainly done between about 600 feet and 1,000 feet, owing to the usually prevailing bad weather. Our only excursion to the high ground began under brilliant sunshine, but before the day was far advanced it broke down in heavy sleet showers, and our collecting was without satisfactory results.

On July 2nd rain had fallen most of the day, but towards evening the sun was streaming into the glen down which we were passing. The movements of a large dragon-fly attracted attention, and on getting nearer we at once detected a ♂ *Aeschna coerulea* settled in its characteristic way on a barkless bleached pine stump—a beautiful example of an old acquaintance of our excursions in Glen Lochay, Rannoch, and the Dovrefjeld. The exact hour was 6.20 p.m. A few minutes later another was secured. The species continued in evidence during the whole of our stay, most frequently in the same glen. A remarkable circumstance was the apparent scarcity of females. A few occurred early in the month, only one was taken, and later hardly any were seen at all. It seems to me, therefore, that where we took most of this species was merely their feeding ground and not near their breeding haunts. From the higher ground one could see away to the east a great expanse of peaty moor, dotted with pools and lochans, and these may be the early home of *Aeschna coerulea* in this district.

Our next most interesting capture was *Somatochlora arctica*, found settled in the sunshine on a ling-covered bank in the same glen, on the 4th, by my son, an active youngster of eight years, just getting in his hand with the net. He developed a special interest in this beautiful metallic insect with green, jewel-like eyes, and his captures of it ran about *pari passu* with my own. It was none too common, and, owing to the unsuitable weather conditions, it was, as a rule, restless and rather wild in its flight, but as we were evidently in the centre of its breeding area, we were able to make the most of our opportunities, and we found it up to the end of our stay.

Aeschna juncea from the 4th was exceedingly common in both sexes, and it was interesting to watch them in the evening seeking the birch trunks which were exposed to the sunlight, as many as three having been noticed on one tree. Of other dragon-flies, *Cordulegaster annulatus* was the most abundant. A female was observed ovipositing on the gravelly shore of a small loch. One rather worn ♀ of *Leucorrhinia dubia* was found at a small sphagnum bog near Loch Trieg. *Libellula quadrimaculata* was not very common, being perhaps over, although odd examples were taken up to July 23rd. *Énallagma cyathigerum* and *Pyrrhosoma nymphula* were the only other dragon-flies seen.

Of *Plecoptera*, nymph-skins of *Perla maxima* and *P. cephalotes* were found in quantity at the River Spean, while the latter species, on the same evidence, had been common at Loch Trieg just above the point of efflux of the river. A small and dark form of *Chloroperla grammatica* swarmed on the river just below the loch. *Isopteryx torrentium* was common at smaller streams. The genus *Nemoura* was represented by *N. variegata*, *N. cinerea*, *N. cambrica*, and *N. inconspicua*; and *Leuctra* by *L. klapaleki*, *L. albida* and *L. inermis*.

Panorpa germanica was common, flitting about amongst bog-myrtle in sheltered places, the majority of the males very lightly spotted, but mixed with a few more typically marked examples.

The genus *Hemerobius* (using the term in the wide sense) was well represented in species, if not in numbers. It was interesting to meet again *H. mortoni*, which I had not seen alive in this country since taking the type specimens in Rannoch. The other species noticed were *H. stigma*, *pini*, *atrifrons*, *orotypus*, *lutescens*, *marginata*, *concinus* and *quadrifasciatus*. *Chrysopa* was rare, *C. vittata* (2) and *C. alba* (1) being the only species seen. *Sialis lutaria* was nearly over.

Trichoptera, with a few exceptions, were not very common. The

species included *Phryganea obsoleta*; *Limnophilus luridus*, *auricula*, *centralis*, *vittatus*, *griseus* and *sparsus*; *Stenophylax stellatus*; *Lepidostoma hirtum*; *Crunoecia irrorata*; *Sericostoma personatum*; *Odontocerum albicorne*; *Leptocerus aterrimus*; *Oecetis ochracea*; *Mystacides azurea*; *Hydropsyche instabilis*, *H. pellucidula*; *Polycentropus flavo-maculatus*; *Philopotamus montanus*; *Tinodes waeneri*; and *Hydroptila femoralis*. An example of *S. stellatus* was taken by Evans at about 2000 feet.

13, Blackford Road,
Edinburgh:
March, 1916.

A note on the habits of Dorytomus tortrix L. and D. dejeani Faust (costirostris Gyll.).—Whilst searching (in vain I am sorry to say) for the larvae of *Dorytomus dejeani* and *D. tortrix* on aspens (*Populus tremula*) in a garden at Yelverton, S. Devon, in June, 1914, and also whilst experimenting to induce the species to breed (also unsuccessfully), I observed one or two points in their behaviour which seem worthy of a summary record.

To begin with, it must be stated that *D. dejeani* is a pitchy brown weevil (Plate I, fig. c) with a feeble mottling of pale yellowish pubescence, whilst *tortrix* (Plate I, figs. B, B) is brownish yellow in colour. *D. dejeani* is just the colour of the damp dark earth of the garden; *D. tortrix* is nearly identical in colouring with that of the husks or sheaths of the leaf buds of the tree. The species occur together and are gregarious.

SUMMARY.

1. About the middle of August, 1914, the attempts to breed the two species in muslin sleeves on separate boughs had failed: decided to release the beetles, as all the free-living individuals on the tree had already departed: concluded the insects would not breed until the following spring. Found *D. dejeani* in its cage quite lively, the specimens walking on my hand whilst being liberated. *D. tortrix* not to be seen: eventually discovered them apparently all dead in the bottom of their sleeve, mixed with old husks of leaf buds, &c.: held them and the debris in my hand for some time: was struck by the great resemblance of the beetles to the old leaf buds (Plate I, figs. A, A, A): wondered why they had died: then one of them moved: bottled the lot and put them in my pocket: soon afterwards all the beetles were quite actively walking about.

2. In September, 1914, cut a turf at base of aspen and shook it over a sheet: almost instantly *D. dejeani* was actively walking about: bottled as many as required; again noted *tortrix* shamming death, but after a while secured as many as were desired. Old leaf buds conspicuously present.

3. May, 1915. The aspens not yet in leaf: could find two only of *D. tortrix* by beating; of *dejeani* none. Again cut a turf with same experience as in No. 2. Cut a piece more and observed that as the *tortrix* fell when shaken out of the turf on to the sheet, so they lay without moving, some with all their legs tucked underneath, others with just one or two legs extended: timed them by watch and found that the first individual to walk away had remained quiescent for six minutes, and the last of the batch noted was 20 minutes before it moved.

4. When searching the trees for larvae in June, observed that it was quite common for the outer husk of the leaf bud to persist long after the leaf had expanded, and for it often to adhere so firmly as to be carried up with the stalk as it grew (Plate I, fig. D, photographed from dried specimens).—JAMES H. KEYS, 7, Whimble Street, Plymouth: April, 1916.

Teratology of Anomala aenea De G. (frischi Fab.).—While preparing some insect slides for the microscope a short time ago, I came across a specimen of the above beetle, kindly given me by my friend Mr. J. Gardner of Hartlepool, in which the external claw on the intermediate and posterior legs of the left side was in each case bifid for about a third of its length; all the other claws were quite normal.—GEO. B. WALSH, 166, Bede-Burn Road, Jarrow-on-Tyne: April, 1916.

Obituary.

Geoffrey Meade-Waldo, M.A., of whose untimely and wholly unexpected death on March 11th we made a preliminary announcement in our last number, had been a member of the staff at the Natural History Museum, S. Kensington, since 1909, and occupied the post formerly held by the late W. F. Kirby, as Assistant in charge of the collections of *Hymenoptera*. Although he had not, we believe, previously much occupied himself with that group, he speedily became proficient in his new duties, and has done good and much-needed work in the arrangement of the collections entrusted to him, and also produced valuable memoirs on certain Families in the "Annals and Magazine of Natural History" and elsewhere. Parts iii and iv of the Tr. Ent. Soc. Lond. for 1914 contain a Revision by him of the Ethiopian *Odynerus* spp., and he had undertaken to deal with the Bees (*Andrenidae* and *Apidae*) of the world in Wytzman's "*Genera Insectorum*." He had recently completed for this work his recension of the genus *Hylaeus* F. (= *Prosopis* of authors) and we believe it would have already appeared but for the outbreak of the great war.

He was born in 1884. His taste for natural history early developed itself—first, we understand, when he was a pupil at a well-known school in that "Paradise of Naturalists," the New Forest. He specially affected the *Lepidoptera*, but was also keenly interested in all nature, and (as might be expected in a son of Mr. E. G. B. Meade-Waldo) was a good field-ornithologist. He was at Eton from 1898 to 1903, and then passed on to Magdalen College, Oxford, where he

graduated as B.A. in 1907, and M.A. in 1911. While at Oxford we hear that he had some idea of "specialising" on *Arachnida*, but he does not appear to have ever actually done so. His holidays from 1900 to 1902 and also the spring of 1901, were spent in Morocco, where he did a good deal of collecting; and in 1907-8 he went on an extended yachting cruise, with the late Lord Crawford, to the Federated Malay States and Borneo.

In 1904 he became a Fellow of the Entomological Society of London, and in 1914 was elected to its Council. On March 1st of this year he attended the latter for the last time, and on March 15th the President had the sad duty of announcing to the assembled Fellows that they had just lost a colleague who had "endeared himself to us all."

His modesty, intelligence, and charming manners won him "golden opinions from all sorts of people." One of his Oxford teachers writes: "I was very fond of him, as were all those of his contemporaries who got to know his fine character, an English gentleman in the best sense of the word." Further details of his work and personality may be found in a most interesting and sympathetic notice contained in the April number of our contemporary, "The Entomologist," written evidently by one who knew him well, and was specially qualified to bear testimony to the excellence of his character and his work.

Societies.

ENTOMOLOGICAL SOCIETY OF LONDON: *Wednesday, March 1st, 1916.*—Commander J. J. WALKER, M.A., R.N., F.L.S. Vice-President, in the Chair.

In accordance with the decision of the Council, it was announced that the Special Meeting for consideration of the proposed alterations in the Bye-Laws would take place on April 5th before the Ordinary Meeting, and the Fellows present decided that the hour should be 7.30.

Mr. J. H. Durrant exhibited a fine variety of *Arctia caja* L., ♂, with dark fuscous hind-wings; also a specimen of *Laverna nodicolella* Fuchs, taken at Westerham, Kent, June 24th, 1915, by Mr. P. A. Buxton. This species has not been recorded as British. Mr. G. Talbot, on behalf of Mr. J. J. Joicey, several species of *Rhopalocera* from Waigen, and contributed notes. Prof. Poulton, a specimen of a hawk-moth, *Chromis erotus* Cr. (*eras*, Boisd.), found in the stomach of a fish in Suva Harbour, Fiji; also a series of *Danaïda chrysippus* L., from Fernando Po. Mr. G. Meade-Waldo, a South African Carpenter bee (*Xylocopa hottentota* Smith), the tarsi of all three pairs of legs bearing the pollinia of some Asclepiad flower. Mr. Hamilton Druce, a book he had lately come across entitled "The indigenous insects of the region of Petersburg," by John Cederhielm, published at Leipzig in 1798. The Rev. F. D. Morice, a specimen of true *Sirex juvencus*, ♀, F., from Wakefield in Yorkshire; also a series of photo-micrographs to illustrate specific characters in the ♀ ovipositors or "saws" of various Cimbicids. Mr. A. Bacot, a series of lantern slides showing outline camera drawings of preparations of the anal fins or paddles of

mosquito pupae; also a slide showing outlines of eggs of *Eretmopodites quinquevittatus*, illustrating the remarkable range of size.

The following papers were read: "On Specific and Mimetic relationships in the Genus *Heliconius* L.," by H. Eltringham, M.A., D.Sc., F.E.S.; "Gynandromorphous *Agriades coridon* Poda," by E. A. Cockayne, M.A., M.D., F.E.S.

Wednesday, March 15th, 1916.—The Hon. N. CHARLES ROTHSCHILD, M.A., F.L.S., F.Z.S., President, in the Chair.

The death was announced of Mr. G. Meade-Waldo, a Member of the Council.

Mr. Ralph Headley Moore, B.A., Heathfield, Plymstock, Devon, and Lieut. F. W. Sowerby, R.N.D., Cleethorpes, Lincolnshire, were elected Fellows of the Society.

The proposed alterations in the Bye-laws, being in the hands of all Fellows present, were taken as read for the third time.

Mr. D. A. J. Buxton, who was present as a visitor, exhibited a small collection, mostly butterflies, taken on the Gallipoli Peninsula, where he was stationed from April to October, 1915. Mr. L. W. Newman, two pairs (a part of a series) of *Pieris brassicae* bred from wild Aberdeenshire larvae, the ♂♂ especially showing a decided pink coloration all over the wings. Mr. G. Talbot, on behalf of Mr. J. J. Joicey, several interesting African *Rhopalocera*. Mr. A. Bacot, specimens of *Pediculus humanus (vestimenti)*, *P. capitis*, and the 2nd generation of hybrids resulting from a pairing between *P. capitis* male, and *P. humanus* female.—GEO. WHEELER, *Hon. Secretary*.

NOTES OF A VOYAGE TO AUSTRALIA, CEYLON AND THE MALAY ARCHIPELAGO, JULY—NOVEMBER, 1914.

BY F. A. DIXEY, M.A., M.D., F.R.S.

(Continued from page 51.)

On September 27th we found an opportunity of visiting the Botanic Gardens, about $3\frac{1}{2}$ miles from the sea front. Here most of the chase was undertaken by my junior, whose bag included the fine swallow-tail *Papilio demolion demolion* Cram. ♂; the Nymphalines *Cupha erymanthis* Drury, *Eulacura osteria* Westw. ♂; *Elymnias nigrescens* Butl. ♂; the Lycaenids *Deudorix domitia* Hew. ♂, *Logania sirwa* Dist. ♂ and ♀, *Nacaduba atrata* Horsf. (much worn); and two dragonflies, the brown-winged *Neurothemis fluctuans* Fabr., and *Rhyothemis phyllis* Sulz., a handsome species with black and yellow markings on the hind-wings near the body. Neither *C. erymanthis* ♂ nor *E. osteria* ♂ possessed any recognisable scent; *E. nigrescens* ♂,

on the other hand, emitted a strong odour of vanilla. A fragrant flowery smell was also noted in *D. domitia* ♂. My Singapore list likewise includes a fine Uraniid, *Lyssidia docilis* Butl. ♂, which flew on board the s.s. "Montoro," and was brought to me by a Chinese boy in a sadly damaged condition. Here I transhipped to the Japanese liner, "Kashima Maru," and after some considerable delay, possibly due to the exploits of the "Emden," we got under way for Penang. No landing was possible at Malacca, where we stopped at four miles or so from the shore and took in cargo from lighters. The cosmopolitan carrion-beetle *Necrobia rufipes* Fabr. abounded on the ship during this part of the voyage; it readily took flight when disturbed.

Penang, reached on October 3rd, impressed us as a bright and interesting place. My son and I went ashore and took a walk up the Northam and Kelawi Roads, with occasional detours to the sea front. As at Singapore, most of the catching was done by the junior member of the party. The strong vanilla-scent of *Elymnias nigrescens* ♂ was confirmed; three specimens were taken of *Precis atlites* Joh., one in good condition, the others much battered. Lycaenids were represented by three males and a female of *Zizera gaika* Trim.; Satyrids by *Yphthima newboldi* Dist., and *Y. hübneri* Kirby; Dánaines by *Radena vulgaris* Butl., and Pierines by three females and a male of *Terias hecabe* Linn. All four of the *T. hecabe* are of the wet season form; the male and one of the females are devoid of markings in the cell of the fore-wing beneath; another female has in that situation two faint markings, and the third female only one. All have the "dog's head" well developed. Other captures at Penang included *Vespa cincta* Fabr., which was common, and two males of the handsome golden-brown *Xylocopa verticalis*, which species was only seen in one place, flying about a hibiscus hedge near the sea. *Necrobia rufipes*, already noted as abounding on board s.s. "Montoro," was common in Penang. This species occurs in Britain, and was also found by Dr. Longstaff at Kimberley in South Africa.

After an adventurous evening excursion by sampan in a heavy sea, with the accompaniments of lightning, thunder and drenching rain, I left Penang on October 4th for Colombo. On October 5th our ship passed within sight of the Nicobar Islands, and after dark on October 7th we made the lights of Ceylon. As on the outward journey, clouds and rain greeted the disembarkation at Colombo, but bright intervals were not infrequent. The first insect to turn up at Colombo was our old friend *Necrobia rufipes*, larger than average

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The Chair will be taken at 8 o'clock in the evening precisely.

The Library is open daily from 9 a.m. to 6 p.m. (except on Saturdays, when it is closed at 2 p.m.), and until 10 p.m. on Meeting nights.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 8 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

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THE LONDON NATURAL HISTORY SOCIETY which meets at 7 p.m., on the 1st and 3rd Tuesdays in each month, at Room 20, Salisbury House, Finsbury Circus, E.C., will be glad to welcome at its Meetings any French or Belgian entomologists now staying in this country, and to give them the benefit of its library and collections. Communications should be addressed to the Secretary, Salisbury House, E.C.

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Arrangements have been made by the Lepidoptera Committee of the above Society for a Member of the Committee to attend at Salisbury House at 6.30 p.m. on Meeting Nights (1st and 3rd Tuesdays in each month, except July and August), for the purpose of giving advice and assistance to young entomologists, whether members of the Society or not. A cordial welcome will be extended to any who care to avail themselves of this arrangement.

Woodford Branch. Meetings are held at the Wilfrid Lawson Hotel, Woodford Green on the last Friday in the month, and commence at 8 p.m. The Meeting Room is open at 7.30 p.m.

Chingford Branch. The Chingford Local Branch meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the 2nd Monday in each month.



specimens from further east, and at night entertainment was provided by a flight of Termites round the hotel lamps, lasting for half-an-hour, more or less. On October 9th I ascended to Kandy by the beautiful railway route, the views along which are world-renowned and deserve their reputation. Kandy itself is delightful in regard of scenery, climate, and surroundings generally. It is true that a thunderstorm began at about 2 p.m. on every day during my stay, and that no day passed without heavy rain. But the mornings, and usually the evenings were fine, and the air was always fresh and exhilarating. My quarters on the shore of the charming lake, within sight (and hearing) of the famous Temple of the Tooth, could hardly have been bettered for interest and comfort. The eulogy passed by Dr. Longstaff on Lady Horton's Drive ("Butterfly Hunting in many Lands," Longmans, 1912: p. 109) accords with my own experience, and is, I think, no whit too favourable. Along this pleasant road, cut through the jungle that clothes the hillside, butterflies were numerous so long as the sun shone. Many, however, scarcely deigned to come within reach of the net. From time to time the splendid black and gold *Papilio (Ornithoptera) darsius* Gray, would be seen; generally too high up for capture. Now and then it descended, and on one occasion I actually had a fine male in my net; but eventually it escaped and I did not get another chance. More often in view was *P. pammon* Linn. Dr. Longstaff states that in the only specimen of this *Papilio* in which he detected any odour, it was somewhat agreeable; a male, however, tested by me on October 11th is noted as "smelling like a kitchen sink." Pierines were very little in evidence; the only ones taken belonged to the *hecabe* group of *Terias*, and were all of the wet season phase. Two males of *T. silhetana* Wallace, were observed playing together; one of these had a slight flowery scent, the other appeared to be odourless, as also did a male and female of *T. rotundalis* Moore (? *T. sari* Horsf.)*.

The common Danaine in Lady Horton's Drive, as elsewhere about Kandy, was *Parantica aglea* Cram. It was noted by me as flying slowly, being easily caught, and possessing very great tenacity of life. One specimen had a slight smell suggestive of old upholstery; in another a scent, not particularised, was doubtfully present; in three others, including one taken in Colombo, no odour was detected. These five specimens were, curiously enough, all females. A male of *Crastia asela* Moore, taken in the path above the old cemetery at Kandy, was

* For an interesting discussion of certain forms of the *hecabe* group, see Dr. Longstaff's "Butterfly Hunting in Many Lands," Longmans, 1912, pp. 353, 354.

similarly noted as tenacious of life, and as having no perceptible odour. Dr. Longstaff (*loc. cit.*, pp. 496, 7) says, "I am satisfied that in *P. aglea* the scent is more transitory, possibly more volatile, than in the majority of scent-yielding butterflies As with *Parantica* the scent of *Crastia* would appear to be more volatile than in the *Pierinae* or in *Danaida*." This accords with my own observations. Among Nymphalines, *Neptis varmona* Moore, was common; like other species of the genus it has a slow, sailing flight. Two specimens, ♂ and ♀, were noted as scentless; in a third, however, apparently a female, a faint flowery scent seemed to be present. A male taken at *Lantana* flowers close to the lake had no distinct odour. It is interesting in connection with these observations that Dr. Longstaff writes as follows (*loc. cit.*, p. 502), "*Neptis jumba* Moore (Ceylon, 1908). A faint sweet chocolate scent was detected in a male in the house. A somewhat similar scent was suspected in another male and in a female. On the other hand, no scent was recognised in the much commoner *N. varmona* Moore." One of the most remarkable frequenters of Lady Horton's Drive was *Cethosia nietneri* Feld.; an ammoniacal scent was noted in a captured female. With regard to *Cynthia asela* Moore, I agree with Dr. Longstaff (*loc. cit.*, pp. 112, 348) that it "seems to like sailing about over the trees"; also that it is hard to get in good condition. He finds in the male a faint scent which he compares to "sassafras and to French polish." The only specimen tested by me (a ♂) appeared to have a scent, the nature of which I failed to determine. No odour was detected in a ragged *Cirrochroa cognata* Moore, ♂; but a slight fusty smell was somewhat doubtfully recognised in *Ergolis ariadne* Linn., ♀. This specimen had a large piece cut cleanly out of the right fore-wing. A specimen of *Vanessa haronica* Moore (the "Blue Admiral") behaved much like an English *Vanessa*. It settled in the road with wings expanded, closing and opening them again from time to time, and when disturbed returned persistently to the same place. On its intermittent flights it was joined by another one, which eluded capture. No scent was found in the specimen taken. The commonest Satyrines in Lady Horton's Drive were *Nissanga patnia* Moore, and *Ypthima ceylonica* Hew. A somewhat worn male of the former species was odourless, as were also two females; but a fresh male specimen emitted a strong fragrant scent, which I compared to that of caramel with a touch of chocolate. Dr. Longstaff (*loc. cit.*, p. 346) says of *N. patnia*, "twice I suspected that it had a scent, though it cannot have been strong." It evidently varies in individuals. The

same is probably true of *Y. ceylonica*, since in two males I found a strong smell of chocolate, in one case confirmed in the house; and of a third male I note "odour (in field) slight or absent. No odour detected in the house." Three females were likewise scentless. Dr. Longstaff reports (*loc. cit.*, p. 346) that "the males appeared to have a very slight scent suggestive of chocolate."

Another Satyrine taken in Lady Horton's Drive was *Orsotriaena mandata* Moore. This was only seen in one place—just above the paddy fields near the end of the Drive. Dr. Longstaff (*ibid.*) also found it to be very local, and only common in one place—along the edge of a paddy field. Before leaving Kandy, however, I found it in another locality. This was Wace Park, on the wooded slopes overlooking the lake; here two males were playing together in the rain. One was examined for scent without result; the other at first appeared to be odourless, but on spreading out the tuft of hair-scales on the left side, I at once became sensible of an odour which I cannot otherwise describe than by calling it pleasantly aromatic. Close to the aforesaid paddy-fields, I made practical acquaintance with the land-leech of Ceylon—a noisome and insinuating beast.

Perhaps the commonest Lycaenid in Lady Horton's Drive was *Loxura arcuata* Moore. Several were seen, darting rapidly about and settling from time to time on the upper side of leaves. It is a particularly wary insect. No scent was found in *L. arcuata*; *Nacaduba atrata* Horsf., ♂, on the other hand, which was captured while flying about a patch of old bullock-dung in the road, had a distinct flowery smell, still perceptible on the following day.

A female caught at the same time and place was odourless. A sweet flowery scent was noticed in two males of the same species by Dr. Longstaff (*loc. cit.*, p. 505). One of the most striking denizens of the Drive, also encountered on the opposite side of the lake, was *Talicauda nyseus*, an interesting Lycaenid with curiously variegated underside. Other captures included *Chalcosia thallo* Linn., a pretty moth, white with touches of bronzy green, and *Macaria nota* Walker, a Geometrid with a somewhat butterfly-like aspect. *C. thallo* was found by Dr. Longstaff (*loc. cit.*, p. 360), to have "a peculiar, disagreeable, musty odour, not at all strong and seemingly present in both sexes." The only specimen examined by me appeared to be scentless. At one place winged Termites were swarming (October 11th); one of these shed two wings in the cyanide bottle; another reached home intact. The blue-banded bee, *Podalirius zonatus* Linn., ♀, ends the list of captures in Lady Horton's Drive.

A visit to the famous Botanical Gardens at Peradeniya was not productive of insect booty. The day was dull, and from time to time the rain fell in torrents. The usual afternoon thunderstorm did not improve matters, and much of my time was spent under the roof of a hut on the slope overlooking the river. Between the showers, *Ypthima ceylonica* was to be seen in plenty. Immediately after rain, or even before the last drops had fallen, numbers of this cheerful little Satyrid appeared on the wing; flying near the ground, and settling with wings sometimes open, sometimes closed.

At a cluster of *Lantana* flowers, on the east shore of the lake, I took *Precis iphita* Cram. This butterfly was on one occasion noted by Dr. Longstaff at flowers, though he observes that this is not a common habit of the species (*loc. cit.*, p. 64). My specimen, a male, possessed no distinct odour. *Neptis varmona* was taken at *Lantana* flowers in the same place, which also yielded *Talicauda nyseus*, *Ypthima ceylonica*, and a handsome Hemipteron, *Ectrychotes* sp., captured on the wing. A pale-coloured Arctiid moth, *Migoplastis alba* Moore, ♀, picked up in the road at Kandy by a fellow-traveller, Mr. C. Skyrme; and a metallic-green beetle, *Euchlora (Anomala) dussumieri* Blanch., found by the same gentleman in the road between Kandy and Peradeniya, complete the tale of my collecting at Kandy.

On returning to Colombo, I revisited my old locality; war conditions, however, proved to be adverse to collecting. The best spot was in occupation by the military; after capturing a single *Parantica aglea* I was challenged by an armed sentry, and finding him impervious to reason, I thought it best to withdraw. Other places were unproductive, but in the Park I saw *Delias eucharis* Drury, on a flower—the only specimen of this common butterfly that has crossed my path.

The remainder of the voyage was entomologically uneventful. On the morning of Oct. 16th, a fine view was had of Cape Comorin; and on Oct. 20th, R.M.S. "Otway" was in the Gulf of Aden. Here a pretty Sphingid came on board—small, and with a stripe of old gold on each side of its body. It was boxed, but eventually made good its escape. A *Macroglossa* (?) was seen flying about the ship off Suez. At Port Said a fine specimen of *Mantis religiosa* was secured on deck. On Nov. 2nd we were once more at Gibraltar. The day was perfect—fine, warm, and sunny. Many butterflies were on the wing—whites and Vanessas. Hibiscus, plumbago, and other flowering shrubs were well out in bloom. The "pepper trees" (*Schinus molle*) were bright with

red berries. Altogether, Gibraltar in November presented a decidedly attractive appearance. But our stay here was short, and after experiencing some rough weather off Cape St. Vincent, we made Plymouth safely on the morning of November 6th.

Wadham College, Oxford:

November 24th, 1915.

STUDIES IN HELOPHORINI.

BY D. SHARP, M.A., F.R.S.

10.—HELOPHORUS (continued from p. 112).

24.—*Helophorus hilaris*, sp. n.

Palpis, antennis pedibusque flavis, illis elongatis, gracilibus; capite thoraceque laete metallescentibus, hoc tenuiter sulcato, obsolete sculpturato, margine laterali tenuissime flavo; elytris testaceis parum variegatis, subtiliter punctato-striatis, margine laterali medio parum prominulo; subtus niger. Long. 3 mm.

Hab.: Kurdistan.

This should be an easily recognised species; the slender legs and palpi, and the brightly coloured head and thorax, and the general facies give it a resemblance to *H. minutus* and *affinis*, from which it is, however, distinguished by the visibility of the elytral flanks, and various other characters. The elytra are only very slightly impressed in front of the middle. The very fine elytral margin as seen from above is exceptional in connection with the visibility of the flanks beneath. The grooves of the thorax are very fine and shallow, and the sculpture of the intervals is much effaced, the yellow colour of the lateral margins extends distinctly along the front margin. The elongate and slender maxillary palpi are remarkable; the labial palpi are slender, but only moderately long, the terminal joint about as long as the penultimate of the maxillary.

These characters bring it nearest to *H. aritzuensis*, which it does not resemble, and differs strongly by the palpi. I have seen only one specimen which I have little doubt is a female. I obtained it with the W. W. Saunders collection, in which it was labelled merely "Kurd," his abbreviation for Kurdistan.

H. suturalis Motsch. from the Kirghese Steppes is not adequately described, but cannot, I think, be *H. hilaris*; it is queried by Zaitzev as a synonym of *pallidipennis* Muls., as to which refer to *H. fulgidicollis*.

25.—*Helophorus illustris*, sp. n.

H. dorsalis Muls. (nec Marsh.).

Elongatus, sub-parallelus, antennis, palpis, pedibusque flavis, palpis articulo ultimo elongato, gracile; prothorace metallescente, lateribus prominulis, pallide flavis; elytris variegatis, interstitio secundo saepius macula parva pallida.
Long. $3\frac{5}{8}$ –5 mm.

Hab. : Europa mer.

This is a species easily recognised, notwithstanding considerable variation in size, sculpture and, specially, colour. The elongate form and the strongly outstanding pallid lateral margin of the thorax should be the first points noticed, and then the rather long slender palpi, the last joint of the labial pair being unusually long and slender. The thorax is usually very brilliantly coloured, and has the disc convex, and in front of this is distinctly depressed; it is a little larger than usual, and the sculpture varies a good deal. The elytra are depressed in front of the middle, moderately strongly punctured, somewhat sordidly yellow, with numerous darker markings, and usually with an elongate, slender, oblong pallid mark on the second interstice (third if the sutural interval be counted as one) just at the commencement of the apical declivity; the flanks are quite visible beneath. The colour of the under-surface varies much, and is often in larger part red. The aedeagus (fig. 42) is pallid, and appears to be about intermediate between that of *walkeri* and *aeneipennis*.

H. illustris appears to be a Mediterranean species. A nice series in the Champion collection, found by Commander Walker at Corfu, illustrates the variation; specimens from South France in the Laferté collection were named *dorsalis* by Mulsant. Elmas, Sardinia (Gestro: 9.5.1873); Arabia, one female (Fry coll.).

26.—*Helophorus corsicanus* Kuw.

Atracthelophorus puncticollis, Cat. Zaitzev.

This species is a very distinct one, and easy of recognition. The head and thorax are black, nearly or quite devoid of metallic reflections; the thorax is finely and sparingly punctured and remarkably smooth, there being obsolete granulations on the very broad sub-external interval; the grooves are very narrow, the lateral margin very fine, and the external groove extremely indistinct and only it is yellow. The elytra are pallid, but with numerous dark marks.

Apparently peculiar to Corsica (Vizzavona, Champion) and rare there. I have seen four female specimens and one male.

H. corsicanus is very difficult to place. Zaitzev has it in *Atracthelophorus*, probably in consequence of Rey saying that it is allied to *glucialis*. The palpi are not suitable for *Atracthelophorus*; and though the flanks of elytra are only slightly visible, I think the species is best placed here for the present. There is but a very faint trace of any

depression on the elytra, and were it not for that I should have preferred the *aeneipennis* group for it, and I anticipate that will prove to be its natural position.

The aedeagus (fig. 43) is not very near that of any other *Helophorus*. With regard to the name of the species we meet with great difficulties owing, I suspect, to errors of identification made by both Rey and Kuwert. The name *puncticollis* was proposed by Baudi, but the insect was not described by him. I have one of his specimens from Sardinia before me, and it is *H. aritzuensis*. Rey also received the species from Baudi, but associated it wrongly with *glacialis*, which it is much like, and at that time the genera and species were generally confused in collections. Kuwert's description of *corsicanus* applies to the Vizzavona insect, and the name he gave to it is available, though he subsequently abandoned it as a synonym of *puncticollis* Rey (which, when found in Corsica, was called *insularis* Reiche). I am doubtful as to the synonymy given by Deville (Cat. Crit. Col. Corse, p. 184) under the heading of "*puncticollis*"; but if his *puncticollis* be really *corsicanus*, it would appear that the species is really plentiful in Corsica.

27.—*Helophorus discrepans* Rey.

This is placed by Zaitzev and Ganglbauer as a synonym of *griseus* (= *minutus* Fabr.), but it is a distinct species. It may be separated from *minutus* by the delicate lateral margin of the thorax, which does not stand out laterally and is not definitely yellow; the thorax is rather more narrowed behind, and the granulation on the median intervals is not quite effaced on the disc. The flanks of the elytra are slightly visible, as in some *aeneipennis*. The aedeagus (fig. 44) is remarkable: it is constricted at the junction of the basal piece with the lateral lobes, and the latter are consequently a good deal rounded externally; the median lobe is very peculiar, the struts being remarkably long, while the barrel is correspondingly reduced in length so as to be only one-fourth of the length of the struts.

Pyrenees (Pandellé). I received examples of this species, and so named, from M. Pandellé forty years ago; as Rey described *H. discrepans* from specimens sent to him by the same careful entomologist, there is no doubt as to the determination. Moreover Rey mentions the delicate thoracic margin.

H. discrepans is another species very troublesome to place; it is not only confounded with *minutus*, but is also, I believe, really most

nearly allied to that species, although I place it in a different section. The flanks of the elytra are certainly a little visible, but, as I explain below, this character is too slight and uncertain in several species to be relied on.

[*Helophorus aeneipennis*. In some individuals of this protean species the flanks of the elytra are distinctly visible, so that we mention it here, though we place it in the next section, q.v.].

b². Flank of elytra not (or very slightly) visible beneath.*

This character, though an important one, is very difficult of application, because there are several species that would be as well placed in one group as in the other. A glance at fig. 71, flank visible, and fig. 72, flank not visible, will make this comprehensible without further explanation.

28.—*Helophorus aeneipennis* Thoms.

This species, which in Britain is the most abundant of the genus, is so variable in colour, sculpture, size and shape, as to be very difficult to diagnose. Even the aedeagus varies considerably, but always is elongate, with a long basal piece, and usually is much infusate (fig. 45). The colour is always dark, the elytra being strongly infusate, or even black, the legs rather sordid yellow; the bases of the femora often blackened, and the club of the antennae obscured, or even blackish; the sides of the thorax only slightly or not at all yellow. The elytra are usually elongate, and are slightly impressed in front of the middle, but sometimes this depression is nearly absent. The thorax varies in sculpture; the submedian grooves are usually but little angulate, and the median intervals are either nearly smooth or are granulate. The punctures on the elytra are moderately coarse, and are very close together in longitudinal sequence, the interstices are never in the least carinate; the epipleuron is rather narrow and nearly always strongly infusate, the flanks usually not visible, though in some specimens they may be slightly seen.

Length 3–4½ mm.

This species and *H. walkeri* are so variable, and some of the specimens so closely approximate, that it is not a matter for surprise that they are mixed in collections, and I should have treated them as one, except that the aedeagus indicates that they are really segregated, and I find that after becoming acquainted with the variation I can always say previous to dissection what the aedeagus will prove to be. Some of the females are certainly very difficult to identify.

* Cf. *antenn.*, Vol. li, p. 274.

I have retained for this species the name under which it is usually known (with a possible admixture of *H. walkeri*) in our British collections. On the continent it has been proposed to replace the name by that of *H. viridicollis* Stephens, but Stephens' description is not characteristic of *H. aeneipennis*, and there are no specimens with green thorax. Whether or not Thomson really had this species in view as *H. aeneipennis* is somewhat doubtful. In the Opusc. Ent., iii, p. 327, he gave an amended diagnosis of *aeneipennis* with a view of distinguishing it from *H. planicollis*, a supposed new species. I give these two diagnoses below, as this work of Thomson's is but little known.

H. aeneipennis. "Niger, palpis articulo ultimo elongato pedibusque testaceis; frontis linea media antice dilata; prothorace aeneo, transverso, angulis posticis obtusiusculis, disco longitudinaliter leniter, transversim fortius convexo, sulcis intermediis angulatis, interstitiis, saltem exterioribus sub-rugoso-punctatis, limbo piceo-testaceo; elytris obscure testaceis, interstitiis alternis vix elevatis, haud carinatis, et sutura virescenti-aeneis, crenato-striatis."

H. planicollis. "Niger, palpis articulo ultimo pedibusque testaceis, femoribus basi fuscis; frontis linea media antice dilatata; prothorace sulcis intermediis leviter flexuosis, disco laevi, aeneo; elytris fusco-aeneis, fortiter punctato-striatis."

These diagnoses may apply to forms of *H. aeneipennis*, and it is better to accept this view, though an examination of Thomson's types is required to make it certain. Unfortunately I know nothing of the Scandinavian forms of *aeneipennis*.

Kuwert's *H. obscurus* var. *shetlandicus* is, I think, probably founded on dark *H. aeneipennis*.

In Britain this is, as I have said, the most abundant species of the genus, and is found in all sorts of waters. Several hundred specimens are before me, and in about one hundred the aedeagus has been examined.

I have also seen examples from Germany, France, the Pyrenees, Spain, Algeria, Corsica, Savoy, and Lombardy. In Spain the species is abundant, and examples from the Escorial show the same form of aedeagus as our British specimens.

29.—*Helophorus phalleterus* sp. n.

Capite thoraceque nigro-sub-metallescentibus, sub-obsolete sculpturatis, elytris fuscescentibus, sub-aeneo-micantibus, ante medium obsolete impressis, fortiter punctato-striatis, pedibus validis, sordide testaceis. Long. $3\frac{1}{2}$ mm.

Hab.: Anglia mer.

This insect presents us with a curious enigma. I should have passed it without any doubt as *aeneipennis*, but the aedeagus (fig. 46) is markedly different, and does not agree with that of any other *Helophorus*. The legs are perhaps a little longer and stouter than in the similar forms of *aeneipennis*. I have only been able to find one specimen, but it is desirable to give it a name. The suspicion that will be entertained is that it may be a phallic sport or mutation of *aeneipennis*. Nothing of the sort has so far as I know been yet recorded, and if the creature be such a sport, it opens a wide field for speculation. The colour on the under surface is very dark, and the elytral flanks are scarcely at all visible, in which it agrees with the corresponding variety of *aeneipennis*.

Brockenhurst, March 20th, 1915. In the pond on Balmer Lawn that yields somewhere about 10 or 12 species of the *Helophorini*. On the day in question very few *Helophori* could be found, though *Berosus* was very abundant.

30.—*Helophorus ganglbaueri* sp. n.

H. crenatus Ganglb. Käf. Mitteleur. iv, 1904, p. 171; Edwards, Ent. Mo. Mag., 1908, p. 223 (*nec* Rey, 1884).

This species is one that has not yet been found in England. My reasons for concluding that it is not the original *crenatus* of Rey are given (p. 271 last year) under the heading of *H. crenatus*. I base the species *ganglbaueri* on four examples from Upper Italy sent to Mr. Champion by Ganglbauer as *H. crenatus*, and quite agreeing with his description; whether they are the same as Rey's *crenatus* of 1885 does not matter, but it is at best doubtful.

These specimens are all females, of elongate, parallel, rather flat form, 6 mm. long by 3 broad, and are remarkable by the dense, even granulation of the head and thorax, the palpi are long, the last joint of the labial pair larger than usual. The channel on the vertex is narrow but is perceptibly broader in front. The thorax is a good deal narrowed behind, its greatest width in front of the middle, the grooves are rather shallow, and somewhat narrow, the submedian and the sub-external very indistinct in front. The elongate elytra are of a dirty yellow colour, with darker marks, some of which are vague. The punctures of the elytra are rather large, the series very regular, the interstices broad, but little convex. The antennal club is infuscate, and also the tip of the maxillary palpus. Legs pale yellow. On the underside the flanks of the elytra are not at all visible.

Monte Legnone (Ganglbauer in coll. Champion).

(To be continued.)

NOTES ON THE COLEOPTERA OF CROWTHORNE

(A PARISH OF BERKSHIRE).

BY W. E. SHARP, F.E.S.

(Concluded from page 89).

Of the great Clavicorn series - apart from the *Palpicornia*, of course—we have many interesting species. Among the *Brachelytra* there are probably far more than have been recorded; the nests of the two ants, *Formica rufa* and *Donisthorpea (Lasius) fuliginosa*, both of which are frequent, furnish between them most of the British myrmecophilous *Staphylinidae* known to exist, but such other contingent species as are associated with “Cossus trees” and moles’ nests are absent, because the forest land is quite impossible for moles, and there are very few of the deciduous trees such as the goat-moth affects. However, round the muddy margins of meres and streams, occur many species of *Tachyusa*, *Atheta*, *Stenus*, *Trogophloeus*, etc., while the district remains, I believe, one of the few localities in these islands where *Bledius femoralis* Gyll. can be taken with certainty. This species occurs in sandy hollows near water, and in a similar locality I took *B. fracticornis* Payk. in some numbers this year. The vast abundance of fungi of all kinds supplies all the commoner fungivorous beetles, and under bark *Coryphium angustirole* occurs rarely with various more frequent *Homalia*. Other captures perhaps worth mention are *Callicerus rigidicornis*, *Gyrophæna bihamata*, *Deinopsis erosa*, *Medon obsoletus*, and *Stenus bipunctatus*.

It was, perhaps, the capture of various of our rarer species of *Liodidae*, including especially *Triarthron märkeli*, which first brought “Wellington College” under the notice of Coleopterists; and here these species still occur, although, as I have remarked, in varying quantities and proportions each year. Possibly the presence, or at least the frequency, of many of them may have been made possible by the advent of the pines, and certainly these are responsible for the vast numbers of *Coccinellidae* which abound throughout the year. Otherwise not much of note can be recorded.

The numerous species of the less common *Clavicornia*, which such woodlands as those of Sherwood and the New Forest (Ytene) maintain, depending as they do on the aged and decaying oaks and beeches of those forests, are necessarily absent from a district in which such sylvan features are not found. Then also the lack of the dung of herbivorous domestic animals owing to the deficiency of pasture, or of

carrion due to the abundance of crows, magpies, and foxes, explain the scarcity of so many of our coprophagous and necrophagous *Clavicornes*. In fact, the most noteworthy of the group, after the *Lioididae*, are perhaps among the smaller species. Thus *Cephennium thoracicum* and *Euconnus hirticollis* can often be swept up with the *Liodes*, and very rarely *Thalycra fervida* Ol. (*sericea* Stm.). Among moss and dead leaves occur *Corticaria ferruginea* Marsh. (*fenestralis* Brit. Cat.), *Lathridius constrictus*, *Atomaria fuscipes*, and *A. affinis* (*badia* olim). *Cryptophagus subdepressus* is sometimes to be beaten from the lichen covered lower branches of the spruce firs, and it will be remembered that Mr. Tomlin has recorded (Ent. Mo. Mag., LI, p. 143) *C. cylindrus* in the borings of the Scolytid, *Pityogenes bidentatus*.

Sphindus, which perhaps is more correctly placed within the Clavicorn series than in its old position, is exceedingly common in the brown powdery fungoid growth which occurs in small shining excrescences on the stumps of various trees, and with it, but more rarely, *Aspidiphorus orbiculatus*.

Turning to the *Lamellicornia*, the almost complete absence of the usual ruminants of the country side does much to make our list a short one; *Geotrupes typhoeus*, however, is one of our commonest beetles; it seems to assume the imaginal state during the late autumn, and can be dug out of its very obvious burrows at any time between November and February, when any mild day will bring it up, and all through the early spring it is to be seen crawling about in the bleak sunshine. *G. mutator* also occurs, but among the *Aphodiina* nothing of special interest has been observed. Undoubtedly our most interesting Lamellicorn beetle is *Odontaeus armiger* Scop. (*mobilicornis* F.), of which we have three or four records. These captures detract in no way from our ignorance of the economy of this insect, as they have all been made in the evening, either by the beetle flying into a lighted room, or by its flight being intercepted by a net or otherwise.

It may here be appropriately mentioned that although we have no record of the typical form of *Anomala aenea* from the district, its entirely dark blue variety (*cyanea* Torre) has been taken. The occurrence of this form here and in other sandy localities in Surrey, as well as in the New Forest, leads me to speculate as to whether this may not be predominately the inland form of the species. So far the only evidence I have to support such a theory is that supplied me by Mr. S. R. Ashby, who reports that out of 24 specimens of *Anomala* taken in the New Forest in 1910, and 7 in 1911—in the first year 17,

and in the second 6 specimens were of this blue form. More evidence is required, however, from the coast, where *A. aenea* is common wherever there are sandhills, as to the proportion existing *there* between the type and varietal forms.

Among the *Sternoxi* and *Longicornia*, the influence of afforestation with Scots pines is quite obvious. Such species as *Limonius aeruginosus* Ol. (*cylindricus* Payk.), and *Denticollis* (*Campylus*) *linearis*, the former of which is extraordinarily abundant in the spring, probably belong to the pre-pine period; but *Melanotus rufipes*, another very common species, no doubt was made so by their advent, and among the *Longicornia*, *Aseum striatum*, now fairly frequent, and *Crioccephalus fesus*, of which at least one record exists, certainly arrived with the pines. Indeed, our list of *Longicornia*, except such as may be associated with these trees, is an exceedingly small one.

The district has so far afforded but little of interest among the *Phytophaga*. *Cryptocephalus bipunctatus* v. *sanguinolentus* Scop., is always fairly common by sweeping, and a nearly black form of *C. pusillus* (v. *marshami*?) is locally abundant on birches. *Longitarsus castaneus* Foudr. (*brunneus* Duft.), which may always be known by its white apical cilia, occurs in marshy places, and the beautiful but unstable *Cassida nobilis* is frequent everywhere. Mr. Tomlin also reports the capture of the much rarer *C. sanguinolenta*, all of which were probably here before the pine woods existed.

But among the *Rhynchophora* there are several species that directly depend on the pines. Thus *Hyllobius abietis* is so abundant that (I quote from a Government Report), "To combat this insect, newly felled areas are now allowed to remain unplanted for four years in order that the stumps, in which (when fresh) the beetles breed, may lose their attractiveness."

Of course all the *Scolytidae* associated with conifers are usually very abundant, and one of the rarer species, *Hylastes cunicularius*, is occasionally to be extracted from the stumps. Otherwise such species of weevils as have been noticed are merely such as might occur on any uncultivated land. Of the less common species, the broom which is generally distributed gives us regularly, but not in abundance, *Apion fuscirostre*, and *A. immune*; and *Tychius venustus* erratically. This year (1915), *Sitona griseus* has been locally in profusion on the same plant, thus confirming the Rev. W. W. Fowler's suggestion (Col. Brit. Isls., Vol. V, p. 219) that *Genista* might be its food-plant, a

point hitherto somewhat uncertain.* Among the striped specimens of *S. griseus* taken, there occurred, in some numbers, an entirely unicolorous, dark reddish-brown variety, without any trace of the usual whitish linear elytral fascia : this is the typical form, according to the description of Fabricius and his British types, still preserved in the Banksian collection in the British Museum. The names *suturalis* Herbst (1784), and *sutura-alba* Ol. (1790), apply, of course, to the lineate examples. Another species rather abundant on the broom is *Cneorrhinus exaratus*. Then, by general sweeping, such species have been taken as *Apion marchicum*, *Gronops lunatus*, and *Sibinia potentillae* in great abundance ; also more or less frequently, *Acalles turbatus*, *Rhinoncus bruchoides*, and *R. perpendicularis*, and from the birch, *Balaninus cerasorum*. Of the *Heteromera*, besides the *Hypophloeus* and the *Sphaeriestes* already referred to, except an odd specimen or two of *Orchesia minor*, nothing has been observed worth notice. And here I must bring to a close these imperfect notes on the Coleopterous fauna of an interesting, and certainly a specialized, district—a fauna which has been distinctly modified by the recent operations of mankind.

Charterlea, Crowthorne :

December 2nd, 1915.

THE GEOGRAPHICAL DISTRIBUTION OF *DIMORPHA* (*ENDROMIS*)
VERSICOLORA L., AND WHAT IT SUGGESTS.

BY J. W. H. HARRISON, B.Sc.

During some recent work on the *Bistoninae*, the necessity arose for working out their past and present geographical distribution—a necessity that led to a similar investigation into the range of other forms inhabiting the same area. Amongst the species so studied was *Dimorpha versicolora* L., which, like *Lycia hirtaria* Cl., and some other insects, displays a double distribution in our islands. My examination of the available facts concerning this species had such interesting results that I consider them worthy of special treatment, for any fact, no matter how small, which can throw light on the history of the flora and fauna of our islands, is worthy of being put on record.

Dimorpha versicolora, of all European moths, is the most isolated, for it forms the type of a super-family containing no other species than

* It occurs in abundance in some years on broom in the Woking district, but the unicolorous typical form is scarce.—G. C. C.

itself, and not clearly allied to any other known family. Further, its range is purely European, as it only occurs in the British Isles, France (from which it just overflows into the valley of Piedmont in Italy), Switzerland, Germany, Austria-Hungary, Russia (as far east as Moscow), Finland, Roumania, Scandinavia (as far north as 66°), and it barely enters Belgium and Holland on the east. Thus we see that it includes in its stations, habitats varying from those enjoying a mild and oceanic climate, to those possessing the vigorous Continental one of Central Russia. But, let it be noted, it seems to object to passing the Arctic circle and into the warmer regions of Europe. Its limits, whether as a mere coincidence or not, seem to be the winter isotherm of 5°C , and the summer one of 7°C . The species, then, is wholly European, and shows no sign of ever having wandered beyond our boundaries. Coupled with this is the fact that if one judges from the remoteness of its nearest relatives, it must be a very old one. Its history and geography then, if worked out clearly, should betray to some extent the past history of the distribution of the European flora and fauna. The present range, except for the break in Britain, is just what one would expect of a birch feeder which had originated in Europe and spread there. Still, one must note that its distribution does not coincide with that of the food plants, birch and alder, or of any one species of birch or alder, for they exist throughout the Holarctic area, occurring even in the Mediterranean Islands. Inability then to stand a high *average* annual temperature, or a very low one, seem to be the sole limits to any extension of range; and if this be the case now, presumably the same factors had the same power formerly. Hence, granting that the limits of its colonising ability were attained in late Pliocene times, of necessity on the approach of the glacial period, in spite of the probable continued existence of the dwarf birch (*Betula nana*) in Britain throughout that time, one cannot conceive of survival here, at any rate in its present habitats. It would, therefore, be driven forth southward to more favourable climes, whence when the climate ameliorated, it would issue and regain lost ground. Evidently, this re-advance would be across the lower reaches of the dry bed of the North Sea. But this temptingly simple position is clearly untenable in this crude form, as it offers no explanation of the broad gap in the British distribution, such as occurs in Mid and North England and in South and South Central Scotland—that is, unless we grant that this gap has been caused by subsequent geological or other events. Geologically, the only event which would satisfactorily

explain that gap would be a submergence of the whole of our central area—a submergence for which, in spite of the existence of marine shell beds* of Pleistocene age on the Welsh Mountains, there is no warrant subsequent to the separation of England from Ireland. In any case, a submergence of the extent required would have cleared the insect out of the southern English localities far more effectively than from the higher birch-clad regions of the North of England, where both birch, and particularly alder, are very common indeed. In that direction there is no explanation for the gap, if its distribution has once been continuous. We must therefore search for other reasons. Human agency might be considered, but the only causes which one can suggest are intensity of cultivation and the firing of primaeval forests, both of which causes acted with far greater severity in the South of England than in the North, and, on that supposition, the only places in England to contain the insect would be the very ones from which it is so evidently absent.

However, all these surmises are based on the usual idea that our islands are colonised chiefly by plants and animals advancing from the south, whether south-westerly or south-easterly—an idea not supported by the present facts of distribution. Excluding those cases of erratic or unexpected distribution exhibited by the American and Lusitanian elements of our flora and fauna, which, to any but the perfervid glacialist, are palpably survivals from our Pliocene flora and fauna, and therefore cannot be brought under any rule, the ranges of the bulk of our plants and animals are ordered and regular, suggesting that our Northern forms came from the North and the Southern forms from the South, and so on. Or, more plainly, the range of our Northern animals, etc., is Northern and Western, whilst that of our Southern ones is just as certainly Southern and Eastern. One need only point to the stations of such things as the Pearl Mussel (*Unio margaritifera* L.), the Carabid beetle *Pelophila borealis* Payk., the water-beetle *Dytiscus lapponicus* Gyll., the Coccid *Orthezia cataphracta* Shaw, and the large Heath Butterfly (*Coenonympha tiphon* Rott.), as proofs of the first statement, and to the cases of the whole group of the Wave Moths (*Acidalia*), the Painters' Mussel (*Unio pictorum* L.), the Spurge Laurel (*Daphne laureola* L.), to confirm the second. These are but a few examples chosen at random from the enormous number available in all groups to illustrate the point.

* See Wright, "Ice Age in North America," page 401.

That there were land connections available between Scotland and Scandinavia when our flora and fauna and those of Scandinavia were in the making, can be readily demonstrated. Take, for example, the two mosses *Andreaea alpina* Sm., and *Grimmia maritima* Turn. The former, so abundant in suitable localities with us, is entirely absent from Continental ones, except for a few in Scandinavia, from which we can only conclude that it advanced from Scotland *via* some old and long since submerged land. In the case of *Grimmia maritima*, the reverse is apparently true, *i.e.*, that it passed to our islands from Norway, because if one judges from its present North Atlantic distribution, the form has originated on American shores. Clearly, it seems possible and probable that *Dimorpha versicolora* reached its northern stations with other (and more truly northern) migrants from Scandinavia. That this occurred at a later period than that which marked the passage of most of the Northern forms can be shown by its absence from Ireland in areas affected by Northern species which passed to Ireland *via* the Mull, Islay, Donegal, and Londonderry route, which lasted long after the Wales-Ireland causeway broke down. This would throw the origin of the Southern colony of *Dimorpha versicolora* in our islands far anterior to the Northern one, because the former had time to reach Ireland by a connection which broke early, whilst the latter failed to reach the same goal by a route which lasted an infinitely longer period.

There seems, thus, to have been some disturbances in the Scandinavian stations after these had been settled, which caused the species once more to resume its wanderings; this disturbance we shall discuss shortly.

The smallness of the area occupied by the southern detachment suggests that, before it had had time to spread, something effectually checked and interrupted the advance, and that consequently it had very long distances to travel from its retreat; this, in turn, implies that the habitat during the period of least distribution was not South-western, but South-eastern Europe.

Now, it can be demonstrated from the geological record by references to the flora of the submerged peat in the sea between Denmark and Scandinavia, that birches and alders spread to Scandinavia (and therefore presumably to the British Islands) during the Inter-glacial period just prior to the development of the Baltic system of glaciers. Presumably, our insect followed the lines of advancing

birches and alders during this period, and reached suitable Scandinavian regions then. This would place the origin of much of our flora and fauna as Inter-glacial. Before our islands were fully colonised, a colder climate supervened, and the normal passages were interrupted, but, in spite of that, we gained and gained at the expense of other and more northern areas. The agent causing this gain was the last great Baltic glacier which overwhelmed most of Norway, Sweden, North Germany, and Denmark, and, incidentally, threw the waters of the greater and land-locked Baltic Sea over Holstein and far into the low-lying plains over which the North Sea now rolls.

Now, let us examine the sequence of events these circumstances would bring into being. As the warmer Inter-glacial period in Scandinavia gave way before the gradually increasing glaciers, the animals and plants which had, in the main, migrated to Scandinavia *via* Denmark and South Sweden, would be gradually forced southward only, however, to meet the ice which was working slowly westward over the South of the Baltic and into Denmark and Germany. This would deflect the retreating forms westward—a deflection that would be emphasized by the huge arm from the Baltic Sea which now stretched far over the North Sea plains. The result would be that *Dimorpha versicolora* (and other forms!) would reach, at the climax of the Baltic ice, the limits of its present North British range from which it has oscillated but little since. That the conditions in Britain were not unfavourable to the insect during the period of the last Baltic glaciers seems certain, for the conditions here were not more rigorous than those which obtain in the present habitats of *Dimorpha versicolora* near existing Scandinavian glaciers. On the contrary, they were probably more favourable, for but little of Britain supported ice then, and this would be far more than counterbalanced by the proximity of the Gulf Stream.

If other northern forms, such as the reindeer, were similarly affected by the Baltic ice, and we grant that the last Inter-glacial period saw the advent of the bulk of our animals and plants, then possibly we have fathomed the mystery of the strange inter-mingling of Southern and Northern forms found in certain Pleistocene deposits, both in our own country and in those parts of West Europe with which it was connected during part of glacial times.

SUMMARY.

(1). *Dimorpha versicolora* is a purely European form, which was probably widespread in this continent in late Pliocene times.

(2). It was driven far to the East during the Glacial period, whence it advanced during favourable Inter-glacial periods, only to be driven back as the climate oscillated.

(3). The bulk of the present habitats of European forms were reached during the last Inter-glacial period.

(4). There is a gap in the British range of the species we have studied which indicates that the species had a double origin here, one contingent reaching Britain from France, and the other from Scandinavia.

(5). The Scandinavian forms were forced south-west by the last Baltic glaciers, which had but little effect in Britain.

(6). This explains how all our Northern forms are Northern and Western in distribution, and do not appear to have advanced from the South as the ice retreated, as we are usually asked to believe.

(7). This may explain the curious and anomalous mixture of Northern and Southern forms, seen in some of the Pleistocene deposits of Western Europe.

181, Abingdon Road,

Middlesbrough :

March, 1916.

Bornean Rhopalocera: a reply to a criticism by Mr. H. H. Druce.—The February number of the Ent. Mo. Mag., in which Mr. Druce has criticised my paper on Bornean *Rhopalocera*, has just been forwarded to me from Sarawak. Although my regiment is stationed at present in the Himalayas, and I am therefore out of reach of any entomological literature, I wish to lose no time in attempting to remove any false impressions which his remarks may have created.

Mr. Druce's chief complaint is that I have made no mention, either in my short preface or in my bibliography, of a paper by Mr. Herbert Druce on a collection of Bornean butterflies, and of two papers by himself on Bornean *Lycaenidae*. The explanation is simple: the bibliography, which Mr. Druce takes the trouble to stigmatise as "of course, very incomplete," merely lists eight papers, and I really thought it hardly necessary to state that those eight papers made no pretence of being a complete bibliography for the huge subject of Bornean *Rhopalocera*.* Two of the first three papers are mentioned because they appear in unexpected and little-known publications†; the next three papers

* In my "Hand-List of the Birds of Borneo" I gave an "extensive, but by no means complete" (as I described it) bibliography, which listed 232 papers by 68 different authors. Now the birds of Borneo number 556, while the butterflies run to some 80 different forms. A complete bibliography for the latter, which have been collected and studied for more than 60 years, would contain rather more than eight papers.

† Mr. Druce advocates republishing these papers in some more accessible journal. The late Mr. Shelford has already pointed out that they have no value as entomological literature, and that their historical interest is hardly sufficient to warrant their conservation. Some *nomena nuda* are introduced in one of them; no original descriptions in either. The species enumerated are fully discussed by Shelford and myself in the respective portions of our list of the butterflies of Borneo.

contain full references to practically all previous literature affecting Bornean *Rhopalocera*. In one of them, as Mr. Druce knows very well, I have made continual reference both to his valuable memoirs and personal help which he was kind enough to give me at the time. And I have no hesitation in repeating that without his papers and help I should not have been able to do justice to that portion of the Bornean list, writing, as I was then, in Borneo. The remaining two papers in my bibliography are given because they appeared in 1913 and 1915, and so escaped mention in the papers published before those dates.

If anyone who wishes to take up the study of Bornean *Rhopalocera* will take the trouble to refer to the papers given in my bibliography, I think he will find himself introduced, directly or indirectly, to a very large proportion of all the literature on the subject. Need a bibliography do more?

Mr. Druce calls attention to my error of attributing the authorship of "Schmetterlinge das Inseln Philippinischen" to Staudinger instead of Semper. The error is certainly regrettable, but I think obvious to most people who are conversant with the literature on the *Rhopalocera* of that part of the world. Perhaps, as an extenuating circumstance, I may be allowed to plead the excuse of natural worry, caused at that time by hurried preparations for a complete severance from the peaceful pursuits of museum life in order to plunge into the very different military life.

Mr. Druce's concluding paragraph of criticism runs to some twelve lines of ill-considered remarks on misprints at the expense of one who is dead. Surely not in the best of taste; and hardly in consonance with the words of Laboulbène, which the cover of the Ent. Mo. Mag. bears so proudly:—"J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise."

In defence of the late Mr. Shelford, whose entomological reputation is too sound to need any other support of mine, I may say that, in the copy of this particular paper which he gave me, he underlined most of the printer's errors and wrote on the front page—"I was never allowed to see the proofs! R. S." At the first opportunity, *i.e.*, in the next number of the same journal, Mr. Shelford published a full list of *errata*.

Those who have had anything to do with printers in the East will sympathize with the feelings of the author who thus found his work issued to the public in such a mutilated form, and who knew that he had been powerless to prevent it.—J. C. MOULTON, 4th Wiltshire Regiment, Chanbattia, United Provinces, India: April 16th, 1916.

Entomological notes from the trenches in France.—The following stray notes, mostly relating to *Colcoptera* and *Hemiptera*, are quotations from letters received during the last few months from Mr. P. Harwood, who is serving in the 10th Battalion Royal Fusiliers:—

30.ix.15. N. of France.—*Silpha obscura* was in abundance in certain of the trenches about three weeks ago. I noticed several feeding on slugs. I put four in a box with an equal number of *Carabus monilis*, and on opening the box

next morning found that a *Silpha* had killed a *Carabus* by hanging on behind the neck, somewhat similar to the way in which a stoat attacks a rabbit. We have been in remote villages the whole time, except for about ten days at Armentières, and a day and two nights at Baillieu. In the village just behind the trenches we now occupy, there is not a living soul, except British soldiers. Every house and cottage is in ruins; the church also. The only thing in the church that is not knocked to pieces is the crucifix, which has hardly been touched. Some of our men think it must have been renovated.

The following are among the insects noticed in this neighbourhood:—*Carabus auratus*, *C. catenulatus*, *C. monilis* and var. *consitus*, *C. nemoralis*, *C. violaceus*, *Nebria brevicollis*, *Calathus cisteloides*, *Harpalus aeneus*, *H. rubripes*, *H. ruficornis*, *H. rufibarbis*, *Amara apricaria*, *A. ovata*, *A. similata*, *A. plebeia*, *A. trivialis*, *A. familiaris*, *Pterostichus niger*, *P. vulgaris*, *P. madidus*, *P. strenuus*, *Zabrus gibbus*, *Tachypus flavipes*, *Olisthopus rotundatus*, *Bembidium obtusum*, *B. lampros*, *B. littorale*, *Trechus minutus*, *Tachyporus obtusus*, *T. hypnorum*, *T. chrysomelinus*, *Silusa rubiginosa* (at St. Amant), *Ocytus olens*, *O. similis*, *O. morio*, *Creophilus maxillosus*, *Staphylinus stercorarius*, *Philonthus discoideus*, *Oxytelus rugosus*, *O. sculpturatus*, *O. nitidulus*, *O. tetracarinatus*, *Silpha obscura*, *Necrophorus humator*, *N. vespillo*, *Aphodius rufipes*, *A. punctatosulcatus*, *Geotrupes spiniger*, *Agelastica alni* (on alder), *Adimonia tanaceti*, *Galerucella lineola*, *Lema lichenis*, *L. septentrionis* (at St. Sylvestre), *Crepidodera aurata*, *C. impressa*, *Phyllotreta atra*, *P. undulata*, *Plectroscelis concinna*, *Psylliodes chrysocephala*, *Eryx ater*, *Sitona lineatus*, *S. hispidulus*, *S. sulcifrons*. Also *Mutilla europaea* commonly.

18.xii.15. I dug up a *Carabus monilis* yesterday; it was quite ten feet down. Also tried a mole's nest, but only found one of the big fleas.

30.iii.16. *Coleoptera* noticed in the Somme district, March 23rd to 30th:—*Anchomennus dorsalis* (literally in thousands), *Badister bipustulatus*, *Oodes helopioides*, *Callistus lunatus*, *Carabus granulatus*, *Chlaenius nigricornis* (on chalky hill, with *Callistus*), *Lebia chlorocephala*, *Brachinus crepitans* (common), *Philonthus decorus*, *Bryaxis fossulata* (common), *B. juncorum*, *Silpha atrata* and var. *brunnea* (common), *S. sinuata*, *S. dispar*, *S. thoracica*, *S. laevigata*, *S. tristis*, *Scymnus frontalis*, *Ips quadripunctata*, *Rhizophagus* (two species), *Silvanus unidentatus*, *Trachys troglodytes*, *Chrysomela fastuosa*, *Timarcha tenebricosa*, *Cassida viridis* (abundant), *C. vibex*, *C. flaveola*, *C. nobilis*, *C. oblonga* (both fairly common), *C. hemisphaerica* (not rare), also a *Cassida* with metallic-green thorax and rosy-red elytra; *Apion ebeninum*, *Trachyploeus scaber*, *Hypera plantaginis*, *H. variabilis*, *H. polygoni*, *H. nigrirostris* (these four all common), *H. punctata*, *Barynotus obscurus*, *Rhynchites conicus*. I also got a Clavicorn beetle allied to *Orthocerus muticus*, but shorter, broader, and blacker, with very pronounced setae.

Hemiptera in the same district:—*Eurygaster maura* (several), *Palomena prasina*, *Coreus denticulatus*, *Berytus minor*, and *Enoplops scapha*.—J. R. LE B. TOMLIN, Lakefoot, Reading: May 9th, 1916.

Cimex pipistrelli Jenyns, in Oxfordshire.—On April 24th last, whilst examining a rotten elm tree in Thame Park, Oxon, which had been blown down during one of the recent gales, and knowing that a stock-dove had nested last year in the hollow top, I hoped to find the pigeon flea, *Ceratophyllus columbae* Gerv., and possibly some beetles attached to birds' nests. The hollow tree top, however, was untenanted by anything of interest. About two feet lower down there was a woodpecker's old nesting hole, with some mossy debris in the bottom, as if one of the tits had used it last year, and in this debris and in the crevices in the rotten wood there were a number of fleas and a dozen mature specimens of a *Cimex*, as well as a good many immature examples of the latter. These bugs seemed to have come from the stock-dove's nest above. On examining my captures, the flea was identified as *Ceratophyllus gallinae* Schrank, which I have met with on several occasions in the nests of tits, and the bug proved to be *Cimex pipistrelli* Jenyns. No doubt the old nesting hole had been used as a roosting place by bats, although there were no signs of occupation by these animals.—H. BRITTEN, Myrtle View, Headington, Oxon: May 15th, 1916.

Societies.

ENTOMOLOGICAL SOCIETY OF LONDON: *Wednesday, April 5th, 1916.*—**SPECIAL MEETING:** DR. C. J. GAHAN, M.A., D.Sc., Vice-President, in the Chair.

The Chairman, having read the notice summoning the Meeting, the proposed alterations in the Bye-laws were submitted to the Fellows present. All were adopted, with a few verbal amendments.

ORDINARY MEETING: DR. C. J. GAHAN, M.A., D.Sc., Vice-President, in the Chair.

Mr. Charles Hanslope Boccock, The Elms, Ashley, Newmarket, was elected a Fellow of the Society.

The Secretary announced that the Council had, in accordance with the Bye-laws, co-opted Mr. H. Willoughby Ellis as a Member of Council, in the place of the late Mr. G. Meade-Waldo.

Mr. H. Main exhibited a new observation cage for the study of earth-boring insects, especially *Geotrupes* species. Prof. Poulton, further examples of *Hypolimnas bolina* L., from the same locality in Madagascar as the fifty-one specimens shown by him last year. Prof. Poulton said that in the spring of last year Mr. Dodd had sent him a number of interesting observations on various insects in N. Queensland, together with examples of the species on which they had been made. He now brought forward some of these observations and showed the insects concerned. Prof. Poulton said that he had received from Dr. R. C. L. Perkins a letter, dated November 15th, 1915, on the nest-building instincts of bees of the genera *Osmia* and *Anthidium*, together with the specimens referred to and exhibited to the meeting. The Rev. F. D. Morice followed with additional remarks on some of the insects exhibited. Mr. G. Talbot, on behalf

of Mr. J. J. Joicey, two species of butterflies from Waziristan, viz., *Synchlœ lucilla* Butl., and *Ypthima bolanica* Marsh. Dr. C. J. Gahan read a letter on the Mimetic grouping of insects, which had been addressed to him as Keeper of the Entomological Department of the British Museum, by Mr. F. G. Stokes, and said it was very interesting not only in itself, but as a quite independent account of a phenomenon which had been discussed more than once at meetings of the Society. Dr. H. Eltringham gave a short abstract of his paper on "Specific and Mimetic Relationships in the Genus *Heliconius*," illustrated by several coloured lantern slides. In connection with this exhibit, Mr. W. J. Kaye showed four large cabinet drawers of *Heliconius*, three of which contained what might ultimately be proved to be forms of the extraordinarily variable species *melpomene*. Dr. F. A. Dixey showed upon the screen outline drawings of scent-scales and genitalia from various forms of *Pieris napi* L.

Wednesday, May 3rd, 1916.—THE HON. N. CHARLES ROTHSCHILD, M.A., F.Z.S., F.L.S., President, in the Chair.

Messrs. Leonard Charles Box, F.R.H.S., Dominion Experimental Station, Fredericton, New Brunswick, and Leonard Spencer Tatchell, Heathwood Road, Bournemouth, were elected Fellows of the Society.

Mr. Bacot gave in brief outline an account of some experimental work carried out in Freetown, West Africa, dealing with the hatching of eggs of the mosquito, *Stegomyia fasciata*. Dr. T. A. Chapman exhibited living specimens of the Sawfly *Trichiosoma tibialis* Steph., and eight eggs laid in the cuticle of hawthorn leaves. He also exhibited a teratological specimen of a Heteromorous beetle labelled "*Odontopus cupreus*?" with additional tarsal joints, and read notes. Mr. E. E. Green, various species of *Cassididae*, preserved in 2 per cent. formalin, displaying their natural metallic colours, which are lost on desiccation. Prof. Poulton, a living male *Celastrina argiolus* L., which had recovered after having been stunned for nearly three days by a fall. Mr. H. Willoughby Ellis, a rare British beetle, *Amara nitida* Stm., taken at Knowle, Warwickshire. Mr. Champion, specimens of *Mascauraxia cyrtica* Desbr., from the Landes and Monte Video, an American weevil related to *Dorytomus*, apparently recently introduced in some way into France, where it has been found in numbers under the loose bark of plane trees. The following papers were read:—"Butterflies from Southern Kordofan, collected by Capt. R. S. Wilson, Lancashire Regt.," by G. B. Longstaff, M.A., M.D., F.E.S., etc. "New Chrysidids from Egypt and Algeria," by the Rev. F. D. Morice, M.A., F.E.S.—GEO. WHEELER, *Hon. Secretary*.

NOTES ON MELANDRYIDAE (3).

BY G. C. CHAMPION, F.Z.S.

*(Continued from page 108.)*2.—*Laccoderus scaber*, n. sp.

♀. Elongate, much widened posteriorly, depressed, moderately shining; rufous, mottled with black, the black markings on the elytra in part condensed into two oblique fasciae which nearly reach the suture, those on the prothorax confined to the sides, the antennae piceous, the legs rufo-testaceous, the femora and tibiae darker; head and prothorax densely, rugosely punctate, the close irregular punctuation of the elytra interrupted by small, scattered, smooth, slightly raised, angular spots, the depressed portions of the surface pubescent. Head transversely depressed in the middle between the eyes, the latter convex, large; antennae rather stout, reaching very little beyond the prothorax, joint 3 much longer than 2 or 4, 4-10 transverse, triangular. Prothorax transversely quadrate, as wide as the head together with the eyes, the two dorsal foveae deep, distant. Elytra long, much broader than the prothorax, rapidly widened to beyond the middle, obsolete grooved, the suture depressed before the apex. Legs short; posterior tarsi nearly as long as the tibiae. Length 6, breadth $2\frac{1}{5}$ mm.

Hab.: BRAZIL, Parana (*ex coll. Fry*).

One specimen. Differs from *L. chilensis* in the rough sculpture of the upper surface, the mottled, obliquely nigro-bifasciate, rufescent elytra, the relatively smaller, non-sulcate head, the stouter, sub-serrate antennae, etc. The prominent eyes, quadrate prothorax, and stouter apical joint of the maxillary palpi distinguish *L. scaber* from *Thisias*, which has somewhat similarly maculate elytra; and the open anterior coxal cavities separates it from all the *Lagriids*.

3.—*Laccoderus melanurus*, n. sp.

♀. Elongate, depressed, a little widened posteriorly, shining; obscure testaceous, the head (except in front), eyes, antennae, palpi, base and apex of the elytra, and mesosternum piceous or black, the tarsi also in part infuscate; densely, finely, the prothorax a little more diffusely, punctate, thickly pubescent. Head transverse, together with the large, convex eyes narrower than the prothorax; antennae short, rather stout, joint 3 longer than 2 or 4, 6-10 transverse, 11 acuminate-ovate. Prothorax strongly transverse, rounded at the sides anteriorly and also slightly narrowed behind, the two dorsal foveae very deep, the base also excavate in the middle, the transverse basal groove sharply defined. Elytra moderately long, broad, becoming slightly wider towards the apex, shallowly grooved, bluntly rounded at the tip, the suture depressed at the apex. Beneath densely, minutely punctate. Length $6\frac{3}{4}$, breadth $2\frac{1}{2}$ mm.

Hab.: BRAZIL, Parana (*ex coll. Fry*).

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MONTHLY MAGAZINE.

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ENTOMOLOGICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W.—Wednesday, October 4th, 1916.

The Chair will be taken at 8 o'clock in the evening precisely.

The Library is open daily from 9 a.m. to 6 p.m. (except on Saturdays, when it is closed at 2 p.m.), and until 10 p.m. on Meeting nights.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 8 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

The Chair will be taken punctually at 8 o'clock.

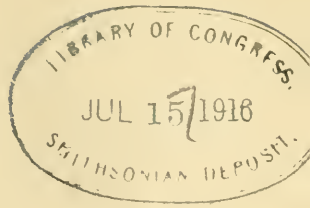
THE LONDON NATURAL HISTORY SOCIETY which meets at 7 p.m., on the 1st and 3rd Tuesdays in each month, at Room 20, Salisbury House, Finsbury Circus, E.C., will be glad to welcome at its Meetings any French or Belgian entomologists now staying in this country, and to give them the benefit of its library and collections. Communications should be addressed to the Secretary, Salisbury House, E.C.

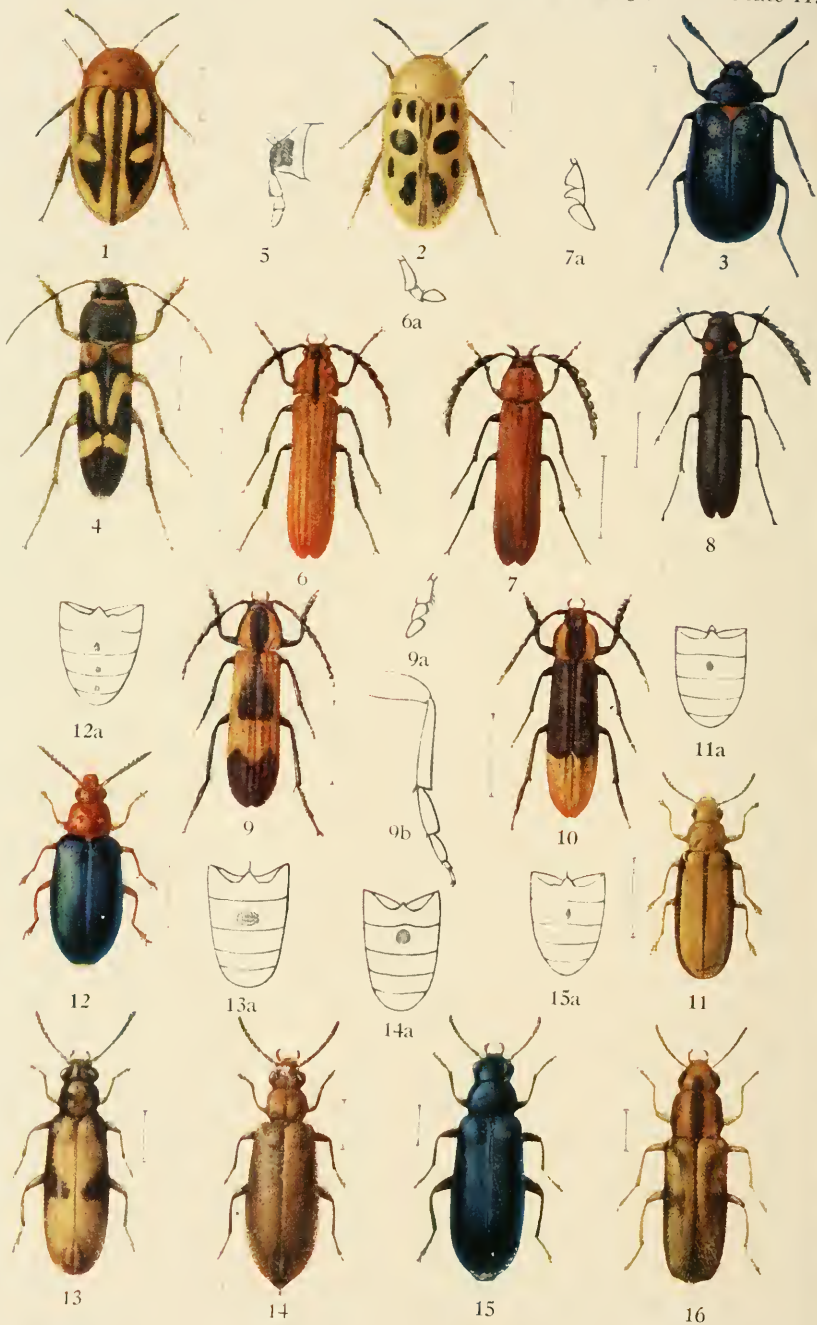
Hon. Sec.: J. Ross, 18, Queen's Grove Road, Chingford, N.E.

Arrangements have been made by the Lepidoptera Committee of the above Society for a Member of the Committee to attend at Salisbury House at 6.30 p.m. on Meeting Nights (1st and 3rd Tuesdays in each month, except July and August), for the purpose of giving advice and assistance to young entomologists, whether members of the Society or not. A cordial welcome will be extended to any who care to avail themselves of this arrangement.

Woodford Branch. Meetings are held at the Wilfrid Lawson Hotel, Woodford Green on the last Friday in the month, and commence at 8 p.m. The Meeting Room is open at 7.30 p.m.

Chingford Branch. The Chingford Local Branch meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the 2nd Monday in each month.





Horace Knight del

Andre. Sleigh & Anglo, Ltd.

MELANDRYIDAE

One specimen. Differs from the two other species of the genus in the relatively broader prothorax and elytra, the prothorax more rounded at the sides and with an additional fovea at the base, the fifth ventral segment shorter, the elytra black at the apex and also infuscate at the base. In the absence of the male, the species can remain under *Laccoderus* for the present.

EURYPINUS, n. gen.

Head short, obliquely narrowed behind the eyes, with distinct frontal groove, the epistoma not longer than the labrum, the antennae inserted beneath the feebly raised orbits, short; eyes large, rounded, entire; terminal joint of the maxillary palpi narrow, oval, obliquely truncate at apex; prothorax transversely quadrate, without lateral carina, conspicuously bifoveate at the base, and excavate down the middle; scutellum transverse; elytra long, confusedly punctate; anterior coxae conical, exerted, the cavities open behind; intermediate coxae narrowly separated, the cavities closed externally by the sterna; legs rather short; tibiae with minute spurs; tarsi narrow, the penultimate joint lobed and broader than the preceding joint, the claws appendiculate; ventral segments 4 and 5 equal in length, 2 with a pubescent pad in ♂.

Type: *E. nyasae*.

The single species from Tropical Africa from which the above characters have been taken is very nearly related to the S. American forms here included under *Laccoderus*, and the peculiar ♂ ventral pad (like that of *Mycterus curculionoides*) is similar; but as the African insect has a smaller and narrower apical joint to the maxillary palpi, and the two large dorsal foveae of the prothorax replaced by a broad median channel, it is best placed in a separate genus. The elytra have each a conspicuous elongate callosity near the suture before the apex, a character present or perceptibly traceable in various allied forms. The much larger eyes and mesially sulcate prothorax separate *Eurypinus* from *Lacconotus*.

1.—*Eurypinus nyasae*, n. sp.

Elongate, depressed, sub-parallel (♂), much widened posteriorly (♀), moderately shining; ferruginous, the eyes, antennae, palpi, elytral callosities, and abdomen, and the legs in part, piceous or infuscate; densely, finely, confusedly punctate, and somewhat thickly pubescent. Head slightly depressed in the middle between the eyes, the latter more prominent in ♂ than in ♀, and separated by a little less than their own width; antennae about reaching the base of the prothorax, rather stout, joint 3 longer than 2 or 4, 6–10 transverse, 11 ovate. Prothorax strongly transverse, in ♂ narrower than, in ♀ as broad as, the head together with the eyes, sub-truncate at the base, the anterior angles

rounded, the hind angles somewhat obtuse, the two basal foveae distant, oblique, small, the median sulcus becoming broader and deeper towards the base. Elytra long, much broader than the prothorax, widened to beyond middle in ♀; each with an elongate, more sparsely punctate callosity adjacent to the suture before the apex (the suture here appearing depressed), the puncturing on the rest of the surface dense and uniform. Ventral segment 2 with a rounded, densely pubescent, tuberculiform pad just before the middle. Length 4-6, breadth $1\frac{1}{2}$ -2 mm. (♂ ♀.)

Hab.: NYASA (*F. A. A. Simms*, ♀; *Thelwall*, ♂).

One pair, the ♀ larger than the ♂, both received by the Museum in 1877, the ♂ coming to hand a little later than the ♀. *E. nyasae* superficially resembles *Lacconotus pinicola* Horn.

CONOMORPHUS Champ.

Four Tropical American species were originally included under this genus, and Pic has since added one from Brazil and three from the Malayan Islands. Three more are represented in the Museum. *Conomorphus* is very like *Stilpnonotus* Gray* in general facies, but the latter has the anterior coxal cavities narrowly closed behind, and the genus was, in consequence, referred by me to the *Lagriidae*, in the "Biologia."

1.—*Conomorphus apicalis*.

Conomorphus apicalis Pic, L'Echange, xxii, p. 45 (June, 1906).

Extremely elongate, narrow, rather convex, flattened above, the head and prothorax opaque, the rest of the surface shining, finely pubescent; piceous, the antennae, palpi, tibiae, and tarsi rufo-testaceous; head and prothorax very densely, minutely, the elytra more distinctly and not so closely, punctate. Head large, together with the eyes broader than the prothorax, the eyes very large and separated by about half their own width; antennae slender, reaching the base of the prothorax, joints 4-10 obconic, longer than broad, 3 longer than 4. Prothorax convex, cylindrical, a little widened anteriorly, as long as broad, the sides compressed at the middle, the base sub-truncate, and sharply margined to near the hind angles, slightly depressed in the centre. Elytra broader than the head, extremely long, very gradually widened to about the middle and narrowed thence to the tip, the suture depressed at the base and before the apex, the intervening space on the disc somewhat broadly hollowed. Ventral segments closely, finely punctate. Legs long, slender; posterior tarsi with a very long basal joint. Length 9, breadth 2 mm. (♀?)

Hab.: BRAZIL, Valley of the Rio Pardo in Sao Paulo (*Gounelle*: xii, '98).

* *S. goyasensis* Pic, from Goyaz, Brazil, is obviously a small specimen of *S. cupripennis* Pasc., the allied *S. meicurus* varying from $7\frac{1}{2}$ -13 mm. in length.

An extremely narrow, elongate insect, with a relatively narrower and more scabrous prothorax than the allied *C. pilosus* Champ., the pubescence shorter and finer, the antennae and tarsi rufo-testaceous. Pic's specimens, length 10–12 mm., were taken by Gounelle at the same locality, and there can be little doubt that the example in the British Museum belongs to the same species; he described the insect as black, with the elytra red at the apex, the specimen before me having the elytra uniformly piceous.

2.—*Conomorphus paranensis*, n. sp.

Conomorphus, n. sp., Champ., Biol. Centr.-Am., Coleopt. iv, 2, p. 98.

Very elongate, somewhat robust, flattened above, the head and prothorax sub-opaque, the rest of the surface shining, finely pubescent; castaneous, the elytra with a small black patch at the apex extending forward along the sutural callosities, the head, prothorax, antennae, palpi, and legs (the bases of the femora and the apices of the tarsi excepted) infuscate or piceous; head and prothorax densely, minutely, confluent, the elytra closely and irregularly, punctate, the punctures on the latter becoming coarser towards the base. Head not wider than the prothorax, the eyes large and separated by more than half their own width; antennae slender, nearly reaching the humeri, joint 3 much longer than 4, the others moderately elongate. Prothorax as long as broad, cylindrical, slightly compressed at the sides behind the middle, the transverse basal groove deep, the foveae wanting. Elytra very long, broader than the head, widened to the middle, the suture depressed at the base and before the apex, the intervening space on the disc somewhat broadly hollowed. Length $10\frac{1}{2}$, breadth $2\frac{1}{2}$ mm. (♀.)

Hab.: BRAZIL, Parana (*ex coll. F. Bates*).

One specimen. Broader and more robust than *C. apicalis* Pic; the antennae and legs piceous; the elytra castaneous, with the apex black, and more sparsely, less finely, punctate; the head not so wide. Compared with *C. pilosus* Champ., the vestiture is finer, and the elytra are much longer and broader, with sparser, coarser punctuation. The allied *C. (Calophthalmus) tenuicornis* Fairm., from Minas Geraes, which is said to have the elytra differently coloured in the two sexes, apparently has more densely punctured elytra, and reddish antennae and legs.

3.—*Conomorphus dentiventris*, n. sp.

♂. Very elongate, narrow, rather convex, somewhat flattened above, the head and prothorax opaque, the rest of the surface shining, finely cinereo-

pubescent; obscure castaneous, darker beneath, the eyes, antennae, outer joints of the palpi, and a streak on the elytral suture before the tip, black, the legs piceous, with the tarsi and the bases of the tibiae rufo-testaceous; head and prothorax very densely, extremely minutely, the elytra finely and closely, punctate. Head slightly wider than the prothorax, the eyes extremely large and separated by about one-third of their own width; antennae short, barely reaching the base of the prothorax, joints 5-10 triangular, about as broad as long. Prothorax cylindrical, as long as broad, the sides slightly rounded anteriorly, uncompressed, the basal groove sharply defined. Elytra elongate, a little broader than the head, very gradually widened to the middle, the disc slightly depressed near the suture, the latter hollowed before the tip. Legs comparatively short. Ventral segment 3 with a compressed, sub-triangular, dentiform, flavous prominence in the middle at the apex. Length $6\frac{2}{5}$, breadth $1\frac{2}{3}$ mm.

Hab.: BRAZIL, Valley of the Rio Pardo in Sao Paulo (*Gounelle*: xii.'98).

One male. Less elongate, and with shorter limbs, than *C. apicalis* Pic, the puncturing of the upper surface finer, the antennae black, the prothorax not compressed laterally, the eyes more approximate. The ventral armature of the male is peculiar, and the only allied insect known to me that has anything approaching it, is *Osphya tuberculiventris* Champ.

4.—*Conomorpha convexus*, n. sp.

Elongate, narrow, rather convex, the head and prothorax opaque, the rest of the surface shining, finely pubescent; obscure testaceous, the head and prothorax rufescent, the latter suffused with piceous, the sterna, the oblong sub-apical callosities on the elytra, and the base of the latter indeterminately, also more or less infuscate, the antennae and legs testaceous; head and prothorax densely, very minutely, the elytra closely and finely, punctate. Head a little broader than the prothorax, the eyes extremely large, separated by less than half their own width; antennae slender, reaching the base of the prothorax, joints 4-10 sub-triangular, longer than broad, 4 much longer than 3. Prothorax as long as broad, sub-cylindrical, feebly rounded at the sides anteriorly, the basal groove well defined, the disc depressed in the middle behind. Elytra moderately elongate, at the base about as broad as the head (with the eyes), somewhat convex, very gradually widened to the middle, obsoletely lineate beneath the surface, the suture with an oblong, slightly tumid streak before the tip. Beneath closely, finely punctate. Legs slender, moderately long. Length $5\frac{1}{4}$, breadth $1\frac{1}{4}$ mm.

Hab.: AMAZONS, Villa Nova (*H. W. Bates*).

One specimen, purchased in 1865. A small, narrow, pallid form, with the antennae testaceous and more slender than in *C. flavicornis*

Champ., the elytra moderately elongate, more convex than in the allied species, and with a dark streak on the suture before the apex.

CONOMORPHINUS, n. gen.

Head somewhat exerted, gradually narrowed behind the eyes, the latter transverse, coarsely faceted, depressed, lateral; apical joint of maxillary palpi stout, triangular; antennae short; prothorax transverse, immarginate laterally, truncate and margined at the base, and with a deep fovea on each side near the hind angles; scutellum triangular; elytra elongate-oval, incompletely covering the abdomen, confusedly punctate; wings abbreviated, not reaching the apex of the elytra; anterior coxal cavities open behind; legs short; tibiae with short, conspicuous spurs; tarsi with the penultimate joint lobed, the basal joint of the posterior pair shorter than the others united, the claws angularly dilated at the base; the other characters as in *Conomorpha*.

Type: *C. bolivianus*.

The Bolivian insect forming the type of this genus might easily be mistaken for a Tenebrionid allied to *Helops*, if the open coxal cavities, etc., were not noticed.* It may be described as a broad *Conomorpha*, with a more exerted head, small, depressed eyes (as seen from above), a short prothorax, incompletely developed wings, and a short basal joint to the posterior tarsi. The elytral puncturing is much finer than that of the rest of the upper surface, an unusual character in this group. The insect is probably of terrestrial habits and unable to fly.

1.—*Conomorpinus bolivianus*, n. sp.

♀. Elongate-obovate, rather convex, flattened above, shining; piceous, the front of the head, the basal and apical margins of the prothorax, knees, and tarsi ferruginous; head and prothorax densely, moderately finely, the elytra sparsely, minutely, punctate, finely pubescent. Head arcuately impressed between the eyes; antennae about reaching the base of the prothorax, rather slender, joint 3 much longer than 4, 4-10 obconic, longer than broad, 11 longer than 10. Prothorax considerably broader than long, as wide as the head, compressed at the sides anteriorly, the latter feebly rounded towards the apex, the hind angles sub-rectangular, the disc with two widely separated shallow foveae at about the middle, the punctures here and there longitudinally confluent and a little finer than those on the head. Elytra somewhat rounded at the sides, narrowed towards the base and there much wider than the prothorax, shallowly longitudinally grooved, the apices rounded. Beneath closely, finely, the head and propleura coarsely, punctate. Length $7\frac{3}{4}$, breadth 3 mm.

Hab.: BOLIVIA, Territory of the Juracares Indians, N. side of the Cordillera de Cochabamba (*Bridges*).

One specimen, received by the Museum in 1846.

*The Magellanic *Chanopterus paradoxus* Boh. (= *Chitoniscus brevipennis* Wat.), described as a Helopid, has open anterior coxal cavities and simple tarsi: it probably belongs to *Pythidae*.

PHALYSIUS, n. gen.

Head short, obliquely narrowed behind the eyes, without definite frontal groove, the antennae inserted beneath the feebly raised orbits, short; eyes large, entire, finely faceted, not very prominent; terminal joint of maxillary palpi oval, obliquely truncate at tip; prothorax short, rounded at the sides anteriorly, without lateral carina, sharply grooved along the bisinuate basal margin to near the hind angles, and with a short notch extending forward from the groove near its point of termination; scutellum rounded; elytra long, confusedly punctate, the epipleura nearly reaching the apex; anterior coxae contiguous, the cavities open behind; intermediate coxae well separated, the cavities closed externally by the sterna; legs short; tibiae with minute spurs; tarsi narrow, the penultimate joint lobed, the claws angularly dilated in their basal half; ventral segments 1-3 sub-equal in length, 2 with a tuft of hairs in ♂.

Type: *P. caeruleus*.

The Perak insect referred to this genus is nearly related to *Conomorplus*, differing from the latter in its less developed head, smaller eyes, much shorter prothorax, much less elongate body, etc.; it is therefore probable that at least one of the three Malayan forms (*C. curticollis*) placed by Pic under *Conomorplus* may belong here. *Eurypinus*, based on a single species from Central Africa, has the sharply-defined transverse basal groove of the prothorax replaced by two deep foveae and a longitudinal median excavation, the prothorax itself transversely quadrate, and the intermediate coxae less approximate. The open anterior coxal cavities separate *Phalysius* from all the Tenebrionids.

1.—*Phalysius caeruleus*, n. sp.

Elongate, rather narrow, moderately convex, more widened posteriorly in ♀ than in ♂, shining; caeruleous or obscure caeruleous, the head in front and beneath, the knees, and tarsi more or less rufescent, the antennae (the basal joint excepted) and palpi piceous; above and beneath densely, very finely, uniformly punctate, and finely cinereo-pubescent. Eyes separated by about their own width. Antennae very short, slender, joint 3 a little longer than 4, 5-10 transverse, 11 ovate. Prothorax much broader than long, transversely convex, a little wider than the head, rounded at the sides anteriorly, and slightly narrowed behind, the hind angles sub-rectangular. Elytra moderately elongate, considerably broader than the prothorax, obsolete grooved, but without trace of striae, the suture depressed before the apex, the latter rounded. Ventral segment 2 with a small, backwardly directed, tuft of fulvous hairs in the middle in ♂, and 2-4 each with a minute, oblong, darker tuft near the apex in ♀. Length 5-5½, breadth 1¾-1⅝ mm.

Hab.: PERAK (*Doherty*).

Two males and one female, the latter having three minute tufts on the ventral segments, one larger tuft only being present in the males.

PHYSCIUS Champ.

The type of *Physcius* is *P. conicus*, from Central America. Pic has since referred ten other species to the genus, all from the Antilles or South America. Two from Brazil, in the Fry collection, are apparently different from any of these latter, so far as can be judged from the brief descriptions. The former differ from *P. conicus* in having very much shorter antennae and more widely separated eyes.

1.—*Physcius brevicollis*, n. sp.

Moderately elongate, robust, rather shining; piceous, the head rufous, the prothorax rufo-piceous, the mouth parts, palpi, antennae, legs, and tip of abdomen testaceous, the elytra with an oblong black streak near the suture before the tip; densely, minutely punctate, and clothed with very fine, sericeous, cinereous pubescence. Head large, transversely convex, narrowly extended on each side behind the very large eyes, the latter separated by about their own width; antennae rather stout, short, scarcely reaching beyond the base of the prothorax, joints 1 and 2 much stouter than 3 and 4, 3 a little longer than 4, 5-10 serrate, transverse, 11 ovate, about as long as 9 and 10 united. Prothorax strongly transverse, sub-quadrate, much narrower than the head, margined at the base, and with two large, oblique, narrowly separated, shallow foveae on the disc. Elytra rather convex, moderately long, a little broader than the head, widened to beyond the middle, deeply, transversely depressed below the base, and with indications of a seriate arrangement of the punctures down the basal third, the suture depressed before the apex. Legs short, slender. Length $2\frac{1}{2}$, breadth 1 mm. (♂.)

Hab.: BRAZIL, Rio de Janeiro (*Fry*).

One specimen, with the broad terminal dorsal segment extruded, showing the genital armature beneath. *P. brasiliensis* Pic, from Jataly, is similarly coloured, but it is said to have the head very little broader than the prothorax, and the latter almost as long as broad.

2.—*Physcius scapularis*, n. sp.

Moderately elongate, narrow, shining; piceous, the head and prothorax rufescent, the antennae, palpi, and legs, and the elytra with a sharply defined humeral spot and a common triangular apical patch, testaceous; densely, minutely punctate, and finely sericeo-pubescent. Head moderately large, together with the eyes considerably wider than the prothorax; eyes distant, large; antennae short, rather slender, about reaching the base of the prothorax, joints 5-10 serrate, transverse. Prothorax rather convex, quadrate, slightly broader than long, margined at the base and with two large, oblique, narrowly separated, shallow foveae on the disc. Elytra long, considerably broader than

the prothorax, widened to beyond the middle, obsoletely striate anteriorly, transversely depressed below the base, tumid on either side of the suture in front of this, the suture depressed before the apex. Legs short, slender. Length $2\frac{1}{2}$, breadth $\frac{9}{10}$ mm. (♀.)

Hab.: BRAZIL, Rio de Janeiro (*Fry*).

One specimen. Narrower and less robust than *P. brevicollis*, the head and eyes smaller, the antennae more slender, the prothorax longer, the elytra with a shallower post basal depression, and with a sharply-defined humeral spot and a common triangular apical patch testaceous. *P. impressipennis* Pic, from Tijuca, Minas Geraes, must be a nearly allied form; it is described as having the elytra infusate at the middle, with the base broadly, and a triangular apical patch, testaceous-red, the head scarcely broader than the prothorax, the antennae short.

GRAMMATODERA, n. gen.

Head obliquely narrowed behind the eyes, without frontal groove, the antennae inserted beneath the feebly developed, short, oblique, cariniform orbits, the epistoma short, broad; eyes large, lateral, depressed, rounded, feebly emarginate, finely faceted; antennae short, slender, sub-serrate; mandibles long, unemarginate at tip; labrum large, transverse; terminal joint of maxillary palpi narrowly ovate, obliquely truncate at apex; prothorax immarginate laterally, truncate at base, simply convex, unimpressed; scutellum small, transverse; elytra elongate, confusedly punctate, the epipleura abbreviated; anterior coxae conical, exerted, contiguous, the cavities open behind; intermediate coxae narrowly separated, the cavities closed externally by the sterna; metathoracic episterna broad, parallel-sided; venter convex, the fifth segment very short; legs short; tibial spurs minute; tarsi narrow, the penultimate joint lobed, the basal joint of posterior pair not longer than the others united, the claws angularly dilated in their basal half.

Type: *G. bifasciata*.

The type of this Cingalese genus has the general facies of an elongate, sub-cylindrical, maculate Cryptophagid, but it is undoubtedly correctly placed near *Euryppus* and the other genera here associated with the latter. The head appears to be somewhat produced in front, but this is due to the development of the labrum and mandibles. The prothorax is convex, without foveae or impressions. The elytra have an oblique intra-humeral groove, as in many Xylophilids, etc. The lobed penultimate tarsal joint separates *Grammatodera* from the Pythids.

1.—*Grammatodera bifasciata*, n. sp.

Elongate, narrow, convex, flattened above, moderately shining: testaceous, the antennae (except at the base) and eyes, the prothorax with three rather broad vittae, the median one extending forwards on to the vertex, the scutellum, the elytra with the sutural and outer margins, and an oblique streak extending from the shoulder across the disc, and a transverse, angularly dilated median fascia extending inward from the marginal stripe (neither reaching the suture), and the sides of the metasternum, infuscate or black; above densely, finely, uniformly punctate, thickly pubescent. Antennae not reaching the base of the prothorax, joint 3 longer than 4, nearly twice the length of 2, 4-10 triangular, gradually becoming shorter and wider, 11 short-ovate. Prothorax broader than long, as wide as the head, rounded at the sides anteriorly and slightly narrowed at the base. Elytra moderately long, flattened on the disc, a little wider than the prothorax, sub-parallel in their basal half, very gradually narrowing thence to the apex, obliquely depressed from the humeri inward, the latter somewhat tumid, the apices conjointly rounded. Ventral segments very finely, the rest of the under-surface densely and more distinctly, punctate. Length 5, breadth $1\frac{1}{2}$ mm. (♀?)

Hab.: CEYLON (*Murray, ex coll. Fry*).

One specimen.

LOBOGLOSSA Solier.

The type of this genus is *L. variipennis* Sol., from Chile. There is a good series of it in the Museum (length 7-12½ mm.) showing considerable variation in the dark mottling of the elytra, the markings being sometimes obsolete and the vestiture uniformly flavo-cinereous. The males, as in various species of the allied genera, have an oval, densely fulvo-pubescent pad on the second ventral segment. The main figure of the insect in Gay's work is absolutely valueless and misleading.*

In general facies *L. variipennis* resembles *Thisias marmoratus* Champ., figured in the "Biologia"; but the Chilean insect is larger and more elongate, and has a differently shaped prothorax, more convex eyes, a broader apical joint to the maxillary palpi, longer mandibles and antennae, the frontal suture obsolete, etc. In *Thisias*, ♂, the ventral pad is wanting. *Loboglossa* has hitherto been included in *Edemeridae*, near *Mycterus*, both being obviously misplaced in that family. A second species is now added from Moreton Bay. *Trichosalpingus* Blackb. (= *Tellias* Champ.) is an allied Australian genus, and *Lagrioida* F. and G. has a similar distribution.

* The description of the labium, too, as noted by Lacordaire, is misleading, it being scarcely more developed than in *Thisias*, and the apical joint of the labial palpi is certainly not "valde elongato," even as shown in Solier's figure. The elytra are very closely, confusedly punctured and longitudinally grooved, but the punctures are not arranged in striae.

1.—*Loboglossa australica*, n. sp.

Elongate, slightly widened posteriorly, shining; obscure ferruginous, the eyes and tips of the mandibles black, the antennae and tarsi rufo-testaceous; above and beneath densely, finely, confusedly punctate, clothed with rather long, adpressed, flavo-cinereous pubescence, that on the elytra condensed into patches, giving a mottled appearance to their surface. Eyes large, convex, coarsely faceted. Antennae sub-serrate, very short, not reaching the base of the prothorax, joint 3 much longer than 4, 4-10 gradually becoming shorter and broader, 6-10 triangular, 9 and 10 transverse, 11 short-ovate. Prothorax much wider than the head, transverse, rather convex, rounded at the sides anteriorly and also a little narrowed behind, the base bisinuate, the hind angles rectangular; the disc with six large, shallow, foveiform depressions—two along the median line (one of these basal), an oblique one on each side of them, and one at the base towards the hind angles. Scutellum rather large. Elytra long, a little broader than the prothorax, slightly wider at the middle than at the base, shallowly longitudinally grooved, the disc also transversely depressed anteriorly. Length $8\frac{1}{2}$, breadth 3 mm. (♀?)

Hab.: AUSTRALIA, Moreton Bay (*Diggles*).

One specimen, acquired by the Museum in 1857. Differs from the Chilean *L. variipennis* (unicolorous form*) in its very short, sub-serrate antennae, larger eyes, broader prothorax, with an additional large fovea on the middle of the disc (as in *Thisias sexfoveatus*) and the base rather strongly bisinuate, and the coarser somewhat granulate sculpture. The prothorax in the Australian insect has an indication of a raised marginal line, but it could not be termed a carina, there being no trace of this in *L. variipennis*.

THISIAS Champ.

1.—*Thisias sexfoveatus*, n. sp.

Oblong-ovate, moderately shining; nigro-piceous or piceous, mottled or variegated with ferruginous above, the antennae and tarsi in part, the knees, and apices of the tibiae also ferruginous; densely, finely punctate, and very finely pubescent, the pubescence on the light-coloured portions of the upper surface ochraceous, forming irregular scattered spots on the elytra. Eyes moderately large. Antennae short, joint 3 longer than 2 or 4, the latter sub-equal in length, 5-10 triangular, 6-10 transverse. Prothorax transversely sub-quadrate, sub-angularly dilated at the sides before the middle, and sinuously, obliquely narrowed thence to the apex, the hind angles rectangular; the disc with six deep impressions—two along the median line (forming an interrupted median sulcus, the anterior one elongate, the other basal, large, triangular), one large, oblique, at about the middle on each side of these, and two at the base, the three basal impressions connected by a narrow transverse sulcus within the

* *Salpangida brunnea* Germain, in litt.

margin. Elytra long, much broader than the prothorax, and widened to beyond the middle, strongly so in ♀, the disc shallowly longitudinally grooved, but without trace of striae, the suture slightly depressed before the apex.* Beneath closely, finely, the prosternum and propleura densely, punctate; ventral segments 4 and 5 together not much longer than 3. Length 6-7, breadth $2\frac{1}{2}$ -3 mm.

Hab.: ECUADOR (*Buckley, ex coll. Fry*).

Two specimens, one of which is certainly ♀, the other (which is less widened posteriorly) apparently ♂. Much larger than the Central American *T. marmoratus*, the elytra more closely mottled with nigropiceous and variegated with small patches of ochraceous pubescence; the prothorax with larger foveae and a deep interrupted median sulcus; the ventral surface closely, uniformly punctate. It is not impossible that this insect may prove to be *T. marmoratus*, var. *subelongatus* Pic (from Brazil), the comparative description of which is useless for the purposes of identification. *T. apicenotatus* Pic, from Brazil, is rufotestaceous, with a long black patch on the suture before the tip.

TRICHOSALPINGUS Blackb. (= TELLIAS Champ.).

Since the preceding pages have been in type, Mr. E. W. Ferguson, of Sydney, has presented two new species of this genus to the British Museum, which also possesses the types of the three known Australian forms.†

1.—*Trichosalpingus planatus*, n. sp.

Moderately elongate, rather broad, flattened, shining, finely pubescent; piceous, the head and prothorax rufescent or obscurely rufescent, the basal joints of the antennae, the palpi, and legs testaceous; the entire upper surface closely, finely punctate. Head (together with the eyes) about as wide as the prothorax; antennae short, joints 5-10 sub-triangular, 11 ovate. Prothorax strongly transverse, narrowed posteriorly, and with a deep oblique impression just within each hind angle. Elytra broad, widened to the middle, arcuately narrowed thence to the apex, and with indications of faintly impressed lines on the disc. Legs short. Length 3, breadth $1\frac{1}{2}$ mm.

Hab.: NEW SOUTH WALES, Sydney (*Ferguson*).

Two specimens, probably sexes, one of them having a broader head and prothorax than the other. More depressed than *T. brunneus* Blackb., from which it may be distinguished by the smaller head and eyes, the shorter, less densely punctured prothorax, and the entirely testaceous legs. *T. obscurus* Blackb. is a narrower insect.

* There is an elongate, narrow, infusate callosity exterior to this depression in some specimens of *T. marmoratus*.

† Mr. Ferguson has also brought a specimen of *Talagra sericata*, antea p. 55, from Narromine, N.S.W., the type of which was from Tasmania.

2.—*Trichosalpingus quadrinotatus*, n. sp.

Moderately elongate, depressed, shining, thickly clothed with fine sericeous pubescence; piceous, the head and a space down the middle of the prothorax rufescent or obscurely rufescent, the four or five basal joints of the antennae, the labrum, palpi, and legs, and two large spots on the disc of each elytron (one broad and oblique, before the middle, the other oblong-oval, placed near the suture towards the apex), testaceous; the entire surface densely, minutely punctate. Head broad in ♂, narrower in ♀, the eyes more prominent and a little larger in ♂ than in ♀; antennae slender, short, a little longer in ♂, joints 5–10 sub-triangular, 11 ovate. Prothorax broader than long, about as wide as the head exclusive of the eyes, rather convex, compressed at the sides posteriorly, and with a deep oblique groove extending for some distance forwards from just within each hind-angle. Elytra moderately elongate, much broader than the head, widened to a little beyond the middle and arcuately narrowed thence to the apex; depressed on the disc below the base, and with indications of faint impressed lines which extend to near the apex. Legs short, slender, the femora moderately incrassate, the tibiae feebly curved. Length $2\frac{3}{4}$ –3, breadth $1-1\frac{1}{10}$ mm.

Hab.: NEW SOUTH WALES, Blue Mountains and Sydney (*Ferguson*).

Two specimens, the larger one from Sydney, with wider head, assumed to be male. Near *T. obscurus* Blackb., but with the puncturing of the entire upper surface much finer, the prothorax more uneven, narrower, and less transverse, the elytra maculate as in various *Dromiids*.

SCRAPTIINA.

TOLMETES, n. n.

Tolmerus Fairmaire, Ann. Soc. Ent. Belg., XLIV, p. 111 (1900) (*nec* Loew, 1849; Förster, 1888; Heine, 1890).

Fairmaire referred *Tolmerus* to the Melandryidae, s. str., with which it agrees in the form of the maxillary palpi, coxae, etc.; but as the head is abruptly constricted into a narrow neck behind, the genus should be placed under the section Scruptiina, of which it is an exaggerated form. The eyes are deeply emarginate, the third antennal joint is very short, the prothorax is very sharply margined from the base to near the apex, and the anterior and intermediate coxal cavities are somewhat open externally, with visible trochantin. The generic name is thrice preoccupied in Zoology.

1.—*Tolmetes longipennis*.

Tolmerus longipennis Fairm., *loc. cit.*, p. 112; Résult. Belg., pl. 1, fig. 13 (1906).

Hab.: CHILE (*Mus. Brit., ex coll. Fry*), Forest of Lapataia, Beagle Channel, Tierra del Fuego [type].

This species was described from a single example, found in a rotten tree trunk, on December 27th, 1897; the two others, in the Museum, from the Fry collection, were received in 1882. The sex of the specimens before me has not been ascertained.

EXPLANATION OF PLATE II.

Fig. 1.	<i>Eustrophopsis hieroglyphicus</i> , n. sp., Amazons	<i>antèa</i> , p. 2
„ 2.	<i>Eustrophopsis decemguttatus</i> , n. sp., Brazil.....	„ 2
„ 3.	<i>Penthe metallica</i> , n. sp., ? Indo-China	„ 79
„ 4.	<i>Callidircæa sexnotata</i> , n. gen. and sp., ♂, Brazil.....	„ 54
„ 5.	<i>Dapsiloderus (Hylotastes) terminalis</i> Pasc., ♂, Malacca: profile of head and maxillary palpus.....	„ 56
„ 6.	<i>Dapsiloderus miniaceus</i> , n. sp., ♂, Tenasserim: 6 <i>a</i> , max- illary palpus	„ 57
„ 7.	<i>Dapsiloderinus quadricostatus</i> , n. gen. and sp., ♂, Penang: 7 <i>a</i> , maxillary palpus	„ 58
„ 8.	<i>Dapsiloderinus notaticollis</i> , n. sp., Borneo	„ 59
„ 9.	<i>Eudircæa laticornis</i> , n. gen. and sp., ♂, Brazil: 9 <i>a</i> , max- illary palpus; 9 <i>b</i> , hind leg	„ 76
„ 10.*	<i>Eudircæa xanthura</i> , n. sp., ♂; Colombia	„ 76
„ 11.	<i>Eurypus kirbyi</i> , n. sp., ♂, Brazil: 11 <i>a</i> , abdomen	„ 104
„ 12.	<i>Eurypus cyanipennis</i> , n. sp., ♂, Brazil: 12 <i>a</i> , abdomen	„ 104
„ 13.	<i>Laccoderus chilensis</i> , n. gen. and sp., ♀, Chile: 13 <i>a</i> , ab- domen, ♂	„ 107
„ 14.	<i>Eurypinus nyasæ</i> , n. gen. and sp., ♀, Nyasa: 14 <i>a</i> , ab- domen, ♂	„ 145
„ 15.	<i>Phalysius caeruleus</i> , n. gen. and sp., ♂, Perak: 15 <i>a</i> , ab- domen	„ 150
„ 16.	<i>Grammatodera bifasciata</i> , n. gen. and sp., Ceylon.....	„ 153

“Heatherside,”

Horsell, Woking, Surrey:

1916.

ANOTHER CARABID AMONGST CHARRED PINES.

BY J. R. LE B. TOMLIN, M.A., F.E.S.

Mr. Champion's researches into the fauna of burnt pine-woods in Surrey opened up a sphere of great interest and importance to British Coleopterists a few years ago. The occurrence of numerous forest fires in the district between Wokingham and Wellington College during the past two or three years is giving Berkshire collectors an

excellent opportunity of investigating the resultant fauna on their own ground. Canon Fowler has already recorded in this Magazine the occurrence of isolated specimens of *Anchomenus quadripunctatus* De G. last year, and that species has been far from uncommon in the course of the past two months. Interest in this beetle has, however, been eclipsed by the occurrence of *Pterostichus angustatus* Duft., a well known, though uncommon, Continental species of the sub-genus *Bothriopterus*, which has also been turning up, though very rarely, in the course of April and May.

Whether the burnt ground is essential to its existence seems doubtful. I do not find that Continental writers associate it with such a habitat, but it must be far more than an accident that in this country at any rate it has been first noticed on burnt ground. Its sudden and unaccountable appearance is altogether on a par with that of *Anchomenus quadripunctatus*, *Melanophila acuminata*, and others, and it will doubtless disappear and re-appear elsewhere, where and when conditions are suitable, with similar intermittence. It is very possible, as Mr. Champion suggests, that the Carabids at any rate are attracted to the burnt ground by the numbers of *Thysanura* which congregate among the charred fragments.

Pterostichus angustatus is most closely allied to *P. oblongo-punctatus*, but is on the average a smaller beetle, ranging in length from $7\frac{1}{2}$ to $10\frac{1}{2}$ millimetres, and differs from that species in the following particulars: it is entirely shining black, except the tips of the four palpi, the spines and bristles of the legs, and the tarsal claws, which are all clear red; the form is shorter in proportion to breadth; the thorax has broader margins; the elytra have three foveiform impressions on or near the third interstice instead of five, the impressions being much deeper and more obvious; the episterna of the metasternum are markedly narrower and punctured, whereas in *P. oblongo-punctatus* they are broad and smooth. The last seven joints of the antennae are inclined to be pitchy. The elytral impressions are not always quite symmetrically placed, and in one example that I have there are four on one elytron and three on the other. The tarsal joints of the male are much less dilated than in *P. oblongo-punctatus*. On comparison with Continental specimens from Galicia (*Reitter*), and from Salmünster in Hesse Nassau (*H. G. Champion*), kindly placed at my disposal by Mr. Champion, I can detect no difference in size or any other point.

P. angustatus is a species of North and Central Europe, and is on

record from the East of France, Germany, Scandinavia (*Thomson*), Austria, and eastwards to Siberia.

I should like gratefully to acknowledge the assistance I have received from Canon Fowler, Mr. Champion, and Dr. Joy, in the identification of this important acquisition to the British list, the first species of *Pterostichus* to be added since Stephens' days.

Lakefoot, Reading:

June 8th, 1916.

STIGMELLA SPECIOSA FREY, AN ADDITION TO THE BRITISH LIST (*LEP-TIN.*).

BY THE RIGHT HON. LORD WALSHINGHAM, M.A., LL.D., F.R.S., *etc.*

STIGMELLA Schrank.

STIGMELLA Schrank (1802), Oken (1815); = *NEPTICULA* Hdn. (1843), Z. (1848).

STIGMELLA SPECIOSA Frey.

Nepticula speciosa Frey Ent. Wk. Int. **4**. 27 (1858)¹; de Fré Ann. Soc. Ent. Belg. **4**. 115 (1860)²; Stn. NH. Tin. **7**. 150-1 sp. 72, 152-3 (1862)³; Hnmn. Wein. Ent. Mts. **6**. 242, 249, 265-6 sp. 13 (1862)⁴; Ent. Ann. **1863**. 43. (1862); Stgr-Wk. Cat. Lp. Eur. 337 sp. 3015 (1871)⁵; Wk. Zts. Ent. Bresl. (n.s.) **4**. 99 sp. 28 (1874)⁶; Hnmn-Wk. Schm. Deutsch. Tin. 743 sp. 120-4, Tbl. 92 (1876)⁷; Hartm. MT. Münch. Ent. Ver. **4**. 61 sp. 3015 (1880)⁸; Stgr-Rbl. Cat. Lp. Pal. **2**. 224 sp. 4347 (1901)⁹; Crmbg. Mém. Soc. Ent. Belg. **14**. 113 sp. 4347 (1906)¹⁰; Meess, Hfm. Schm. Eur. (ed. **3**, Splr.) **2**. 473, 477 sp. 60 (1911)¹¹.

Type: (Frey Coll.) BM.

Hab.: SWITZERLAND^{1, 4-5, 7, 9, 11}; Zürich^{1, 4, 7}—GERMANY^{4-9, 11}; SILESIA⁶⁻⁷, Hochwald and Sattel (nr. Salzbrunn)⁶; BRUNSWICK, Brunswick^{4, 7}; (? Wolfenbüttel⁴)—BELGIUM^{2, 9-11}; Louvain^{2, 10-11}—ENGLAND: HANTS, Emery Down (nr. Lyndhurst). Larva: mining leaves of *Acer pseudoplatanus*,^{1, 3-11}, VIII (*Wlsm.*), IX^{1, 4, 7-8, 10-11}, X^{4, 6-8, 10-11}, excl. 17. IV¹, V^{4, 8, 10-11}.

Antennae pale, shining, yellowish; *eye-caps* white. *Head* black (but known to vary to rust-red). *Thorax* and collar steel-grey, slightly cupreous. *Forewings* shining, bronzy cupreous, with a brilliant pale brassy fascia at two-thirds

from the base (wider on the dorsum than on the costa) beyond which the remainder of the wing is dark purplish fuscous, the cilia tipped with steely grey. *Exp. al* 4-5 mm. *Hindwings* (hidden in this unset specimen, but described by Heinemann as dark brown-grey in the ♂, which agrees with Frey's type). *Abdomen* bronzy fuscous. *Legs*: hind tibiae bronzy fuscous, tarsi silvery.

The above description is taken from a specimen which had unfortunately died in the bottle during my absence abroad. It had emerged from one of three rather pale brown cocoons made by bright green larvae, which descended from a sycamore tree, under which I was sitting, at Emery Down, near Lyndhurst, on August 27th, 1914. I had watched these cocoons for some weeks, and had despaired of breeding the species, and it was only lately that I re-examined the bottle, which was carefully labelled. I have a note that these larvae were bright green—Heinemann describes the larvae of *speciosa* as greenish amber-yellow. I was convinced at the time that these larvae were not those of *Stigmella sericopeza* Z. (the only species known to feed on maple or sycamore in England), because there were no seeds on the young tree above me, which was well isolated from all others. Being able to reach some of the upper leaves from my window, I searched diligently for mines, but found none, nor could I discover any in fallen leaves from the same tree, which were subsequently sent to London at my request, although it is obvious that they must have been there. The species is an interesting addition to the British fauna, for, in the *Entomologist's Weekly Intelligencer* 4. 27 (1858), Professor Frey wrote as follows: "In the neighbourhood of Zurich the sycamore (*Acer pseudoplatanus*) is a very common tree in all the woods. I had detected, some years ago, in September, a yellowish *Nepticula* larva mining the leaves in very long galleries, but I never succeeded in rearing the perfect insect. Yesterday, at last, I had the good fortune to rear, all at once, three specimens. It is a new, very fine species, which I propose to call *Nepticula speciosa*, nearly allied to *N. aurella*, but likewise somewhat similar to *N. alnetella*. Doubtless *N. speciosa* is not confined to Switzerland: perhaps your lynx-eyed and active entomologist, Mr. Edleston, will be enabled, by this short notice, to find so brilliant a little creature in England." This is the earliest description of the species.

There are five specimens of *speciosa* in the Frey Collection (now in the British Museum) with which I have carefully compared my specimen, as also with Heinemann's full description of the species, which should follow *marginicolella* Stn. in our collections.

A Plague of Caterpillars.—With reference to the notices in the public Press relative to the devastation caused by caterpillars (chiefly those of *Tortrix viridana* L.) to the oak trees at Ashtead, it may be of interest to recall that some three or four years since the oak plantations in Richmond Park were attacked in a similar manner. The denudation of the trees was then so severe that in the spring of 1913 H. M. Office of Works consulted Mr. Maxwell Lefroy, the well-known entomologist of the Royal College of Science, with a view to stamping out the pest. Eventually it was decided to spray the trees with chromate of lead at such a time that the young larvae, on hatching out, should have only poisoned food. The spraying operations were carried out by portable high-pressure pumping apparatus lent by myself, self-supporting telescopic ladders being provided to reach the tree-tops, some 40 feet from the ground. This was, I believe, the first occasion on which attempts were made to spray such large trees, and there is not much doubt that the oaks at Ashtead could be treated in a similar manner. It is, of course, now too late in the season to undertake preventive measures, but if spraying were undertaken early next May I have little doubt that the pest could be eradicated.—J. COMPTON MERRYWEATHER, 4, Whitehall Court, S.W. : June 7th, 1916.

[In the woods near Oxford, many of the oak trees, as early as the first week in the present month, were nearly or quite defoliated by the larvae of several common Geometrid moths, those of *Cheimatobia brumata* being in the majority. Although ordinary larvae are abundant enough at present in the New Forest, I have seen no trees that have suffered appreciably by their ravages.—J. J. WALKER, Brockenhurst : June 16th, 1916.]

Abstracts of Recent Literature.

BY HUGH SCOTT, M.A., F.L.S., F.E.S.

WADSWORTH, J. T. "ON THE LIFE-HISTORY OF *ALEOCHARA BILINEATA* GYLL., A STAPHYLINID PARASITE OF *CHORTOPHILA BRASSICÆ* BOUCHÉ." *Journal of Economic Biology*, Vol. 10, Nos. 1 and 2, June, 1915, pp. 1-27, pl. I-II.

That a species of *Aleochara* is parasitic on the destructive cabbage-root fly, *Chortophila brassicæ*, was discovered by Sprague as long ago as 1870, and has been stated subsequently by more than one writer. These earlier accounts were, however, erroneous as to details. It was thought that the beetle-larvae lived inside the maggots of the fly, whereas actually they make their first entry into the puparia. The life-history has now been studied fully by Wadsworth, who describes his methods of keeping the insects in captivity. The facts are of the greatest importance from an economic as well as a scientific standpoint. They constitute if not the first complete account, at any rate one of the first complete accounts of the life-cycle of a member of the genus *Aleochara*.

The beetles hitherto found to be parasitic on *Chortophila* were referred to *A. nitida*, but almost all those reared by Wadsworth belong to a form previously called *A. nitida* var. *bilineata*, in this work regarded as a distinct species (p. 5).

Both in its larval and adult states *A. bilineata* destroys *Chortophila*, its larvae parasitising the puparia, and its adults preying on the maggots of the fly. Its larvae are, strictly speaking, *ectoparasites*, for though they penetrate the puparia, yet they never enter the living bodies of the pupae. They exhibit a simple kind of hypermetamorphosis, the difference between the larvae of the first and subsequent stages being considerable. With these remarks one may pass to an actual summary of the life-history.

The ova are deposited in the soil, and the larvae hatch in 10–12 days. They are active, and about 1.5 mm. long. Their habitat is at the depth where the puparia are found, and when brought to the surface they at once begin to burrow. It is essential for their development that they should enter dipterous puparia, though whether they are restricted to those of *C. brassicae* is uncertain. Having found a suitable puparium, the young larva gnaws its way in through the wall thereof, an operation taking, in some cases at least, a considerable time. The entrance-hole is nearly always dorsal or dorso-lateral, and circular. It becomes filled with a white opaque substance, probably clotted fluid from within the puparium. In some cases both host and parasite are killed by Nematode worms or by a fungus, infections which probably enter through the hole made by the *Aleochara*, either with the latter or before the hole is properly sealed up: the importance to the parasite of the effective sealing of the hole may therefore be great. In only few instances does more than one larva enter a single puparium, and in the observed cases where two or three did so, either none, or only one, survived.

The young larva, after its entry, may be seen moving slowly over the pupa, apparently confining itself to the anterior dorsal surface. It feeds, and before the first moult becomes much swollen. The larva of the second stadium differs widely from that of the first. The cuticle is much less strongly chitinised, the antennae and mouth-parts are much changed in form, the legs have lost their claws and become indistinctly segmented, the anal cerci have disappeared: the larva now presents all the characteristics of a parasite. It takes up a definite position, nearly always on the dorsal surface of the pupa, with its head near the junction of the head and thorax of the host. In this position it absorbs the greater part of its food. Having exhausted the front part of the pupa, it bends its head round and feeds on the hind parts, after which it straightens itself again.

The exact method of feeding is hard to ascertain in the first stadium, but in the second it has been closely watched. The cuticle of the pupa is pierced by the mandibles, and the semi-fluid contents are sucked out: the labium works like a tongue, apparently with a lapping action, the maxillae move outwards and inwards, probably helping to press the fluid substances out of the pupa, and the pharynx rhythmically expands and contracts. The cuticle of the pupa is not eaten.

The larva undergoes a second moult, but there is no further hypermetamorphosis, the third stadium closely resembling the second in form. Two days after feeding has ceased the excreta are got rid of, this action having

been deferred till now. After some days of quiescence the third and last ecdysis occurs, disclosing the pupa. Pupation takes place within the puparium of the host, and the adults emerge after 12—18 days. At least two generations are produced in the year. Larvae which enter puparia in autumn remain in the first stage till April or May, the adults appearing in May or June; while the adults of the second generation emerge in August or September. The adults feed with great voracity on living maggots of *Chortophila*. They excavate passages in the soil and are to a slight extent gregarious.

[P.S.—Since the above was in print, I have received a paper by A. Gibson and R. C. Treherne on “The Cabbage Root Maggot and its control in Canada” (Dominion Dept. of Agriculture, Ent. Bulletin No. 12, 1916). On pp. 52, 53 it is stated that an allied Staphylinid, *Baryodma ontarionis* Casey (previously referred to *Aleochara nitida*), is a most useful and active parasite of the fly, from the puparia of which it is bred. Its life-history is not described in detail. It is figured on p. 52.]

Obituary.

Frederick Enock.—We greatly regret having to announce the death of Frederick Enock, which took place at Hastings on May 26th. Mr. Enock was born in Birmingham on April 17th, 1845. At an early age he took great interest in natural history, and when a boy collected *Lepidoptera*. He was educated at Ackworth School in Yorkshire. His uncle, Edmund Wheeler, who was a mounter of objects for the microscope, as well as a lecturer, occasionally lectured at this school and took notice of him. At a later period, when he wanted assistance, he asked his nephew to come to London. Enock then left Birmingham, where he was employed as an engineer's draughtsman (he had served his time in the “fitting shop”), being glad to follow his natural taste for science. After mounting objects for the microscope under his uncle's guidance for some years, he started on his own account, the beauty of his preparations making his name become a household word among microscopists. In 1872, a specimen of one of the *Mymaridae* was exhibited by Mr Fitch at a meeting of the Quekett Microscopical Club. The great beauty of this object so impressed Enock that he forthwith began collecting and mounting them for the microscope, and it was while thus engaged that he conceived the idea of writing a monograph of the family. This he kept in view for the last thirty years, taking photo-micrographs of all the species, and in the difficult genera, of every specimen so far as he was able, as it is practically impossible to compare and identify them in any other way. These photographs he exhibited on more than one occasion at the Royal Society. In 1909, descriptions of the eight new genera that he had discovered were published in the “Transactions of the Entomological Society of London.” Since then most of the new species, some 150 in number, have had manuscript names attached to them, and descriptions of them written. It is earnestly hoped that his death will not prevent the publication of these, together with reproductions of the necessary photographs.

In 1887-8 he took a prominent part with the late Prof. Riley in the controversy respecting the Hessian Fly. In connection with this he made observations on the insect's life-history and its numerous parasites; one very important discovery being that it remained sometimes for two or more years in the puparium (Proc. Ent. Soc. Lond., 1887, pp. xxxix-xlii). In 1909 he discovered and worked out the life-history of an allied pest, *Clinodiplosis equestris* (Entomologist, 1909, p. 217).

For some years past Enock has been a well-known lecturer on entomological subjects, and although these were cast in a popular form, they brought to notice many scientific facts as to the structure and habits of the insects dealt with which were of great interest. His observations on trap-door spiders, the metamorphoses of *Cicindela*, *Aeschna*, *Gonepteryx*, etc., mainly made during his residence at Woking, are the result of extraordinary patience, often involving all night sittings and watching, in which Mrs. Enock sometimes took part. Some of his lectures he gave in a modified form at the Royal Society soirée, and before the Linnean and Entomological Societies. He was elected a Fellow of the Entomological Society of London in 1886, of the Linnean Society in 1892, and of the Royal Microscopical Society in 1900. He joined the Birmingham Natural History Society in 1863 or 1864, and remained a member to the last, being for the last few years the "father" of the Society.

Enock had a very good general knowledge of British plants. He was elected a Fellow of the Royal Horticultural Society in 1897. Latterly his health failed somewhat, and this, together with the anxiety caused by the loss of lecturing engagements owing to the war, brought about his end somewhat unexpectedly. He will be greatly missed by a large circle of friends. He leaves a widow, but no family.

STUDIES IN HELOPHORINI.

BY D. SHARP, M.A., F.R.S.

10.—*HELOPHORUS* (continued from p. 130).

31.—*Helophorus fulgidicollis* Motsch. ?

The *H. fulgidicollis* of Motschulsky cannot be identified from his brief remarks, but Rey and Kuwert have applied his name to a species from Southern France, which may be the one I have before me, though even this is somewhat doubtful.

Closely allied to *H. mulsanti*, but readily distinguished by the less deep striae, so that the interstices are very slightly convex, and but little unequal; the first one is indeed feebly depressed, and the second somewhat elevated when close to the dark mark across the suture. The sculpture of the clypeus is rather fine and that of the thorax more obsolete. The setosity of the upper surface is greatly diminished, so that the insect has a smooth appearance. The thorax is rather short, not curved at the sides, brilliant, dark metallic on the disc, with the grooves, the sides, and the front margin of a yellowish tint passing into

the golden colour in an indefinite manner, the sculpture of the intervals very much reduced. The grooves shaped as in *mulsanti*, but broader so as to appear a little less sinuous, the sub-median interval more reduced in front. Length $3\frac{1}{8}$ –5 mm. The maxillary palpi are rather long and slender; the hairs of the hind tarsi largely developed. The aedeagus (fig 47) a little broader in proportion to the length than in *mulsanti*, with the median lobe longer than usual; the basal piece rather strongly narrowed in front.

Algeria (found by Rippon many years ago); Gibraltar (Walker); Lyons (Coll. Castelnau); Malta (Walker).

The material before me shows a great deal of variation, but I cannot divide it into species satisfactorily. The specimens from Malta are mostly distinguished by rather larger size, and the golden-coppery colour of the head and thorax: the thorax is in them usually a little more transverse, and its sculpture diminished. There are minute differences in the shape of this part in several individuals, but I cannot separate any of them. The aedeagus of a Malta example is broader than that of one from Gibraltar, and the lateral lobes are broader and less pointed, but the distinctions are not marked enough to rely on at present.

The species as here accepted must be one of the most variable of the genus, as (though altogether I have seen only 20 examples) they might be divided into ten or twelve "varieties." The aedeagus in all the males has been examined, and the differences found to exist are not sufficient to support the view of there being more than one species; still I cannot but think that longer series of the supposed varieties may show that some of them are entitled to specific rank.

32.—*Helophorus iricollis* sp. n.

Capite prothoraceque metallicis, antennis palpis pedibusque testaceis, palpis elongatis, elytris sordide testaceis, macula suturali communi dilute nigra, fortiter striato-punctatis, interstitiis pone medium leniter convexis; subtus cum coxis niger.
Long. 5 mm.

Hab.: Gibraltar.

I describe this from a solitary female, very closely allied to *fulgidicollis*. It is of a dirtier coloration, with the last joint of both maxillary and labial palpi longer, the thorax rather more parallel-sided, the punctures of the elytra larger, the interstices less flat, and the coxae darker. There is a fine, very distinct, punctuation on the median intervals of the thorax, the sub-median groove is less angulate in the middle, and the yellow coloration of the sides is not extensive. The true last dorsal segment is very broad at the tip, its marginal chitinisation pallid, moderately broad.

The specimen is in the Champion collection and was found by Commander Walker many years ago. It may prove an extreme form of *fulgidicollis*, but has a different facies.

33.—*Helophorus pallidipennis* Mulsant.

Mulsant's description is of little value for identification: his locality was Caramania and the length of the insect $4\frac{1}{2}$ mm. Kuwert adopted the species but leaves it quite obscure. If we consider *fulgidicollis* to be a variable species, then we may expect *pallidipennis* will prove to be a synonym or at most a variety. Both the authors state the tip of the palpus is black, and this does not agree with *fulgidicollis*, but is a character of minor importance. The elytra are given as unspotted by both authors, and Kuwert adds a variety, *reitteri*, distinguished by possessing the dark mark usual in *Helophorus* on the elytra; this is a very variable character. Except for the colour of the palpi, I should treat the specimens from Malta referred to under *fulgidicollis*, as probably similar to Mulsant's *pallidipennis*.

34.—*Helophorus biscrensis* sp. n.

Minus gracilis, sat convexus, capite cupreo-aurato sed haud fulgido, thorace sub-metallico-nitente, obsolete sculpturato, elytris testaceis parum maculatis, regulariter sat fortiter punctato-striatis, interstitiis leniter convexis; corpore subtus nigro, abdomine apicem versus rufescente; antennis palpis pedibusque flavis. Long. $3\frac{1}{4}$ – $3\frac{3}{4}$ mm.

Hab.: Algeria, Biskra (Champion).

This is a peculiar and easily recognised species, though without any very salient character; one of its points is that the thorax, though rather concolorous, is only feebly metallic. Head rather broad and short, coppery and rather dull, sculpture rugose but obsolete, vertical impression broad. Palpi yellow, slender, moderately long, terminal joint almost linear. Antennae entirely yellow. Thorax broad and short, of a brownish-testaceous colour, with but obscure metallic reflection, the lateral margin pale yellow, as is also the front margin behind the eye; the grooves well marked, the sculpture of the intervals obsolete, the sub-median groove a good deal angulate in the middle. Elytra yellowish, very little marked, with a shining, as if waxed, lustre; series of punctures fine, interstices extremely broad in comparison with the punctures, even, but little convex, punctures and pubescence on them excessively minute and difficult to detect. Under-surface black, more or less red towards the end of the abdomen. Epipleura rather small, pseudepipleuron scarcely visible. Legs moderately slender, long, tarsal claws small.

Mr. Champion found a long series of this insect, and it is not very variable; the maculation varies a little as in many other species,

and there is also some difference in sculpture, and when this is most pronounced there is a considerable resemblance to the common *H. minutus* (*griseus* Auctt.), but the terminal joint of the palpus is decidedly more elongate, which induces me to place the species here.

The basal piece of the aedeagus (fig. 48) is small, the median lobe has an elongate slender extremity, the lateral lobes rather broad and rounded externally, not quite so long as the median lobe.

35.—*Helophorus vinctus* sp. n.

Capite prothoraceque sordide metallicis, hoc inaequali, lateribus margineque anteriore flavescens, obsolete sculpturato; elytris sat fortiter punctato-striatis, interstitiis haud convexis. Long. 3½ mm.

I cannot refer this to *H. fulgidicollis*, as it has a smaller head and rather shorter palpi in addition to its obscure coloration. *H. vinctus* is very like *H. exasperatus*, but the sculpture is much diminished on the head and thorax, and less coarse and deep on the elytra. It is a most obscure species without salient character, unless a convexity across the middle of the thorax rendering the surface uneven should prove to be constant. The grooves and intervals of the thorax are like those of *exasperatus* and *fulgidicollis*. The legs are somewhat feeble; the epipleura rather small, and flanks of elytra not visible. The tip of the palpus is infuscate, and the club of the antennae brown. The aedeagus (fig. 49) is much like that of *mulsanti*, but is more elongate; the basal piece is specially longer in comparison with the terminal segment.

Hab.: Besika Bay (Commander Walker), one specimen.

36.—*Helophorus pici* Guilleb.

I have not seen this species, but I think it should probably come in near *fulgidicollis*; it is 5½ mm. long, has an unmetallic thorax, and long hairs on the tarsi.

Algeria, Saint-Charles, one specimen found by M. Pic.

37.—*Helophorus punicus* sp. n.

Capite cupreo-aurato, prothorace anterieus et ad latera late flavescens, dorso metallescente, antennis palpis pedibusque flavis, elytris pallide testaceis, dorso posterius macula parva fusca, corpore subtus nigro. Long. 4½ mm.

Although there is only one specimen of this species, and it resembles the Maltese form of *fulgidicollis*, I cannot consider it the same species as there is a definite difference in the form of the head, the clypeus being shorter, and the eyes a little more convex, giving rise to a little

difference in shape at the sides. The sculpture of the head is fine, that of the thorax scanty and much obliterated, the grooves of the latter but little sinuate. The elytra have a shining appearance, almost as if waxed, the series of punctures are fine, the interstices broad and very feebly convex, their pubescence excessively minute and reduced. The tips of the maxillary palpi a little blackened.

Hab.: Tunisia, Kairouan (Champion), one specimen, no doubt female.

38.—*Helophorus diffinis* sp. n.

Sat latus, minus parallelus, haud convexus, capite thoraceque laete aureo-cupreis, hoc margine laterali et anteriore latius membranaceo, intervallis sublaevigatis, antennis, palpis pedibusque pallide flavis, elytris pallidis vage nigro-signatis, punctis haud magnis, interstitiis fere planis. Long. 3½ mm.

Hab.: Europa.

Helophorus dorsalis Er. (*nec* Marsh.) Käf. Mark Brand., p. 196 (in part).

This species is apparently passed over at present as a variety of *affinis*; it is, however, perfectly distinct, and the mistake is probably due to its rarity. The front angles of the thorax are broadly pallid yellow, and this colour extends along the sides and front margin; the eyes are more convex than usual, and the margin of the ocular cavity is correspondingly more elevated; the sculpture of the thorax is remarkably fine, and the rather long, stout legs are very pallid, in life almost white; the coxae, however, are black. It does not vary much, except that the colour of the median and sub-median intervals is sometimes bluish-green.

The aedeagus (fig. 50) is remarkably distinct; the basal piece is very elongate, the lateral lobes broad and short; the struts of the median lobe are short, and the barrel is short, narrow and pointed. The female genitalia have also distinctive characters.

I have seen but few specimens except those found by myself at Brockenhurst, but the species was sent to me from the Pyrenees by M. Pandellé under the name of *dorsalis* Er. Erichson's description probably included this species and *H. affinis*, so that the species no doubt occurs in Germany. At Brockenhurst there is a pond in which I can generally obtain two or three examples in March, April, and May; it occurs in the midst of scores of specimens of eight or ten commoner species, and may be picked out from them quite easily when alive. Mr. Champion found an individual at Lee in Kent many years ago, and it was accompanied by a mimetic variety of *H. affinis*.

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39.—*Helophorus angustatus* Motsch.

“ *H. deplanatus* (Waltl in litt. ?) ” teste Zaitzev Catalogue.

This species, though very variable in colour, is readily recognised by the yellow, unmetallic thorax, which is much narrowed behind and slightly sinuate, so that the hind angles are minutely acute. The general shape and facies remind one strongly of our *H. diffinis*. The legs are long and slender, very pale. The head is brilliantly metallic in striking contrast with the colour elsewhere. The under surface is sometimes entirely pallid, sometimes entirely black, except at the margins. There is also variability as to size, length $3\frac{1}{2}$ –5 mm., and as to the slenderness of the legs. In a specimen entirely pallid beneath, there is a slight visibility of the flanks of the elytra on the under surface; and it is possible there may be more than one species as Motschulsky supposed to be the case.

The aedeagus (fig. 51) is of the type of *H. diffinis* with long basal piece; the lateral lobes are sinuate externally, and the median lobe is remarkably short. This is apparently an Eastern species: Egypt, Syria, Mesopotamia, Fao.

40.—*Helophorus minutus* Fabr.

H. griseus Herbst, Cat. Zaitzev, p. 48.

This very abundant *Helophorus* is a variable species, and others that are very like it are frequently placed under the same name in collections. The size is $2\frac{1}{2}$ – $3\frac{1}{2}$ mm. long, the ground colour of the elytra is always pallid, and there are black marks on them, variable in number, sometimes reduced to one on the suture, very rarely altogether wanting; the palpi are moderately long, pallid yellow, with the tip of the last segment of the maxillary pair feebly blackened; the thorax is metallic but of variable colour, its lateral margin definitely outstanding, this prominent part being always entirely pale yellow, the yellow coloration extending more or less distinctly all along the front margin; the sub-median groove is but feebly angulate, the sculpture is predominantly granular, and even on the median interval never assumes the condition of a diffuse fine punctuation, though the most convex part of this interval is frequently polished and free from sculpture. The elytra vary considerably in elongation, there is never a definite post-basal depression, though an indefinite one is frequent; the coarseness of their sculpture also varies considerably, but is always moderate, and the interstices between the rows of punctures are never more than slightly convex.

The aedeagus (figs. 52–54)—like the external characters—is destitute of any striking peculiarity; it has been examined in a large number of examples, and after making all allowances for shrivelling, immaturity, stretching, and differences in preparation, some variability remains, which I have endeavoured to exhibit by three carefully prepared drawings. Fig. 52 is taken from an English individual; 53 and

54 are from Algeria, 54 being very slightly teratological as regards the shoulders of the struts.

In Britain this is a very abundant insect, and is probably so over a large extent of at least Western Europe, but owing to the paucity of material in collections, I am not able to say much more about it. From France, I have seen specimens from Paris, La Vendée, Nîmes; Sardinia, Terranova, and Golfo Aranci (Champion), many specimens, Sarrabus, May, 1873, R. Gestro, one specimen. Malaga, two doubtful specimens, with coarser sculpture of elytra, not agreeing, but one of them probably really a variety of *minutus*. In Algeria the species becomes so variable that a special study of it there is desirable; some of the specimens differ but little from ours, while others are of a much brighter colour, and the black marks of the elytra may be entirely wanting; unfortunately the small material at my disposal consists too largely of females, but I have figured the aedeagus (figs. 53 and 54) of two Algerian males, which apparently differ a little from British examples, though in slightly different ways. From the East I have almost nothing: one doubtful specimen from Silesia (Reichenstein, v. Bodemeyer); Besika Bay, one example, perhaps distinct (coll. Champion); Mesopotamia (Millingen), one individual, probably distinct and near the Armenian *lederi*. From Scandinavia no specimen, *lapponicus* Th., which has been placed as a synonym of this species, being distinct. Siberia (Ochotsk, coll. Sahlberg), one specimen, also probably a different species, as I shall mention under *H. sahlbergi*.

As regards the name *minutus*, see my remarks on p. 233 of Vol. LI (last year). I need only add that *minutus* Fabr., being pretty certainly this species, is older than the equally uncertain *griseus* Herbst, and that in the absence of knowledge as to the Scandinavian forms, we cannot yet discuss the question as to what the *griseus* of Gyllenhal was.

From all points of view — nomenclatorial, anatomical, and systematic — *H. minutus* is one of the real difficulties of European Coleopterology.

41.—*Helophorus affinis* Marsham.

This is very closely allied to *H. minutus*, and as it is variable like that species some of the varieties can scarcely be distinguished by external characters. *H. affinis* is broader, less parallel, but of brighter colour; the thorax is more narrowed behind and not in a simple curve but sub-sinuate, and the lateral

margin stands out less; the sculpture of the median and sub-median intervals is usually a fine punctuation, but varies a good deal; the antennae, legs, and palpi are bright yellow, slightly infuscate at the tips, the tarsi broadly darker terminally. The series of punctures of the elytra are fine, the interstices broad and flat. The aedeagus (fig. 55; and from photograph, on p. 236, Vol. LI) is highly perfected; the lateral lobes are slender, about as long as the basal piece; the struts of the median lobe are short, the barrel long, about as long as the struts, the chitinisation at the junction of the struts with the barrel is very strong.

Britain; Savoy; Pyrenees; Algeria.

H. affinis is considered to be a rare insect, and that is my experience of it in Britain. Owing however, to the difficulty of distinguishing it from the allied forms, records of its distribution are not trustworthy.

Erichson's description of *H. dorsalis* was probably taken from this species and *H. diffinis*, and is correctly placed in Zaitzev's catalogue as a synonym. *H. erichsoni* Bach, is merely a catalogue name proposed to replace *dorsalis* Er., and falls with that name as a synonym of *affinis*.

42.—*Helophorus celatus*, sp. n.

Capite thoraceque metallicis, antennis, palpis, pedibus elytrisque testaceis, his haud nigro-variegatis; capite parvo, canalicula tenui, thorace in medio longitudinaliter plano, canaliculis tenuibus, intervallis parum sculpturatis; elytris sat fortiter punctatis, interstitiis vix convexis. Long. vix 4 mm.

Hab.: Fennia (Sahlberg).

I have seen only one example of this species, but it is a male, and the aedeagus marks it as allied to *diffinis* and *minutus*, from both of which it is easily distinguished. The margin of the thorax is only very finely set out, and the front angles are not at all prominent. The palpi are rather largely developed, the apical joint being indefinitely darker on its distal half. The legs are rather long and stout, and the whole facies reminds one of the *mulsanti* group. The aedeagus (fig. 56) is nearest to that of *diffinis*, the basal piece being elongate, longer than the distal segment, the median lobe is short, but the struts are rather long, the barrel being quite short.

Received from Dr. Sahlberg many years ago, without name. It may be perhaps found in some collections under *affinis*, but it has quite a different facies, and the aedeagus separates the two completely.

43.—*Helophorus fryanus*, sp. n.

H. minuti (grisei) similis et affinis. Niger, capite thoraceque laete metallescentibus, antennarum basi, pedibus elytrisque pallidis, his vage nigro-signatis,

fortiter punctatis; thorace medio sub-laevigato, ad latera granulato. Long. corp. 3-3½ mm., elytr. 2⅓ mm.

Distinguished from *minutus* by the rather shorter and more convex elytra, which are more strongly punctured; by the side of the thorax very little set out, with the sculpture of the disc less, and by the median interval very strongly angulate in the middle externally. The basal piece of the aedeagus (fig. 57) is short, scarcely so long as its terminal segment; the median lobe and the lateral lobes elongate and slender, the latter slightly sinuate externally.

Hab.: Arabia (Milligen, five specimens in the Fry collection).

It is interesting to find a species so closely allied to our common European form at so great a distance. *H. fryanus* has the palpi very much as in *minutus*, and also the flanks of the elytra not visible beneath, by which it is distinguished from *H. arabicus*.

44.—*Helophorus lapponicus* Thoms.

H. lapponicus Thoms. is treated by Ganglbauer and Zaitzev as a synonym of the common *H. minutus* Fabr. (= *griseus* auctt.). I have long entertained doubt as to this, and having now received two specimens from Prof. Sahlberg as *lapponicus* Th., I apply the name to the one of these that agrees best with Thomson's and Kuwert's descriptions.

The individual in question is a different species from *H. minutus*. It is larger and broader, length 4 mm., the thorax is straight in front, strongly granular everywhere, dull greenish-metallic in colour, with pale cupreous grooves; the yellow lateral margin is well outstanding; the juxta-median groove is narrow and sinuous but not angulate, the sub-external interval quite broad. The terminal joint of the maxillary palpus is large, much darkened at the tip; legs stout. The aedeagus (fig. 58) is on the whole nearest to that of *minutus*, but is not very close; note especially the great difference in size.

This specimen is from Muonio, Finland. The second example sent by Sahlberg is remarked on under *H. jeniseiensis*.

45.—*Helophorus jeniseiensis* Kuwert.

H. jeniseiensis was characterised by Kuwert in 1866 as a variety of *lapponicus* Thoms. As usual his judgement cannot be trusted, but I have received from Prof. Sahlberg a specimen bearing a label in Kuwert's handwriting, "*lapponicus* Th. var. *jeniseiensis* Kuw." The individual is a female, It is however, I believe, distinct from *lapponicus*, though probably closely allied.

The last joint of the maxillary palpus is elongate, only very slightly darker on the apical part; the last labial joint is stout, rather short, yellow. The thorax is moderately large, the sculpture of the median intervals consists of ocellated

punctures—a fine puncture surrounded by a very obscurely raised ring, or obsolete granule—and that of the juxta-median and sub-external intervals is coarsely granular; the lateral margin is definitely yellow, and stands out moderately. The serial punctures on the elytra are moderately fine, and the intervals slightly convex.

This species should be placed near *affinis* and *lapponicus*. Zaitzev has correctly queried it as being a synonym of *lapponicus*. *H. ytenensis* is a larger insect than *affinis*, with a more ample prothorax, the sculpture of which is more granular.

In describing *H. lapponicus* I alluded to a second specimen sent to me by Sahlberg with that name. It is from Palojohti, in Finland, and is a female so similar to *jeniseiensis* that I have assigned it thereto, though doubt must exist till more ample material, including males, shall be obtained.

46. *Helophorus* sp. ?

I may briefly mention a species apparently allied to *H. jeniseiensis*, but having slender palpi, the terminal joint of the labial pair being remarkably slender and elongate, almost four times as long as broad, instead of about twice as in *jeniseiensis*.

The unique specimen is from Reichenstein in Silesia (v. Bodemeyer) and is in the Champion collection; it is, I believe, a female, so I have not attempted to dissect the genitalia, but I have taken out the trophi so that I am sure there is no mistake about them.

47.—*Helophorus sahlbergi* Kuwert.

Kuwert described this species in 1886 (Wien. ent. Zeit., p. 90), founding it on imaginary characters of pubescence of palpi, elytra and legs. I should therefore have altogether omitted the name had it not been that Kuwert received his specimens from Prof. Sahlberg, and that this authority has sent me two specimens as being *sahlbergi*. They are from Ochotsk, in Siberia, and belong to two different forms, both of which are otherwise unknown to me. Supposing that Kuwert's description were taken from one, or other, or both, of these specimens I should apply the name to a form allied to *iteratus* and *minutus*, and differing from the latter by its larger thorax, with very delicate and not outstanding lateral margin. The second example appears to be more nearly allied to *H. exasperatus*. Both are in very bad condition and apparently females. Unless some individual can be certified as the actual type of Kuwert, it is useless to attach any good description to the name.

48.—*Helophorus iteratus*, sp. n.

Capite thoraceque metallescentibus, hoc sulcis plus minusve cuprescentibus, palpis, antennis, pedibus elytrisque minus dilute testaceis, his macula communi nigra; capite thoraceque granulatis; elytris fortiter seriatim punctatis, interstitiis sat convexis. Long. 3½ mm.

Hab.: Silesia (Reichenstein, v. Bodemeyer), coll. Champion.

This is another of the uncertain species allied to *minutus* and *affinis*; three specimens from the locality of the type were received by Champion from Reitter under the name of "*griseus*," and one of them is that species, the other two being the sexes of *H. iteratus*. It is about the size of the largest specimens of *minutus* (*griseus* Zaitz.) and closely resembles some of the varieties of that species, but it has a smaller head and larger serial punctures on the elytra; the sculpture of the thorax is scarcely coarser than it is in some *minutus*, but the male is very different and much approaches that of the smaller *H. discrepans*, as will be seen from the figures. *H. discrepans* has a comparatively smaller head, and a thorax rather differently shaped and sculptured. In the absence of more specimens of these variable and difficult forms it is not advisable to attempt a conclusive description. The female I assign to *H. iteratus* differs a good deal from the male, and resembles *minutus* rather than *discrepans*. In the male *iteratus*, the lateral margin of the thorax stands out but little more than it does in *discrepans*, but in the doubtful female it is as prominent as in some examples of *minutus*. The type specimen is of course the male of which the aedeagus is figured (fig. 59).

49.—*Helophorus lederi*, sp. n.

Palpis, antennis, pedibus elytrisque pallidis, his vage nigro-signatis, capite thoraceque cupreo-auratis, hoc marginibus lateralibus et anteriore flavescentibus; thorace medio parce subtiliter punctato, versus latera parce granulato; elytris sat fortiter striato-punctatis, interstitiis parum convexis. Long. vix 3 mm.

Hab.: Montes Armeniaci (Leder).

Allied in size and shape to *H. minutus* (*griseus* auctt.), readily distinguished by the colour of the head and thorax, which are brilliant pale copper, the latter with conspicuously flavescens lateral and anterior margins: the punctuation of the thorax, too, is more like that of *affinis* or *difinis*; the elytra in colour and sculpture much as in *minutus*.

Thorax but little convex transversely, with deep grooves, the median narrow, the juxta-median strongly angulate, sub-external straight, outside it the surface is entirely yellow, and the yellow colour extends all along the front margin: the median interval has no granules, though the surface is a little uneven and there are some fine punctures, the sub-median interval has some very obsolete granulation on the anterior part.

I have seen only one specimen sent by Herr Reitter to Mr. Champion as "*granularis*," but the species should come between *minutus* and *affinis*; this is supported by the aedeagus (fig. 60), which

is on the whole rather more slender than in *minutus*, has a shorter basal piece with the chitinisation encroaching more on the membrane, the struts shorter, the barrel more slender, the lateral lobes with less oblique inner margin.

50.—*Helophorus granularis* L.

This is reputed to be a very abundant species in Europe; in Britain, however, it is rare, and as very few examples from the Continent are before me, I am but imperfectly acquainted with it.

It is a short, very convex insect, rather coarsely sculptured, about 2½ mm. long, but varying, though not greatly, in this respect. The thorax is rather short, very convex transversely, strongly granulate, metallic, but varying in colour, from brassy to almost steel-blue, the lateral margin is but little set out, and usually exhibits little or no trace of yellow colour. The elytra are sordid testaceous, but little maculate, the punctures are rather large, and placed in such a way that four of them form an almost true square. The wings are large, a little more or a little less than 3 mm. long (fig. 73). These characters bring the insect very near to *H. discrepans*, which has longer elytra, and an aedeagus with struts very long in comparison with the barrel, or cone, of the median lobe.

I have been able to examine only one aedeagus (fig. 61) of *granularis*; it is of short and broad proportions, but without any remarkable feature; the lateral lobes are rather broad, quite rounded externally, as will be seen from the figure.

H. granularis is at present a rarity in Britain: by great searching for it I have only secured 20 specimens at Brockenhurst in the last two or three years, and the only other localities yet known for it are Strood in Kent, and County Down, North Ireland.

One of the specimens sent to me by M. Louis Pandellé from the Pyrenees as *H. discrepans* appears to me to be a variety of *granularis*. Finland examples from Sahlberg agree with our British specimens; I have no satisfactory evidence of its occurrence in Germany, where it would appear it is not well distinguished from small *minutus* by collectors, as there can be little doubt of its existing there.

51.—*Helophorus ytenensis* Sharp.

This species, so far as is at present ascertained, differs from *granularis* only by the abbreviated wings, and a slight distinction in the aedeagus (fig. 62), which is not quite so broad and has the lateral lobes less rounded externally. This phallic difference is but slight,

and if more specimens were examined would possibly prove to be unimportant. But as regards the wings the reverse is the case.

H. ytenensis abounds at Brockenhurst, and when I found, a year ago, an individual with the wings distinctly longer than usual (fig. 75), I suspected that by examination of a large number of specimens I should find a series of intermediates. I have therefore captured and examined some hundreds of specimens of *ytenensis*, but have found no real connection with *granularis* in this respect. The wings are not only shorter than in *granularis*, but are differently shaped. I figure the wing of *granularis* (fig. 73), which is the same in all the examples of that species (24 in number) at my disposal, and the wings of the various forms of *ytenensis* selected from a very long series: fig. 74 shows the form as it usually occurs; fig. 76 a very rare, broad variation in shape; and fig. 75 the longest wing of a series of some hundreds of examples. These figures show that the wing of *ytenensis* is somewhat unstable in size and form. The difference in size is not correlative with that of the individual. I find it impossible at present to account for the wing distinctions between *granularis* and *ytenensis* by any theory except that the two are really different species.

At Brockenhurst the two forms occur together, and about 3 per cent. of the total specimens captured have proved to be *granularis*; the two, however, are not mixed indiscriminately, for the spot that has produced most of the specimens of *granularis* is one where *ytenensis* is rare, and the other localities where *ytenensis* is abundant at present have each yielded only one or two *granularis*.

The species inhabits very shallow grassy ditches or pools, that dry up completely for four or five months each year, and are then covered with ordinary, as distinguished from aquatic, vegetation. In November, and in the spring from March till April or May, *ytenensis* may be found in profusion in certain of these spots, and has continued to frequent the same spots for several successive years. The place where *granularis* occurs is a larger pond with aquatic vegetation, and only dries imperfectly and leaves much mud in the summer. This pond is only a few yards distant from a shallow ditch in which *ytenensis* abounds, so that the few specimens of this species found in the pond may be merely temporary migrants. A corresponding consideration might account for the occasional presence of a specimen or two of *granularis* in the haunts of *ytenensis*, so that the evidence inclines one to believe that there is some real difference in the habits of the two forms.

H. ytenensis is the only kind known in *Helophorus* to possess abbreviated wings, and the phenomenon is equally rare among other water-beetles; it is in fact only known in a single Dytiscid: this little and obscure *Helophorus* is therefore a very interesting creature. *Bradempleurus schmidti* and *Atracthelophorus brevitarsis* have reduced wings, but are not aquatic.

H. ytenensis is not yet known to occur in continental or Scandinavian Europe. In Britain I believe it to be an abundant insect, though at present it has been recorded from but few localities. I have examined specimens from North Cornwall (Padstow, Lamb), the Isle of Wight (Totland Bay, Champion), Brockenhurst (Bedwell, Willoughby Ellis, Sharp and Walker), Cumberland (Day), Dumfries (Irongray, Sharp), and North Ireland (Co. Down, Balfour Browne).

(To be continued.)

DIAGNOSIS OF A NEW SPECIES OF *BIBLOPECTUS*

(COLEOPTERA, PSELAPHIDAE).

BY D. SHARP, M.A., F.R.S.

Mr. H. Britten, who is engaged on an attempt to elucidate our British species of this much misunderstood genus, has asked me to publish a form he has not become acquainted with, except by means of our specimens.

Biblopectus margaretae sp. n.

Piceus, antennis pedibusque testaceis, prothorace elytrisque parum elongatis, illo posterius bene angustato, his ad humeros angustis. Long. vix ultra 1 mm.

Hab.: Brockenhurst, Angliae mer.

The members of this genus are easily distinguished from *Euplectus* by the absence of the anterior thoracic depression. Up to the present time we have only recognised two species in Britain, viz., *minutissimus* and *ambiguus*. *B. margaretae* has but little resemblance to the former, but is closely allied to the latter, from which it may be separated by the points mentioned above, though the real characters are to be found in the extraordinary structure of the aedeagus, which differs from all the others by the long slender process at the prow of the scaphium, or bulb.

This species was discovered and dissected, and its characters delineated, by my daughter, Margaret Annie Sharp, after whom I have named it. I need say no more about it at present, as Mr. Britten will deal with it fully, I hope, very soon.

Brockenhurst:

July 13th, 1916.

ADDITIONAL BRITISH SPECIES OF *ERNOBIUS*.

BY D. SHARP, M.A., F.R.S.

Liozoum parvicolle Muls., Col. France, Térédiles, p. 178.

This is very different from our other species by the form of the thorax, the base of which is narrow, while in the middle the sides project so that a large space separates the most prominent part from the elytra. The legs are dark, with yellow tarsi, the elytra are piceous-brown. In the male the terminal three segments of the antennae are very long, and 6-8 are sub-equal in length, rather short, but not compressed as they are in *Ernobius nigrinus*.

A specimen of this very distinct species was found near Mildenhall on June 6th, 1899. It occurred, I believe, on the peculiar hedge of conifers, near the road from Barton Mills to Brandon. Thomson's genus *Ernobius* bears the date 1863, and Mulsant's *Liozoum*, 1864, so it may be presumed that the European catalogue is correct in adopting the former name.

Liozoum consimile Muls., *op. cit.*, p. 167.

This name is placed in the European catalogue as a synonym of *E. mollis*. I have, however, been able to prove that the two species are distinct.

E. consimilis Muls., is the form standing in my own collection under the name of *E. mollis*, and I presume this will be found the case in other collections of our native *Coleoptera*. If so, it is *E. mollis* that is really a novelty in our fauna, and it is occurring at present at Brockenhurst on burned Scotch fir-trees, in company with *E. consimilis*. Some difficulty will at first be experienced in distinguishing the two, owing to considerable variability and to the differences between the sexes. These must be separated by the student as a preliminary to the study of the specific distinctions. The male has usually longer antennae than the female, and the ninth joint in it is quite parallel-sided, while in the female it is just perceptibly curved on the inner margin.

E. mollis is a somewhat longer and paler insect, and has more prominent eyes, the 6th, 7th, and 8th segments of the antennae are subequal in length, while in *consimilis* the 7th is definitely longer than either the 6th or the 8th. In the male of *mollis* the front tibiae are curved, in *consimilis* they are quite straight.

The male structure of *E. consimilis* has been figured by Muir and myself (Tr. Ent. Soc. London, 1912, pl. lxiv, figs. 134 and 134a) under the name of *E. mollis*. The three lobes of the aedeagus are considerably longer in the true *mollis*, and are besides sufficiently different in shape to make us sure that it is a distinct species. Numerous dissections made by my daughter and myself, leave me without doubt as to this result.

As I have before said, the true *E. mollis* is occurring here commonly on burned fir-trees, but I have seen no other specimens of it, though doubtless it occurs elsewhere in the country. Mulsant says that *mollis* is a rare species, but that *consimilis* is generally common in France.

Ernobius oblitus, sp. n.

Minor, ferrugineo-testaceus, antennis pedibusque pallidioribus, illis tantum modice elongatis, maris feminae non dissimilibus; supra dense subtiliter sculpturatus, et pubescens, oculis minus prominulis. Long. corp. (capite extenso) 3-3½ mm.

Hab. : Brockenhurst, Angliae mer.

This species is so similar to the smallest specimens of the common *E. consimilis*, that it is not improbably confounded with that form in collections; dissection of the aedeagus reveals such great differences as to assure us that the two are not closely allied.

The most remarkable superficial character of *E. oblitus* is that the male antennae in shape and size are not differentiated from those of the female; the 7th segment is slightly longer than the 6th or the 8th, as in *consimilis*.

Five specimens—all just alike—have occurred here on the burned fir-trees in company with *mollis* and *consimilis*.

The male aedeagus in *Ernobius* (and many other *Anobiidae*) is so peculiar in form and so distorted that one wonders how it can function.

I have had the opportunity of dissecting a copula of *E. consimilis* as well as one of *E. mollis*. In this state the sexes stand end to end, the male being sometimes the larger, but not always. The 6th abdominal segment of the female enters entirely into that of the male, so that the hooks and processes of the male aedeagus are brought into contact with the entrance of the vulva; the median lobe of the male structure enters the vulva, but the lateral lobes do not—one of these, in fact, lies on each side of the female vulva. The structure of the female organs of *Anobium pertinax* has been well figured by Stein

(pl. vii, fig. 11), and those of *E. consimilis* are very similar. How the sperm finds the way to the spermatheca I have no idea, as there appears to be nothing but the short broad sac figured by Muir, l.c. The copula is of unusual duration. I have in one pair observed it to last quite 40 hours, and it may have been much longer as the pair was coupled when captured.

Brockenhurst :

July 15th, 1916.

NOTE ON SOME FOSSIL INSECTS.

BY EDWARD MEYRICK, B.A., F.R.S.

A paper on Mesozoic and Tertiary Insects of Queensland and New South Wales has lately appeared as Publication No. 253 of the Queensland Geological Survey ; the descriptions of the insects (accompanied by nine plates) are by Mr. R. J. Tillyard (Science Research Scholar in the University of Sydney), to whom I am indebted for a copy, together with a request that, if I thought fit, I would publish some remarks on the single specimen (the most perfect and striking of all) which, with the support of Dr. A. Jefferis Turner, he has referred to the *Lepidoptera*. This is described and figured under the name of *Dunstaniana pulchra*, and regarded as representing a new Family.

The specimen in question was obtained from the Ipswich Coal Measures in Queensland, assigned to the Upper Triassic, and would therefore be the most ancient Lepidopteron known ; associated with it were various insects referred to the *Blattoidea*, *Protorthoptera*, *Coleoptera*, *Odonata*, *Mecoptera*, and *Hemiptera*, together with an abundant flora, chiefly consisting of ferns. It is therefore obviously of the greatest interest. It consists of a nearly complete hind-wing of very Lepidopterous appearance, which, on the assumption of its Lepidopterous nature, may be briefly described in the usual Lepidopterous terminology as under, viz. : 20 mm. in length, ovate, without frenulum, base of costa not prominent, cell shorter than $\frac{1}{3}$ of wing, 2 from near base, with strong bar downwards from before its middle (but dorsal area with veins 1a-1c missing), transverse vein absent between 3 and 4, but 4 running to base of wing, 5 from upper angle, 6 and 7 from upper margin of cell, 5 and 6 coincident on posterior half so as to enclose a long narrow secondary cell, 7 to about apex, 8 free ; membrane between veins densely strewn with minute pits, supposed to

represent points of insertion of scales; all veins and wing-margin narrowly but distinctly edged with brownish; apparently a strong corneous margin running all round costa and termen, on latter delicately transversely ribbed. The absence of the transverse vein between 3 and 4, and the peculiar auxiliary cell formed between 5 and 6, are the characters relied on by the author for the justification of a new Family.

In order to appreciate the position I looked up the record of *Palaeontina oolitica* Butl., from the Jurassic, hitherto the oldest known Lepidopteron, described as a butterfly by its author, apparently with the approval of Westwood and other entomologists (the opinion of Scudder that it was an insect allied to *Cicada* can only be regarded as ludicrous); I must express my opinion that there is little doubt it belongs to the *Hepialidae*; the specimen is a complete fore-wing, in which the irregular and ill-composed structure of the upper part of the cell is very different from the compact arrangement of the same part in a butterfly, 9 and 10 are stalked as characteristic of the family, and the jugum appears to be perceptibly indicated in the proper position. Other species described from Tertiary strata are genuine butterflies. Now it is clearly proved on structural grounds that the *Micropterygina* (the small group to which the *Hepialidae* belong, otherwise termed *Jugatae*) were the primitive form of the *Lepidoptera*, and the nature of *Palaeontina* is in accord with this conclusion and confirmatory of it. Parenthetically, I take occasion to notice that Goss, Tillyard and others, are troubled as to what the early *Lepidoptera* can have fed upon, when flowering plants were not yet in existence, and honey was not available; it is a problem easy of solution, since the more primitive forms (including the *Hepialidae*) have in general no proboscis or feeding apparatus, and therefore fed on nothing in the perfect state.

With the evidence recounted above, *Dunstania*, if regarded as Lepidopterous, is violently discordant. As the hindwing possesses neither frenulum nor prominent basal angle of costa, it must be assumed that the forewing was furnished with a jugum; all existing *Lepidoptera* exhibit one or other of these structures. But all jugate *Lepidoptera* have the hindwing similar in neuration to the forewing, with at least 11 veins, whereas this wing seems to be of the modern 8-veined type, though conspicuously different from any known form, and in fact quite as highly specialised as any now existing. Finally, there is the apparently corneous margin round the costa and termen, which is

altogether abnormal, no other *Lepidoptera* showing a trace of it, and in my estimation a far more important systematic character than the two which the author lays stress on.

It appears to me, then, that this specimen can only be regarded as Lepidopterous on the theory that it is a member of an entirely unknown line of development of that Order, which had attained a high degree of specialisation at a period far anterior to the earliest certainly Lepidopterous insect known, itself a lowly organised form; this cannot be termed impossible, but it involves a very great improbability. The alternative view that the resemblances are accidental and the insect not Lepidopterous seems to me, on the whole, less improbable.

I cannot venture to express any positive opinion on its possible relation to other Orders, but I suggest that there are some points of resemblance to the *Hemiptera-Homoptera*, some species of which have a semi-Lepidopterous facies. The corneous margin of wing, the central cell (usually, it is true, much larger), and approximate number of veins rising from it, and even the curious dark banding of the membrane alongside the veins can all be paralleled in this group, which, moreover, is already known to have been in existence since the Carboniferous period. Further evidence may soon be available to assist comprehension, for it appears that the collection described in the paper quoted is only the first-fruits of a quantity of material of similar character which has been discovered, and the results of the investigation of this promise to be of the highest importance.

July 18th, 1916.

Mr. Druce's Criticisms, and an Appeal.—May I venture to hope that entomologists in general will not be disturbed unduly by Mr. H. H. Druce's resurrection of those two unfortunate papers on Bornean *Rhopalocera* by Pryer and Cator, and Bartlett? As Mr. Druce has told us, the first was published in the "British North Borneo Herald" of 1894, and the other in the "Sarawak Gazette" of 1896. The late Mr. Shelford buried them with all due publicity and decency in his paper of 1904, and they have been allowed to sleep on undisturbed for the last twelve years, save for an occasional reference given to them in "Lepidoptera Indica" or in my own papers. Finally, Dr. Sharp, in a recent letter, which Mr. Druce publishes, administers the *coup de grace*: "In 'Zool. Rec., 1894, p. 248, Pryer and Cator's list of Bornean butterflies is mentioned, but I did not accept the new species." Most entomologists would be satisfied to accept the judgment of such a long-experienced and distinguished authority as Dr. Sharp (even if Mr. Shelford had not taken the trouble to give his reasons for disregarding these papers in 1904) and treat these papers as non-existent.

Mr. Druce amiably suggests that I "should without delay examine the types, redescribe them carefully, and correct their synonymy." Much as I should like to oblige Mr. Druce, I am afraid that this is impossible under present circumstances. Surely we can accept Dr. Sharp's very common sense view and treat as non-existent any species that are "described" (most of these, if I remember right, are *nomina nuda* pure and simple) in little known newspapers, like the "British North Borneo Herald" and the "Sarawak Gazette"?

With regard to the 19 new species named by Pryer and Cator in 1894, the probability is that most, if not all, have been described since, and I for one should be very much averse to upsetting the present nomenclature in favour of such unacceptable species as those under discussion. The Pryer collection (or a large portion of it) went to the Oxford Museum, so it should not be difficult for Mr. Druce to find out if the types of these 19 new species are there and to describe any that still remain unknown to us.

I take strong exception to Mr. Druce's concluding remarks: "the nomenclature of the Bornean butterflies is probably in a worse state of chaos than that of any other country, and this fact is due to the writings of gentlemen who have lived in this island at various periods during the last 22 years."

It has already been shown clearly enough that the two papers by Pryer, Cator and Bartlett should be ignored for the future as they have been in the past. If they are not ignored, then I admit that there is quite a lot of work to be done to correct synonymy. The only papers published by residents in Borneo since 1896, as far as I know, are those by Shelford and myself. A careful study of Shelford's work has shown me that, so far from reducing the nomenclature of Bornean butterflies to a chaotic state, he helped enormously to bring it to its present state of accuracy. In my own writings I can also claim to have advanced the work of bringing our nomenclature up to date.

This criticism of systematic work done on the borders of civilization, instead of at the centre, leads me to hope that the present is a good opportunity to ventilate a grievance of much wider interest. It is this: time and again the naturalist abroad is accused of wasting his time and opportunities by doing systematic work which ought to be done more satisfactorily and certainly more easily by more competent people at home. The reply is always the same: there is no up-to-date work on this subject; no one at home will work it up; these species must be named; no one will do it, therefore I must find time to try. I have waited *ten years* for the name of a beetle!

There is no great pleasure in sitting in an office on the equator, working out a key for identification, while perspiration drips monotonously on to the floor, and a small but devoted band of mosquitos hums contentedly in your ear. Outside, the tropical forest beckons, reeking of unsolved mysteries in the great insect world. Beyond, rise those mountain tops, ever fruitful source of something new, something unexpected. There is air up there, too. But no, the continual amassing of unnamed and unnameable material, and the labour of observation and notes on the same must wait awhile until some means are provided for introducing order into chaos. Those means are the grammars and

dictionaries which we call systematic papers, by which alone can we commence to study our material. In almost any current zoological journal published in the East to-day one will find one or more systematic papers written by workers in the East. Away from complete libraries and collections they naturally work at some disadvantage, nevertheless, *faute de mieux*, the labour of compiling these necessary grammars and dictionaries falls on them. Their successors, however, owe it to them and not to the scientist at home for the means thus provided for them to prosecute their studies.

To put the matter briefly, my Utopian idea is this: *at home*, there is a vast world-wide collection, named up-to-date; also a large band of willing and experienced specialists, each moved with the ambition of advancing our knowledge, and adding to the national collection of his own particular group. *Abroad*, there is the energetic collector and field naturalist, who sends his material home, soon receives a representative portion back again, duly named up, and who, in correspondence with his specialist at home as likely as not at his actual suggestion, makes valuable discoveries on the life-history of the species he has collected. *At home*, scores of descriptions fill the entomological journals; *abroad*, field notes and life-histories keep Eastern editors equally busy. The specialist at home provides the former (from the latter's spoils), the naturalist abroad is responsible for the latter. Thus Utopia.

Our present experience falls a long way short of this. Although many eminent specialists have given of their best in helping the naturalist abroad, the chances are long against one being able to obtain the correct name for a quarter of the insects one may collect to-day in any comparatively little-worked Eastern country. There are not nearly enough specialists available. The natural centre to which the Englishman turns is, of course, the Natural History Museum at South Kensington. There, as is well known, the entomological staff, however willing, is hopelessly inadequate. It remains, therefore, for private entomologists to come forward and fill the breach. I am quite sure that many Coleopterists who read this magazine are fully capable of taking up the study of one or more of their pet families, and of making themselves (if they are not so already) quite efficient enough to undertake the identification of species from one or more quarters of the globe.

May I suggest this suitable war task for the Editors of this Journal? Namely, the formation of a body of British (allied if you like) experts, who will undertake to help the national collections, at the same time advance their favourite science, and help the naturalist abroad, by making themselves available for and capable of naming up some at least of the many orders or families of insects. Will one or more of them not undertake a special study of the insect fauna (or part of it) of some neglected land? The need is all the more pressing now that specialists of enemy nationality are no longer available for help.* When the time comes for peace will the Editors of this Journal earn our lasting gratitude by publishing a list of all the specialists they can secure to help the naturalist abroad? For those of us who are temporarily divorced

* For the year 1914 I acknowledged assistance from 53 specialists, of whom 25 were British, 5 of neutral nationality, 12 of allied nationality, and 11 of enemy nationality.

from the accustomed forceps, a promise of such a list would help to make the future a little less cloudy than it is now.

One instance of apparent neglect I am tempted to mention before I close. "The Fauna of British India" volumes on Butterflies were published in 1905 and 1907 by the late Col. Bingham. A third, to complete, was arranged for very soon after—and is still awaited. Moore's "Lepidoptera India," recently concluded as far as the butterflies are concerned by Swinhoe, is beyond the reach of most pockets, and collectors in one of our largest, oldest, most important, and (entomologically speaking) most attractive dependencies, are still without their book to tell them what they see or catch!—J. C. MOULTON, Lieut. 1st/4th Wiltshire Regiment (Territorials), Chanbattia, United Provinces, India: May 23rd, 1916.

Note on the Curculionid-genus Mascarauzia Desbr.—Mons. J. Clermont, of Paris, recently sent me for examination some specimens of *Mascarauzia cyrtica* Desbr., from St. Vincent de Paul, Landes, suggesting that it might be an acclimatised exotic in France, like the American *Stenopelmus rufinatus* Gyll. He is almost certainly correct in his surmise, as I have an example of it from Monte Video, captured many years ago by Commander Walker. But how it could have been introduced into the Landes it is difficult to understand. The first specimen of *M. cyrtica*, described by Desbrochers in 1899, was found on marshy ground on the heaths at Cassen, near Dax. In 1908 two others were taken at Dax, from beneath plane bark, and in 1910 M. Clermont (Proc.-Verb. Soc. Linn. Bord. LXIV., pp. 56, 57) recorded the capture by M. Degland of many specimens at St. Vincent de Paul, under similar conditions. *Mascarauzia* is very closely related to the American genus *Hyperodes* Jekel (= *Macrops* Kirby), but differs from it in having a narrower rostrum. The former, it seems to me, was correctly referred by Desbrochers to the section *Eriirrhina*, whereas Leconte and Horn place *Hyperodes* in *Hyperina*. This last-mentioned genus ranges widely over North and South America, and some Mexican forms very similar to *M. cyrtica* were figured and described in the "Biologia." Mr. W. D. Pierce, of Washington, at my request, has examined one of M. Clermont's examples, and he informs me that the insect is not known to him from the United States. *Mascarauzia* is very like some of our British species of *Dorytomus*, differing from them in having a much stouter rostrum. It probably hibernates or aestivates under plane bark, after the manner of our *D. validirostris*. M. Degland thinks it may live on *Senecio erratica* or *aquatica*, a plant allied to *S. jacobaea*.—G. C. CUAMPION, Horsell, Woking: June 28th, 1916.

Trinodes hirtus F., in Oxfordshire.—While examining a fallen elm tree at Thame Park, Oxon, on April 24th last, I found a very dark *Anthrenus*-like larva which was unknown to me, the segments being covered with long black hairs instead of the usual brown hair-tufts characteristic of *Anthrenus*. I fed it with dead spiders and flies, and succeeded in getting it to pupate on May 3rd, inside the larval skin, which retained the long dark hairs throughout. The beetle burst the pupal envelope on May 13th, but remained *in situ* without moving.

gradually assuming its full colour, and it was quite mature before its final emergence on May 22nd. Being at Thame Park again on May 28th, I found another example, this time a pupa, which burst the envelope on June 8th, emerging fully mature on June 15th. The first specimen bred proves to be a male, whilst the later one is a female.—H. BRITTEN, Myrtle View, Headington, Oxon: *July 17th*, 1916.

Ischnomera sanguinicollis F., in Oxfordshire.—I took a female example of this somewhat rare species sitting on a nettle leaf at Thame Park, Oxon, on May 28th last.—H. BRITTEN.

Deleaster dichrous Grav., in Roxburghshire.—I think it may be worth while recording the capture of *Deleaster dichrous* here about the end of May. I was going down to the barracks near the River Slitrig when I noticed a beetle flying, and on knocking it down with my hand found it to be this rather uncommon species.—JAMES E. BLACK, Lieut., Stobs Castle, Hawick: *July 12th*, 1916.

Notochilus limbatus Fieb., in the New Forest.—On May 21st, 1915, I found a single example of this distinct and apparently very rare little bug in wet *Sphagnum* near Rhinefield Enclosure, but failed to meet with it again in a recent visit to the same spot. In the Oxford University Museum there is also a somewhat broken specimen of this insect from the New Forest, which was taken by Mr. Donisthorpe on May 12th, 1914, with *Tachys walkeriannus* and other *Sphagnum*-frequenting species.—JAMES J. WALKER, Oxford: *July 7th*, 1916.

A plague of Caterpillars.—The greater or less denudation of the foliage of oaks has been a good deal remarked, and is noticed in the Ent. Mo. Mag. How the seasons affect *Tortrix viridana* I have no suggestions to make, but there can be little doubt that the mild winter of 1915-16 must have greatly favoured the winter moths, *Cheimatobia*, *Hibernia*, etc. As a reverse to this, I have not come across a single brood of *Vanessa urticae* so far; it would be interesting to know whether this scarcity is local or general. I attribute it also to the mildness of the winter. I saw a *V. urticae* on the wing at an unseasonably early date, which I did not record, and suppose that many individuals of the species were tempted out of hibernation only to perish, suffering not from the severity, but the mildness, or rather the variability, of our climate. I explain the absence of *V. antiopa* from us by its always perishing when it attempts to settle here, by our winters not being severe enough to keep it in effective hibernation. I do not know that I can connect with the mild winter the disappearance of a common *Nematus* that was abundant on a sallow tree here last year and for several preceding years, or of *Phymatocera aterrima*, which is not absent, but very scarce this year, having been common for two years. It is also a very unusual circumstance that there is not a trace of *Nematus ribesii* in my garden. These common variations in the abundance of species unquestionably have causes, but we are rarely able to surmise a satisfying explanation.—T. A. CHAPMAN, Betula, Reigate: *July 1st*, 1916.

Vespa norvegica at Reigate.—Mr. Lionel Adams calls my attention to there being more wasps' nests in bushes than usual, his attention having been called to several. Unfortunately these were all destroyed but one when we came to investigate them. The remaining one proved to be of *Vespa norvegica*; the others were probably the same species. This wasp is perhaps sufficiently infrequent in this district to make its occurrence, apparently in some numbers, worth noting.—T. A. CHAPMAN,

Obituary: a correction.—In the notice of Mr. Enoch which appeared in our July number, his birth-place is by an oversight given as Birmingham. It should have been Manchester.—Eds.

Abstracts of Recent Literature.

BY HUGH SCOTT, M.A., F.L.S., F.E.S.

KEILIN, D. "RECHERCHES SUR LES LARVES DES DIPTÈRES CYCLORHAPHES." Bulletin Scientifique de la France et de la Belgique, Vol. 49, fascic. 1-2, pp. 15-198, pl. 1-16, Dec., 1915.

In the Ent. Mo. Mag. for August, 1915, there appeared an abstract of a short paper on "the adaptative forms of Anthomyiid larvae," one of a number of interesting articles on Dipterous larvae and their biology published by Dr. Keilin, who is at present carrying on his studies at Cambridge. The large and extremely valuable work now under review is the result of several years of research effected at the Laboratoire d' Evolution in Paris. It is a striking fact that much of the material, on which the remarkable discoveries outlined below were made, came from the small garden of that institution and from some other gardens in the heart of the great city.

The treatise is divided into two parts: (i) dealing with the life-history of *Pollenia rudis* and the parasitism of Dipterous larvae in Oligochaet worms; (ii) discussing various points in the comparative morphology and biology of Dipterous larvae. Though it is of considerable size, its author intends it to be only the first of a series of memoirs on the early stages of the *Diptera*.

Pollenia rudis, a Calliphorine fly known in America as the "cluster-fly," is one of the commonest flies in houses in Europe and America, sometimes infesting rooms in swarms. Though it is so common, its life-history was unknown till Keilin discovered that its larval existence is passed in the earthworm *Allolobophora*. His preliminary narration of this fact appeared in 1909, and was referred to by me on p. 20 of the present volume of the Ent. Mo. Mag. The full account of the life-cycle is contained in the work now under review.

The species of *Allolobophora* parasitised are *A. chlorotica* Sav. and *A. rosea* Sav., but the following remarks apply mostly to the former. The female *Pollenia* lays its eggs in the earth about the beginning of September. The larvae hatch in 4-6 days, and having found an earthworm, penetrate into it through the male genital orifice. This act, which Keilin has watched in the course of several

experiments, probably occurs in nature at the moment of pairing of the worms. The young larva finds its way into the seminal vesicle, and then falls into a state of hibernation, in which it passes the winter. The long duration of this state is due to the low temperature, and it can be ended, and the cycle hurried forward, by artificially raising the temperature at any time. The presence of these 'primary' larvae in the worms can be detected by examining the latter under strong transmitted light.

About the beginning of May the larva awakes, and comes out of the seminal vesicle—if it has not already passed into the general body-cavity, which may have occurred during the winter. It then migrates forwards in the body-cavity from the genital segments to the front end of the worm, working its way with the hooks on its body and with its mouth-armature. This migration occupies 1–4 days. The last part of the journey is effected hind end foremost; arrived at the prostomium of the worm, the larva tears this with its hind end, and thus puts its posterior spiracles in communication with the outer air by way of the worm's mouth.

Henceforth the worm ceases to feed or move about. The larva, on the other hand, commences the more active and the feeding part of its life. Six days after perforating the prostomium it undergoes a moult, passing into the second stadium, in which it grows considerably and destroys the partition separating it from the worm's pharynx, into which it then passes, and which it distends. Several photographs show the hind end of the larvae projecting from the front end of the worm. After nine days in the second stadium it moults again, passing into the third stadium, in which it begins to devour the tissues of the host. The body-walls of the worm, distended by the larva, become inflamed and disintegrate from before backwards, leaving the larva more and more exposed. The larva ends by being attached by its front end to a few of the hindmost segments of the worm, which still have some life in them. It leaves these remains, buries itself more deeply in the earth, and pupates. There is but one generation in the year.

As many as four young larvae can penetrate into a worm, but only one completes its development. The others appear to be wounded by the random strokes of the mouth-armature of their comrades, and are then perhaps overcome by the phagocytic reaction of the host. The survivor probably owes its success largely to arriving first at the front end of the worm, in which position, with its own head-end directed backwards, it is likely to wound any other larvae that come so far forward.

The phagocytic reaction of the host has been mentioned. 'Primary larvae' are often found in winter completely enclosed in phagocytic cysts. If uninjured, they generally manage to emerge from these cysts in spring and continue their development. Wounded or weakly larvae may, however, succumb to the phagocytes. The worm can also react in another way, by expelling the larva mechanically from its body under certain conditions, as when the larva makes any error in its movements: *e.g.*, if it perforates the prostomium *head first* (instead of tail first) it can be expelled by the contraction of the worm. Or if it tears the pharyngeal wall too soon, or goes too deep into the pharynx, it can be swallowed and expelled through the anus.

The morphology of the larva is described in detail. There are considerable differences between the first and the two succeeding stadia of the larva. The first-stage larva is furnished on the ventral side of the abdomen with hooks which are absent in the later stages. The bucco-pharyngeal armature also is peculiar in the first stadium, *inter alia* having in front a single median mouth-hook instead of the paired hooks of the later stages.

The primary larvae of the Muscid *Onesia sepulchralis* have also been found in certain species of *Allotobophora*, as have also certain later-stage larvae probably belonging to that species. It seems possible that this insect may have a life-cycle not unlike that of *Pollenia rudis*. The larvae of *Onesia cognata* have once been found living in sores on the bodies of nestling wagtails (*Motacilla alba* (p. 95 sqq.)): but Keilin suggests that this may be quite exceptional.

The conclusions of the second part of the treatise, on the Comparative Biology and Morphology of Dipterous larvae, can only be very briefly summarised. (A) The phases in the life-cycle of *Pollenia rudis* correspond to those in the cycles of Muscoid flies parasitic on Arthropods: for these latter also show (i) a phase of non-fixation, in the body-cavity of the host; (ii) phase of migration; (iii) perforation; (iv) phase of fixation, in which the parasite is successively plasmophagous, sarcophagous, saprophagous; (v) emergence from remains of host and free life; (vi) pupation. The life-cycles of some Dipterous parasites of Vertebrates, such as *Hypoderma*, also exhibit phases comparable with those of *Pollenia*, especially in the inflammation of the surrounding host-tissues during the fixed phase. Other parasites of Vertebrates, such as *Sarcophaga*, *Cordylobia*, and *Oestrus* have a much more simple and direct cycle. Some striking peculiarities in the life-history of *Pollenia* are (i) the phagocytic reaction of the host; (ii) the possibility of expulsion from the host; (iii) the fact that when the parasite commences to feed, the host ceases to do so. (B) the essential difference in the behaviour of Dipterous and Hymenopterous parasites lies in this, that the former must put their spiracles in communication with the outer air, whence largely arises the complication of their life-histories. This necessity affects all Dipterous larvae, free-living as well as parasitic, aquatic as well as terrestrial. (C) The bucco-pharyngeal armature shows certain constant differences in detail which characterise the great ethologic groups (parasitic, carnivorous, predaceous, saprophagous, and phytophagous forms, and species passing the whole larval life in the body of the parent) irrespective of systematic relationship. (D) All Cyclorhaphous larvae pass through three stages separated by two moults. *Pollenia* is typical in this respect, that the great morphological divergence is between the first and the two succeeding stadia, not between the two latter, which closely resemble one another. (E) The greatest differences between Orthorhaphous and Cyclorhaphous *Diptera* lie in the forms of the larvae, the morphology of which is entirely unlike. For various reasons Keilin suggests that all Cyclorhaphous larvae have had a parasitic origin, the free-living kinds being only secondarily free-living. (F) All Dipterous larvae possess certain minute sensory organs in the places where the thoracic legs would be were they present; these organs are to be regarded as sensory vestiges of the legs.

BEQUAERT, J., "PARASITIC MUSCID LARVAE COLLECTED FROM THE AFRICAN ELEPHANT AND THE WHITE RHINOCEROS BY THE CONGO EXPEDITION." Bulletin of the American Museum of Natural History, Vol. 35, pp. 377-387, June, 1916.

It is interesting to mention this paper in connection with the above. The species discussed are *Neocuterebra squamosa*, Grünberg, from the sole of the foot of an elephant; and *Gyrostigma pavesii*, Corti, from the stomach of the rhinoceros.

Review.

"THE CLASSIFICATION OF LEPIDOPTEROUS LARVAE, WITH TEN PLATES," by STANLEY BLACK FRACKER: Contributions from the Entomological Laboratories of the University of Illinois. No. 43. 1915. pp. 169.

The study of the disposition of the tubercles of Lepidopterous larvae was perhaps begun by Buckler, but was first placed on a sound basis by Dyar. In England Bacot did some work on the subject, but for the most part we may say that the matter has been most advanced in America. The essay before us by Mr. Fracker is a monograph in which a further advance is made in the study of these larvae. Other larval structures as well as the tubercles are used in the classification. Much of it is based on last stage larvae, in which of course the tubercles are less instructive.

The first 40 pages are devoted to the "Homology of the Setae." Some confusion as to the naming of the setae (tubercles) is discussed, and they are re-named with Greek letters (α , β , γ , etc.), not as being better than numbers, but to escape the ambiguity which now attaches to the use of numbers (i, ii, iii, etc.). Some general principles of development and ontogeny are stated. Primary and sub-primary setae are defined.

The next part is a "Systematic outline of Families and Genera." The structures used are "the head sclerites, head setae, and ocelli; the armature of the body, especially the setae, the shape of the spiracles, the number of prolegs and the arrangements of the crochets they bear; and the presence on the body of humps and gibbositities, eversible glands or peculiar modifications of the usual organisation." Forbes is followed in regard to head characters, and the arrangement of the ocelli is found to be of great importance, especially in classifying the *Micro-Lepidoptera*. The arrangement of the crochets on the prolegs is more fully discussed.

A Table follows by which the families may be distinguished by larval characters; this is to some extent a classification, but does not place all families in quite their natural positions.

The several families are then taken in the order in which the author classifies them, and details of larval structure are given under each. The primary sub-orders *Jugatae* and *Frenatae* are accepted. Under *Micropterygidae*, the larva examined was evidently a leaf-mining Erioceraniid, but is stated to have been that of *Epimartyria auricrinella*; this however, is, as stated and

proved in Walsingham's original description, a *Micropteryx* (*calthella*) (Ent. Rec. X, p. 161). There is evidently an error somewhere. We note further that the *Nepticulidae* are placed in the *Lepidoptera Aculeata*. They are certainly not aculeate, and lay their eggs on the surface of the leaf, as described by Wood, also in Tutt's Brit. Lep., Vol. I, p. 185.

In the Table, *Tortricidae* and *Cossidae* come close together, and are distinguished by a trifling and even doubtful difference, and are both separated from *Aegeriidae* by a substantial one; yet in the detailed account, *Aegeriidae* and other families are placed between *Tortrix* and *Cossus*. It may be said that simple points have to be taken in a Table, and wider and more correct views in a classification. This is no doubt so, but does not alter the fact that the table appears to be really right and the classification much less so.

Psychids placed between Cossids and Elachistids seems inadmissible, and can only be explained on the ground that they cannot easily be placed correctly. Indeed, the division into Tineoid and Pyrali-Zygaenoid series may be good in one way, but certainly the Pyraloids and the Zygaenoids are more distinct from each other, than either are from certain families placed in Tineoids, the table again appearing to show relationships and separations on more important characters than those on which the classification is based.

In the division *Macro-Heterocera*, we find much more detail as to subdivisions of families, and tables of generic characters are frequently given. This results no doubt from the larger knowledge we have of the larvae of Macros than of Micros.

Though the setae are largely employed as the means of distinguishing groups and the setae of the first stage, showing more clearly the primary ones are used for larger divisions, it is curious that the very unusual armature of the first stage larvae of the Lycaenids is not even referred to.

The first seven plates are devoted to "setal maps," showing in 68 figures the disposition of the setae (tubercles), on different segments and at different stages of larvae typical of different families, etc. On the further plates are figures showing the disposition of the ocelli, head structure, spiracles, arrangements of crochets on prolegs, verrucae and scoli, *i.e.*, warts, as on *Arctias*, and spines, as on *Vanessus*, and the last plate shows their disposition on *Saturnias* and in *Polygonia*.—T. A. C.

Societies.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY :
 Thursday, May 25th, 1916.—Mr. Hy. J. TURNER, F.E.S., President, in the Chair.

Mr. H. Moore exhibited specimens of *Catocala palaeogama* from the U.S.A., and *C. nupta* from France. Mr. A. E. Gibbs, species of New World and Old World *Catocalinae*, including *E. nubilis*, and *E. desdemona* from the former area and *M. dilecta*, *C. elocata*, *C. promissa*, and a British bred *C. fraxini* from the latter, and gave notes on the species. Mr. Hy. J. Turner, numerous species

of Palaearctic and Nearctic *Catocalinae* and read a short paper on the exhibit. An aberration of *C. promissa* was exhibited, in which the crimson of the hind-wings was replaced by a beautiful cream colour. A discussion followed: Messrs. Frohawk, Gibbs, Wolley-Dod, Dr. Chapman, etc., took part. Mr. Gibbs, an aberration of *Pararge megera*, taken in Devon by Dr. Perkins, in which the two central transverse lines were united by a dark patch. It was taken in September and was possibly of a third brood. Mr. Ashdown, a further series of aberrations of *Coccinellidae*, including black forms of *Adalia bipunctata* and *A. obliterata*. Mr. Frohawk, a female form of *Celastrina argiolus*, in which several small streaks of male colour ran through the marginal dark area, and an underside of the same species in which there was a dark streak from base to hind margin. He also showed an aberration of *Argynnis adippe (cydippe)* in which some of the black markings were coalesced to form a narrow transverse band across the disc. Mr. Curwen, a series of forms of *Coenonympha pamphilus* from the Mediterranean area, including var. *lyllus*, ab. *marginata* and var. *thyrsides*. Dr. Chapman, leaves of hawthorn and birch, to show the method of oviposition of the saw-flies *Trichiosoma tibiale* and *Cimbex sylvarum*.

Thursday, June 8th, 1916.—The President in the Chair.

Mr. W. J. Ashdown exhibited male and female specimens of *Cryptocephalus coryli* to show the sexual dimorphism, and also a male example of the Tipulid *Ctenophora flaveolata* (?) from Surrey. Mr. H. Main (1) A small cockroach from among bananas, the colour of which it closely resembled; (2) Male and female of the burying beetle, *Necrophorus ruspator*, covered with *Acari*. A discussion took place as to the relations between the host and the *Acari*. (3) Nearly full-fed larvae of the fire-fly *Luciola italica* from ova laid in 1914. Mr. Dunster, cocoons of *Plusia moneta* found on *Delphinium* at Southgate.

Thursday, June 22nd, 1916.—The President in the Chair.

Dr. Robertson exhibited a larva of *Cleora jubata (glabraria)* from the New Forest, which was almost wholly suffused with black coloration. Mr. Piske, a series of the very local beetle, *Copris lunaris*, and pointed out the sexual dimorphism in the development of the frontal horn. Dr. Chapman, the larva of the sawfly, *Cimbex sylvarum*, a large species on birch, and stated that the ova laid by a virgin female would produce all males. Mr. Carr, a spider from the Wye Valley, and reported on the species of *Lepidoptera* he had recently met with there, including *Leptosia sinapis*, *Asthena blomeri*, *Brenthis selene*, *B. euphrosyne*, *Abraxas sylvata*, *Perinephele lancealis*, *Cymatophora fluctuosa*, etc. Mr. Sich, specimens of *Argyresthia brockeella*, with the aberration *aurivittella* and an intermediate form, and also a cocoon of *Tortrix viridana* spun on a blade of grass, and thus of a long narrow shape. Mr. Hy. J. Turner, a number of species of *Pyraustinae* taken by Mr. Bacot in Sierra Leone. They were all species of very extensive distribution, and included *Entephria cribrata*, *Zinckenia fascialis*, *Marasmia venilalis*, *Syngamia floridalis*, *S. abruptalis*, *Bocchoris inspersalis*, *Nacoleia indicata*, *Sylepta balteata*, *S. derogata*, *Glyphodes indica*, *G. sinuata*, *Sameodes cancellatus*, *Maruca testulalis*, and *Pachyzanda phaeoptivalis*. Mr. R. Adkin, xanthic forms of *Aglais urticae*.—HY. J. TURNER, Hon. Report Secretary.

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 G. C. CHAMPION, Horsell, Woking.
 Those relating to Diptera, to
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A SYNOPSIS OF THE BRITISH SIPHONAPTERA, by the
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ENTOMOLOGIST'S
MONTHLY MAGAZINE.

EDITED BY

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W. W. FOWLER, D.Sc., M.A., F.L.S.

R. W. LLOYD, F.E.S. G. T. PORRITT, F.L.S.

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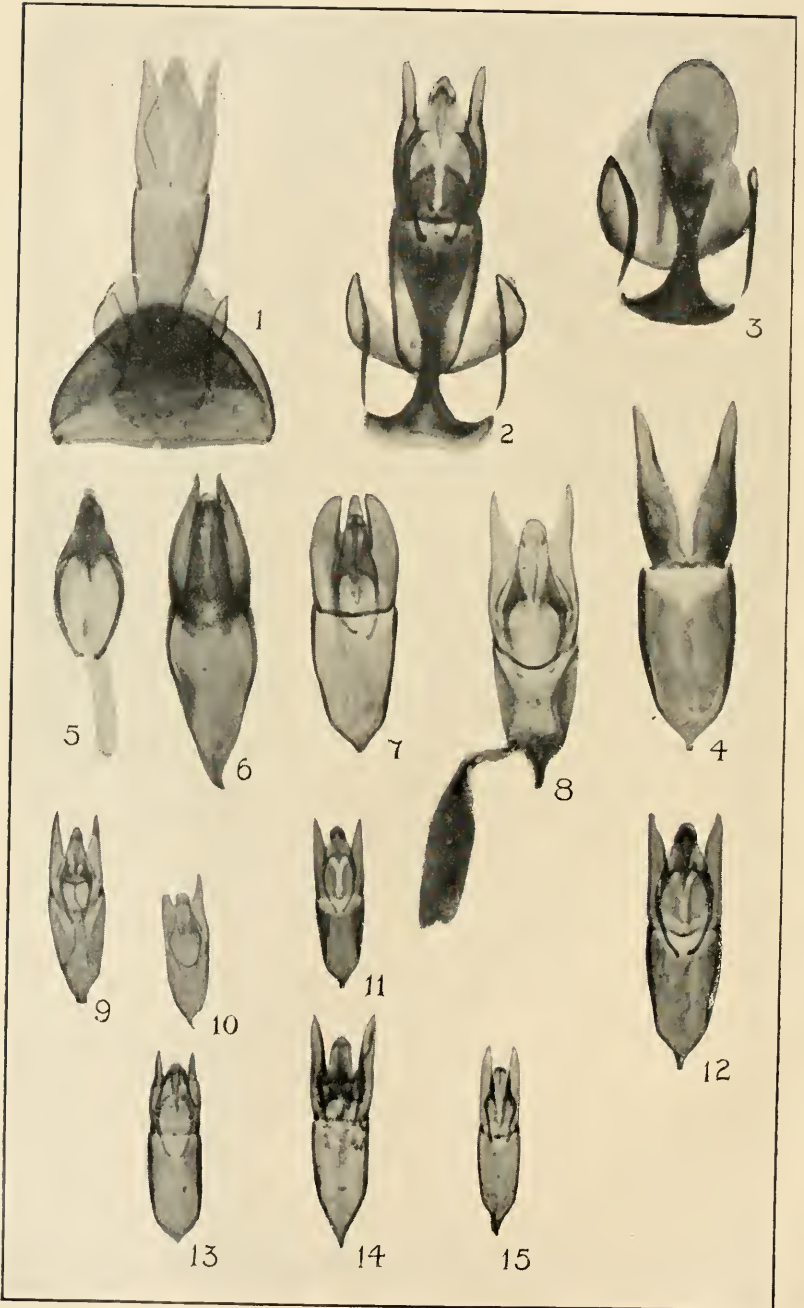
THE LONDON NATURAL HISTORY SOCIETY which meets at 7 p.m., on the 1st and 3rd Tuesdays in each month, at Room 20, Salisbury House, Finsbury Circus, E.C., will be glad to welcome at its Meetings any French or Belgian entomologists now staying in this country, and to give them the benefit of its library and collections. Communications should be addressed to the Secretary, Salisbury House, E.C.

Hon. Sec.: J. Ross, 18, Queen's Grove Road, Chingford, N.E.

Arrangements have been made by the Lepidoptera Committee of the above Society for a Member of the Committee to attend at Salisbury House at 6.30 p.m. on Meeting Nights (1st and 3rd Tuesdays in each month, except July and August), for the purpose of giving advice and assistance to young entomologists, whether members of the Society or not. A cordial welcome will be extended to any who care to avail themselves of this arrangement.

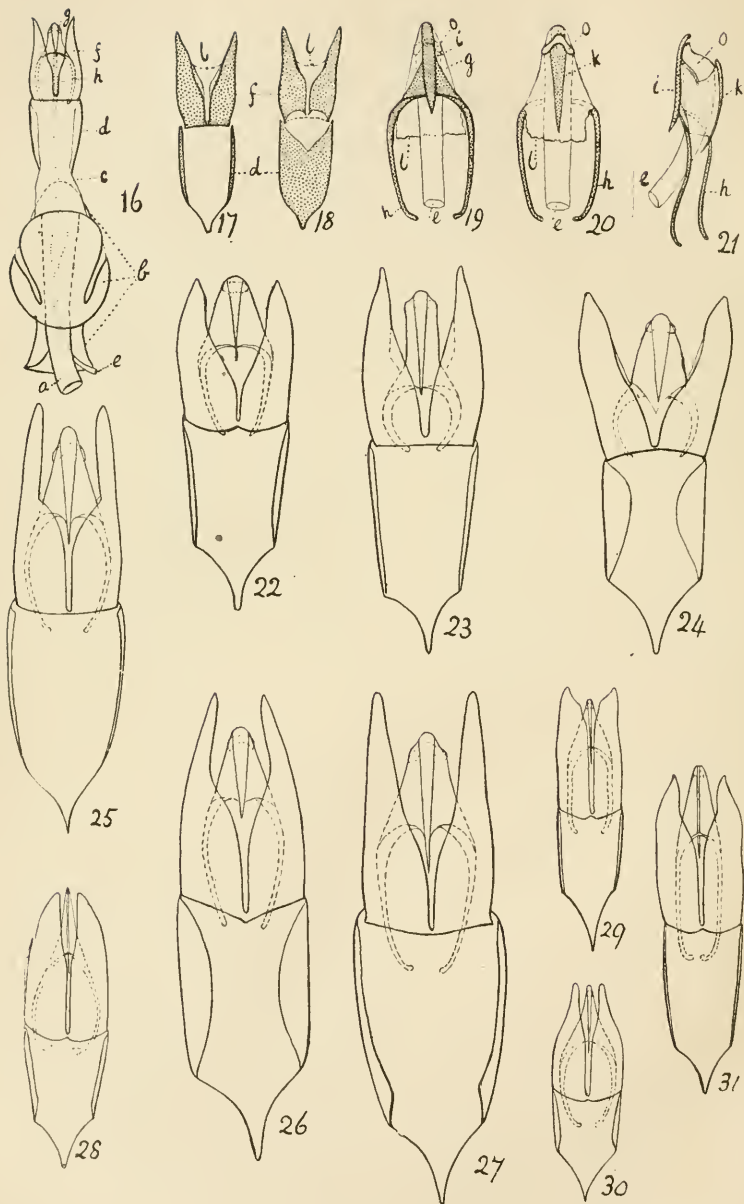
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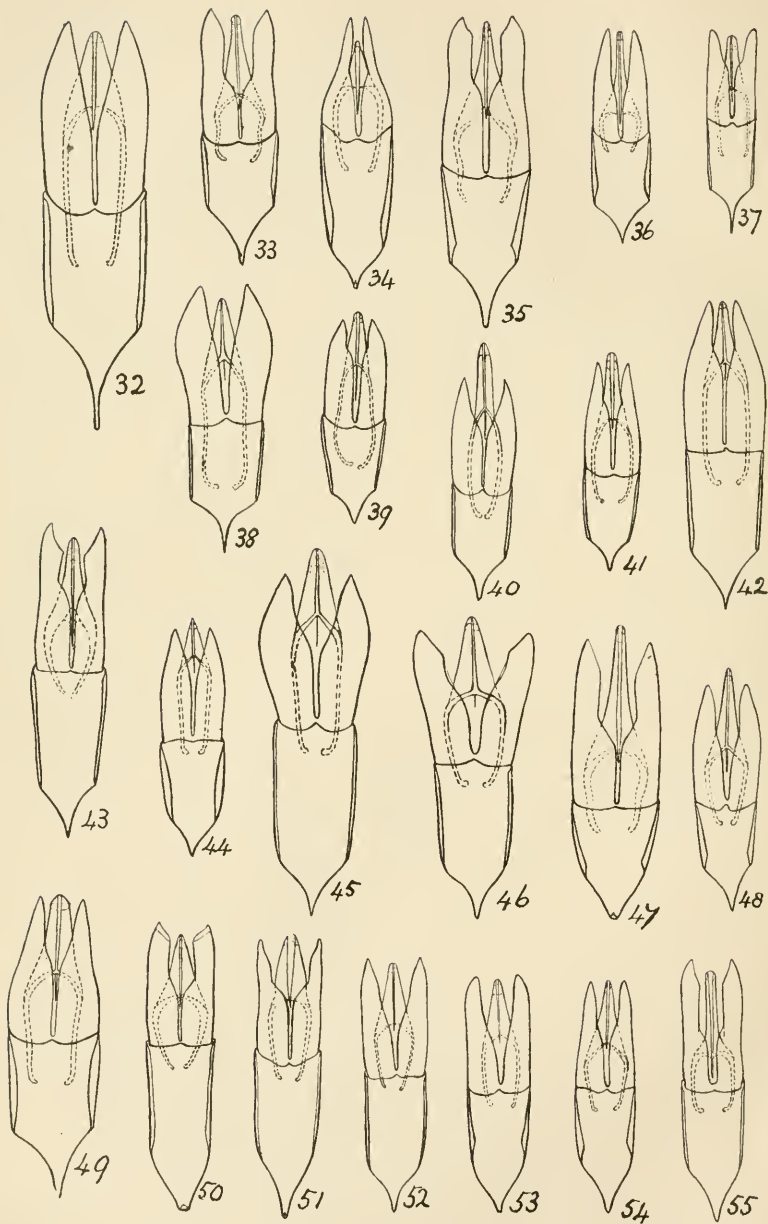
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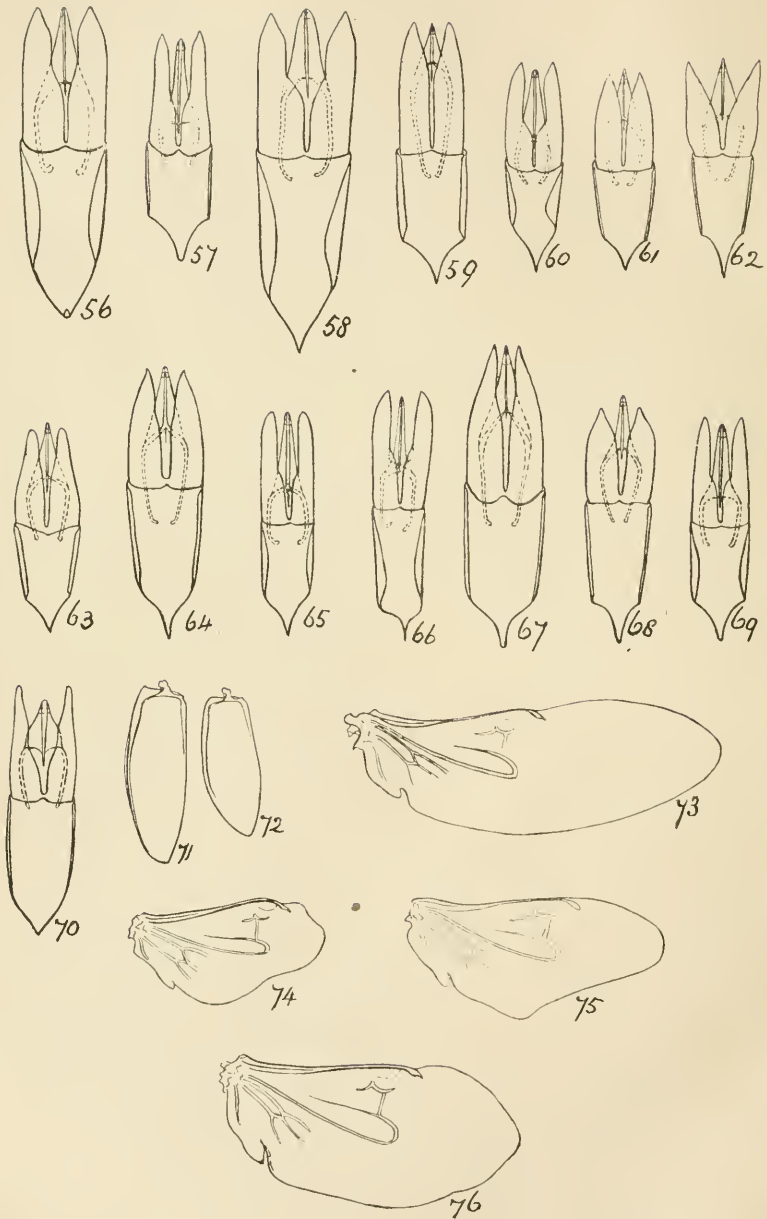
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STUDIES IN *HELOPHORINI*.

BY D. SHARP, M.A., F.R.S.

(PLATES III—VI.)

11.—*ATRACHELOPHORUS* AND *CYPHELOPHORUS*.*ATRACHELOPHORUS* KUW.

Although the character of the shape of the palpus appears but a slight one, I believe *Atracthelophorus* to be a natural genus. The labial palpi always have a comparatively small terminal joint, the epipleuron is usually smaller than in *Helophorus*, the hind tarsi are shorter and more rigid, and the flexile hairs on both thorax and legs are always much reduced and very difficult to detect. The elytra are always impressed, and the flanks visible beneath. All the *Helophorini* are but imperfectly aquatic, and I believe that the species of *Atracthelophorus* are even less aquatic than those of *Helophorus*. In fact they haunt the neighbourhood of water, but only occasionally enter it. *A. brevipalpis* is, however, more closely similar in habits to *Helophorus* than the other species of the genus. *A. glacialis* is, on the whole, the species that comes nearest to *Helophorus*; while the *Helophorus* that most approaches *Atracthelophorus* is *H. corsicanus*. If Deville's *H. puncticollis* be really *corsicanus* as he states it to be, it would seem that *corsicanus* and *glacialis* are found together in Corsica.

The species are much easier of distinction than those of the genus *Helophorus*. As regards the position of the genus, cf. *Cyphelophorus*.

1.—*Atracthelophorus brevipalpis* Bedel.

This abundant species is very variable. Length $2\frac{1}{2}$ – $3\frac{1}{2}$ mm. Thorax usually brilliant, always metallic, coppery, sometimes purple-metallic with the grooves coppery; sculpture rather coarse, granular, even on the median intervals; sides not much outstanding, a little sinuate and slightly narrowed behind, sometimes narrowly yellow. Elytra testaceous, maculate with black in a very variable manner; punctuation coarse, but variable, interstices usually narrow and but slightly elevated. Legs yellow, tarsi generally a little darker at the extremity, and less flexible than in most of the species of *Helophorus*. Aedeagus (fig. 63) short and broad, the lateral lobes a little sinuate externally, the struts short. In some individuals the aedeagus is distinctly narrower than normal.

Very narrow and very broad individuals are found in this species. The most remarkable variety is the var. *bulbipalpis* of Kuwert, which occurs occasionally on the banks of the rivers of Scotland; it is of very pale colour, and the terminal joint of the palpi is unusually broad and short. This variety is connected with more ordinary forms by numerous aberrations.

In Britain *A. brevipalpis* occurs from the North of Scotland to the extreme south of the Isle of Wight. It appears at Brockenhurst somewhat later in the year than other species, but becomes very abundant in the early summer, and may sometimes be found freely in the rain-pools on the black peat.

It is abundant, I believe, throughout Europe; in the Mediterranean (Sicily, Crete, Salonica); Syria (Millingen); Lake Baikal, from several sources.

Kuwert recognises three forms of the species, calling them *griseus*, *bulbipalpis* and *brevipalpis*; and he says that in the North the palpi are swollen, but become thinner in the South. His three forms are, however, of the most indefinite character, and there is but little foundation for his statement about the palpi, which vary much in their thickness in the North and in the South. The specimen I have seen from Syria, and one of those from Salonica (coll. Champion) are, it is true, extreme forms of the species, and the Syrian example has very slender palpi, but other examples from Salonica are ordinary. In fact all we can say at present is that there is generally great variation, and that is carried to the extreme in certain localities.

2.—*Atracthelophorus arvernicus* Muls.

Convex, coarsely sculptured, terminal joint of palpus very thick. One of the most easily recognised of the species. Differs from *brevipalpis* by the above points, and by its longer thorax more narrowed behind. The aedeagus (fig. 64) is longer, narrower and more parallel than that of *brevipalpis*, and the struts are very slender.

This is more rare than most of the species; it occurs in muddy places on the banks of rapid rivers, both in Scotland and the South of England; Devon, and Christchurch, Hants.

On the Continent the species appears to be scarce. I have seen it from Germany, and the Castlenau collection included specimens from Switzerland labelled "*H. pumilio*."

3.—*Atracthelophorus glacialis* Heer.

This has very much the facies of *Helophorus aeneipennis*, but of course can be at once distinguished by the dilated and symmetric last joint of the maxillary palpus. One of its chief characters is the unusually large development of the black pigmentation of the surface, so that in some cases even the legs and palpi are black. This character varies a good deal, and in the paler specimens the legs are brown, and have a very faint metallic shimmer.

The aedeagus is rather narrow and parallel, with slender median and rather broad lateral lobes (fig. 65).

A. glacialis is an alpine insect, found at the edges of snowfields on high mountain ranges from Scandinavia to the Sierra Nevada, and Corsica, and is extremely abundant in its haunts. It is a very variable species, but does not form local races as one would expect it to do on account of the great isolation of its colonies. Kuwert made a Caucasian variety (*caucasicus*), which he later treated as a different species under the name of *guttulus* Motsch. I have not seen this form.

This species has not yet been found in Britain, but may perhaps be detected at the snowfields on our highest mountains when the snow is disappearing in June.

4.—*Atracthelophorus faustianus*, sp. n.

Parvus, niger, supra aeneomicans, antennis, palpis pedibusque fuscis, femoribus nigricantibus; parum convexus, prothorace subtiliter punctato; elytris ante medium impressis, sat fortiter punctato-striatis, interstitiis haud convexus. Long. vix 2½ mm.

Hab.: Alp. Caucasus.

A single specimen, fortunately a male, is indicated by the aedeagus as certainly a distinct species, perhaps most allied to *glacialis*, especially to the small individuals from the Guadarrama and the the Lago della Maddalena. Legs and tarsi short and feeble. Channel of vertex very fine, eyes rather small. Thorax with the sides straight but convergent behind, the grooves not deep, the median intervals finely punctate, not polished. Aedeagus (fig. 66).

Distinguished from the smallest and most slender forms of *A. brevipalpis* not only by the colour, but by the finer sculpture, as well as by the peculiarities of the aedeagus.

A single specimen sent me by the late J. Faust of Libau, the only locality given being Alps of the Caucasus.

5.—*Atracthelophorus rivalis* Giraud.

Dark in colour, the elytra being fuscous-brown or piceous, without maculation; the thorax black with but little metallic reflection and only very obscurely yellow at the lateral margin, the grooves deep and broad, the sculpture on the intervals very obsolete; the elytra much depressed in front of the middle, strongly sculptured, but apparently to a variable extent, the side margin well outstanding, epipleuron broad. Legs and palpi brown. Length 3½ to 4 mm.

This species is not very likely to be confounded with any other of the genus, as it has rather the facies of the *strigifrons* allies. The aedeagus has no great

peculiarity (fig. 67), the lateral lobes are a little sinuate externally so that the apical part is rather slender and acuminate.

Apparently an alpine species, and much more eastern and limited in its distribution than *glacialis*. Austrian and Swiss Alps. It is not abundant and I have seen but few specimens.

6.—*Atracthelophorus nevadensis*, sp. n.

Parvus, niger, vix aenescens, elytris fusco-nigris, antennis palpis pedibusque sordide flavis; prothorace sulcis sat angustis, intervallis sublacvigatis, externo obsolete granulato; elytris regulariter sat fortiter punctato-striatis, interstiliis haud convexis. Long. 2¼–2½ mm.

Hab.: Hispania.

Head rather small, channel of vertex narrow, clypeal suture strongly angulate, sculpture very fine, eyes rather small. Thorax rather short, median and juxta-median channels fine, only moderately deep, the juxta-median only slightly sinuate, the sub-external but little convergent behind, the intervals shining and only obsoletely punctate, the sub-external interval obsoletely granulate, the sides a good deal rounded but not sinuate; the lateral margin fine and but little prominent. The punctures of the elytra very regular, the interstices not broad and not convex, the lateral margin but little outstanding; colour of elytra dark brown or blackish, without maculation; a slight depression in front of the middle. Legs and palpi brown-yellow. Terminal segment of maxillary palpus moderately thick.

Fig. 68. Aedeagus with rather long basal piece, struts rather short and with not prominent shoulders, lateral lobes broad, apical part not slender.

I found two specimens on the snowfields of the Sierra Nevada; there is another in the Castelnau collection labelled "Hispania." Mr. Champion found two at La Granja. These are all I have seen. All are a little immature.

7.—*Atracthelophorus dormitans*, sp. n.

Convexus, niger, palpis pedibusque piceo-testaceis, elytris fusco-testaceis, nigro sub-maculatis; oculis parvis, vertice canalicula angusta antice haud latiori. Long. 3¼ mm.

Hab.: Trans-Caucasus (Faust).

This interesting species is allied to *A. brevitarsis*, but the thorax is shaped more like that of *A. nivalis*. I have seen only two examples, both females. The thorax is rather long, transversely, moderately convex in front, flat behind, the sides distinctly sinuate, the hind angles very definite, the lateral margin fine; the median groove fine in front and behind, the juxta-median strongly angulate, the sculpture quite obsolete. The elytra are depressed in front of the middle, finely punctate-striate, the interstices not at all convex. Legs and tarsi rather short.

Herr Faust sent me no locality except "Trans-Caucasus."

8.—*Atracthelophorus brevitarsis* Kuw.

One of the most distinct species of *Helophorini*. Rather short and convex, with unusually short legs and tarsi, small eyes, obsolete channel of the vertex, and somewhat abbreviated wings. The upper surface rather strongly bronzed, the thoracic grooves deep, the sculpture of the intervals and punctuation not rugose. Elytral punctuation moderate, interstices not convex. Length 3 mm. Aedeagus (fig. 69) rather narrow, lateral and median lobes slender.

Described from a co-type sent me by Kuwert from Bosnia. There are three specimens from Herzegovina in the Champion collection, one of them is labelled "*brevitarsis*" in Kuwert's handwriting.

CYPHELOPHORUS Kuw.

This is one of the most distinct of all the genera of *Helophorini*. Its affinities are with *Megempleurus* and *Trichelophorus*, between which it should be placed. The true epipleuron is very small but is pubescent; the flank of the elytron becomes so greatly horizontal (and visible from beneath) as to form a sort of false epipleuron, which is very polished and shining, and makes therefore a strong contrast with the true epipleuron. The sculpture of the surface of this insect is very peculiar, the strong tubercles of the elytra being of themselves distinctive. Flexible hairs are apparently quite absent, except near the mouth-parts, there being even on the labial palpi, which are minute, polished and shining, only one or two long hairs.

The genus is certainly also allied to *Atracthelophorus*, and shows that it should be placed before, instead of after, *Helophorus*. Although *Cyphelophorus tuberculatus* can live in the water it is not truly aquatic, but is really amphibious. According to Sahlberg it is fond of burned places on the moors, with which its intense black colour corresponds. It occurs in N. America, and will probably be found to be a common species in suitable sub-arctic localities when people know how to look for it.

1.—*Cyphelophorus tuberculatus* Gyll.

The intense black colour and the tubercles of the elytra are diagnostic of this species. It is the only one of the genus, and in Europe is confined to the northern parts. In Britain the species occurs on the moors of Scotland, Yorkshire, and in the Manchester district. Its distribution in America is unknown to me. The aedeagus (fig. 70, pl. vi) is much like that of *Trichelophorus*.

EXPLANATION OF PLATES III—VI.

(HELOPHORINI).

The plates consist in part of photographs and in part of drawings. We began these illustrations with the intention of presenting photographic representations of the aedeagus in all the species, but grave difficulties were encountered in securing satisfactory results, so that after some experience we came to the conclusion that our purpose of giving an idea of the amount of difference between the species of *Helophorini* was best obtained by means of drawings made with the camera lucida. The student will be able to form an opinion of the comparative merits of the two methods as we give a selection from the photographs as well as the drawings; and we may call attention to the fact that the drawing fig. 55 of plate V is made from the same preparation as the photograph given on p. 236 of Vol. 51 (*Heloph. affinis*), but without any comparison at the time of making the drawing. The photographs were made by Tams of Cambridge. The drawings are all due to my daughter, M. A. Sharp, and have been made by means of a Bausch and Lomb monocular microscope and camera lucida. They are as nearly as may be on one scale of magnification, which is approximately about $\frac{60}{1}$.

A general account has already been given (p. 27, Vol. 51) of the aedeagus, and figs. 16 to 21 of pl. IV will serve to illustrate that, and to explain the structures, in connection with the descriptions, given below, of the figures. But it is necessary to remark that the great difficulty in these illustrations is that the membranes, which form a very important part of the mechanism, are perfectly transparent, and cannot be revealed by the figures, which in fact represent the chitinous parts of a tubular arrangement. The membranes that supplement the chitinous parts have to be supplied by the imagination of the student.

A great difficulty exists in connection with the median lobe, as the apical part (as will be seen by inspection of figs. 19 to 21) looks very different according to the point from which it is viewed, and also according to whether it is completely closed or not. We have therefore not given so much attention to this part as its real importance calls for. Note also the difficulties involved by the difference between the dorsal and ventral rods, which is accentuated by the fact that when the aedeagus is collapsed these rods lie one on the other, and the eye cannot differentiate them.

The special distinctions of the aedeagus of *Helophorini* are (1) the elongate struts, and (2) the large size and pointed anterior extremity of the basal piece. *Helochares* (a genus with extreme phallic peculiarities) has elongate struts, but a small and differently shaped basal piece. *Philydrus* is nearly without struts, but has a somewhat similar basal piece. Chief importance may be attached to the struts, as the basal piece is very subject to post-mortem shrivelling, and is apparently somewhat variable in its scleritic extension. The encasement (*i.e.*, the highly modified last body segment) is extremely similar in all the forms of *Helophorini*.

SPECIAL DESCRIPTION OF PLATES III—VI.

PLATE III (from photographs).

- Fig. 1.—*Meghelophorus aquaticus*, dorsal, aedeagus protruded from last abdominal segment. X 31.
- „ 2.—*M. aquaticus*, ventral, encasement and aedeagus. X 31.
- „ 3.— „ „ „ „ separated. X 31.
- „ 4.— „ „ dorsal, tegmen. X 31.
- „ 5.— „ „ „ median lobe and ejaculatory duct. X 31.
- „ 6.—*Megempleurus rugosus*, aedeagus, dorsal aspect. X 44.
- „ 7.— „ *porculus*, „ „ „ X 44.
- „ 8.—*Empleurus nubilus*, „ and duct, dorsal aspect. X 45.
- „ 9.— „ *hispanicus*, „ dorsal aspect. X 29.
- „ 10.— „ *nubilus*, one of the lateral lobes is broken. X 29.
- „ 11.—*Meghelophorus aequalis*, aedeagus, dorsal. X 24.
- „ 12.— „ „ var., aedeagus, dorsal. X 36.
- „ 13.— „ *frigidus*, „ „ X 36.
- „ 14.—*Trichelophorus alternans*, „ „ X 36.
- „ 15.— „ *mauritanicus*, „ „ .

PLATES IV, V, AND VI (from camera lucida drawings).

The magnification of the aedeagus is about X 60; broken lines indicate internal parts.

Figs. 16-21 are anatomical diagrams to explain the anatomy and morphology of the male genital tube of *Helophorini*; they are all founded on *M. aquaticus*, and the lettering is uniform.

Fig. 16: dorsal aspect of the genital tube and encasement. *a*, gut; *b*, encasement = last body-segment; *c*, membranous part of the tube connecting encasement and aedeagus; *d*, basal piece; *e*, ejaculatory duct, lying under the alimentary canal, and shown therefore by fine dots; *f*, lateral lobe; *g*, median lobe; *h*, strut of median lobe.

Fig. 17: In figs. 17-21 the chitinous, or hard, parts are shown dotted; letters *a-h* as above; fig. 17, tegmen dorsal; fig. 18, tegmen ventral; fig. 19, median lobe dorsal; fig. 20, median lobe ventral; fig. 21, median lobe in profile with the orifice fully open: *i*, dorsal rod; *k*, ventral rod; *l*, torn membrane, making the continuity of tegmen and median lobe: this membrane is really less extensive than the diagrams show; *o*, orifice.

Figs. 22-70 are drawings made with camera lucida of the dorsal aspect of the aedeagus of various species of *Helophorini*; the magnification is in all

cases about $\times 60$. Fig. 22, *Bradempleurus schmidti*; 23, *Eutrichclophorus besicanus*; 24, *E. micans*; 25, *Gephelophorus auriculatus*; 26, *G. sibiricus*; 27, *Meghelophorus milleri* (var. from Malta); 28, *Helophorus strigifrons*; 29, *H. fullax*; 30, *H. nanus*; 31, *H. laticollis*; 32, *H. borealis*; 33, *H. mulsanti*; 34, *H. oblitus*; 35, *H. exasperatus*; 36, *H. arabicus*; 37, *H. spinifer*; 38, *H. walckeri*; 39, *H. ariztuensis*; 40, *H. lancifer*; 41, *H. carpetanus*; 42, *H. illustris*; 43, *H. corsicanus*; 44, *H. discrepans*; 45, *H. aeneipennis*; 46, *H. phalleterus*; 47, *H. fulgidicollis*; 48, *H. biscrensis*; 49, *H. vinctus*; 50, *H. diffinis*; 51, *H. angustatus*; 52, *H. minutus*; 53 and 54, *H. minutus*, varr., Algeria; 55, *H. affinis*; 56, *H. celatus*; 57, *H. fryanus*; 58, *H. lapponicus*; 59, *H. iteratus*; 60, *H. lederi*; 61, *H. granularis*; 62, *H. ytenensis*; 63, *Atracthelophorus brevipalpis*; 64, *A. arvernicus*; 65, *A. glacialis*; 66, *A. faustianus*; 67, *A. nivalis*; 68, *A. nevadensis*; 69, *A. brevitarsis*; 70, *Cyphelophorus tuberculatus*.

Fig. 71, *Helophorus spinifer* elytron (flanks visible); fig. 72, *H. granularis* elytron (flanks not visible): figs. 71 and 72, $\times 25$. Fig. 73, *H. granularis* wing; 74, 75, and 76, *H. ytenensis* wings, viz., 74 usual form, 75 longest form, 76 broadest form: figs. 73-76, magnification $\times 17\frac{1}{2}$.

Lawnside,

Brockenhurst, Hants:

June, 1916.

Curculionidae
ON SOME WEEVILS ATTACKING ORCHIDS.

BY G. C. CHAMPION, F.Z.S.

At the request of Mr. H. B. Weiss, of New Brunswick, N. J., U.S.A., I have drawn up descriptions of two species of *Curculionidae*, a *Cholus* and a *Diorymellus* (a genus of *Barina*), found attacking orchids from Brazil, Colombia, Central America, &c., in a greenhouse at Bergen County, New Jersey. Mr. H. S. Barber, of the U.S. Dept. of Agriculture, Washington, had previously sent me a photograph of the imago, larva, and pupa of the same species of *Cholus*, from specimens found in a local orchid house at Milwaukee, Wisconsin. Mr. C. R. Crosby, too, had also forwarded an example of the *Diorymellus* for determination; this was found attacking orchid roots in a greenhouse at Ithaca, N. York. Another Barid sent by Mr. Weiss, found feeding on the flowers of *Dendrobium* (an eastern genus of orchids) in the same place in New Jersey, proves to be *Baridius orchivora* Blackb., described from an example captured amongst introduced orchids in Queensland. This species belongs to the genus *Acypotheus* Pasc. A third Barid, *Acypotheus (Baridius) aterrimus* C. Waterh., is known to attack *Phalaenopsis* and *Dendrobium*, and also to feed upon flowers of

Catasetum (cf. Ent. Mo. Mag., XLIX, p. 33). Mr. Weiss, I believe, intends to publish in an American journal an account of the life-history of the species sent by him, the *Diorymellus* apparently doing considerable damage to orchids. The insects here described will be presented to the British Museum.

Cholus cattleyae, n. sp.

Oblong-rhomboidal, robust, black, opaque, the prothoracic tubercles and the rostrum somewhat shining; variegated with dense patches of rather large, imbricate, oval, white scales, which form an oval spot on the median basal lobe of the prothorax, a similar spot on the scutellum, a common elongate-subquadrate, post-scutellar patch (enclosing a square bare spot) and two laterally connected fasciae on the elytra (one just below the base, narrow, confluent with square basal patch, the other sub-apical, broad, interrupted, and extending obliquely forwards to the shoulder), a transverse sinuate fascia on the front of the prosternum, and various spots along the sides of the meso- and metasternum and abdomen, and an interrupted line down the middle of the latter; the tibiae and tarsi thickly, and the bases of the intermediate and posterior femora sparsely, clothed with coarse yellowish hairs. Head rugosely punctate; rostrum long, curved, moderately stout, widened at the tip, coarsely punctate, the antennae inserted at the middle. Prothorax transverse, convex, rounded at the sides, compressed towards the apex, and rapidly narrowed anteriorly; studded with small, oblique, prominent, scattered tubercles. Elytra sub-triangular, at the base much wider than the prothorax; closely seriato-foveolate, the interstices narrow and unevenly raised, those surrounding the common sub-quadrate basal patch (which appears depressed) very prominent and transversely confluent. Anterior coxae somewhat widely separated. Legs long, stout, the femora sharply dentate towards the apex. Length (excl. rostr.) $11\frac{1}{2}$, breadth $5\frac{1}{2}$ mm.

Hab.: TROPICAL AMERICA.

Found breeding in the bulbs of *Cattleya gigas*, and also seen feeding on different parts of the same plant. The description is taken from a very fresh specimen (♀?) sent by Mr. Weiss, this agreeing precisely with Mr. Barber's photograph, except that the spot on the prothorax is wanting in his insect. The nearest allied forms are *C. forbesi* Pasc., bred in London from an Ecuador orchid, and *C. nigronotatus* and *C. nigromaculatus* Champ., from Nicaragua and Panama, all of which have the elytra differently marked and less uneven, and the prothorax conspicuously maculate and studded with larger tubercles.

Diorymellus laevimargo, n. sp.

Rhomboidal, narrow, shining, black; glabrous above, the punctures of the under surface and legs each bearing a minute whitish scale. Head finely punctate, transversely grooved between the eyes; rostrum moderately long,

stout, arcuate, finely punctate, striate at the sides, smoother in ♀. Prothorax transverse, conical, constricted before the apex, sparsely, finely punctate, the punctures becoming coarser near the basal and apical margins. Elytra narrowed from a little below the base, the humeri not prominent; each with six sharply-cut, rather broad, deep, sparsely punctured striae on the disc, and another stria along the margin beneath, the interstices flat, each with an irregular row of excessively minute punctures. Beneath coarsely, closely punctate; ventral segment 1 broadly hollowed and smoother in the middle of ♂. Prosternal sulcus deep, V-shaped, strongly margined, not extending beyond the anterior coxae. Anterior coxae widely separated. Femora feebly sulcate beneath. Length $1\frac{7}{8}$ -2, breadth $1-1\frac{1}{10}$ mm. (♂ ♀).

Hab.: TROPICAL AMERICA.

Feeds on leaves and flowers of *Cattleya*, also seen attacking flowers of *Dendrobium* (*Weiss*). Found attacking roots of orchids (*Grosby*). Amongst the eight described species of *Diorymellus*, all of which are from Central America or the Lesser Antilles, seven of them being known from single examples only, the present insect is nearest allied to *D. 12-striatus* Champ., differing from it in the conspicuously punctate prothorax, the less prominent humeri, the broader and more deeply impressed elytral striae, the much more coarsely and closely punctate under surface, the narrower prosternal sulcus, and the more widely separated anterior coxae. In *D. 12-striatus*, from Panama, the elytra are triangular and much wider at the base, and finely striate. Eight specimens of *D. laevimargo* have been examined.

Horsell, Woking:

August, 1916.

OTIORRHYNCHUS PORCATUS HERBST, IN IRELAND.

BY G. W. NICHOLSON, M.A., M.D.

Pitchy, or almost black, with scanty short greyish pubescence, which is uniform over the forehead and rostrum, and occurs in patches on the thorax and the elytra. Head and rostrum broad, eyes prominent, antennae pitchy, with the 2nd joint of the funiculus about half as long again as the 1st. Thorax broader than long, the sides rounded, slightly narrower in front than behind, covered with coarse unbilicated granulations, which are, however, absent from a narrow depressed space in the middle line. Elytra short, broader than the thorax, shoulders prominent. Each elytron with four raised tuberculated ridges, which attain their greatest development at the apex and sides, and bear coarse curved hairs at the apices of the tubercles; the ridges are bounded by a row of large punctures, which occupy the greater part of the interstices. Legs pitchy, femora simple. Length $4\frac{1}{2}$ -5 mm.

O. porcatus is most nearly allied to *O. septentrionis* Herbst, but differs from it in its smaller size, totally different pubescence, shorter form, broader head and elytra, and in the presence of the marked ridges on the latter.

I took fourteen specimens of this species at Balrath, Co. Meath. One on the hall steps on June 2nd, 1916, and the rest out of moss on the bog, about two miles from the house, on June 10th.

Stierlin records it from Germany, Switzerland, Austria, Tirol, Carniola, and Central and Northern France. The insect is chiefly found in hilly or mountainous districts, under moss.

Oxford and Cambridge Club, S.W. :

July 20th, 1916.

Occurrence of Somotrichus (Lebia) elevatus F., in Cheshire.—A few days ago my friend Mr. J. Collins brought me to name a rather striking-looking little Carabid, which he had received from a correspondent in Cheshire. This I found to agree in every respect with specimens in the Oxford University Museum labelled "*Coptodera*" *elevata* Fab. The captor of this interesting insect, Mr. Bernard R. Lucas, of Northwich, has since kindly furnished the following information: "These beetles come from the bone works at Acton Bridge, and must have been established there for many years. They were found under an old staging near a crushing mill; the bones, rat dung, bits of skin, etc., were all brown with age; the bones had lost all value for fat and glue exhaustion, and according to the manager had not been moved for years. *Lebia elevata*, of which I saw six specimens and caught four, was very active and hard to catch, it probably got off the shovel as we took the stuff out. June 28th was the date of my last visit." Specimens of *Dendrophilus punctatus* Hbst., and *Carcinops 14-striata* Steph., both highly characteristic of the special situation in which the *Somotrichus* was found, were also sent with it.

S. elevatus is a decidedly pretty little beetle, smaller than any of our species of *Lebia* and of shorter and more convex build, and of a rather bright testaceous-red colour with a common cruciform dark fuscous fascia on the elytra. The locality "Paris" in the original description (Fab., Ent. Syst., I, p. 162) has been shown by Brullé (Rev. Ent., II, p. 108) to be erroneous, the specimens on which the species was founded coming from the "Ile de France" (Mauritius). It appears to have become widely dispersed by commerce like *Plochionus*, *Laemostenus*, and a few other *Carabidae*. In the latest European catalogue it is noted (as an introduction) from Marseilles and Rouen, also from South France; and the three specimens in the Museum here are all from the first-mentioned locality. It is even not an entire stranger to our own lists, being included by Crotch in the "Accidentally introduced species" in the

second edition of his Catalogue of British *Coloptera* (1866); and the description of "*Lebia ephippium*" in the Appendix to Stephens' Manual (p. 433), stated to have been taken in the "Zoological Gardens, Regent's Park: June," also applies very well to *S. elevatus*. Although this interesting insect has no claim to be regarded as otherwise than an introduction into our islands, its occurrence far from the coast, and under such peculiar conditions, is certainly worth recording.—JAMES J. WALKER, Oxford: August 11th, 1916.

Euconus mäklini Mannh., in the Oxford district.—On the evening of July 19th, I swept a bright-looking and very active little Scydmaenid off short herbage on a limestone down between Headington and Stanton St. John, Oxfordshire. Mr. Champion has kindly confirmed this for me as *Euconus mäklini* Mannh. ♂. The elytra of my specimen, which is quite mature, are of a full chestnut-red colour.—J. J. WALKER.

Psylliodes cyanoptera Ill., ab. *tricolor* Weise, an aberration new to Britain; and some notes on the species as British.—Through the kindness of the Hon. N. Charles Rothschild, I have recently taken a nice little series of *Psylliodes cyanoptera* in Huntingdonshire. Among these were several specimens with the thorax black; this is the ab. *tricolor* Weise [Ins. Deutschl., VI, 806 (1893)].

This beautiful *Psylliodes* is hard to catch, as it jumps very strongly. The situation of its food plant, *Sisymbrium sophia*, in this locality (and the fact that it might destroy the plants, where they can be got at, before they had produced seed for another year) renders sweeping out of the question. Consequently the beetle has to be searched for and then caught with the fingers, or in a glass-topped box. The insect appears to be very rare in Britain; there is an old pinned specimen, without locality, under the name "*Macrocnema tripudians*" in Kirby's collection in the Natural History Museum, but none in the Stephensian, the Power, or the old British Museum collections. We are unable to find Stephen's statement, quoted by Fowler [Col. Brit. Isls., IV, 391 (1890); Ent. Mo. Mag., Vol. LI, p. 265 (1915)]:—"Taken near London, in Suffolk, and about Bristol," and shall be glad if anyone can supply the reference. We are inclined to think, however, that the quotation refers to some other insect, and the localities must be deleted for *P. cyanoptera*. The only known captures, other than those from Huntingdonshire, are a few specimens taken by Chitty and myself at Wicken Fen. My old friend, the late Arthur Chitty, joined me for a few days collecting in the Fen, in August, 1892, and among other captures we swept a few specimens of this beetle. In those days I was not much interested in "hoppers" and other small fry, and I handed over my one (or two?) to him in the field. We did not know what it was at the time; in fact Chitty, later, distributed one or more specimens as vars. of *P. chrysocephala*. I believe our captures were made on rough, partly cultivated land, between Waterbeach and Upware.—HORACE DONISTHORPE, "Durandesthorpe," 19, Haylewell Road, Putney: August 16th, 1916.

[In my short series of *P. cyanoptera*, which I owe to the kindness of the Hon. N. C. Rothschild and Mr. W. Holland (the original captor of the species

in its Huntingdonshire locality), there is one specimen of the ab. *tricolor* Weise, noted above. An example from "Wicken" given to me many years ago by the late A. J. Chitty, is also to be referred to this aberration, and one of the two specimens from the same locality in his collection of British *Coleoptera*, now in the Oxford University Museum, is of this form.—J. J. W.]

Leptura sanguinolenta L. at Barnsley.—While in a neighbouring garden, on the afternoon of July 20th, my wife espied a beetle in the heart of a large cream rose, growing about a foot from the ground. This she secured and brought to me. It proved to be a fine female *Leptura sanguinolenta*. Although it is not impossible for it to have been bred in the district, it is much more likely to have been imported, in an immature state, in pine timber intended for pit-props.—E. G. BAYFORD, 2, Rockingham Street, Barnsley: August 7th, 1916.

Field note on Corymbites pectinicornis L.—This beetle occurs annually in the rough meadows fringing Orton Woods, near Carlisle, but has never been considered a common species by local Coleopterists. One could usually rely on taking a specimen or two in June by beating the hedges and bushes in the fields, or perhaps capture an odd female resting on the stems of the long grass. I have always suspected, however, that the species was much commoner than this, and, wanting a couple of males, I went to the likeliest meadow on June 17th last, and swept and beat for about an hour, but without the least success, although various other *Elaters* were abundant. Disappointed, but not discouraged, I sat down on a little hillock and surveyed the field, and almost at once noticed a large black-looking beetle a few yards away, hovering over the herbage, and evidently about to alight. On netting it a fine male *C. pectinicornis* was revealed. In a few minutes others were similarly observed and captured, and soon I had as many as I cared to take. The majority were males. Females occurred in the proportion of about one to five males. In some cases the beetle would alight on a grass stem and remain quiet, but on the least tremor of the grass dropped to the ground: hence my failure to sweep any up. Others were flying along in a straight line to or from the adjoining wood, mostly quite low, and were easily seen when one was in a sitting or stooping position, one's eyes being then nearly on a level with their line of flight. In one case I saw one flying high up out of reach. It settled on an oak bough, but a stick thrown where it was resting brought it down, and it flew along just over the top of the grass. With both sexes present and the species occurring so freely, I was rather surprised not to observe pairing taking place, and can only assume that this occurs in the evening or at night. My observations were in the early afternoon when the sun was bright and warm. I tried "sembling" with several of the captured females, but not a single male responded. Each individual seemed intent upon its own affairs.—F. H. DAY, 26, Currock Terrace, Carlisle: July 21st, 1916.

Ocyopus cyaneus Payk. in the Oxford district.—On July 23rd I found a ♀ specimen of *Ocyopus cyaneus* Payk., trapped in a short trench dug in a sandy

spot at Tubney, Berks. In its company were sundry *Leptura livida* De Geer, and one or two common species of *Stenus* and *Xantholinus*. This rare species is an addition to the Berkshire list of *Coleoptera*.—J. COLLINS, 74, Islip Road, Summertown, Oxford: *July 29th*, 1916.

Another Staphylinid parasitic on a Dipteron.—On page 161 of this volume of the Ent. Mo. Mag. appeared an abstract relating to *Aleochara bilineata* Gyll., and *Baryodma ontarionis* Casey, the larvae of which are parasitic on the puparia of the fly *Chortophila brassicae*. A larva of *Maseochara valida* Leconte has also been observed gnawing its way into the puparium of a fly, the Syrphid *Copestylum marginatum* (see Coquillet, "Insect Life" (Washington), Vol. iii, 1891, pp. 318-9). To these three species of *Aleocharinae* must now be added a fourth, *Aleochara (Polystoma) algarum* Fauvel, which has been found by Mr. G. T. Lyle of Brockenhurst in puparia of the Phycodromid fly *Orygma luctuosum*, Meigen. Mr. Lyle collected a large number of fly puparia from under decaying seaweed on the beach at Osmington Mills, Dorset, on September 22nd, 1912; far the greater number of puparia produced the *Orygma*, and no other species of fly was bred from among them. Several produced the Braconid *Aphaereta cephalotes*, and numbers of a small wingless Proctotrupid. As a few puparia were still intact in February, 1913, they were opened, and in two cases were found to contain a dead specimen of *Aleochara algarum*. Apparently the beetles completed their development, but failed to emerge from the puparia in the unnatural surroundings formed by a glass-topped box. Mr. Lyle has kindly supplied the above particulars and also given to this Museum one of the beetles, an empty puparium, and two of the host flies.—HUGH SCOTT, University Museum of Zoology, Cambridge: *July 28th*, 1916.

Note on Tanygnathus terminalis Er.—This insect, rather rare in Europe, has a wide distribution in the tropical and sub-tropical regions, where it is not uncommon in marshy places. I have recently been able to examine microscopically a number of specimens, with the result that I find the anterior tarsi possess five joints, and not four as stated in the text-books; the first two are short, each being a little broader than long, the three following gradually increase in length, and are all longer than broad. The tarsal formula will therefore read 5, 4, 4.—M. CAMERON, H.M.S. Cornwall: *May 14th*, 1916.

Black pupae of Abraxas grossulariata.—Among my wild pupae of *Abraxas grossulariata* this year were several of an uniform glossy black colour, *i.e.*, without any trace of the golden rings so characteristic of the pupae of this species. Three of them I put into a cage to themselves, to ascertain whether the imagines would be in any way different, but all three produced only the ordinary type of the moth, although some of the ordinary pupae produced some very fine dark var. *nigrosarsata*. Among the very many thousands of pupae of this species I have had during the past ten years, I do not remember ever before to have seen this black form.—GEO. T. PORRITT, Elm Lea, Dalton, Huddersfield: *August 5th*, 1916.

Colour of Stigmellid larvae.—With regard to the colour of larvae of some of the species of the genus *Stigmella* (*Nepticula*), I believe that it changes when the larva is about to spin its cocoon. On October 1st, 1908, I took two quite green ones off an alder at Barnes, and was lucky enough to breed both the next June. They produced *Stigmella alnetella* Stt. The larva of this species is described as yellow. On the other hand, that of *S. centifoliella* Zell. retains its yellow colour to the last.—ALFRED SICH, Corney House, Chiswick, W.: *July*, 1916.

A plague of caterpillars—? Vanessa urticae.—My note in last month's Ent. Mo. Mag. (p. 186) brings me a letter from Mr. Arthur Horne, Aberdeen, in regard to the absence of the larvae of *Vanessa urticae* in his district this spring. He says: "The same state of matters exists here. Last summer and this one I have been at Muchalls on the Kincardine coast; *V. urticae* swarmed in the larval state last year, all along the sea braes: this year *not one!* We had very mild weather here in early spring, many *V. urticae* were flying in my garden then; this was before the nettles were above the ground, after that we had a long continuation of very cold and wet weather, which must have killed the butterflies." It would be interesting to have similar or contrary experiences, as the case might be, from other districts.—T. A. CHAPMAN, Betula, Reigate: *August*, 1916.

The Rhododendron Tingid (Stephanitis rhododendri Horv.) in Surrey.—Having heard that this Tingid had, comparatively recently, been introduced into the British Isles, I have been on the watch for it in my garden at Camberley. About the middle of June I noticed a discoloration on the leaves of several of the plants and found, on the under-surface of such leaves, small groups of Tingid larvae. The insects were then quite small. Examples in the nymphal stage were observed towards the middle of July, and imagines were found on the 28th of that month. The larvae were disposed on the foliage of the previous year: the adults have now dispersed themselves over the new foliage, in which they will presumably deposit their eggs. The presence of the larval insects is indicated, on the upper surface of the leaves, by crowded areas of yellowish dots which—in the case of a heavy infection—become more or less confluent. On the under-surface the discoloration is of a reddish brown colour, punctuated by blackish spots of viscid liquid excreta. It is noticeable that the few Rhododendrons that have been attacked in my garden are of comparatively small-leaved varieties, and are well-established plants that must have been in position for at least four or five years. None of the younger plants (introduced since I came to the place) have been touched; nor can I find any signs of attack on my Azaleas. — E. ERNEST GREEN, Way's End, Camberley: *August 11th*, 1916.

[Distant (*Zoologist*, 1910, p. 395) has given figures of the imago and nymph of *S. rhododendri* Horv. (1905), from specimens found infesting rhododendrons at Fulham, Horvath's type having been found in the same way in Holland. *Leptobyrsa explanata* Heidemann (*Proc. Ent. Soc. Washington*, X, pp. 105–108, pl. 4, figs. *d, e, f*, 1908), from the United States, is certainly the same species,

as a comparison of the figures of both imago and nymph clearly shows. The home of the insect is therefore almost certainly the Eastern States of North America, and not India, as suggested by Distant. *L. explanata* is said to live abundantly on mountain laurel (*Kalmia latifolia*) and *Rhododendron maximum*, and to injure the foliage of the latter. It has been found in many places in the Atlantic States, from Florida to Boston, Mass., and westward to Ohio. A full account of the life-history is given by Heidemann, and more recently by Crosby and Hadley (Journ. Econ. Ent. viii, pp. 409-413, pls. 22, 23, 1915), who figure the egg, different stages of the nymph, the imago, infected rhododendron leaves, etc. The insect would perhaps be better placed under *Leptobyrsa* Stål (the type of which, *L. steini*, from Brazil, was figured by myself in Trans. Ent. Soc. Lond., 1898, p. 58, pl. 2, fig. 4), and Heidemann's name *explanata* must fall as a synonym, that of Horvath having three years priority. Five species of the same genus from Central America were figured and described in the "Biologia" in 1897. *Stephanitis mitrata* Ståhl, from Brazil, also figured by me in 1898, is the type of *Calliphanes* Horv. (1906).—G.C.C.]

Chrysops sepulchralis F., and *Anthrax fenestratus* Fln., in Dorsetshire.—I should like to record that I took 40 *Chrysops sepulchralis* F. yesterday on Wareham Common, and 30 on July 19th. They alighted on and around me, and I could take them with my hand. Mr. Harwood says it is a record number of this species, he thinks. There are plenty to be had, and they were seen in similar numbers last August by my brother, N. D. F. Pearce, M.A., of Cambridge, who brought home a dozen, the first he had seen there. We are natives of Dorset. I also took nine *Anthrax fenestratus* Fln., and saw a good many more, on the Wareham road on July 18th.—E. K. PEARCE, Kempston, Chine Crescent Road, Bournemouth: July 26th, 1916.

Review.

"REPORT AND TRANSACTIONS OF THE CARDIFF NATURALISTS' SOCIETY." Vol. XLVIII, 1915. Cardiff: printed for the Society by William Lewis (Printers), Ltd. 1916.

With the *Heteromera* and *Rhynchophora*, Mr. Tomlin brings his annotated list of the *Coleoptera* of Glamorgan to a conclusion in the current volume of the above Report. As in previous sections of the List, many rare and interesting species are included, and our esteemed contributor may be congratulated on the completion of one of the best County catalogues of the Order that has yet appeared. Our knowledge of the distribution of insects in these Islands has been largely increased in recent years by the publication of lists, as far as possible complete, of the insects occurring within certain well-defined areas; and that now under notice will serve as an excellent model to any Coleopterist who is desirous of making a census of the beetles of his county or district. As before, Mr. H. M. Hallett contributed some interesting notes on *Hymenoptera* and other Glamorgan insects.

Obituary.

Roland Trimen, M.A., F.R.S., died on July 25th, after a long period of failing health, in his 76th year, having been born at Paddington on Oct. 29th, 1840. He was educated at King's College School, and his entomological studies must have commenced at a very early age, as we find him contributing notes on *Lepidoptera* in 1856 to the first volume of the "Entomologist's Weekly Intelligencer," and in subsequent volumes describing his "doings" at Dorking and elsewhere with the geniality and fresh humour so conspicuous in the man in later years. In 1860 he entered the Civil Service of Cape Colony, and began at once to study with energy the insect fauna of that productive but then imperfectly known region. The first result of his researches was the publication of the very useful and well illustrated little volume, "*Rhopalocera Africae Australis*" (London and Cape Town, 1862-1866), subsequently expanded, with the assistance of his friend Col. J. H. Bowker, into "*South African Butterflies*" (3 vols., London, 1887-1889). This fine work, which embodies a great store of descriptions of the habits and life-histories of the Diurnal *Lepidoptera* of the region south of the Zambesi, written with the author's characteristic lucidity and grace of style, remains the standard authority on the subject. His sole contribution to the pages of this Magazine (Vol. IV, pp. 212-223) belong to this early period, and is a masterly picture of the "Aspects of Insect Life in South-Eastern Africa."

His most important item of scientific work is without doubt the paper read before the Linnean Society on March 4th, 1868, and published in the volume of "Transactions" for 1869 (pp. 497 *et seq.*) on the Mimetic relations of the female *Papilio merope* (*dardanus*) with other South African butterflies. This is now recognised as being by far the most striking and elaborate of all cases of mimicry and polymorphism in *Lepidoptera*, and has been fully established by extensive and repeated breeding of the species, though at the time of publication regarded with doubt—not to say ridicule—by many Lepidopterists of eminence.

In 1873 Mr. Trimen was appointed Curator of the South African Museum at Cape Town, in succession to Mr. E. L. Layard. During the long period that he held this important post he visited England on leave on several occasions, finally resigning in 1895 and returning home on account of failing health.

He joined the Entomological Society in 1859, being at the time of his decease the third in order of seniority on its List of Fellows. He sat on the Council in 1868, 1881, and 1890, and occupied the Presidential chair in 1897 and 1898; his annual addresses, on the subjects of "Mimicry," and "Seasonal Variation," being of special interest and value. In 1883 he was elected a Fellow of the Royal Society, and received in 1910 the high distinction of the Darwin Medal. The University of Oxford also conferred on him the degree of M.A., *honoris causâ* in 1899.

Few men were more highly and deservedly esteemed in life, or are more deeply regretted in death by his wide circle of friends and colleagues, than

Roland Trimen. We tender our very sincere sympathy to his widow, who is well known in connection with the "League of the Empire" and other patriotic associations.

Society.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY :
Thursday, July 13th, 1916.—MR. HY. J. TURNER, F.E.S., President, in the Chair.

Mr. H. Leeds exhibited a large number of aberrations of *Polyommatus icarus* taken in May and June, including obsolete, asymmetrical, gynandromorphous, abnormally spotted, light, dark, and suffused specimens. Mr. H. Main, pupa of *Geotrupes spiniger*, living examples of *Copris lunaris*, larva of *Panorpa germanica* (scorpion-fly), an ichneumon of the alder sawfly, *Phyllotoma vagans*, and the larva of the sawfly of the Solomon's seal, *Phymatocera aterrima*. The Rev. F. D. Morice, a British specimen of *Polistes gallica*, a common continental wasp. It was taken in Durham. Dr. Chapman, a larva of *Trichopteryx viretata* on the flowers of *Cornus sanguinea* from Reigate. Mr. Hy. J. Turner, cocoons of *Bucculatrix aurimaculella*, leaves of birch mined by the Coleopteron *Orchestes rusci*, the beautiful open net-work cocoon of the anomalous Lepidopteron *Chrysocoris festaliella*, and some tubular larval cases of a Tineid formed on dog's excrement at Aden. Mr. Bunnett, the imagines and larval cases of the hawthorn Coleophorid, *Coleophora nigricella*. Mr. F. B. Carr, a pupa of *Gonepteryx rhamni*. Messrs. R. Adkin and F. M. B. Carr communicated notes on the *Lepidoptera* of the present season, and interesting remarks were made on the same subject by Messrs. Curwen, Hare, Newman, Rev. F. D. Morice, and others.—H. J. TURNER, *Hon. Report Secretary*.

NOMADA RUFICORNIS (sensu lato) AND ITS CLOSE ALLIES.

BY R. C. L. PERKINS, D.Sc., M.A., F.Z.S.

The very variable *Nomada*, which we know as *ruficornis* L., though a most interesting species, has never received in this country the attention that it deserves. Both the distinctive characters of its named varieties, and the habits of these, require a most careful study, and this will only have been satisfactorily carried out on the acquisition of extensive series of examples, specially collected with regard to the different species of *Andrena* on which they are parasitic.

In considering the status of the so-called varieties of *ruficornis*, it is advisable to include with them the two forms, *N. borealis* Zett., and *N. xanthosticta* K. (*lateralis* E. Saund. nec Smith), which, as Saunders remarks, are without any very strong structural characters to distinguish them from *ruficornis* itself.

In his "Hymenoptera Aculeata of the British Isles," Saunders, in his table of species of *Nomada*, and also in his descriptions of *N. borealis* and others, but particularly in the case of *borealis*, appears to have practically considered only what might be called typical examples, even though the variability may be great. Thus the scape of the antennae in ♂ *ruficornis* is in some forms entirely black, while the mesonotum of *borealis* ♀ may have distinct red lines. Also the scape of the latter species in the ♀ is frequently either red at the base and apex, or entirely red beneath.

Of *ruficornis* (quoting vars. *flava* and *signata*, as synonyms), he remarks that it is "of extraordinary variability both in colour and size, so that little dependence can be placed on these characters. In his "Synopsis," he says that the varieties are in no wise constant, excepting the var. *signata*. This remark is not to be taken too literally, since *signata* itself is distinctly variable in some points, but probably Saunders only meant that he could always distinguish it, or at least its ♀, from other forms of *ruficornis*, while the latter could not be distinguished from one another. As a matter of fact Smith confused a certain variety of *flava** ♀ with it. This last named author treated the matter very differently from Saunders. In addition to *borealis* and *lateralis* Saund. (*nec* Sm.) the latter of which he called *bridgmanniana*, Smith retains *signata* Jur., and a form he calls *lateralis* Pz. (which is entirely different from that which Saunders calls *lateralis* Panz.) as distinct species. As is evident from the note in the "Synopsis," Pt. II, p. 179, under *N. bifida*, quoted by Saunders, Smith was not satisfied, even after the subtraction of his *signata* and *lateralis*, that there were not two species under *ruficornis*. Probably he was perplexed by the fact that while some of his "dark-coloured varieties" had bifid mandibles, others had not. Smith's series of *ruficornis*, I may add, contained nearly a score of *bifida*. Had he removed all these on the mandibular character, he would still have been left with what he calls "dark-coloured vars." (i.e., *ruficornis*) and "pale examples" (i.e., *ruficornis* var. *flava*).

Kirby describes *N. ruficornis* on female examples only. His description of what he considers the type form is more applicable to *bifida* than to what we call *ruficornis*, and one would rather infer this to be the case from Smith's MS. note, quoted by Saunders, as referred to above. Smith's collection contains examples with a label "var. β Kirby." These are specimens of *ruficornis*. Kirby's vars. γ & δ are,

* Really the ♂ *signata* is very difficult to separate from some vars. of *ruficornis*, and also some of *flava*, and probably many supposed ♂ *signata* are wrongly named.

according to Smith, examples of *ochrostoma*. As to *N. flava* K., it was described on male examples only, and there is nothing in the description to show whether it is based on *bifida*, *ruficornis*, or the form we call *flava*, but including his three described varieties, it was clearly a mixture of forms. I have been informed that the form considered to be *N. flava* of Panzer, on the Continent, is the same as that, which I have identified as such, in my description below. Panzer having the priority, it is not of much importance what Kirby's *flava* may have been.

As to the species of *Andrena* on which the various species or forms of the *ruficornis* group are parasitic, the information is far from satisfactory. *N. signata*, which Smith, in his 2nd Edition says "was very abundant on Hampstead Heath some years ago," is stated definitely to be the parasite of *A. fulva*, though it by no means always occurs where that *Andrena* is found, being more local than its host. Shuckard corroborates Smith, as also does Saunders. The only locality where I have taken *signata* was in my father's garden at Raglan, Monmouthshire, where *A. fulva* abounded, a locality probably very distant from those where Smith, Shuckard, and Saunders collected it.

N. lateralis Sm.,? Panz. is given both by Shuckard and Smith (2nd Ed.) as the peculiar parasite of *Andrena bucephala*, and is said by the latter to have been "formerly very abundant near Highgate Archway," where it was found at a colony of *A. bucephala*. My personal knowledge of this parasite is very slight, as I have only taken a single ♂, in April, 1914, near Newton Abbot. Parfitt of Exeter, in a life-time's collecting in that neighbourhood, I believe only once found *A. bucephala* there, and then in a locality very similar to that in which I found this *Nomada* at Newton. Consequently I feel fairly certain that *A. bucephala* is to be discovered at the latter place. Shuckard's figure of the ♀ is certainly not *lateralis* in my opinion.

N. xanthosticta K. (*lateralis* E. S. nec Sm.) is exclusively the parasite of *Andrena praecox*. I had abundant opportunities of studying these two species, host and parasite, in Norfolk and Suffolk, and in gardens in Cambridge, in 1888 and 1889. I supplied Mr. Saunders with specimens of the *Nomada* at that time, and pointed out to him that his association of it with *A. bucephala*, as given in his book, was certainly an error. This error may have arisen because Smith's record of the host of "*lateralis*" was accepted, the fact that this author's *lateralis* was quite distinct from his own *lateralis* having been overlooked by Saunders, in this connection; and also his mind was influenced by the fact that Mr. T. R. Billups had taken *N. xanthosticta*

(i.e., *lateralis* E. S.) and *A. bucephala* on blackthorn blossom at Box Hill on the same day.

In some localities, e.g., in Monmouthshire, I have found *A. praecox* in the utmost profusion, without any of its parasite, the latter being much the rarer in England, and, so far as I know, not occurring in the West.

N. borealis Zett. All authors give *A. clarkella* K., as the host of this species, Smith and Shuckard indeed give no other. Since their time, however, it has been found also to parasitize *A. apicata* Zett. I have myself recently taken a few examples on Dartmoor with the latter, in places where no *clarkella* have ever been met with. The attack on two hosts, so dissimilar, is of great interest, and it would be interesting, were it possible, to compare a long series of the parasite from a locality, where only the one host is found, with those from another place, where the other host occurs alone.

N. flava Panz., though a very abundant insect in many localities, still requires careful study in the field, as to the species it parasitizes. It is certainly a common parasite of *A. trimmerana*, but whether it attacks *A. nigroaenea* also is not certain. Certainly *A. trimmerana* is the usual host. As *N. flava* in one of its varieties approaches somewhat to *N. signata*, the parasite of *A. fulva*, and in another variety is very similar to the large form of *ruficornis*, which parasitizes the same *Andrena*, it would be interesting, if it should prove that these two varieties of *flava* were also attached to *A. fulva*; but I have no evidence that this is the case, and think that it is unlikely.

N. ruficornis s.str., is generally, if not solely, the parasite of those species of *Andrena*, which belong to the group of *A. varians*, exclusive of *A. praecox* and *apicata*, both of which, as above mentioned, have their own special forms, distinct from *ruficornis* proper. How far or how constantly the varieties of *ruficornis*, which attack different species of the *varians* group, differ in the range of their variation I have not the material necessary for a decision. I have read that the form of *ruficornis*, which is parasitic on *A. varians*, is considered on the Continent as the typical form, but I should think that this is merely guess-work. I have before me three series of *ruficornis* of which the host is known to me. One of these is from *A. fulva*, one from *A. ambigua* (but this may have some from *A. fucata* mixed with them) and the third from *A. lapponica*. In each of these cases the examples of *ruficornis* appear to have at least a very distinctly different

range of variation, but the material that I have is insufficient for any more definite decision. In localities that have been accessible to me of late years, neither *A. helvola* nor *A. varians* occur, so that I have been unable to collect *ruficornis* from these hosts.

Smith in the first edition of his book says that he has found *ruficornis*, (i.e., *ruficornis* + *flava*) "entering burrows of *trimmerana*, *nitida*, *varia*" (*sic!* no doubt = *varians*), "and *fulva*, its attacks are very general." In his 2nd edition he says, "parasitic on several species of *Andrena*, frequently so on *trimmerana*, *atriceps*, *fulva*, and *nigroaenea*." Without very strong evidence in its favour I should consider *atriceps* an improbable host. The fact that *A. fulva* has the peculiar *A. signata* attached to it, and likewise a specially large form of *A. ruficornis* proper, forms extremely dissimilar, though the host is the same, seems to me a decided reason for considering such forms more than mere varieties and ranking at least with the so-called races of certain Bombs, such as *jonellus*, *pratorum*, and *lapponicus*. It is certain that in the *ruficornis* group the specific characters are much more evident in the ♀♀ than in the ♂♂, as if the former sex had been the first to acquire distinctive characters, which is what might have been expected in accordance with their habits. Certainly in most cases the different forms that I have tried to distinguish can in the female sex, in the great majority of individuals, be at once separated at a glance with the naked eye, but the males are much more difficult and generally require minute examination, or in rare cases are only dubiously separable, imperfectly studied as they have been.

On the evidence of observations made by myself in 1890, I long believed that one dark form of *ruficornis* was parasitic on *A. albicans*, and even now, improbable as this host seems, I have difficulty in persuading myself that my observations were incorrect. At the time mentioned I had previously captured only *flava*, the so-called light-coloured form of *ruficornis*. In the early spring of the year 1890, however, on the edge of a small copse, where burrows of *albicans* were scattered amongst the grass, I found a *Nomada* entering the burrows of this *Andrena*, as I supposed. Knowing well that *N. bifida* was the common parasite of *albicans*, and seeing no resemblance between my new captures and my previous ones of *flava*, which Saunders had named *ruficornis*, I jumped to the conclusion that the former must be an extraordinary variety of *bifida* with the mandibles pointed! In fact I actually recorded these specimens as a variety of *bifida* in the

Ent. Mo. Mag., the record of course being a gross error, as the specimens were what were then called "dark forms" of *ruficornis* (i.e., *ruficornis* proper). It still remains a question whether these *ruficornis* were really parasitic on *albicans* or on some other host, the burrows of which were intermixed with those of *albicans*, but of which, during several occasions spent in collecting the *ruficornis*, I did not see a single example.

The fact that, while *albicans* and its true parasite *bifida* abounded everywhere in the district, it was only in this one small spot and in this one year that I found the dark-coloured *ruficornis*, inclines me to the belief that some other *Andrena*, in spite of the time spent in specially collecting the *Nomada* in this spot, was overlooked by me. Looking over my records for past years, I find that in that particular neighbourhood the only species of the *Andrena varians* group—the group to which the *ruficornis* group is particularly attached—that was ever collected, was *A. helvola*, and that this was of the rarest occurrence. Consequently I have some doubts whether some of the supposed *albicans* burrows may not really have belonged to *helvola*, though many of the former were seen entering their nests, but not one of the latter.

SYNOPSIS OF ♀♀.

- 1 (2) Abdomen brown or ferruginous, the base of the 1st segment black, the yellow spots of the 2nd segment lateral, extremely widely separated from one another, 3rd segment with an extremely small spot on each side or without spots; scape of antennae black, the pronotal tubercles bright yellow.....*xanthosticta* Kirby
(= *lateralis* E. S. nec Smith).
- 2 (1) If the scape of the antennae is wholly black and the abdominal markings as above, the tubercles are not bright yellow.
- 3 (4) Clypeus with a narrow apical red band, generally narrowest in the middle, or even entirely interrupted there; mesopleura at most with a small red spot in front behind the base of the front femora; hairs of the mesonotum much longer and more plentiful than in any of the following. (Scape of antennae often wholly black; mesosternum rarely with red lines).....*borealis* Zett.
- 4 (3) Clypeus with the apical red band usually occupying at least half its length and often widest in the middle; sometimes the whole clypeus is red; mesopleura with at least a large and conspicuous red macula, or with a large one below and a small one above.
- 5 (6) 2nd abdominal segment with lateral ovate or sub-triangular yellow spots, which are so widely separated inwardly that they do not

extend on to the middle third of the width of the segment, the 3rd segment with much smaller spots, still more widely separated, only visible as minute lateral spots when the abdomen is viewed from above; antennae unusually long and slender, the flagellum with a sparse but very noticeable fringe of erect hairs behind, obviously more developed than in any of the following. (Abdominal markings identical with those of many ♀ *N. ochrostoma*) ...*N. lateralis* Sm.

6 (5) Abdomen hardly ever coloured as above; if somewhat similar, the antennae are shorter and the hair-fringe less developed.

7 (8) 2nd abdominal segment with a wide unbroken yellow band; the first black at base followed by a brown median band, which in front is occupied by two yellow spots, forming a more or less interrupted band; propodeum with erect conspicuous, usually trilobate, yellow maculae on either side of the middle; mesonotal red lines not wide, together not occupying half the area of the mesonotum...

N. signata Panz.

8 (7) 2nd abdominal segment rarely with an unbroken yellow band, this being usually interrupted, at least slightly, medially, and often broken into two yellow spots; if entire, the mesonotal lines are wide, often confluent, or the propodeal markings are red, not largely yellow.

9 (10) Average size larger, wings with notable yellowish tint, antennae with entirely pale flagellar joints, not even the more apical ones appearing more or less darkened or brownish above.

(Pubescence on each side of propodeum just above the abdominal insertion and also that on the hind coxae flavescient in fresh examples, not white or silvery).....*flava* Panz.

10 (9) Average size smaller, wings not distinctly yellowish, but rather greyish and usually with deeper infuscations than in the above; flagellar joints often entirely brownish or suffused above (or in front) or at least with some of the joints that precede the apical one evidently darker above (or in front) than they are beneath (or behind).

(Pubescence on each side of propodeum nearly always white or silvery as also that on the hind coxae)*ruficornis* L.

Before tabulating the ♂ ♂ of the above, a few remarks on some of these ♀ ♀ are necessary.

For the separation of the different forms I have chiefly relied on colour distinctions, though I believe that most, if not all, are separable by slight structural characters as well. But such slight differences as are to be found in the thickness or length of the antennae, or of the legs, or in the length or density of the pubescence of various parts, are of little use in a table, which is intended to enable collectors to

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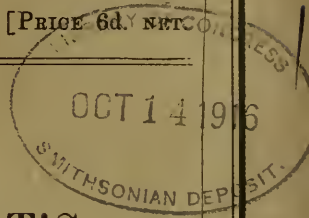
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ENTOMOLOGICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W.—Wednesday, October 4th, 1916.

The Chair will be taken at 8 o'clock in the evening precisely.

The Library is open daily from 9 a.m. to 6 p.m. (except on Saturdays, when it is closed at 2 p.m.), and until 10 p.m. on Meeting nights.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 8 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

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THE LONDON NATURAL HISTORY SOCIETY which meets at 7 p.m. on the 1st and 3rd Tuesdays in each month, at Room 20, Salisbury House, Finsbury Circus, E.C., will be glad to welcome at its Meetings any French or Belgian entomologists now staying in this country, and to give them the benefit of its library and collections. Communications should be addressed to the Secretary, Salisbury House, E.C.

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Arrangements have been made by the Lepidoptera Committee of the above Society for a Member of the Committee to attend at Salisbury House at 6.30 p.m. on Meeting Nights (1st and 3rd Tuesdays in each month, except July and August), for the purpose of giving advice and assistance to young entomologists, whether members of the Society or not. A cordial welcome will be extended to any who care to avail themselves of this arrangement.

Woodford Branch. Meetings are held at the Wilfrid Lawson Hotel, Woodford Green on the last Friday in the month, and commence at 8 p.m. The Meeting Room is open at 7.30 p.m.

Chingford Branch. The Chingford Local Branch meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the 2nd Monday in each month.

distinguish the various forms that they possess. Also these slight structural characters are most difficult to appreciate.

The ♀ of *flava* seems to be generally divisible into two more or less well-marked varieties, the commoner one with the propodeum generally with much less red colour and sometimes without any red markings, and the orbital lines very narrow or often almost interrupted between the cheeks and the line of the antennal insertions, the other with broader orbital lines and the propodeum with large red markings, either with three red spots on each side, or with two of these united into one, or with all united.

The ♀ of *ruficornis* that is parasitic on *A. fulva* makes the closest approach to *flava*, and might be confused therewith, as it is hardly inferior in size to fairly well-developed specimens of the latter. It always has the propodeum very largely red-marked, the markings on each side often confluent into one large irregular spot, shaped like those of *signata*. Two examples of this form in Smith's collection are certainly three-quarters of a century old, and, from fading, their resemblance to *flava* is increased, but they remain certainly distinguishable.

As to the forms of *ruficornis* that I possess, the hosts of which are species of *Andrena* other than *fulva*, these present great variability, but are not likely to be confused with *flava*. Some of these are extremely like some varieties of *N. borealis*, or the species called *lateralis* by Smith (not Saunders). The much longer erect mesonotal pubescence of *borealis*, and the comparatively well-developed hairs on the posterior surface of the whole flagellum of *lateralis* Sm., are such good and constant characters that others are hardly necessary. Smith himself remarked on the long antennae of his *lateralis*; in which respect the species rather resembles *flava* than *ruficornis*, although superficially it is entirely unlike any examples of the former. It is quite remarkable for its constancy of pattern and colour in both sexes.

SYNOPSIS OF ♂♂.

- 1 (2) Clypeus with only the extreme apical margin pale, the pale line sometimes altogether interrupted in the middle; scape entirely black.

(Pubescence of mesosternum pale fuscous with yellow or golden tint; yellow marking of the cheek not prolonged back along the eye-margins nearly so far as the line of the antennal insertions)

...*borealis*.

- 2 (1) Scape often pale in front, if black, the clypeus has a conspicuous yellow band, which rarely occupies much less than its apical half, or it may be wholly yellow.

- 3 (4) Scape entirely black ; hind tibiae (except beneath) nearly wholly black or pitchy, middle tibiae also dark, the hind metatarsi black or very dark ; yellow facial markings continued back along the eye-margins to about the line of the antennae.

(Tubercles black, their hind margins bright yellow)...

xanthosticta.

- 4 (3) Scape entirely black only in unusual aberrations ; if so, either the legs are not as above or the facial marks are different.

5 (6) Scape entirely black*ruficornis* var.

- 6 (5) Scape more or less pale in front or beneath.

- 7 (8) Spots of the 2nd abdominal segment well separated inwardly (but the space between them, where least, is less than one-third the width of the segment), those of the 3rd segment truncate or blunt inwardly and much more widely separated than the preceding (the space between them not less than one-third the width of the segment or often greater than this) ; mesosternum excessively densely clothed with silver hairs, which appear denser and more decumbent than in other forms ; fringe beneath the hind and middle femora dense and unusually short.

(Yellow orbital lines reaching to about the line of the antennae, the latter appearing longer and more slender than in *ruficornis*)

...*lateralis*.

- 8 (7) Spots of the 3rd abdominal segment rarely separated as above, and, if so, the fringe beneath the middle femora is longer ; mesosternum less densely clothed, and in some forms the clothing is yellow-tinged, not silver.

- 9 (10) All the abdominal bands, from and including that on the 2nd segment, wide and entire, the apices of the segments mostly dark brown or pitchy ; 1st segment with two conspicuous black or very dark round spots in the pale band ; facial yellow markings not nearly extending back to the line of the antennal insertions*signata*.

- 10 (9) If all these abdominal bands are wide and quite unbroken, then the yellow facial markings are continued back (sometimes extremely narrowly) to about the line of the antennae ; pale band of 1st segment in many varieties without two conspicuous black spots, but in some they are present.

11 (12) Wings always conspicuously flavo-hyaline*flava*.

12 (11) Wings in nearly all varieties more greyish, without notable yellow tint*ruficornis*.

So far as the specimens before me are concerned, there is not much difficulty in distinguishing the males of *flava* from *ruficornis* in the case of most varieties of the latter, but this sex of the large form of *ruficornis*, which parasitizes *A. fulva*, is extremely close to *flava* and separable only with great difficulty. This form also greatly resembles

the ♂ of *signata*, although its ♀ is so entirely different in appearance. It is indeed evident that in all cases the ♂♂ of the *ruficornis* group are far harder to differentiate than the ♀♀, and still require a great deal of close study. However, this parasite of *fulva* appears to me to have the wings less flavescens, the antennae slightly shorter or thicker, and the hind femora rather stouter than in *flava*, but the great variability in the size of individuals of the latter makes it most difficult to appreciate such characters of degree.

As to the smaller forms of *ruficornis*, parasitic on *A. synadelpha* and *A. lapponica*, these are easily distinguished from *flava* by the wing-colour and general appearance, their range of variation being also quite different. The fringe beneath the middle femora in these forms is always long.

Since the above notes were written a careful examination of *N. flava* in May and June of this year showed it to be an abundant parasite of *A. trimmerana*, but no evidence could be obtained of its attacking any other species. The female of *N. lateralis* Sm. (*nec* Saunders) was found in Glamorganshire by Mr. H. M. Hallett, as a parasite of *A. bucephala*, confirming the old observations made by Smith and Shuckard on Hampstead Heath.

Park Hill House, Paignton :

August 10th, 1916.

ADDITIONS AND CORRECTIONS IN THE GENUS *ERNOBIUS*;
WITH NOTES ON THE COPULA.

BY D. SHARP, M.A., F.R.S.

At the time of my brief communication on this genus in the August number of this Magazine, I was aware that we probably had in this country more species than I there alluded to, but I thought it well to wait till I had more information about collections other than my own before bringing forward additional novelties. I have now examined the collections of Mr. Champion, the British, and the Cambridge Museums, and series submitted to me by Mr. W. E. Sharp and Mr. A. Ford. I have also made numerous fresh dissections, and have become convinced that Mulsant was wrong in the course he adopted as to the application of the name "*mollis*." Hence the following notes.

Ernobius mollis Linn.

Ernobius mollis L., auctt. plur. ; Sharp and Muir, Tr. Ent. Soc. London, 1912, pl. lxiv, figs. 134 and 134a.

Liozoum consimile Muls. (Col. Fr., Térédiles, p. 167); Sharp, ante, p. 178.

In my previous communication, I adopted Mulsant's name of *consimile* for this species, being under the impression that it and Mulsant's *mollis* would be found to be mixed in some collections, and that Mulsant was authorised to apply the name of *mollis* to either of the two forms. I have, however, found no examples of his *mollis* in any collection I have examined; the specimens found by Mr. A. Ford, my daughter and myself in the New Forest being the only exponents of the species I have seen. On the other hand, Mulsant's *consimile* is very widely distributed and common in Europe.

Mulsant says (translated) "it is difficult to decide exactly what the true *Anobium molle* of authors is. Linné, Fabricius, Olivier and Gyllenhal having only described, amongst the four of them, three species belonging to my genus *Liozoum*, must necessarily have confounded several together. Sturm and Redtenbacher distinguished four others Paying no attention to the brief and vague descriptions of the earlier authors, I apply the name *molle* to the species that appears to me to agree best with the descriptions of Sturm and Redtenbacher."

On turning to the description of Sturm I find it to be entirely vague and unaccompanied by any figure, but he says it is found in wood, sometimes in houses, and this of course points to a common species. Redtenbacher is almost as vague, though I am inclined to disagree with Mulsant, and consider that his description applies rather better to *consimile* Muls. than to *molle* Muls.

In short, Mulsant's decision appears to have been entirely arbitrary. He should have used the name for the common species, not for one that is so rare that it exists in but very few collections.

E. mollis is an extremely variable species in size ($3\frac{1}{4}$ – $6\frac{1}{2}$ mm. long), and to a slighter extent in colour and in the development of the antennae, but the 7th joint of these is always definitely longer than either the 6th or the 8th; and the front tibiae are not curved (except at the point of junction with the femur). The male aedeagus has been figured by Muir (*l.c.*); the variability of the species affects even this organ, but only to a slight extent, so that the species may be determined with certainty by a reference to this structure. I have seen about 200 examples of *E. mollis* and have examined the aedeagus in about 30 of them.

In Britain the species extends from the North of Scotland to the

South of England. I have also seen specimens of it from Spain, Switzerland, the Tyrol and Carinthia.

Ernobius schilskyanus, sp. n.

The late Herr Schilsky, who was considered to be an authority on this genus, determined some specimens for Mr. Champion. Among them are a male from Besika Bay, which he labelled "*mollis* Muls.," and a female from the Piraeus which he ticketed as "*mollis* L."

They are extremely similar to rather small, slender *mollis*, but the aedeagus is very different, and not like any other of the genus known to me. The sinister lateral lobe is very broad, and towards the extremity bent at a right-angle towards the median lobe, the small division of which therefore passes over it. The whole aedeagus is shorter than in *mollis*, its basal stalk being less elongate, and the peculiar cleft of this lobe is remarkably deep. The dexter lateral lobe is more like that of *mollis*, but its apex is broader and less pointed. The last (really the penultimate) tergite is rounded, not emarginate, and the corresponding ventral is only obscurely notched in the middle. The male structures do not permit any doubt as to the distinctness of the species.

E. mollis fere omnino similis, antennis paululum crassioribus; ferrugineus, oculis valde prominulis, antennis articulis 6°-8° elongatis 7° quam octavo paulo longiore. Long. 3½ mm.

Hab.: Mediterranean Region (*Walker*, in coll. *Champion*).

The female from the Piraeus is, I feel sure, the same species; its antennae are, however, much mutilated.

Ernobius mulsantianus, nom. nov.

Liozoum molle Muls., op. cit.; Sharp, ante, p. 178.

Elongatus, sub-parallelus, testaceus vel ferrugineo-testaceus, antennis articulis 6°-8° sub-aequalibus, elongatis, oculis valde prominulis; elytris sub-nitidis, subtiliter, minus dense punctatis. Long. 4¼-5½ mm.

Mas, tibiis anterioribus bene curvatis.

Somewhat variable in size, the individuals I have seen of this species being on the average larger than *E. mollis*. The head is broader, with very prominent eyes, the thorax is more sinuate at the side near the front, and the punctuation of the elytra is finer. The male has the anterior tibiae rather strongly curved, while in the female they are nearly straight. The antennae vary a good deal in the same sex, and are moreover markedly different in the sexes, but the 7th segment is not longer than the 8th, though in *mollis* it always is so. The

aedeagus has elongate and more slender lobes; the sinistral lateral lobe is slender, and the "fish-hook" at its extremity is shaped differently from that of *E. mollis*; the median lobe has the basal or stalk part very long, and the minor division of it lies less parallel with the major.

This species is undoubtedly distinct from *mollis*, though aberrations as regards the structure of the antennae occur in each, so too much dependence should not be attached to that character when determining the insect.

E. mulsantianus has apparently been found in Britain only in the New Forest district, where it has been met with in the western part by Mr. Ford on burnt fir-trees, as well as by myself at Brockenhurst. I have examined about fifty specimens.

As I have already stated, I believe this insect to be the *Liozoum molle* of Mulsant. As, however, the species of this genus are so very difficult to determine, and I have seen only English specimens of *E. mulsantianus*, this synonymy cannot be considered to be fully established. Mulsant says that "*molle*" is generally southern and scarce; also that it is found on pines in Provence and Languedoc, and is rare in the neighbourhood of Lyons.

Ernobius reversus, sp. n.

E. mollis persimilis, minor, statura graciliore, tarsis anterioribus tenuibus.
Long. $2\frac{3}{4}$ - $3\frac{1}{4}$ mm.

Mas, antennis elongatis.

This species resembles extremely the small varieties of *E. mollis*, but the symmetry of the aedeagus is reversed in all its parts. The antennae of the male are rather longer, the terminal joint being very long and slender, the 7th joint is longer and broader than the 6th or the 8th. The eyes are slightly more prominent, and the thorax correspondingly more sinuate at the sides in front. The scutellum is not densely tomentose. The front tarsus is very slender, the tibiae straight.

In the male the fish-hook lateral lobe is dextral, and the acuminate one sinistral; the median lobe is correspondingly reversed, but otherwise the shape of the lobes is as in *E. mollis*, so that it is possible this little insect may be a phallic aberration of *mollis*.

Brockenhurst, July 3rd, 1916, one male; June, 1912, one male. I have also one female from the south of England (without more data) that I refer to the species. This female is very like that of *E. oblitus*, but it has the terminal three joints of the antennae considerably longer and thinner.

E. oblitus mihi (ante, p. 179).

This was described from New Forest specimens; it is also in Champion's collection from Woking, 24.vi.1906 (1 ♂ and 4 ♀). The lobes of the aedeagus are very peculiar. Mulsant describes two small species, *parens* and *crassiusculum*, but it is clear that *oblitus* is not either of them.

E. abietis Fabr.

This name has been in the lists of British *Coleoptera* since the time of Stephens. I find nothing that can be it in our collections, and as it is attached to a tree (*Abies*) that is not a native of this country, we should at present eliminate the name. The specimen alluded to by Fowler (Col. Brit. Isls., IV, p. 193) as found by Turner at Alvie has no resemblance whatever to *E. abietis*. It is a female and may be an aberration of *mollis*. Two other specimens in the British Museum collection purporting to be *abietis* are badly mutilated females of *mollis*. The specimens of "*abietis*" in Stephens' collection were stated to be not that species by Waterhouse as long ago as 1858. Even Stephens' description of "*abietis*" does not apply to the species, but apparently refers to the female of *E. mollis*.

Ernobius nigrinus Sturm.

This is the most variable species of the genus in size and colour, and even in punctuation. But on dissection of three males that are very dissimilar in these respects, I find nothing in the structure of the aedeagus to support the supposition that they represent more than one species.

I give a list of the *Ernobii* known to me as British, viz. :—

<i>E. mulsantianus</i> Sharp.	<i>E. oblitus</i> Sharp.
<i>E. mollis</i> L.	<i>E. parvicollis</i> Muls.
<i>E. reversus</i> Sharp.	<i>E. nigrinus</i> Sturm.

I have been much interested in this genus because it is an excellent exemplification of the fact that the species cannot be finally determined in the absence of a knowledge of the sexual characters. The phenomena connected with the functioning of the sexual structures will be found also to present some peculiarities in the genus. The spermatheca of the female is very remote from the vulva, and the male has only a very short sac, and there is very little penetration by any part of the male structures. The aedeagus is very strongly chitinised. It is very asymmetrical, and consists of three lobes attached to a bulb. The three lobes have each its own peculiar form, which is very highly differentiated, exhibiting twists, grooves, clefts and pro-

jections, of a curious nature, so as to make us ask what can be the object of them. The lateral lobes do not enter the vulva; indeed, only the apical part of the median lobe so enters. During the state of rest all the lobes come very closely together, and their structure appears to specially facilitate this. The lateral lobes do not exercise any prehension or clasping; but during copula, one (possibly both) of them crosses and supports the median lobe, so that their shapes are at any rate partially adapted to the two results I have mentioned.

The actual copula occupies a long period—at any rate one or two days. Its inception has not been observed, but while it is going on the pair stands end to end on a twig, in the position that we may be permitted to consider to have been the primitive one in insect copula. They stand quite motionless, with head deflexed and antennae concealed, as if dead. The only sign of life they display is the prehension of the twig by the feet. I have observed a pair to be absolutely motionless in a glass tube for more than 24 hours. Notwithstanding this they are firmly joined, and pairs falling into a beating umbrella frequently retain their connection. This appears to be maintained by a thorough co-adaptation of the abdominal segments. The male has two internal segments, one of them extremely modified, and acting as a supporting saucer (in larger part membranous) for the bulb of the aedeagus. The female has a very long ovipositor, which is retained in the body during coition; but there is another internal segment which enters—at any rate partially—the cloaca of the male, while the male true penultimate segment enters the female segment. Thus a thorough interlocking of the pair is maintained by means of the abdominal segments.

Brockenhurst:

August 19th, 1916.

NOTES ON *MELANDRYIDAE* (4).—SUPPLEMENTARY NOTE AND
CORRECTION.

BY G. C. CHAMPION, F.Z.S.

Since the publication of the concluding portion of my "Notes" on these insects (*antea*, pp. 145-157), a few additional forms in the British Museum have been handed over to me by Mr. Blair for naming. A study of these specimens has led to the identification of *Laccoderus* (*antea*, p. 106) with *Batobius* Fairm. and Germ (1863), and the first name must therefore be sunk as a synonym. The other species are:—

a second *Eurypinus* (*antea*, p. 145), from Durban, described below; *Conomorpha convexus* Champ. (*antea*, p. 148), from Trinidad (*G. E. Bryant*), type from the Amazons; *Cleodaeus rugiceps* Champ., from Para (*H. W. Bates*), type from Panama.

BATOBIUS Fairm. et Germ.

Batobius Fairm. et Germ., Ann. Soc. Ent. Fr., 1863, p. 268 [sub *Oedemeridae*].

Laccoderus Champ., *antea*, p. 106 (May, 1916).

The description of *Batobius* was overlooked by me when dealing with this genus, owing to its having been referred to *Oedemeridae*, where I should not have thought of searching for it. The authors, however, state that *Batobius* approaches the *Pythidae* in the form of the antennae, coxae, etc. The genus was placed by me in *Melandryidae*, under the section "*Myeterina*," and the affinities of the latter with the *Pythidae* noted (*cf.* pp. 101, 102). Three species were included under *Laccoderus*, the type of which, *L. chilensis*, is synonymous with *B. humilis* F. and G., and in the Museum there are also specimens from Chile, apparently referable to *B. bicolor* and *B. ruficollis*. The corrected synonymy will be as follows:—

1.—*Batobius humilis* Fairm. et Germ.

Batobius humilis Fairm. et Germ., Ann. Soc. Ent. Fr., 1863, p. 270.

Laccoderus chilensis Champ., *antea*, p. 107, pl. 2, figs. 13, 13a (♂ ♀).

Hab.: CHILE (*Reed*), Subandine Forests of Chillan [type of *B. humilis*], Valdivia (ex coll. *F. Bates*).

2.—*Batobius scaber*.

Laccoderus scaber Champ., *antea*, p. 144.

Hab.: BRAZIL, Parana.

3.—*Batobius melanurus*.

Laccoderus melanurus Champ., *antea*, p. 144.

Hab.: BRAZIL, Parana.

EURYPINUS Champ.

2.—*Eurypinus rufolimbatus*, n. sp.

♂. Elongate, widened posteriorly, depressed, dull, the elytra and legs shining, closely pubescent; nigro-piceous, with a slight brassy tinge, the

sutural and outer margins of the elytra, the labrum, antennae (joints 1 and 2 excepted), and tibiae, and the tarsi and abdomen in part, rufescent or ferruginous; the head and prothorax very densely, rugosely, the elytra closely, confusedly punctate. Head not much broader than long, tumid in the middle between the eyes, and well developed and gradually narrowed behind them, the eyes rounded and comparatively small (as seen from above); antennae short, rather stout, sub-serrate, joint 3 longer than 4, 4-10 gradually becoming shorter and broader, 10 transverse, 11 ovate. Prothorax a little wider than the head, transversely sub-quadrate, slightly narrower in front than at the base, the sides feebly rounded, the disc rather broadly sulcate down the middle and the two basal foveae deep. Elytra long, much broader than the prothorax, widened to beyond the middle and arcuately narrowed thence to the apex; the punctures not very coarse and mostly separate one from another, the suture with an elongate, smoother tumid space before the tip. Ventral segment 2 with a transverse, fulvo-pilose, very prominent tubercle in the middle in front. Legs short, rather stout. Length 5, breadth $1\frac{1}{2}$ mm.

Hab. : NATAL, Durban (*F. Muir*, 1902, *ex coll. Sharp*).

One male. Differs from the type, *E. nyasae*, in the longer head and smaller eyes, the darker coloration and the rufescent sutural and outer margins of the elytra; the ventral tubercle, too, is larger and transverse.

Horsell, Woking :

September 5th, 1916.

A BEE NEW TO THE BRITISH LIST:

NOMADA CONJUNGENS H.-SCHAEFF.

(= *DALLATORREANA* SCHMIEDEKNECHT)

BY THE REV. F. D. MORICE, M.A., F.E.S.

On June 7th, 1900, I captured at Swanage a ♀ *Nomada*, which I supposed to be merely some form of the common *ruficornis*. On returning home I placed it as such—probably with little or no further examination—among my *ruficornis* specimens, and it has stood undisturbed and unregarded above that name in my collection ever since.

Now, however, Dr. Perkins' paper in the current number of Ent. Mo. Mag. (September) has led me to re-examine all my specimens of so-called *ruficornis*, and I find not only that the Swanage insect is no *ruficornis*, but that it belongs to a species hitherto unrecorded from Britain! This species is described by Schmiedeknecht (*Apid. Europ.*, p. 194), and again diagnosed by him in *Hymen. Mitteleurop.* (pp. 152 and 162) under the name "*Dalla-torreana* Schmiedekt." He mentions,

however, in the latter of these works, that Alfken has identified it with a species described in 1839 by Herrich-Schaeffer under the name "*conjungens*." It was also known as "*conjungens*" to the late Prof. Pérez, and that name has been adopted for it by Frey Gessner of Geneva in his recent excellent monograph of the bees of Switzerland. Having carefully studied Herrich-Schaeffer's account of its characters in Germar's *Zeitschr. f. Ent.*, I, p. 379, I cannot doubt that *dallatorreana* and *conjungens* are identical; and as the name *conjungens* has priority, I introduce the species under it.

The general appearance of *conjungens* ♀—its size, habit, and coloration, etc.—forcibly suggest a rather small and not very highly coloured *ruficornis*; or, perhaps still more forcibly, a specimen of *hillana* K. (= *ochrostoma* K.). *Hillana*, however, it cannot be, since its mandibles are acute! And it differs from any of the species usually placed near *ruficornis* in having a black labrum. With this character it combines that of a yellow 1st antennal joint or 'scape.' Now the only *Nomada* in our present list which presents these two characters together is the ♀ of *flavoguttata* K.* and when *conjungens* ♀ and *flavoguttata* ♀ are carefully compared, it will be found that in almost every detail of coloration the agreement between them is very close indeed. But (1) *conjungens* is much the larger of the two insects—♂ to 9 mm. long as against 6 to 7; (2) *flavoguttata*, as Saunders points out, is distinguished by its "slender form," whereas *conjungens* is a stout, broad-bodied insect; and (3) the propodeum of *flavoguttata* is densely clothed at the sides with conspicuous silvery hairs, whereas its sides in *conjungens* are practically naked. Chiefly on the ground of this last difference, which all authorities on the characters of *Nomada* consider to be one of high systematic importance, Schmiedeknecht decides that it is impossible to unite the two forms specifically, and on this point his opinion is emphatically endorsed by Pérez. Also it may be mentioned that the ♂ assigned by Schmiedeknecht, and also by Frey Gessner, to *conjungens* (= *dallatorreana* Schmiedk.) differs from that of *flavoguttata* in having neither the scape nor the labrum black! So that, in this sex, according to Saunders's Tables, the species would come nearer to *ruficornis*, etc., than to *flavoguttata*!

A character of less importance than those above mentioned, yet not to be ignored, is that the round, pale, lateral spots on the testaceous 2nd and 3rd dorsal segments of the abdomen in *conjungens* are larger (both actually and proportionally) and more brightly yellow than those

* Saunders's statement that the scape of *flavoguttata* is black should be taken as referring only to the ♂. In the other sex I have always found it pale, at least in front.

of the smaller species. The legs also are darker in *conjungens*, e.g., the middle femora are largely black and the hind metatarsi entirely so. This is so in all the specimens I have been able to examine, viz., a ♀ at South Kensington, received from Schmiedeknecht as "*dallatorreana*"; another which I took at Bozen in July, 1907, and identified from Schmiedeknecht's Tables as *dallatorreana*; a third given to me as "*conjungens*" (I believe by Pérez when I last visited him), dated "21.v.'02," and with certain initials indicating its precise locality which as yet, however, I have failed to interpret; and lastly my own Swanage specimen. The only ♂ I have seen is that sent by Schmiedeknecht with his ♀ to South Kensington, and placed with it as "*dallatorreana* Schmiedeknecht" in the General Collection there.

All these ♀ ♀ appear to me to belong to one species, and they all differ from *flavoguttata* in the characters mentioned above.

N. conjungens has been now found in most countries of western and central Europe, viz., France, Germany, Austria, Switzerland, Italy, and England, but is everywhere considered a great rarity. What species of *Andrena* it infests is unknown.† But, though only as a guess, I would venture to suggest that its host may be *Andrena proxima*. I caught a good many specimens of the latter, though unluckily on flowers only—some kind of umbelliférs—not at their burrows, on the same day on which I met with the *Nomada*. *A. proxima* is one of the less common species of the *minutula* group, and is also the largest of them. Now *flavoguttata* is known to infest small species of that group, and it seems to me not improbable that a similar association may exist between the larger forms *N. conjungens* and *A. proxima*. The latter, though not such a rarity as the former, cannot be called a common species. Schmiedeknecht says that though widely distributed it is "nirgends haufig"; but, as to its actual distribution in Europe, I believe that wherever *conjungens* has occurred *proxima* occurs also. I would venture to advise, then, that collectors who have the opportunity of doing so, should for the future keep an eye on the burrows of *proxima* in the early summer, and examine carefully any even common-looking red and yellow *Nomada* that may be flying near them.

Woking :

September 5th, 1916.

† Since this paper was printed I have seen it stated by Alfken (Danzig, 1912) that he has found *N. conjungens* near Bremen, at the burrows of *A. proxima*, which (and not, as he formerly said, *A. chrysoceles*) must "certainly" be its host. He records it also from Spain, and says that it sometimes occurs in numbers in certain North-west German localities. I hear also from Dr. Perkins that he has for some years known of this association, and has been looking for *conjungens* in his own neighbourhood—where, as well as at Swanage, *A. proxima* occurs—but has not yet found it.

TRIOZA PROXIMA FLOR AS A BRITISH INSECT.

BY RICHARD S. BAGNALL, F.L.S.

A generation ago, in the days of Douglas and Scott, some attention was given to the *Psyllidae*, and useful work was encouraged and achieved by those conversant with Continental literature which helpfully suggested particular search for certain species not then recorded as British. There is much room for guidance of that nature, as many insects will only be discovered by special search—in brief, though a good deal may be done by general collecting, very much more may be achieved by a knowledge of the European species, their food-plants and habits, and their distribution.

Although Psyllids as a family cannot be classed as gall-causers, many—especially of the genus *Trioza*—leave signs which, to those who can read them, indicate their presence. *Trioza proxima* Flor is a case in point, and its presence on the mouse-ear hawkweed (*Hieracium pilosella*) is advertised by deformed leaves ornamented to a greater or less degree by wart-like tubercles or “embossments” open on the one surface. This is illustrated in Houard’s *Les Zoocécidies des Plantes d’Europe*, Vol. II, p. 1054, figs. 1363–1365.

Of all species of *Hieracium*, *H. pilosella* is by far the most interesting to Cecidologists. In his “British Plant Galls” Mr. Swanton records *Macrolabis pilosellae* Binnie, *Tephritis ruralis* H. Loew, and *Tylenchus* [*hieracii* Connold] from that plant. Mr. J. W. H. Harrison and I have given some attention to the plant during the past two years, noting eleven different galls, including those caused by a Cynipid, *Aulacidea pilosellae* Kieff., and three Cecidomyiids, *Stictodiplosis pilosellae* Kieff., *Perrisia nervicola* Kieff. (= Houard No. 6205), and *Cystiphora pilosellae* Kieff., new to the British fauna.

But, though we have examined plants from so many parts of the north of England, we have not yet actually taken *Trioza proxima*. though I have succeeded in discovering its galls on two occasions, last month on Penshaw Hill, and to-day at Roker, near Sunderland, a larval form of Psyllid occurring in the first instance.

Macrolabis pilosellae, *Aulacidea pilosellae*, and *Perrisia nervicola* also occurred at Roker, on the same patch of plants.

Penshaw Lodge, Penshaw:

September 15th, 1916.

A NEW BRITISH CECIDOMYIID GALL ON MEADOW GRASS.

BY HENRY S. WALLACE, F.E.S.

Whilst hunting for galls recently with Mr. R. S. Bagnall, F.L.S., at Ryhope, Co. Durham, a new one on grass turned up. I was searching for Vertigos and Pupidae near the roots of grass. Handling a tuft of *Poa nemoralis* (wood meadow grass) I observed an abnormal feature near the bottom of the stem just above the root, which I took to be a cocoon of some sort; further examination, however, revealed a new form of root gall. It proved to be that of *Mayetiola radificica* Rüb.s., a gall-midge (Cecidomyiid). There also occurs on *Poa nemoralis* another gall, the better known *Mayetiola poae* Bosc; this is recognised by filaments, similar to rootlets, disposed regularly in a single patch on one side of the stem, and situated near a node. The new species, *M. radificica* Rüb.s., differs in the numerous filaments being disposed without regard to order, either in length or arrangement, issuing from the leaf sheaths. I have since taken the species in Northumberland at Ovingham, and at Nenthead, Cumberland. It was previously known from Austria.

Sunderland:

August 25th, 1916.

The Trimen Collection of South African Butterflies.—This historic collection has been acquired by Mr. J. J. Joicey. It formed the basis of the late Roland Trimen's classical monograph on the South African Butterflies, and is representative of the whole of the *Rhopalocera* of extra-tropical South Africa, and contains most of the types of the species described by Trimen. Lepidopterists who are desirous of seeing types or other specimens contained in the collection may have access to it upon application to the Curator.—GEORGE TALBOT, The Hill Museum, Witley, Surrey: *August 31st, 1916.*

The food plant of Ceuthorrhynchus euphorbiae Bris.—On July 14th last I found several specimens of this species beneath some isolated plants of *Echium vulgare*, on some waste ground near the reservoir on Woodbury Common, above Budleigh Salterton. *C. asperifoliarum* Gyll. occurred in plenty with them. It is therefore almost certain that both insects attack *Boraginaceae*, the records of *C. euphorbiae* on *Euphorbia*, *Teucrium* (*Labiatae*), and *Veronica* (*Scrophulariaceae*) all being rather doubtful. Commander Walker, however, states (*Ent. Mo. Mag.*, 1910, p. 32) that he has frequently swept it off *Nepeta glechoma*, another Labiate. None of these plants were to be seen near the *Echium*

examined in the restricted Devonshire locality, though *Teucrium* and *Nepeta* grew in the vicinity. De la Garde has already recorded the species from Dawlish and Braunton, in the same county.—G. C. CHAMPION, Horsell: *August 26th*, 1916.

Trichopteryx fratercula Matth., in Yorkshire.—In January of this year, my good friend Dr. W. J. Fordham, of Bubwith, very kindly sent me, as he has done for several years, a large quantity of flood refuse from the Yorkshire Derwent. This proved to be pretty rich in beetles, among which I paid special attention to the smaller forms. The *Trichopterygidae* were submitted to Mr. H. Britten, of Oxford, who very generously worked through them. He has returned four specimens as *Trichopteryx fratercula* Matth., this being a new county record. The species is marked as a doubtful one for Britain in the Exchange List of Messrs. Newbery and W. E. Sharp, 1915, although Mr. Britten tells me that he has seen several specimens previously.—GEO. B. WALSH, 166, Bede Burn Road, Jarrow-on-Tyne: *September 12th*, 1916.

Vanessa urticae and other butterflies in Co. Monaghan.—With reference to Dr. Chapman's notes (pp. 186 and 207), it may be of interest to mention that *Vanessa urticae* was noticed near Emyvale, Co. Monaghan, in fine condition between August 4th and 11th. In the beautiful weather, when windows and doors outside and inside were wide open, these butterflies sometimes wandered through the house in which we were staying. No doubt some of them would later take up a position in the hollows of the cornices, and remain there for hibernation as they did last year. Other butterflies seen during the same period were *Pieris napi*, very common, flying especially over the bogs and meadows in great numbers; *Epinephele jurtina*, *Aphantopus hyperanthus*, and *Pararge egeria*, common and almost universally distributed, but nearly all much worn excepting some of the first-named on the higher ground, where one *Coenonympha pamphilus* was seen; *Dryas paphia* not uncommon, and apparently just coming out during the earlier days of the month; and *Polyommatus icarus*, nearly all much worn. *P. egeria* shows no sign of decadence in the district; wherever there is a scrap of woodland it is the butterfly most in evidence, and it is to be seen along the roads and in lanes when these are sheltered by overgrown hedges of privet, sloe, hawthorn, and bramble. My son, who remained in Ireland for some time after I left, reported *Vanessa io* and a fresh brood of *P. egeria* on the 17th of the month.

Both in Ireland and Inverness-shire, where I spent the second half of July, also in fine weather, butterflies seemed to be quite up to the average in numbers, but some of them were certainly later than usual in appearing.—KENNETH J. MORTON, 13, Blackford Road, Edinburgh; *August 31st*, 1916.

Societies.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY :
 Thursday, July 27th, 1916.—Mr. HY. J. TURNER, F.E.S., President, in the Chair.

Mr. Frohawk exhibited a figure of the unique, absolutely white form of *Melanargia galathea*, taken near Walmer, in 1843; also a specimen of *Euchloë cardamines*, in which there was no trace of black scales on either side; and a *Colias hyale*, in which the black markings were represented by a faint dusky shade. Mr. Turner, a series of *Parnassius apollo* var. *valaisica* from Macugnaga, and contrasted its size and brilliancy with the smaller var. *montana* from St. Moritz, Engadine. Mr. Turner also showed cases of the following species of the genus *Coleophora* (*Micro-Lepidoptera*), supposed to have been in the late H. T. Stainton's collection, and referred to by him in his "Tineina of Southern Europe," 1869: *C. calycotomella* on *Calycotome spinosa*, *C. chamaedryella* on *Teucrium chamaedrys*, *C. giraudi*, *C. musculella* on *Dianthus superbus*, *C. cornuta*, *C. polonicella* on *Astragalus arenarius*, and *C. otitae* on *Silene otites*. Mr. Bowman, a specimen of *Lytta* (*Cuntharis*) *vesivatoria* from the Isle of Wight. Mr. B. S. Williams, several species of *Eupithecia*, including melanic *E. lariciata* from Leith Hill, a melanic *E. castigata* from Finchley, and a series bred from larvae taken at Oxshott last Autumn. Mr. Sperring, dwarf examples of *Polyommatus icarus*, ♂, 22 mm., ♂, 24 mm., and ♀, 22 mm. respectively, with very light ♂s, and very blue ♀s from Portsmouth; a barred aberration of *Eupithecia oblongata* (*centaureata*); seven examples of *Epinephele tithonus*, with extra eye-spots, from Sidmouth; and a yellow *Pieris napi* spring brood. Attention was called to the destruction caused by the larvae of *Lucanus cervus* in fencing around London.

Thursday, August 10th, 1916.—The President in the Chair.

Mr. H. M. Stewart, M.A., M.D., of Dulwich, was elected a Member.

Mr. Leeds exhibited a series of *Hibernia leucophaearia*, from Herts, with aberrations including ab. *marmorinaria* and ab. *merularia*, together with a female of *Polyommatus icarus* with paler to whitish areas. Dr. Chapman, a series of *Vespa norvegica* which has this year occurred in some numbers near Reigate; and also bred living specimens of *Selenia bilunaria*, showing both spring and summer forms in the same brood. Mr. Main, the pupa of the tiger-beetle, *Cicindela campestris*, produced in one of his small observation cages. Mr. Turner, the life-history of *Coleophora nigricella* on hawthorn; the larval "winter cots" of a species of *Limenitis* from N. America; cocoons of *Nepticula euphorbiella* from mined leaves of *Euphorbia dendroides*; leaves of the cork tree *Quercus suber*, with mines of the larva of *Nepticula suberis*; cocoons of *Nepticula catharticella* from mined leaves of *Rhamnus alaternus*; leaves of *Quercus suber* with mines and cocoons of *Nepticula subcivora*; and cocoons and webs of the larvae of *Zelleria phillyrella* among twigs of *Phillyrea angustifoliella*. These *Micro-Lepidoptera* are some of the actual specimens referred to and described in Stainton's "Tineina of Southern Europe," pp. 224-229.

ENTOMOLOGICAL SOCIETY OF LONDON : Wednesday, June 7th, 1916.—
 The Hon. N. C. ROTHSCHILD, M.A., F.L.S., F.Z.S., President, in the Chair.

Miss Alice Balfour of Whittinghame, Prestonkirk, Scotland, and 4, Carlton Gardens, S.W., was elected a Fellow of the Society.

The death of Mr. F. Enock was announced.

The President read a letter from Mr. H. Rowland-Brown, inviting a continuance of subscriptions to the upkeep of Wicken Fen.

Dr. F. A. Dixey exhibited specimens of insects collected by him during the visit of the British-Association to Australia in 1914. He stated that the exhibit might be considered to have some interest from the extent of the ground covered, but was not otherwise specially remarkable. The localities collected in included Gibraltar, the Gulf of Aden, Colombo, Townsville, Magnetic Island, Kuranda, Thursday Island, Java, Singapore, Penang, Kandy and Port Said. Scents more or less pronounced had been determined in several of the species of butterflies met with during the trip. Mr. G. Talbot, on behalf of Mr. J. J. Joicey :—(1) A family of *Papilio dardanus* Brown; this series was bred in 1914 by Mr. G. F. Leigh of Durban, Natal, from the ova laid by a single ♀ of the *hippocoon* form. (2) Rare butterflies from French Guiana. (3) Mud wasps from a nest made in an insect box. Prof. Poulton read a letter written by the late Colonel N. Manders, on the discussion following his paper on March 3rd, 1915, just before he started for the Dardanelles, where he gave his life for his country. The Rev. F. D. Morise exhibited a worker of the social wasp *Polistes gallicus* L., taken by Mr. J. W. H. Harrison on the day after August Bank Holiday, 1915, at Wolsingham, "in the hilly west of Co. Durham, at about 1200 ft., far away from the sea or even houses." Dr. Chapman showed some dried leaves of birch and hawthorn, with the egg-pockets of *Cimbex sylvarum* and *Trichiosoma tibiale* respectively, from which the larvae had hatched, showing the different relation of the pockets to the margin of the leaf in the two species. Mr. Donisthorpe announced that on some of our battleships the men were much interested in observation nests of ants; and it was found that the ants were entirely unaffected by the firing of the great guns.

The following papers were read :—“On new and little-known *Lagriidae* and *Pedilidae*,” by G. C. Champion, F.Z.S. “On certain forms of the genus *Acraea*. A reply to M. Ch. Oberthür,” by H. Eltringham, D.Sc., M.A., F.Z.S.—
GEO. WHEELER, *Hon. Secretary*.

ON NEW EXOTIC SCRAPTIINA.

BY G. C. CHAMPION, F.Z.S.

This paper contains descriptions of new species of Scraptiina belonging to the British Museum, some of which have remained unnamed in their collection for upwards of 50 years, supplemented by others kindly supplied by Mr. H. E. Andrewes, Mr. G. E. Bryant, and Mr. E. W. Ferguson. Like the Xylophilidae, they are of world-wide distribution, but the species are not nearly so numerous.

Nor are they favourites with collectors, owing to their fragility and to their general uniformity in colour, but few of them having the upper surface maculate. In Britain they are extremely rare insects, but on the continent *S. dubia* Oliv. can sometimes be beaten in abundance from evergreen oaks in dry places. The largest known forms inhabit South or East Africa (*Biophida* Pasc.) and the Straits of

Magellan (*Tolmetes* Champ. = *Tolmerus* Fairm., *nom. praeocc.*). One or two of those from East Africa, described by Pic under *Scraptia*, will have to be transferred to *Biophida*, of which a remarkable new form has been taken by Mr. Neave in the same region.

Forty-three species of Scruptiina are dealt with in this article, and all but four of them are described as new. Thirty-seven are referred to *Scraptia*, this bringing the total number for that genus to 100 (Pic in his Catalogue, 1911, gives 63). The latter now requires revision, but the material before me is insufficient in many cases for the proper study of such fragile insects, and often one sex only is represented. A form closely related to the Central American *S. (Canifa) speciosa* Champ., with a cleft fifth ventral segment, &c., in ♂, occurs in China, showing the wide distribution of at least one of the sections of the genus. The mandibles are very deeply cleft in several of the Tropical American species (*S. triangularis*, etc.), simply bifid at the tip in *S. cribriceps* (China), and entire in *S. setipes* (Ceylon), intermediate forms occurring. The lobing of the penultimate tarsal joint, too, varies in development according to the species. The antennae, again, usually differ in the relative lengths of the joints 2 and 3 in the two sexes, the males of many of the forms having a very small third joint, and the eyes may be much larger in this sex than in the female. It is therefore preferable to leave these insects at present under the one genus *Scraptia*, simply excluding those with toothed or appendiculate tarsal claws (*Biophida*), or with a less dilated apical joint to the labial palpi (*Biophidina*), these two genera belonging to the African fauna. Three minute forms from Tasmania were described by myself in 1895, and a much larger, maculate insect allied to *S. lunulata* Blackb., is now added from the Australian mainland. In the Museum there are also numerous small unnamed Scruptiids from New Zealand, but these have not been dealt with in the present paper. All are wood-feeders in their earlier stages, several of the Palaearctic species living in oak.

The following key will help in the determination of the new species described under the genus *Scraptia*, but where only one sex (♀) is known, the position assigned may prove to be inaccurate when the male is found:—

- 1 (24) Body winged.
- 2 (11) Antennal joints 2 and 3 short and sub-equal in ♂, 3 much shorter than 4 in ♀.
- 3 (10) Head not, or moderately, dilated behind the eyes.

- 4 (7) Head less convex above; eyes well separated in the two sexes.
- 5 (6) Prothorax moderately transverse; antennae at most in part infuscate or black. [Eastern or African forms].....Species 1-8.
- 6 (5) Prothorax about twice as broad as long; antennae black. [Brazil]...
Species 9.
- 7 (4) Head more convex above; eyes more approximate in ♂ (except in the African *S. neavei*).
- 8 (9) Elytra maculate (obsoletely so in *S. fusconotata* from Brazil)...
Species 10-12.
- 9 (8) Elytra immaculate (ventral segment 5 cleft down the middle in ♂ in some of the American and Eastern forms)...Species 13-24.
- 10 (3) Head triangular, more dilated at the base; prothorax very broad: species small. [Brazil].....Species 25.
- 11 (2) Antennal joints 2 and 3 unequal in length, 3 longer than 2 in ♂, in some of the species as long as or longer than 4 in ♀.
- 12 (21) Mandibles (in the species in which they have been examined) not deeply cleft.
- 13 (20) Head not or moderately dilated behind the eyes.
- 14 (15) Elytra maculate. [Eastern forms]Species 26, 27.
- 15 (14) Elytra immaculate.
- 16 (19) Tibiae not setulose externally.
- 17 (18) Prothorax narrow, sub-campanulate. [Ceylon]Species 28.
- 18 (17) Prothorax broader: species large. [Ceylon, Borneo, or Nyasaland]
Species 29-31.
- 19 (16) Tibiae setulose externally; mandibles entire: species robust. [Ceylon]Species 32.
- 20 (13) Head triangular, more dilated at the base; prothorax twice as broad as long: species large. [Natal].....Species 33.
- 21 (12) Mandibles very deeply cleft; head well-developed behind the eyes: species large. [Brazil].
- 22 (23) Elytra maculateSpecies 34, 35.
- 23 (22) Elytra immaculateSpecies 36.
- 24 (1) Body apterous: species small, with triangular head and small eyes. [S. Africa]Species 37.

SCRAPTIA Latr.

Pseudoscraptia Woll.; *Canifa* and *Allopora* Lec.

1.—*Scraptia cingalensis*, n. sp.

Elongate, robust, shining, closely pubescent; the head and prothorax piceous or nigro-piceous, the head in front and the elytra fusco-testaceous or brown, the latter sometimes infuscate towards the sides and apex, the under-

surface infusate, the abdomen often more or less ferruginous; the legs and joints 1-3 of the antennae testaceous, the rest of the latter piceous or black; densely, finely, the elytra more coarsely, punctate. Head broad, transverse, well-developed behind the eyes, the latter coarsely faceted, large, and separated by much less than their own width as seen from above, the frontal suture deep; antennae long, very slender, filiform, joints 2 and 3 short and sub-equal in ♂, 3 considerably longer than 2 in ♀, 4-11 elongate, relatively shorter in ♀; apical joint of maxillary palpi moderately stout, securiform. Prothorax transverse, much wider than the head, the sides parallel behind and arcuately converging anteriorly, the hind-angles sharp, the base sinuate, the two foveae transverse and connected by the marginal groove. Elytra long, much wider than the prothorax, sub-parallel in their basal half, depressed on the disc below the base. Tibiae with a few minute setae mixed with the hairs along their outer edge. Basal joint of posterior tarsi nearly twice as long as the others united. Length $4\frac{1}{2}$ - $5\frac{1}{2}$, breadth $1\frac{1}{3}$ - $1\frac{2}{3}$ mm. (♂ ♀.)

Hab.: CEYLON, Bogawantalawa and Dikoya, alt. 3800-5200 ft. (*G. Lewis*: xii.'81-iii.'82).

Eleven specimens, the two with a short third antennal joint assumed to be males. Narrower and less robust than *S. setipes* (infra), the elytra fusco-testaceous or brown, the prothorax not so roughly punctate, the basal joints of the maxillary palpi not so stout, the antennae more slender, the tibiae indistinctly setulose. More elongate than *S. dubia* Oliv., the eyes very much larger, the antennae more slender, the prothorax relatively narrower, the penultimate tarsal joint small. Larger and more elongate than *S. malabarica*, the head broader, the eyes much larger and more coarsely faceted, the legs longer and not so slender.

2.—*Scraptia forticornis*, n. sp.

♂. Elongate, narrow, sub-parallel, shining, thickly pubescent; testaceous, the head and antennae (joints 1-3 excepted) piceous; the entire surface densely, minutely punctate. Head transverse, convex, the eyes very large, nearly reaching the base, and well separated above, the frontal suture indistinct; apical joint of maxillary palpi stout, securiform; antennae long, stout, joints 2 and 3 very short, 3 smaller than 2, 4-11 elongate, sub-cylindrical. Prothorax strongly transverse, almost as wide as the elytra, the sides rounded anteriorly and sub-parallel behind, the hind-angles rectangular, the two basal foveae large, shallow, and extending forwards, the disc also obsoletely foveate in the middle at the base. Elytra sub-parallel in their basal half, rounded at the tip. Legs long, slender; penultimate joint of front and middle tarsi small, feebly lobed, the basal joint of posterior pair elongate and distinctly curved, Length 3, breadth 1 mm.

Hab.: JAPAN, Junsai Lake (*G. Lewis*).

One specimen, assumed to be a male, on account of the long, stout antennae, with very small third joint. More robust than *S. fuscula* Müll., ♂, with stouter antennae, larger eyes, and the basal joint of the posterior tarsi curved. *S. livens* Mars., the only species of the genus recorded from Japan, is a larger and much more elongate insect,* with the antennae more slender.

3.—*Scryptia malabarica*, n. sp.

Elongate, rather broad, robust, flattened above, shining, thickly pubescent; obscure ferruginous, the elytra testaceous on the disc and infusate at the sides, the mouth-parts, palpi, joints 1-3 of the antennae, and the legs also, testaceous, the rest of the antennae more or less infusate; densely, finely, the elytra a little more coarsely, punctate. Head transverse, well developed behind the eyes, the latter moderately large, distant, the frontal suture distinct; apical joint of maxillary palpi rather large, securiform, that of the labial pair very broad; antennae long, slender, sub-filiform, joints 2 and 3 short, sub-equal in length, 4-11 elongate. Prothorax convex, strongly transverse, much wider than the head; the sides parallel at the base, rounded and converging anteriorly, the two basal foveae small and placed near the rectangular hind-angles, the space between them conspicuously margined. Elytra long, sub-parallel, much wider than the prothorax. Legs slender, moderately long [posterior pair wanting]. Length 4, breadth $1\frac{1}{2}$ mm. (♂ ♀?)

Hab.: S. INDIA (*Mus. Brit.*: type), Malabar (*ex coll. Fry*).

Two specimens, one injured by pinning, the other also imperfect, possibly sexes, the S. India example having a broader head than the other. Narrower than *S. dubia* Oliv. (*fusca* Latr.), the head and prothorax obscure ferruginous and relatively narrower, the base of the latter margined between the two small distant foveae, the antennae slender, the eyes larger, the puncturing of the upper surface coarser.

4.—*Scryptia xylophiloides*, n. sp.

Oblong, somewhat convex, shining, finely pubescent; reddish-brown, the eyes black, the legs and joints 1 and 2 of the antennae testaceous; densely, finely, asperato-punctate. Head strongly transverse, narrowly extended on each side behind the eyes, the latter large, well separated, the frontal suture distinct; antennae long, moderately slender, joints 2 and 3 short, sub-equal in length, the others elongate, filiform. Prothorax much wider than the head, twice as broad as long, rounded at the sides, narrowed in front, the hind angles obtuse, bifoveate at the base, the median fovea large, transverse, deep. Elytra oblong, much wider than the prothorax, somewhat convex, flattened on the

* *S. brunnea* and *dimidiata* Mars. belong elsewhere, cf. *Ann. Soc. Ent. Belg.* XLII. p. 81 (1898).

disc below the base. Legs long, the femora stout; penultimate tarsal joint small, feebly lobed, the basal joint of the posterior pair curved, twice as long as the others united. Length $2\frac{2}{3}$, breadth $1\frac{1}{10}$ mm. (♀?)

Hab.: CEYLON (*Thwaites*, in *Mus. Brit.*).

One specimen, imperfect, acquired in 1867. An oblong, rather convex, reddish-brown insect, with a very short, trifoveate prothorax, the sides of which are rounded to the base. It is very different from the other species here enumerated, and might be mistaken for a *Xylophilus*.

5.—*Scraptia cuneata*, n. sp.

♂. Elongate, very narrow, somewhat cuneiform, shining, finely pubescent; testaceous or obscure testaceous, the head and antennae a little darker than the rest of the surface, the eyes black; densely, very finely, the elytra more coarsely, punctate. Head transverse, convex, extended on each side behind the eyes, the latter large and somewhat narrowly separated, the frontal suture traceable; antennae stout, filiform, as long as the body, joints 2 and 3 very short, 3 shorter and narrower than 2, 4–11 elongate, cylindrical; apical joint of maxillary palpi moderately stout, sub-securiform. Prothorax short, transverse, convex, rounded at the sides anteriorly, the two basal foveae deep, and with a faint longitudinal channel between them. Elytra long, depressed, slightly wider than the prothorax, narrowing from the base. Legs long, slender, penultimate joint of each tarsus feebly lobed, the basal joint of the posterior pair about twice as long as 2 and 3 united. Length $2\frac{2}{3}$ – $2\frac{1}{2}$, breadth about $\frac{7}{8}$ mm.

Hab.: NATAL, Frere (*G. A. K. Marshall*).

Two males. An elongate, small, narrow, sub-cuneiform insect, with very long, comparatively stout, antennae, the third joint of which is smaller than the second, the latter itself being very short. The female doubtless has shorter antennae. An isolated form.

6.—*Scraptia natalis*, n. sp.

Moderately elongate, depressed, shining, finely pubescent; testaceous or obscure-testaceous, the head (except in front) and joints 4–11 of the antennae slightly infusate, the eyes black; densely, minutely punctate, the prothorax and elytra transversely strigose. Head comparatively small, transverse, somewhat depressed between the eyes, the latter moderately large, distant, not reaching the base, the frontal suture traceable; joint 4 of the maxillary palpi sub-securiform; antennae (♂) long, filiform, slender, joints 2 and 3 very short, 3 a little smaller than 2, 4–11 elongate, equal, (♀) shorter and with joints 2 and 3 equal. Prothorax transverse, semi-circular, the sides sub-parallel at the base, the two basal foveae shallow, the disc with a faint depression between them. Elytra moderately long, wider than the prothorax, sub-parallel in their

basal half, separately rounded at the apex. Legs very slender, the penultimate joint of each tarsus scarcely widened, the claw-joint extremely slender. Length $2\frac{1}{2}$ -3, breadth $1-1\frac{1}{8}$ mm. (σ φ .)

Hab.: NATAL, Malvern [σ], Frere [φ] (*G. A. K. Marshall*).

Described from one male and two females. Various other immature φ examples from Salisbury and Frere apparently belong to the same species. Very near *S. fuscula* Müll. (*minuta* Muls.), only differing from it in having the antennae more slender in both sexes, and not so long in σ . The very fine, transversely reticulate elytral sculpture is suggestive of that of the genus *Anaspis*.

7.—*Scraptia indica*.

? *Scraptia indica* Motsch., Bull. Mosc., 1863, 1, p. 482.

Moderately elongate, depressed, finely pubescent, shining; obscure-testaceous, the head reddish, the antennae (joints 1 and 2 excepted) fuscous, the eyes black; densely, very finely, the head a little more sparsely, punctate. Head transverse, the eyes moderately large, distant; antennae (σ) long, rather slender, joint 2 short, 3 minute, smaller than 2, 4-10 obconic, equal in length, (φ) stouter and a little shorter. Prothorax transverse, much wider than the head, rapidly, arcuately narrowed from near the base, the latter sinuate, the basal foveae small, the disc depressed in the middle between them. Elytra broader than the prothorax, flattened, sub-parallel in their basal half. Legs slender; penultimate tarsal joint small, lobed. Length (with head extended) 2, breadth $\frac{2}{3}$ - $\frac{3}{4}$ mm. (σ φ .)

Hab.: CEYLON, Dikoya, alt. 3800-4200 ft. (*G. Lewis*: 21.i.'81-7.ii.'82).

One male and two females. A minute, flattened form, possibly referable to *S. indica* Motschulsky, the type of which was from Nuwara Elia (Nura Ellia), an insect said to be very nearly related to *S. fuscula*, and to differ from it in having the head and prothorax narrower. The Dikoya specimens, however, are much smaller than *S. fuscula*, and the identification must remain doubtful. *S. flavidula* Motsch., from the same locality, is said to have the sides of the elytra infuscate; *S. pulicaria* Fairm.,* from Belgaum, is also very similar, but it apparently has more finely punctate elytra.

8.—*Scraptia punctipennis*, n. sp.

Moderately elongate, shining, flavo-pubescent, pale testaceous, the eyes black; the head and prothorax densely, minutely, the elytra much more coarsely punctate. Head broad, the eyes moderately large, distant; apical joint of the maxillary

* Two immature examples from the Nilgiri Hills, in Mr. Andrewes' collection, probably belong to this species.

palpi large, sub-cultriform; antennae rather slender, about half the length of the body, joints 2 and 3 short, sub-equal, together longer than 4, 4-10 sub-filiform. Prothorax strongly transverse, as wide as the elytra at the base, arcuately narrowing from near the rectangular hind angles, the basal foveae shallow, the disc strongly sulcate down the middle posteriorly. Elytra moderately long, parallel at the base, slightly widened below this, and arcuately narrowed posteriorly. Legs slender; penultimate tarsal joint small, the basal joint of the posterior pair longer than the others united. Length $2\frac{1}{10}$, breadth 1 mm. (♀)

Hab.: W. AFRICA, Ashantee (*ex coll. Sharp*: type), Sierra Leone (*ex coll. Bowering*).

Described from a perfect specimen from Ashantee, another (♀), from Sierra Leone, with the head somewhat injured, doubtless belongs to the same species. Nearly related to *S. fuscula* Müll., but wholly testaceous, and with the elytra relatively shorter and much more coarsely punctured, the last mentioned characters also separating the present insect from the S. African *S. natalis*. The difference in the puncturing of the prothorax compared with that of the elytra is usually well marked.

9.—*Scraptia nigricornis*, n. sp.

Moderately elongate, rather broad, shining, somewhat thickly pubescent; black or piceous, the margins of the prothorax, and the elytra, femora, and tibiae, brown or reddish-brown; densely, finely, the elytra more coarsely, punctate. Head rather small, transverse, sub-triangular, well developed behind the eyes, the latter separated by more than their own width as seen from above; terminal joint of maxillary palpi stout, securiform; antennae rather short and stout, joints 2 and 3 short, sub-equal, 4-11 moderately long. Prothorax very short, about twice as broad as long, rounded at the sides, narrowed anteriorly, somewhat rounded and feebly sinuate at the base, the two basal foveae only just traceable and connected by the fine marginal groove, the disc eanaliculate down the middle. Elytra broad, rather convex, moderately elongate, gradually widened in their basal half, and narrowed thence to the apex, the transverse depression below the base deep (the apical portion thus appearing convex). Legs slender, the femora moderately thickened; penultimate tarsal joint lobed, the basal joint of the posterior pair not half the length of the tibiae. Length $4\frac{1}{2}$, breadth 2 mm. (♀.)

Hab.: BRAZIL, Sao Paulo (*Fry*).

Described from a single, fairly perfect, example, assumed to be a ♀. Another specimen, from Rio de Janeiro, with the antennal joints from the fourth onwards much longer, and the third smaller than the second, and the elytra more coarsely punctate, and with a faint aeneous lustre, is apparently a male of the same species; a third,

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THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 8 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

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THE LONDON NATURAL HISTORY SOCIETY which meets at 7 p.m. on the 1st and 3rd Tuesdays in each month, at Room 20, Salisbury House, Finsbury Circus, E.C., will be glad to welcome at its Meetings any French or Belgian entomologists now staying in this country, and to give them the benefit of its library and collections. Communications should be addressed to the Secretary, Salisbury House, E.C.

November 7th.—Exhibition of "The Larger Bombyces," arranged by the Lepidoptera Committee. November 21st.—"Aspects of Bird Life in Europe," J. A. SIMES. December 5th.—Annual General Meeting.

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from Bahia, now wants the head and prothorax. This insect has the aspect of a Cistelid, but it certainly belongs to the Scraptiina.

Compared with *S. inornata* and the allied Brazilian forms, the present species is much smaller, and has a still shorter prothorax, with the base more rounded and the hind-angles obtuse, the mandibles less deeply cleft, the third antennal joint smaller, and the basal joint of the posterior tarsi much shorter. The antennae and palpi, and the tarsi in part, are black.

10.—*Scraptia sagittifera*, n. sp.

(PLATE VII, fig. 1.)

Elongate, somewhat fusiform, depressed, shining, finely pubescent; pale testaceous, the eyes black, the prothorax with two narrow, widely separated vittae on the disc, and the elytra with a common, sharply defined, sub-apical, sagittiform mark extending forward along the suture to the base, piceous or nigro-piceous, the elytra also with a large, triangular, slightly infuscate scutellar patch; closely, finely, the elytra a little more coarsely and sparsely, punctate. Head transverse, convex, narrowly extended on each side behind the eyes, the latter large, narrowly separated, and very deeply and broadly emarginate, the frontal suture well defined; joint 4 of maxillary palpi moderately stout, securiform; antennae rather stout, filiform, joints 2 and 3 very short, equal, together not longer than 4, the others moderately elongate. Prothorax transverse, semi-circular (as seen from above), sinuate at the base, the hind-angles sharp; with two small deep basal foveae, and a shallow transverse depression between them. Elytra long, slightly wider than the prothorax, rapidly narrowed from about the middle, rounded at the apex. Legs long, slender; penultimate joint of front and middle tarsi feebly lobed. Length $3\frac{1}{2}$, breadth $1\frac{1}{10}$ mm. (δ ?)

Hab.: TENASSERIM, Mergui (*Doherty*).

One specimen, in fairly good condition, evidently a male. Less elongate and more slender than *S. quadrisignata* (*infra*), the puncturing finer, the antennae stouter, not so long, and with a shorter third joint, the apical joint of the maxillary palpi much smaller, the legs slender, the markings very different. The eyes are almost divided into two by the broad ocular canthus. The scutellar patch is perhaps due to discoloration.

11.—*Scraptia picturata*, n. sp.

(PLATE VII, fig. 2.)

Elongate, fusiform, depressed, shining, thickly clothed with rather coarse pallid hairs; testaceous, the eyes black, the prothorax suffused with fuscous,

except down the middle and along the basal margin; the elytra with a large, common, posteriorly narrowed space on the disc extending from the base to beyond the middle (not reaching the humeri and outer margin, and enclosing a dark streak), an oblique mark on the inner part of the disc before the apex, and the outer margin in part, testaceous, for the rest fuscous; the head and prothorax densely, finely, the elytra more coarsely and irregularly, punctate, the punctures on the latter unequal in size. Head transverse, convex, the eyes very large and narrowly separated; antennae long, filiform, not very slender, joints 2 and 3 short, sub-equal, 4-11 elongate. Prothorax broad, strongly transverse, semi-circular, sinuate and margined at the base, the disc longitudinally depressed in the middle behind, and broadly, transversely depressed in front of each of the almost obsolete basal foveae. Elytra long, wider than the prothorax, rapidly narrowed from about the middle, narrow and rounded at the apex, broadly depressed below the base. Legs long, rather stout; penultimate tarsal joint lobed. Length $4\frac{1}{4}$, breadth $1\frac{1}{2}$ mm. (δ ?)

Hab.: QUEENSLAND, Cairns (*E. W. Ferguson*).

One specimen. March larger and more elongate than *S. lunulata* Blackb., the pallid anterior mark on each elytron united into a large common patch which extends forwards to the base, the sculpture not so coarse, the elytra rapidly narrowed posteriorly, the legs and antennae much longer. The fifth ventral segment is entire. *S. pallidonotata* Pic, from Darjeeling, seems to have very similarly maculate elytra.

12.—*Scryptia fusconotata*, n. sp.

(PLATE VII, fig. 3, δ .)

Elongate, narrow, fusiform, shining, flavo-pubescent; testaceous, the eyes black, the elytra sometimes with the suture at the base, an oblong patch at the sides, and a spot on the disc before the apex, more or less infuscate; closely, rather coarsely, punctate. Head transverse, broad, convex, narrowly extended on each side behind the eyes, the latter large, narrowly separated in δ , more distant in φ , the frontal suture distinct; apical joint of maxillary palpi sub-cultriform; antennae very long in δ , a little shorter in φ , rather slender, filiform, joints 2 and 3 in both sexes short, sub-equal, together not so long as 4, 4-11 elongate, 11 shorter than 10. Prothorax transverse, gradually, arcuately narrowing from the sharp hind-angles, the base sinuate, the two foveae shallow, the disc more or less hollowed down the middle posteriorly. Elytra long, scarcely wider than the prothorax, narrowing from a little below the base, somewhat acuminate in δ , the apices more rounded in φ , the disc obliquely depressed anteriorly. Ventral segment 5 arcuate-emarginate at the apex, 6 divided into two rather broad, straight lobes, and the aedeagus slender, in δ . Legs very long; penultimate tarsal joint small, feebly lobed. Length $3\frac{1}{4}$ -4, breadth $1\frac{1}{3}$ - $1\frac{1}{4}$ mm. (δ φ .)

Hab.: BRAZIL, Rio de Janeiro (*Fry*: type); TRINIDAD (*G. E. Bryant*: 1903).

Five males and eight females. A close ally of the Central American *S. (Canifa) oculata* Champ., differing from that species in its less elongate shape, the faintly fusco-maculate elytra, the less roughly sculptured prothorax, the more slender antennae, and the simple fifth ventral segment of the male. The elytral markings are sometimes reduced to the lateral streak, as in the ♂ figured, or altogether wanting. *S. cribriceps*, from Hong Kong, is another allied form.

13.—*Scraptia cribriceps*, n. sp.

Elongate, sub-fusiform, shining, clothed with long, pallid, decumbent pubescence; testaceous, the eyes black; the head coarsely, closely, the prothorax and elytra a little more finely, punctate. Head transverse, convex, unimpressed, the frontal suture distinct; eyes large, narrowly separated in ♂, more distant in ♀; mandibles feebly cleft at the tip; antennae long, filiform, rather stout, joints 2 and 3 short and sub-equal in ♂, 3 considerably longer in ♀, 4-11 elongate and about equal in length; apical joint of maxillary palpi sub-cultriform. Prothorax transverse, much wider than the head, semi-circular as seen from above, with two deep basal foveae and another depression opposite the scutellum. Elytra long, rapidly narrowed from about the middle, narrow at the apex, flattened on the disc below the base. Ventral segment 5 divided into two concave, apically convergent lobes in ♂. Legs long and slender; penultimate joint of each tarsus lobed, the basal joint of the posterior pair very elongate; tibial spurs long. Length 4-5 $\frac{3}{4}$, breadth 1 $\frac{1}{3}$ -2 mm. (♂ ♀.)

Hab.: CHINA (*Bowring*), Hong Kong (*ex colls. Pascoe and F. Bates*).

Ten specimens, some of them labelled as having been captured in 1851 or 1853. Near *S. (Canifa) oculata* Champ. from Central America, but with a broader, semi-circular, less densely punctate, basally trifoveate prothorax, relatively wider elytra, etc. The head is very coarsely punctate, and the fifth ventral segment divided into two lobes in male, in both species. The single recorded *Scraptia* from China, *S. chinensis* Pic, from Tientsin, must be a much smaller insect. It is described thus:—"Sat elongatus, sub-parallelus, nitidus, fulvo-pilosus, rufo-testaceus, capite brunnescente, oculis griseis, antennis sat elongatis, testaceis, vertice sub-sulcato, sat sparse punctato, thorace breve, fortiter sat dense punctato, ad basin et lateraliter fossulato, elytris sub-depressis, fortiter sat dense punctatis. Long. 3 mm."

14.—*Scraptia borneensis*, n. sp.

♂. Elongate, narrow, fusiform, depressed, shining, thickly clothed with pallid pubescence; testaceous, the eyes black; densely, the elytra a little more

sparingly, punctate. Head strongly transverse, convex, the frontal suture obliterated; eyes very large; narrowly separated, nearly reaching the base of the head; apical joint of maxillary palpi broadly securiform; antennae long, slender, filiform, joints 2 and 3 very short, equal, 4-11 elongate. Prothorax transverse, semicircular (as seen from above), the base sinuate, the hind-angles sharp; the disc feebly canaliculate, the two basal foveae deep and extending forward. Elytra long, about as wide as the prothorax, gradually narrowing from the base. Legs long, rather stout; penultimate joint of front and middle tarsi rather broadly lobed, that of the posterior pair small and narrow, the basal joint of the latter twice the length of the others united and almost straight. Length 3, breadth 1 mm.

Hab.: BORNEO, Matang (*G. E. Bryant*: l.xi.1914).

One male, in very good condition. Smaller and narrower than *S. quadrisignata* (infra); the elytra immaculate, more finely punctate, narrowing from the base; the basal joint of the posterior tarsi less elongate and more slender; the antennae perceptibly stouter. Less elongate, and with shorter and more attenuate elytra, than the same sex of *S. livens* Mars., from Japan, the eyes larger and more contiguous, the basal joint of the posterior tarsi scarcely curved. Ventral surface not examined.

15.—*Scraptia melina*, n. sp.

Elongate, narrowed posteriorly, flattened above, shining, flavo-pubescent, testaceous, the eyes black; head closely and moderately coarsely, the prothorax and elytra a little more finely, punctate. Head transverse, convex, somewhat rounded at the base; eyes very large, narrowly separated in ♂, slightly more distant in ♀; antennae (broken in ♂) moderately long, rather stout, joints 2 and 3 short, 3 a little longer than 2, 4-11 elongate, sub-equal, cylindrical. Prothorax transverse, semicircular as seen from above, the hind-angles sharp; sinuate and strongly trifoveate at the base. Elytra long, wider than the prothorax, areately narrowed from about the middle, the apices rounded and rather narrow. Ventral segment 5 short, cleft down the middle, the two lobes thus formed rather broad and convex, in ♂. Legs long; penultimate tarsal joint lobed, the basal joint of the posterior pair elongate and somewhat curved. Length 4-5½, breadth 1½-2 mm. (♂ ♀.)

Hab.: ASSAM, Patkai Mts. (*Doherty*).

Described from four imperfect examples, others from the same locality now wanting the head, etc. Extremely like *S. cribriceps*, from Hong Kong, but with the elytra slightly rounded at the sides and less attenuate posteriorly (the general outline of the body being less fusiform), the lobes of the fifth ventral segment of the male differently shaped. *S. aureopubens* Pic, from Darjeeling, both sexes of which are

known, appears to have the sides of the prothorax straighter; this Himalayan insect is placed by its describer near the Chilean *S. cyclops* F. and G.

16.—*Scraptia sumatrensis* n. sp.

Elongate, sub-fusiform, flattened above, shining, clothed with rather long pallid hairs, testaceous, the eyes black; closely, somewhat coarsely, punctate. Head convex, transverse, large, the frontal suture indistinct; eyes greatly developed, narrowly separated; joint 4 of maxillary palpi moderately large, securiform; antennae rather stout, long, filiform, joints 2 and 3 short, sub-equal, those from 4 onwards elongate. Prothorax transverse, sub-campanulate, with two deep basal foveae and a longitudinal impression between them. Elytra long, very little broader at the base than the prothorax, somewhat rounded at the sides, widening to the middle and narrowed thence to the rounded apex. Legs long. Length $4\frac{1}{4}$, breadth $1\frac{1}{2}$ mm. (δ ?)

Hab.: SUMATRA, Merang (*Doherty*).

One specimen. Larger than *S. sagittifera*, immaculate, the prothorax less rounded at the sides and with larger foveae, the elytra more dilated at the middle. The short third joint to the antennae is probably indicative of the male sex. The terminal joint of the maxillary palpi is less angular than in *S. quadrisignata* and other allied forms.

17.—*Scraptia pallescens*, n. sp.

δ . Elongate, narrow, depressed, shining, clothed with rather long pallid hairs, testaceous, the eyes black; somewhat coarsely, closely punctate. Head short, broad, the frontal suture obsolete; eyes extremely large, sub-contiguous; apical joint of maxillary palpi broadly securiform, that of the labial pair also very broad; antennae long, slender, filiform, joints 2 and 3 short, equal, 4-11 elongate. Prothorax transverse, semicircular (as seen from above), sinuate at the base, the hind-angles sharp; with two small basal foveae, and a transverse depression between them. Elytra long, not much wider than the prothorax, sub-parallel in their basal half, rounded at the apex. Legs long, slender; penultimate joint of front tarsi rather broadly, that of middle pair narrowly, lobed. Length 3, breadth 1 mm.

Hab.: ASSAM, Patkai Mts. (*Doherty*).

One male, in good condition. Very like *S. angulata* (infra), and with a similarly large apical joint to the maxillary palpi; but with the elytra sub-parallel in their basal half and immaculate, the head much larger and with greatly developed eyes, the third antennal joint short, the penultimate joint of the anterior tarsi rather broadly lobed.

18.—*Scryptia nilgiriana*, n. sp.

♀. Elongate, depressed, shining, rather coarsely pubescent, testaceous, the eyes black; the head coarsely, closely, the prothorax and elytra more finely, punctate. Head rather small, convex, sub-triangular, well developed behind the eyes, the latter large and separated by about their own width as seen from above; antennae moderately long, filiform, joint 3 slightly longer than 2, 4-11 elongate; apical joint of maxillary palpi large, securiform. Prothorax much wider than the head, strongly transverse, semi-circular, sinuate at the base, with two very deep basal foveae and a deep fovea in the middle between them. Elytra elongate, a little wider than the prothorax, gradually narrowed posteriorly, the apices rounded. Legs very long; penultimate joint of the anterior and intermediate tarsi rather broadly lobed. Length $4\frac{1}{2}$, breadth $1\frac{1}{2}$ mm.

Hab.: INDIA, Nilgiri Hills (*H. L. Andrewes*).

One female, in good condition. This insect agrees with the Chinese *S. eribriceps* in having a coarsely punctured head; but the head itself is smaller and sub-triangular, the eyes are more distant, and the elytra are less attenuate posteriorly. Compared with the same sex of *S. melina*, from Assam, the head is smaller and more coarsely punctate, the eyes are less approximate, and the elytra are less narrowed behind. More elongate than *S. malabarica** (*antea*, p. 237), wholly testaceous in colour (the eyes excepted), the antennae stouter, the head more convex, the prothorax larger, etc.

19.—*Scryptia amplicollis*, n. sp.

♀. Elongate, somewhat fusiform, shining, clothed with rather long, yellowish pubescence, testaceous, the eyes black; the head and prothorax densely, finely, the elytra a little more sparsely, punctate. Head transverse, convex, well developed behind the eyes, the latter large, moderately distant, and very deeply emarginate; antennae (imperfect) long, not very slender, sub-filiform, joint 3 considerably longer than 2, those from 4 onwards elongate. Prothorax ample, transverse, much wider than the head, semicircular, sinuate at the base, with two deep basal foveae and a shallow depression between them. Elytra elongate, scarcely wider than the prothorax, rapidly narrowed from about the middle, somewhat broadly rounded at the apex. Legs very long, comparatively stout; penultimate tarsal joint rather broadly lobed. Length $5\frac{1}{2}$, breadth 2 mm.

Hab.: INDIA, Nilgiri Hills (*H. L. Andrewes*).

One specimen, wanting a portion of the antennae. Larger and

* Five more specimens of this insect have just been sent me for determination by Mr. E. A. Butler. They were found by Mr. T. V. Campbell in the Nilgiri Hills, and are a little darker than the types, one of them having the suture and sides of the elytra strongly infuscate.

more robust than *S. nilgiriana* (♀), the head broader and not so coarsely punctate, the prothorax more ample and more densely punctate, the elytra more narrowed posteriorly, the legs stouter. The subtriangular head, the less approximate eyes, and the wider, densely scabroso-punctate prothorax, will serve to distinguish the present species from the same sex of *S. melina* from Assam.

20.—*Scraptia munita*, n. sp.

(PLATE VII, fig. 4, anterior leg, ♂.)

Canifa speciosa Champ., var., Biol. Centr.-Am., Coleopt. iv, 2, p. 91 (1889).

♂. Anterior tibiae strongly, triangularly dilated on its inner edge before the middle; penis sheath denticulate at the sides, the apical portion of the aedeagus triangularly dilated.

Hab.: MEXICO, Guerrero.

One male and numerous females, received from various localities in Guerrero. These specimens were described as a variety of *S. (Canifa) speciosa* in the "Biologia," but they must be separated under a distinctive name. In the Guerrero insect the eyes are less approximate in both sexes, though they are almost equally large in the two forms in the male; the male, too, has the elytra more rapidly narrowed from the base, and the anterior tibiae triangularly dilated, of which there is no trace in *S. speciosa*. The sagittiform apical portion of the aedeagus also seems to be produced into a longer point in *S. speciosa* than in *S. munita*. A long series of the former was obtained in both Guatemala and Mexico. The elytra are sometimes infusate at the sides in the two insects.

21.—*Scraptia parallela*, n. sp.

Elongate, parallel-sided, somewhat robust, flattened above, moderately shining, closely pubescent; fuscous or brown, the head, prothorax, and legs obscurely rufescent in the darker (♂) example; densely, finely punctate, the narrow interspaces on the prothorax transversely rugulose. Head transverse, rather small in ♂, the eyes large and somewhat narrowly separated in this sex, more distant and a little smaller in ♀; antennae long, comparatively stout, joints 2 and 3 extremely short in ♂, 3 longer in ♀, the following joints elongate. Prothorax broader than long, much wider than the head, the sides arcuately converging from the middle forward and parallel behind, the hind-angles subrectangular, the two basal foveae deep, the disc sulcate down the middle. Elytra wider than the prothorax, elongate, parallel to near the apex, the latter

rounded. Beneath rather sparsely punctate; ventral segment 5 divided into two lobes, which are narrowed outwards, in ♂. Legs elongate; penultimate tarsal joint rather broadly lobed; anterior tibiae thickened, slightly sinuate within. Penis-sheath gradually narrowed to the tip, very finely denticulate laterally. Length 5-5½, breadth 1½-1¾ mm. (♂ ♀.)

Hab.: MEXICO (*Truqui, ex coll. Fry*).

One pair, the precise locality not recorded. Distinguishable from *S. speciosa* and *S. munita* by the elytra being parallel-sided to near the apex in both sexes, the eyes less approximate in the male, those of the female as widely separated as in the same sex of *S. munita*. The extruding penis-sheath is very like that of these two insects, but as the aedeagus is withdrawn into the tube, no attempt has been made to examine it.

22.—*Scraptia brasiliiana*, n. sp.

Elongate, sub-fusiform, shining, flavo-pubescent, testaceous, the eyes black; closely, rather coarsely punctate. Head transverse, convex; eyes large, narrowly separated in ♂, a little more distant in ♀; antennae long, filiform, slightly shorter in ♀, joints 2 and 3 very short, equal, the others elongate. Prothorax very broad, short, arcuately narrowing from the base, the base sinuate, the two foveae shallow, the disc more or less hollowed down the middle posteriorly. Elytra moderately long, gradually narrowing from a little below the base, rounded at the apex, the disc slightly depressed anteriorly. Ventral segment 5 sub-truncate at the apex in ♂; aedeagus stouter than in *S. fusconotata*, armed on each side at the tip with a slender, curved, backwardly-directed hook. Legs very long; penultimate tarsal joint small and feebly lobed. Length 3¼-4, breadth 1½-1½ mm. (♂ ♀.)

Hab.: BRAZIL, Rio de Janeiro (*Fry*).

Eight specimens, two at least of which are males, one of them having the aedeagus extruded. Very like *S. fusconotata*, but with the prothorax broader, the elytra less acuminate in the male and wholly testaceous, the fifth ventral segment almost unemarginate in that sex. The broad, short prothorax brings *S. brasiliiana* near the Mexican *S. brevicollis* Champ., which has the sides of the elytra infusate, etc.

23.—*Scraptia breviscula*, n. sp.

Moderately elongate, somewhat fusiform, depressed, shining, flavo-pubescent, testaceous (the eyes excepted); the head and prothorax densely, roughly punctate, the punctures on the elytra coarser and less approximate, the interspaces between them transversely wrinkled. Head convex, broad; eyes extremely large, narrowly separated, occupying the whole of the sides of the head and nearly reaching its base; antennae long, filiform, joints 2 and 3

very short, equal, the others elongate and not very slender. Prothorax broad, strongly transverse, semi-circular, the base feebly sinuate, the two foveae shallow, the disc slightly depressed in the middle behind. Elytra moderately long, at the base not wider than the prothorax, rather narrow at the apex, gradually, arcuately narrowing from the middle, the disc obliquely depressed anteriorly. Legs long, the intermediate and posterior femora rather stout; penultimate tarsal joint small, the basal joint of the posterior pair less than half the length of the tibiae. Length 3, breadth 1 mm. (♂?)

Hab.: AMAZONS, between Para and Santarem (*H. H. Smith*).

One specimen, a male, to judge by the greatly developed eyes, the inter-ocular portion of the head being reduced to a rather narrow triangular space. Shorter and smaller than *S. brasiliana* (♂), the head and eyes larger, the triangular inter-ocular space not so broad, the prothorax more rounded at the sides (as seen from above), the elytra much less elongate, the basal joint of the posterior tarsi shorter.

24.—*Scraptia neavei*, n. sp.

Moderately elongate, rather broad, shining, thickly pubescent, testaceous, the eyes black, the antennae (joints 1-3 excepted) slightly infusate; the head and prothorax densely, finely, the elytra a little more coarsely, punctate. Head convex, strongly transverse, much developed and somewhat dilated behind the eyes, the latter small as seen from above, the frontal groove distinct; antennae rather short, not very slender, joints 2 and 3 equal in length, shorter and narrower than those following, 4-8 about as long as broad (9-11 missing). Prothorax transverse, semi-circular, at the base about as wide as the elytra, with two deep basal foveae, and a shallower depression between them, the base sinuate and margined between the foveae. Elytra relatively short, slightly rounded at the sides, and blunt at the tip. Legs comparatively short. Length $3\frac{1}{4}$ mm. (♀.)

Hab.: NYASALAND, Mlanje (*S. A. Neave*: xi-xii. 1912).

One specimen. A small, testaceous, thickly pubescent, rather broad form, with a very convex, transverse head, which is much developed behind the comparatively small eyes, approaching the triangular shape of that of the apterous S. African *S. cribripennis*.

25.—*Scraptia platycephala*, n. sp.

(PLATE VII, fig. 5.)

Moderately elongate, rather broad, shining, finely pubescent, testaceous (the eyes excepted); closely, finely, the elytra more coarsely, punctate. Head convex, broad, sub-triangular, truncate at the base, well developed behind the eyes and extending laterally beyond them, the latter moderately large, distant,

the frontal suture distinct; apical joint of maxillary palpi securiform; antennae slender, joints 1 and 2 thickened, 2 about as long as broad, 3 narrower and shorter, 4-9 moderately long, filiform, sub-equal (10 and 11 missing). Prothorax very short and broad, abruptly and obliquely narrowed anteriorly, the sides parallel at the base, the two basal foveae shallow. Elytra slightly wider than the prothorax, sub-parallel, moderately long, rounded at the tip. Legs short, slender; tibial spurs small; penultimate joint of the tarsi small, the basal joint of the posterior pair less than twice the length of the others united. Length $2\frac{1}{2}$, breadth 1 mm.

Hab.: BRAZIL, Rio de Janeiro (*Fry*).

One specimen, in good condition, sex not ascertained. A small, comparatively broad, pallid form, with a large, sub-triangular head, a very short, obliquely narrowed prothorax, a stout second joint to the antennae, and short legs.

26.—*Scraptia quadrisignata*, n. sp.

(PLATE VII, fig. 6.)

Elongate, narrow, sub-fusiform, flattened above, shining, clothed with pallid pubescence; testaceous, the eyes, and two spots on the disc of each elytron (one at about the middle, the other towards the apex), and the suture narrowly between them, piceous or black; the head finely, the prothorax and elytra more coarsely, punctate. Head transverse, narrowly extended on each side behind the eyes, transversely convex above the frontal suture, the epistoma somewhat depressed, the eyes very large, narrowly separated; antennae long, slender, filiform, joint 2 short, 3 considerably longer, 4-10 elongate, 11 a little shorter; eyes large, rather narrowly separated; apical joint of maxillary palpi broadly securiform, its apical and outer sides nearly twice as long as the inner side. Prothorax transverse, rapidly, arcuately narrowed from near the base, the sides becoming parallel posteriorly, the hind angles sharp, the base sinuate; the disc shallowly canaliculate, and with the two basal foveae deep and extending forward. Elytra long, gradually widening to the middle and rapidly narrowed thence to the apex, narrow at the tip. Legs long, rather stout; penultimate joint of front and middle tarsi lobed, that of the posterior pair very small, the basal joint of latter elongate, nearly three times the length of the others united. Length 4, breadth $1\frac{1}{2}$ mm. (δ ?)

Hab.: ASSAM, Sudiya (*Doherty*).

One specimen, in perfect condition. Recognizable by the elongate, sub-fusiform shape, the quadrimaculate elytra, the long, slender antennae, the finely punctate head, the trisulcate prothorax, and the very broad apical joint of the maxillary palpi. The relatively long third antennal joint is suggestive of the female sex, but the long antenna and large eyes are like those of a male.

27.—*Scraptia angulata*, n. sp.

(PLATE VII, fig. 7.)

Elongate, depressed, shining, clothed with pallid pubescence; testaceous, the eyes, a common, angulate median fascia on the elytra, a patch on the disc of the latter near the apex, and a faint oblique streak on the disc below the base, piceous or black; the head and prothorax closely, finely, the elytra more coarsely, punctate. Head small, transverse, the frontal suture scarcely traceable; eyes moderately large, separated by about their own width as seen from above; apical joint of maxillary palpi broadly securiform; antennae long, slender, filiform, joint 2 short, 3 nearly as long as 4, 4-11 moderately elongate, slightly diminishing in length outwards. Prothorax transverse, semi-circular (as seen from above), trifoveate at the base. Elytra long, gradually narrowing from about the middle, conjointly rounded at the tip. Legs long; penultimate joint of front and middle tarsi feebly lobed, that of the posterior pair very small and narrow, the basal joint of the latter about twice as long as the others united. Length $3-3\frac{1}{10}$, breadth about 1 mm.

Hab.: INDIA, Nilgiri Hills (*H. L. Andrewes*).

Two specimens, in a good state of preservation. Smaller and more slender than *S. quadrisignata*; the elytra differently marked, less rounded at the sides, and not so coarsely punctate; the legs not so stout, etc.

28.—*Scraptia compressicollis*, n. sp.

Elongate, parallel, robust, shining, thickly cinereo-pubescent; nigro-fuscous or obscure testaceous, the legs and joints 1-3 of the antennae testaceous, the under surface always more or less infuscate; densely, finely, the elytra rather coarsely, punctate. Head moderately broad, well-developed behind the eyes, the latter large and somewhat narrowly separated, the frontal suture deep; apical joint of maxillary palpi securiform, that of the labial pair very broad; antennae (σ) rather long, slender, joints 2 and 3 short, 3 a little longer than 2, 4-11 elongate, filiform, (φ) shorter, joint 3 about as long as 4, 4-11 somewhat obconic. Prothorax transverse, uneven, small, a little wider than the head, with the sides obliquely compressed, and converging from near the base (the prothorax appearing sub-campanulate as seen from above), the hind-angles sharp, the base trisinate and deeply trifoveate, the disc also canaliculate down the middle. Elytra long, much wider than the prothorax, parallel in their basal half, somewhat acuminate posteriorly, strongly depressed below the base. Under surface finely, the sides of the metasternum coarsely and closely, punctate; propleura separated from the anterior portion of the prosternum by a sharp oblique ridge. Legs long, slender; tibial spurs short; penultimate tarsal joint feebly lobed, the basal joint of the posterior pair very long, feebly curved. Length $3\frac{1}{4}-4\frac{1}{2}$, breadth $1-1\frac{1}{2}$ mm. (σ φ .)

Hab.: CEYLON, Bogawantalawa and Dikoya, alt. 3,800-5,200 ft. (*G. Lewis*: xii.'81-iii.'82).

Six specimens, varying greatly in size, apparently found with *S. cingalensis*. The pallid examples are simply immature. The head in the larger of the two males is comparatively small; the four females have shorter and less filiform antennae. The narrow, laterally compressed, sub-campanulate, uneven prothorax, and the relatively broad, parallel elytra, readily separate the present species from its allies. The mandibles are acute at the tip, but are toothed at some distance before the apex beneath.

29.—*Scraptia fuscipennis*, n. sp.

Elongate, sub-parallel, robust, flattened above, shining, closely pubescent; rufo-testaceous, darker beneath, the eyes black, the elytra piceous; closely, finely, the elytra a little more coarsely, punctate. Head transverse, rather small, the eyes very large, coarsely faceted, somewhat narrowly separated, the frontal suture sharply defined; apical joint of maxillary palpi long, sub-cultriform; antennae long, slender, filiform, joint 2 short, 3 elongate, distinctly longer than 4, 4-11 sub-equal. Prothorax strongly transverse, convex, semi-circular, the hind angles rectangular; the base bisinuate, completely margined, trifoveate, the outer foveae deep, indefinite. Elytra long, wider than the prothorax, parallel to beyond the middle, conjointly rounded at the apex. Legs long, slender; tibiae with a few minute setae mixed with the hairs along their outer edge; penultimate tarsal joint feebly lobed, the basal joint of the posterior pair very elongate. Length $5\frac{1}{2}$, breadth $1\frac{3}{4}$ mm. (σ ?)

Hab.: CEYLON, Dikoya, alt. 3,800-4,200 ft. (*G. Lewis*: xii.'81).

One specimen, in perfect condition, presumed to be a male. A large, elongate, robust form, with a comparatively small red head, large eyes, long, slender antennae, with the third joint longer than the fourth, a short, convex, rufescent, trifoveate prothorax, and long, parallel, infusate elytra.

30.—*Scraptia fulva*, n. sp.

Elongate, rather broad, robust, flattened above, shining, rufo-testaceous (the eyes excepted), thickly fulvo-pubescent; closely, rather coarsely, the elytra more sparsely, punctate. Head convex, transverse, narrowly extended on each side behind the eyes, the latter very large, somewhat narrowly separated, the frontal suture distinct; apical joint of maxillary palpi stout, securiform, that of the labial palpi broadly securiform; antennae moderately long, stout, joint 2 short, 3-11 elongate, cylindrical, equal in length. Prothorax broad, strongly transverse, semi-circular (as seen from above); the basal foveae sharply defined, deep, the disc also longitudinally depressed in the middle posteriorly, the hind-angles rectangular. Elytra long, a little wider than the prothorax, sub-parallel in their basal half, the sides rounded thence to the apex. Legs comparatively

stout; penultimate tarsal joint small, feebly lobed, the basal joint of the posterior pair much thickened, more than twice the length of the others united. Length $5\frac{1}{2}$, breadth 2 mm. (♀?)

Hab.: BORNEO, Mt. Matang in W. Sarawak (*G. E. Bryant*: xii.1913).

One specimen, in perfect condition. A robust, rather broad, rufo-testaceous, thickly fulvo-pubescent insect, with comparatively stout legs and antennae, large eyes, and a long third antennal joint. It is not very closely related to any of the other species enumerated in this paper, and might easily be mistaken for a Cistelid. *S. fulva* has somewhat the facies of the S. African *Biophidina minor* (infra), differing from it in the form of the labial palpi, etc.

(*To be continued.*)

LYCOPERDINA SUCCINCTA L. IN SUFFOLK.

BY G. W. NICHOLSON, M.A., M.D.

Red, with a broad black band across the middle of the elytra. Head very finely punctured; antennae red, stout, with the 2nd joint scarcely longer than broad, and the 3rd one half as long again as the 2nd. Thorax transverse, with the anterior angles prominent, the sides rounded and contracted at base, with a deep longitudinal groove on each side extending to near the middle. Scutellum transverse. Elytra oblong, broadest near middle, considerably narrowed towards apex; suture smooth, not depressed. Thorax and elytra finely punctured. Legs red. Length 4-5 mm.

Anterior tibiae with a stout pointed tooth at the middle of the inner side in ♂, and a slight thickening in ♀.

This species, the type of the genus *Golgia* Müls., differs from *L. bovistae* F. in colour, in being less shining, considerably narrower, and less contracted in the middle. The antennae are stouter, with all the joints, and especially the 2nd, shorter. The thorax is shorter, with the anterior angles less developed. The suture of the elytra is not depressed at the base. The secondary sexual characters also are absent in the latter insect.

I took nine specimens at Barton Mills, Suffolk, out of ripe *Lycoperdon gemmatum*, on October 1st, 1916, and six more on the same spot on October 4th. They are mostly of the type form, but also include examples of the var. *fasciata* F., in which the black band on the elytra is interrupted at the suture, and of the var. *disca* Gerst., in which the disc of the thorax is dark.

L. succincta is generally distributed over northern and central

Europe and Siberia. It is figured by Jacquelin Duval [Gen. Col. Europ., IV, pl. 75, fig. 358] and Reitter [Fauna Germanica, III, pl. 98, figs. 12a (larva), 12b (imago)].

Oxford and Cambridge Club, S.W. :

October 5th, 1916.

SPHAERIESTES (RABOCERUS) GABRIELI GERH.,

A BRITISH SPECIES.

BY PROF. T. HUDSON BEARE, B.Sc., F.R.S.E., F.E.S.

While examining my specimens of this genus, I discovered that the two examples standing under the name *foveolatus* Ljungh were wrongly named, and that they were in reality *gabrielii* Gerh. This species (Reitter, "Fauna Germanica," Vol. III, p. 417) differs from *foveolatus* in the following respects: the head and thorax are deeply and thickly punctured, and the six terminal joints of the antennae are darker and thicker than the remaining joints, while the punctuation of the upper side of *foveolatus* is fine, and only five terminal joints of the antennae are darker and thicker. There are other slight differences. Reitter states that *gabrielii* was discovered by Gen. Gabriel in the mountains of Silesia, that Konow found it in numbers in Mecklenburg but confused it with *foveolatus*, and that he has received the species from Sahlberg from Finland.

One of my specimens was found under the bark of a small dead beech on the northern slopes of the Pentlands on March 12th, 1904, and the other at Nethy Bridge on September 12th, 1908, in flood refuse on the banks of the Spey (the refuse which produced *Olophrum assimile*).

Under present circumstances it is impossible to obtain Continental examples for comparison purposes, but I have no doubt that my determination is correct—the antennal characters and the punctuation seem decisive.

There are very few records of the capture of *S. foveolatus* in England, and only two in Scotland. I have examined the insects standing under this name in the Waterhouse Collection (now the property of the University of Edinburgh), and find that one, which is in perfect condition, agrees in every respect with my two specimens, and shows all the characters which differentiate *gabrielii* from *foveolatus*. The other three examples are smaller, and somewhat imperfect, and I am uncertain as to what species they really are.

It is probable, therefore, that the specimens in British collections standing under the name of *foveolatus* are all *gabrieli*.

10, Regent Terrace, Edinburgh :

October 11th, 1916.

[The insects representing *S. foveolatus* in the collection of British *Coleoptera* in the National Museum are referable to *S. gabrieli*, as are those (from Scarborough) in my own collection.—G. C. C.]

NOTES ON THE GENUS *TERATOCORIS* FIEB. (*CAPSIDAE*).

BY E. A. BUTLER, B.A., B.Sc., F.E.S.

I have recently had the opportunity of examining a very long series of *Teratocoris saundersi* D. and S., taken by Mr. G. C. Champion, on *Scirpus maritimus*, at Budleigh Salterton, near Exmouth, Devon, in July last, and on comparing them with the representatives of the species in my own collection, I find that they differ from most of mine in certain characters in which these also differ *inter se*, viz., in the size of the insect, and the lengths of the basal antennal joint and legs. Despite these differences, I do not think more than one species is represented in all the examples I have examined. My own captures were made at Deal and Whitstable, in Kent, and at Poole Harbour, in Dorset. I have also some Suffolk specimens taken by Mr. C. Morley at Southwold and Covehithe, as well as a pair taken by Mr. Champion at Christchurch, Hants. The smallest are found amongst the Kentish examples, which run, in the ♀, from $4\frac{1}{2}$ mm. to barely 6 mm. in length; the Suffolk specimens measure from $5\frac{1}{2}$ mm. to a little over 6 mm.; those from Dorset and Hants reach from $5\frac{3}{4}$ mm. to $6\frac{1}{4}$ mm., and with these agree pretty closely Norfolk specimens sent me by Mr. Jas. Edwards; the largest of all occur in the Budleigh series, some of which attain $6\frac{3}{4}$ mm., while the majority are over 6 mm. long, and with these agree examples taken by Mr. T. Edmonds at Totnes; with the larger of these Devon insects agrees one from Notts sent me by Prof. Carr. The extreme limits for the ♀, therefore, are $4\frac{1}{2}$ mm. and $6\frac{3}{4}$ mm., an unusually large amount of variation for a Capsid, and considerably more than has been previously recorded for this species. The range is not quite so great in the ♂♂, which run from a minimum of 4 mm. at Whitstable to a maximum of $5\frac{3}{4}$ mm. at Budleigh, the other localities yielding intermediate sizes. Thus we see that as we travel both north and west from Kent, the average size of the insect gradually increases. The increase in the length of the basal joint of

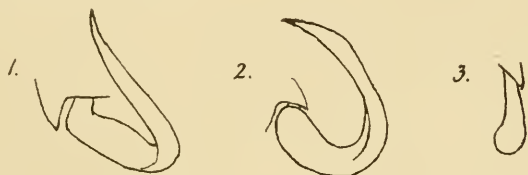
the antennae and legs is in most cases more than proportionate to that of the body, and takes place in the same distributional order. This seems to indicate some causal connection between the dimensions of the insect and its topographical distribution, as though local races are in process of formation.

A similarly wide range exists in the ♀ of *T. antennatus*, which runs from 4 mm. to $6\frac{3}{4}$ mm.; the smallest examples I have seen are from Lymington, Hants, where I took them amongst *Scirpus maritimus*. The size of the ♂ in this species is much more uniform, lying between $3\frac{1}{2}$ mm. and 4 mm.

It may be noted here that there is much variation also in the colour of these insects, especially in *T. antennatus*, and there seems to be a great tendency for green to pass into red and *vice versa*. The lightest specimens of *T. antennatus* are hardly to be distinguished from typical *T. saundersi* in coloration, but *T. antennatus* may always be recognised by the almost glabrous condition of the basal antennal joint, the hairs being extremely minute and difficult to see. *T. saundersi* has very distinct hairs on this joint; in *T. viridis*, which also has hairs, this joint is considerably shorter than in *T. saundersi*, and the insect also is smaller. *T. antennatus* ♀ almost always has a central black line running through the head, pronotum, and scutellum, but occasionally this is reduced to a short line on the vertex or is altogether missing. Usually, also, even if the broad fuscous markings near the elytral suture have disappeared, the actual inner margin of the clavus is infuscated; but again, this feature occasionally disappears as well as the central line on the fore parts, and the insect assumes the coloration of *T. saundersi*, which is always immaculate. The ♂ of *T. saundersi* has similarly a central black line, which sometimes expands into a black triangle at the apex of the scutellum, and sometimes ceases at the end of the pronotum, leaving the scutellum immaculate. *T. viridis* ♂ has more black about the fore parts, but is best distinguished by the shorter basal joint of the antennae; it must be admitted, however, that this species is not very well defined. From the above it will be seen that, on the whole, the most reliable criterion for specific determination is to be found in the nature of the basal joint of the antennae.

The genital armature of the ♂ of *T. saundersi* is of an extraordinary form, which, however, is of generic, and not of specific, significance. The left clasper consists of a long and stout appendage, which, starting on the left side, passes across the end of the abdomen beneath to the right side, and then makes a sudden and rather wide

bend upwards; having thus risen above the dorsal surface, it passes diagonally forwards across and above the genital segment in the form of a long and slightly curved claw. The right clasper is small and insignificant, and of a somewhat spathulate shape. There is nothing unusual in the ♀ apparatus to correspond to this curious development in the ♂. The armature of *T. antennatus* is almost identical with this, but on a rather smaller scale. The genus *Leptopterna*, which appears next to *Teratocoris* on the British list, has an armature based upon the same principle, but with the left clasper very much smaller, and far less fully elaborated.



Claspers of *Teratocoris saundersi* D. and S. × 30 diam.

1. Left clasper, viewed from behind.
2. Do. do. do. the left side.
3. Right clasper.

56, Cecile Park, Crouch End, N. :

October 14th, 1916.

CHARTLEY MOSS AND ITS NEUROPTERA.

BY KENNETH J. MORTON, F.E.S.

Almost as attractive as the exploration of new ground is a visit to one of those localities, perhaps little heard of at the present day, in which an older generation of collectors found what they wanted, and which fortunately have been preserved in a greater or less degree in their primeval state.

Such a locality is Chartley Moss, in Staffordshire. In Stainton's Manual, Chartley Park is given as a locality for *Coenonympha tiphon*, and the name is repeated in the works of Newman and Barrett. Rowland Brown also refers to Chartley in his monograph of the species (*Études de Léop. Comparée*, Fasc. VII, 1913), probably on some recent data which I have not seen. Barrett places the locality in Derbyshire, an inexplicable error when one considers that he worked on Cannock Chase, not many miles distant from Chartley as the crow flies. I am not sure that the Moss, which I suppose is or was the locality for *C. tiphon*, ever formed part of Chartley Park proper.

For some years a relative who is interested in shootings at Chartley had urged me to go and see the Moss, but it was not until the present summer that I was able to get away at a time which seemed suitable, and to spend a few days there towards the end of June (23rd to 26th). My primary object was to try to find *C. tiphon* and *Leucorrhinia dubia*, but I did not succeed in taking either of these species; it may well be because everything was certainly late in such a deplorably backward season. The conditions were otherwise right for these insects—a fine stretch of sphagnum bog with plenty of cotton-grass, with *Vaccinium Oxycoccos* creeping over much of its surface, and amongst other things *Andromeda polifolia* was noticed. Much of the bog carries small or stunted birches, but there are still plenty of open places. Conifers are, however, taking a hold in some parts, and in the long run, these and birches of more vigorous growth may cause a material change in the character of the ground. The margins of the Moss, which are heavily timbered with oak, birch, alder, etc., no doubt produce plenty of *Lepidoptera*, but my attention was chiefly devoted to the Moss itself, on which the only butterflies noticed were *Callophrys rubi*, not uncommon but worn; one or two *Chrysophanus phlaeas* on spots where the peat was bare; and a single *C. pamphilus* on a grassy patch on the side of the Moss.

Although I was disappointed in not finding the two species referred to, the time spent on the Moss was full of interest and profit, as it proved to be swarming with bog *Trichoptera*, including two species which I have never before met with in this country, *Neuronia clathrata* Kol., and *Stenophylax alpestris* Kol., both of which were common, the latter especially being apparently distributed over the whole Moss, while *N. clathrata* seemed to be more restricted to the neighbourhood of open water. Regarding the occurrence of **N. clathrata* in Britain, it may suffice to refer to Ent. Mo. Mag., vol. XL, p. 281, where I have given a fairly full account of what is known about it as a British insect.

S. alpestris has been taken rather more commonly in one or two localities in the north of England, and has recently been recorded from Nethy Bridge in Scotland (Porritt, Ent. Mo. Mag., Vol. LI, p. 146). The Chartley specimens are many of them up to the average size of Continental examples. Another interesting species taken was *Limnophilus elegans* Curt. Other *Trichoptera* frequenting the Moss and the surrounding woods were *Neuronia ruficrus* Scop., *Glyptotaelius pellucidus* Retz., *Limnophilus luridus* Curt., *L. vittatus* Fab., *L. auricula*

* I have for some years had in my collection, a big ♀ *Neuronia clathrata*, taken at Chartley, by Mr. Ellis, of Solihull.—G.T.P.

Curt., *L. sparsus* Curt., and *Asynarchus coenosus* Curt. Most of the following were taken at the River Blythe: *Phryganea striata* L., *Limnophilus extricatus* McL., *Goëra pilosa* Fab., *Leptocerus annulicornis* Steph., *L. bilineatus* L., and *Hydropsyche pellucidula* Curt., while the "Keeper's Pool" produced *Leptocerus aterrimus* Steph., *Triaenodes bicolor* Curt., and a *Holocentropus*, probably *picicornis* Steph.

Of *Plecoptera*, *Nemoura variegata* Oliv. was common on the Moss, *N. inconspicua* Pict. at a small stream near by, and *Chloroperla grammatica* Poda occurred at the river. Of *Sialis*, both the British species were noted. The woods were rich in *Chrysopa*, *C. perla* L. in particular being abundant on the side of the Moss. The other species observed were *C. tenella* Schneider, *vittata* Wesm., *flava* Scop., *alba* L., and *prasina* Ramb. *Panorpa communis* L. and *germanica* L. were common. The Hemerobiids were represented by *H. humuli* L. and *H. lutescens* Fab., both common, *H. nitidulus* Fab., and *Micromus paganus* L.

No large dragon-flies were seen on the Moss, on which *Pyrrosoma nymphula* Sulz. was abundant; *Agrion puella* L. also occurred at one of the ditches. The "Keeper's Pool" produced *Enallagma cyathigerum* Charp. and *Ischnura elegans* Van der L. At the River *Calopteryx virgo* L. was out in great force, a few *splendens* Harris being taken at the same place.

Although I did not collect *Ephemeroidea*, I can hardly pass without remark the fine display of *Ephemera vulgata* L. and *danica* Müll., in the evenings at the River. The main emergence of these insects had taken place earlier, but they were still flying in great numbers.

13, Blackford Road, Edinburgh:

August 29th, 1916.

The Waterhouse Collection of British Coleoptera.—It is desirable to put on record that the Waterhouse Collection of British *Coleoptera* has been acquired for the Entomological Department of the University of Edinburgh, and is now deposited in the Museum of the Entomological Department.

Workers who desire to consult this collection should communicate with the University Steven Lecturer on Entomology, Dr. R. Stewart MacDougall.—T. HUDSON BEARE, 10, Regent Terrace, Edinburgh: October, 1916.

A note on the oviposition of Acilius sulcatus—On May 3rd, 1914, at Stanmore, Middlesex, I found a batch of what I took to be dipterous puparia in a rotten stump growing out of a dried-up pool. I did not examine them further until

the 14th, when the eyes of the inmate were very evident at one end. At the same time I was rather puzzled to account for the presence of a few dead water-beetle larvae in the box; then I found a live one, and discovered that they were hatching from these dipterous puparia! By next morning all the eggs had hatched and the egg-shells disappeared, except for a small area where they were affixed to the rotten wood; and the young larvae were crawling about in the box. Their limbs were not yet free, but their long legs, folded down along the ventral surface, very much in the position they assume in the pupa, reach well to the last segment of the body. Their manner of progression is very peculiar: pressing the front of the head on to the surface on which they are lying, an operation in which they do not seem to be able to make use of their jaws, they as it were hump their shoulders violently, thus dragging the body forward; on too smooth or too dry a surface, which gives no grip for the head, and no support to steady the dragging body, they twist and squirm helplessly.

When dropped into water their legs appear to come unglued, and they at once start to swim about with their peculiarly graceful action. It was not until this stage that I recognised their identity. They are white and semi-transparent, with the alimentary canal yet more transparent; the air-trunk along each side of the body appears black, and these, with the black lateral fringes of the tail, show up in strong contrast with the pale body.

The eggs, which are of a pale yellow colour, are very large for the size of the beetle, and sausage-shaped, but unfortunately I omitted to record the measurements. They were laid partly irregularly, partly in fairly regular rows side by side, though not closely packed, along the edges of a chink in the rotten stump; also, I think, in the substance of the soft rotten wood. There were a large number of them, a hundred or so I should imagine, though I only took a few to see what they would produce. When found they were certainly well away from water, and though it was evident that the stump had been standing in water, I should say that the eggs had been deposited above water-level. The behaviour of the newly hatched larvae, too, is suggestive of their having to make their way to water on emergence—K. G. BLAIR, British Museum (Nat. History), Cromwell Road, S.W.: *August, 1916.*

Dinoderus minutus F. at Penarth.—About a year ago, whilst stowing away the bamboos on which runner beans had been growing, I noticed some of them had been attacked by a wood-boring insect, and on splitting them found one more or less complete, and the fragments of several, specimens of a beetle, which I sent to Mr. J. R. le B. Tomlin with others, for naming. He advises me that Mr. C. J. Gahan has kindly identified it as *Dinoderus minutus F.* These bamboos had been in use as bean sticks for at least three years, and I had not previously noticed any signs of attack.—H. M. HALLETT, 64, Westbourne Road, Penarth: *September 30th, 1916.*

A food-plant of Sitones griseus F.—Mr. W. E. Sharp's observations on the food-plant of this beetle in *Ent. Mo. Mag.*, LII, pp. 133-134, and Mr. G. C. Champion's footnote thereto, induced me to try and ascertain what it fed on at

Porthcawl. It is extremely abundant on the sand-hills there, but there is no broom within some miles of the locality; there is, however, a most extensive growth of *Ononis repens*, and on this plant I found the *Sitones* in the greatest abundance. The only other plant I thought I might find it on was *Lotus corniculatus*, but this proved unfruitful. I found it frequently under *Erodium*, but, I think, only sheltering.—H. M. HALLETT.

Monochamus sartor L. in London.—This fine Longicorn has made its appearance in a woodyard at Old Ford, where my son found it emerging from fir logs imported from the district of Archangel. This wood is known as "Archangel white wood." Although only an introduced species, it is interesting to record its occurrence in this country, where I believe it has rarely been found.—R. S. MITFORD, Thornlea, Weybridge: October, 1916.

Hylotrupes bajulus L. at Weybridge.—On August 11th, 1915, I took in my garden a nice specimen of this rare beetle. The Rev. W. W. Fowler in his description of this species in Vol. IV, p. 222, of his work on British *Coleoptera*, gives Weybridge as a locality in which it was captured by Dr. Power. My specimen is therefore interesting as showing that this beetle is still to be found in its old haunts. But careful search has failed to reveal its headquarters.—R. S. MITFORD.

Gastrodes abietis L. in Oxfordshire.—When at Thame Park, on August 8th, 1916, I came across a number of old spruce fir trees, which had been uprooted by the previous winter's gales; and as there was a large number of cones still on them, I searched these in the hope of finding *Gastrodes abietis* L. at home. The first tree examined had four cones on it, each of which contained numbers of immature examples of the above insect, with only three mature specimens. This early success led me to make a systematic search of every cone on all the trees, spending some hours in the quest, and examining some hundreds of cones without result until the very last tree was reached, when I came across the bug in some numbers, taking over 50 beautiful examples—all quite mature. They live beneath the rather loose scales of the previous season's cones, and it was only necessary to tap the end of each cone into the sweeping net to cause them all to come tumbling out. There was only one example of the common *Gastrodes ferrugineus* L. in all the cones.—H. BRITTON, Myrtle View, Windmill Road, Headington, Oxon.: October 15th, 1916.

Vespa austriaca Panz. at Penarth.—I found the females of this wasp plentifully during the second half of June, about the hedgerows, in company with females of *V. vulgaris*, *germanica*, *rufa* and *sylvestris*. Of these, *V. germanica*, as is usually the case here, were much the most numerous and had apparently been on the wing a good deal longer, as they were very worn; the other species were all in fresh condition. *V. austriaca* is known to associate as an inquiline on *V. rufa*, and in South Devon, Dr. R. C. L. Perkins tells me it associates with

V. norvegica; it was therefore interesting to me to see one of these females seize and kill a large fly (the latter when examined was found to have had its thorax bitten nearly through); later on the same afternoon, my attention was directed by a rasping sound to an old post, and on this I found another female engaged in biting off the wood fibres in the manner adopted by an ordinary industrious wasp. Smith, in his "British Museum Catalogue of Fossorial Hymenoptera, etc.," (1858), p. 219, says that "this wasp was first discovered in 1836 . . . building nests in fir trees, etc.," which may mean that they were entering nests of *V. norvegica*, and Dr. Perkins' experience of this association in Devon helps to confirm this, whilst the observations recorded above seem to point to a possibility that they may take a part in the construction of the nests, and also feed their own larvae. The previous examples I have taken have been badly worn, which would seem to show they must spend a good deal of time in the open. I find this wasp easy to identify in the field both by its colour and more lethargic flight.—H. M. HALLETT.

Breeding of Cimbex lutea.—Miss Doris E. Gardiner, of Girton College, has recently given to the Cambridge Museum a ♀ *Cimbex lutea*, reared from the larval stage, and has supplied me with the following notes: "I found about a dozen of the larvae on Bottisham Fen, July 15th, 1915. They were feeding on willow, and were taken in their last skin. A few days later I found several more on sallows at Quy Fen. I brought some home and tried to rear them, but only two pupated: these two subsequently emerged this year [May, 1916]. The larvae were night feeders, and appeared to thrive best when their food was sprayed daily with water. The two which I reared myself I treated in this way. When full-fed, they span cocoons between the leaves. If touched, the larvae curled up in a ring, and sometimes drops of a white sticky fluid exuded from little swellings in the skin. I have been regularly to Quy and Bottisham Fens for a number of years, and have carefully searched the willows and sallows, but until last year I had never seen the sawfly-larvae."

The ejection of liquid from the lateral pores is well-known (see Cameron, Mon., iii, p. 15). On the other hand it is curious that Miss Gardiner should have found moistening the food to be advantageous. For, as Mr. Morice tells me, "Enslin, who is one of the most successful and experienced breeders of sawflies, is emphatic in saying that wet is injurious to the larvae, and that their food must never be damp." Cameron (l.c.) remarks that the larvae of *C. lutea* are very difficult to rear.—HUGH SCOTT, University Museum of Zoology, Cambridge: October 15th, 1916.

Dolerus triplicatus Klug (*Tenthredinidae*: *Hymenoptera*) in *Epping Forest*.—On May 14th of the present year I captured nine males and eight females of this interesting sawfly, which is usually considered a rarity. The insects were to be found resting on the stems of the common *Juncus effusus*, the food-plant of the species.

Another series, consisting of a dozen of each sex, was captured in the same place on May 23rd. The majority of the latter were taken in flight, only a

few females being found on the rushes. I have already published a note (Ent. Mo. Mag., 3rd Ser., Vol. I, p. 242, 1915) referring to the occurrence of this insect in Epping Forest, and mentioned that it was to be found "by sweeping *Juncus* in marshy ground near Loughton Camp." The series now under consideration did not come from precisely the same locality as that of last year: the ground was far from marshy, being a dry slope facing north, and rather nearer Debden Slade, and the *Juncus* was here growing in clumps. All the males taken this year have the thorax coloured as in the opposite sex, viz., red and black. As I have a few duplicates to dispose of I should be glad to hear from collectors requiring a specimen or two.—HAROLD E. BOX, 55, Baxter Avenue, Southend-on-Sea, Essex: October 2nd, 1916.

Review.

"YORKSHIRE'S CONTRIBUTION TO SCIENCE." By T. SHEPPARD, M.Sc., F.G.S., F.R.G.S., etc. London: A. Brown and Sons, Limited, 5, Farringdon Avenue, E.C., and at Hull and York. 1916.

In this carefully compiled and well printed volume we are perhaps a little disappointed to find that the references to our science are by no means so full or so numerous as might have been expected, when we call to mind the number of eminent Yorkshire Entomologists, and the large amount of excellent work they have done in the past and are now doing. But as a medium of reference to the work of the scientific societies of Yorkshire, which are perhaps more numerous and flourishing in that county than in any other, and to the many important contributions to natural and archaeological science which we owe to Yorkshiremen, Mr. Sheppard's little book will be found of great value and interest.

Societies.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: Thursday, August 24th, 1916.—MR. HY. J. TURNER, F.E.S., President, in the Chair.

Mr. Main exhibited (1) Larva, pupa, and imago of the water-beetle, *Pelobius tardus*; (2) The curious result of an attack of fungus on a Syrphid fly; and (3) The ova of the Neuropteran *Hemerobius concinnus*. Mr. Curwen, a bred series of *Cleora lichenaria* and *Cleora jubata (glabraria)* from the New Forest. The larvae of the latter species fed on a lichen, *Cladonia*. He also showed an example of *Xanthorhœ fluctuata* asymmetrical in both shape and markings. Mr. Turner, details of the life-histories of some *Micro-Lepidoptera*:—(1) Mines of *Lithocolletis lantanella* in *laurustinus*; (2) Pyramidal cones in oak leaves of larvae of *Gracilaria alchimiella (swederella)*; (3) Galleries of larvae of *Gelechia pinguinella (turpella)* on poplar leaves; (4) Mines of *Lithocolletis leucographella* in leaves of *Crataegus pyracantha*; (5) The beautiful network cocoons of *Epiplemia strictellus*; and (6) Larval cases of a Coleophorid, said to be

Coleophora salinella, from the seeds of *Chenopodium maritimum*. He also exhibited coloured figures of a dozen striking aberrations of *Dryas paphia*. Mr. H. Moore, *Agriodes coridon* ab. *semisyngrapha* and ab. *roystonensis*, with an asymmetrical male from Royston. Mr. Frohawk, an unique form of **Arctia caja* with the fore-wings uniformly chocolate and hind-wings almost wholly black, with several others less striking, bred from larvae taken in the Scilly Isles. Mr. Wolley Dod, a *Saturnia pavonia* female in which the antennae were considerably pectinated. Mr. Bunnett, a glow-worm, *Lampyrus noctiluca*, with the tibia of the hind leg on the right side bifurcate. Mr. Carr, a living *Platyptilia gonodactyla* taken in the City. Several specimens of *Amorpha populi* had been taken by members, and it was suggested that they belonged to a second brood.

ENTOMOLOGICAL SOCIETY OF LONDON: *Wednesday, October 4th, 1916.*—
COMMANDER J. J. WALKER, M.A., R.N., F.L.S., Vice-President, in the Chair.

Mr. Howard M. Peebles, 13, Chesham Street, S.W., was elected a Fellow of the Society.

A vote of condolence with Mrs. Trimen, on the death of her husband, a former President of the Society, was passed unanimously.

Mr. P. A. Buxton called the attention of the Society to some remarkable work published in the Ann. Inst. Pasteur (Paris) for July and August, 1916. A plague of the locust (*Schistocerca peregrina*) has been successfully stayed in Morocco by infecting a few thousands with the cocco-bacillus of a fatal enteritis. Mr. Donisthorpe exhibited ♂♂, ♀♀, and ♀♀ of *Myrmica schencki* Emery, discovered at Sully, Glamorganshire, by Mr. Hallett last year, and identified and introduced as British by himself. Mr. L. W. Newman, two leaden-coloured ♂♂ of *Agriodes thetis* and a curious ♂ having part of the wings leaden colour and part the normal blue; all taken on the wing in September, 1916, in East Kent. Mr. O. E. Janson, a male specimen of *Carabus catenulatus*, showing arrested development in the left posterior leg; an example of *Tetropium gabrieli*, in which the right antenna consisted of only eight joints and bore a basal branch of three joints; and a specimen of *Dorcadion egregium* from Mongolia, exhibiting a very rare instance of an almost symmetrical duplication of a limb, both of the antennae bearing a short three-jointed branch arising from the large basal joint, the antennae themselves being otherwise normal; also, on behalf of Mr. F. W. Frohawk, two remarkable varieties of *Arctia caja* reared this season from larvae from the Scilly Islands.

The following papers were read:—"Gynandromorphous *Lepidoptera*," by E. A. Cockayne, M.A., M.D., F.E.S. "The Rein-sheath in Plebeiid Blues. A correction of and addition to Paper VI," by T. A. Chapman, M.D., F.Z.S. "Resting Attitudes in *Lepidoptera*. An example of Recapitulation in Habit," by the same. "The Evolution of the Habits of the Larva of *Lycuena arion*," by the same. "*Micropteryx* entitled to Ordinal Rank. Order Zeugloptera," by the same. GEO. WHEELER, *Hon. Secretary*.

* This specimen is not unique. A similar one is figured in Barrett's "*Lepidoptera*," on Plate LXXI, fig. 1c; and we think we have seen and heard of others.—G.T.P.

EXCHANGE.

DUPLICATES—*Dianthoecia luteago* (*barrettii*), a few. *Desiderata*: *Leucania favicolor*, *Mellinia ocellaris*.—F. C. WOODFORDE, 2, Isis Street, Oxford.

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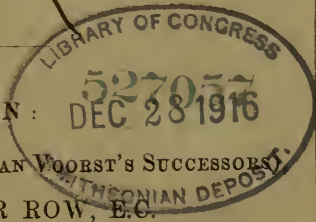
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ENTOMOLOGICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W.—Wednesday, Dec. 6th, 1916; Jan. 17th, 1917 (ANNUAL MEETING).

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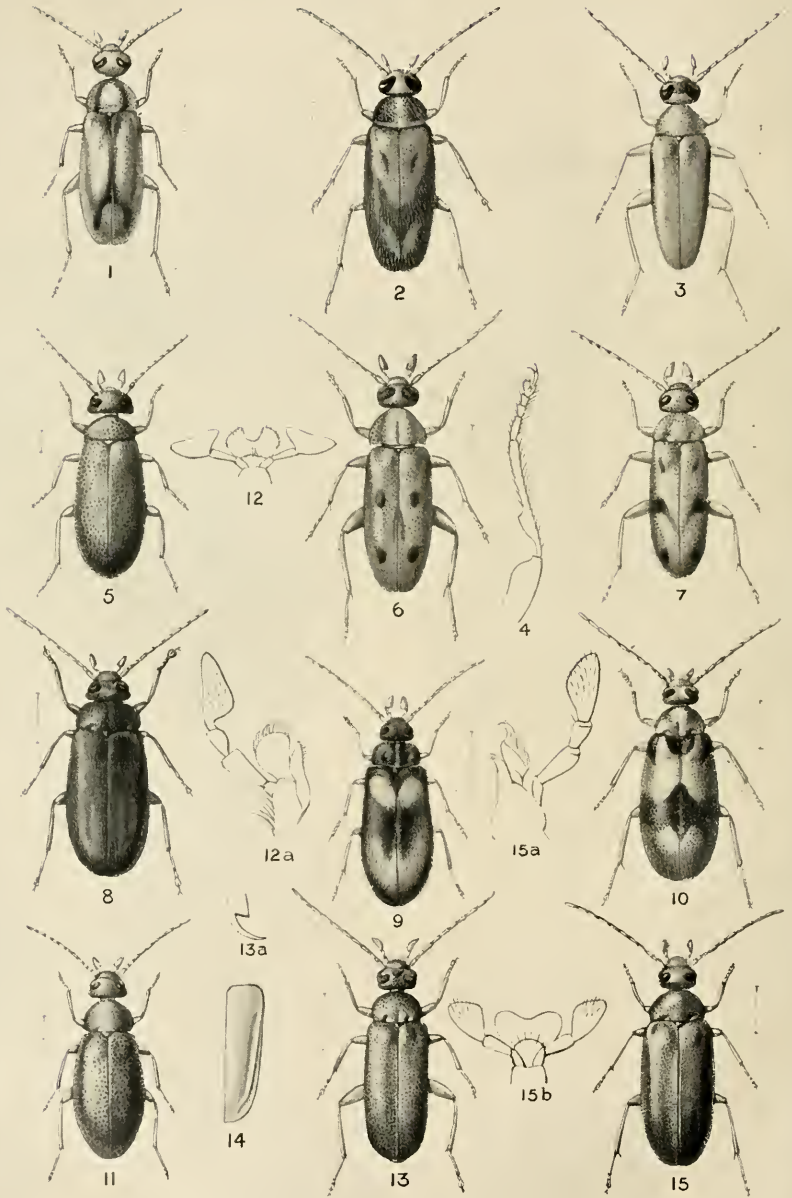
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Horace Knight, del.

EXOTIC SCRAPHIINA.

ON NEW EXOTIC SCRAPTIINA.

BY G. C. CHAMPION, F.Z.S.

(Concluded from page 253.)

31.—*Scraptia africana*, n. sp.

Elongate, rather broad, depressed, shining, finely pubescent, testaceous, the eyes black; the head and prothorax densely, finely, the elytra a little more coarsely, punctate. Head strongly transverse, narrowly extended on each side behind the eyes, the latter very large and separated by about half their own width as seen from above, the frontal suture distinct; antennae moderately long, rather slender, joint 3 longer than 2 and shorter than 4, 4-6 equal in length (the other joints missing); apical joint of maxillary palpi rather stout, rounded at the inner apical angle. Prothorax short, semi-circular, nearly as wide as the elytra at the base, with two deep oblique basal foveae, which are connected along the sinuous margin by a sharply defined groove. Elytra very elongate, widening to the middle, and areately converging thence to the apex. Legs long, rather stout, the penultimate tarsal joint lobed. Length 6, breadth $2\frac{2}{3}$ mm. (♀?)

Hab.: NYASALAND, Mlanje (*S. A. Neave*: viii-xi.1912).

One specimen. Not unlike the Bornean *S. fulva*, but with a relatively broader and smoother prothorax, longer, less parallel, wider elytra, and a less angular apical joint to the maxillary palpi. *Biophida minor* Pic, from Natal, has a narrower apical joint to the maxillary palpi, smaller eyes, shorter elytra, etc.

32.—*Scraptia setipes*, n. sp.

Elongate, robust, moderately shining, rather sparsely pubescent, with a few intermixed longer hairs, these being conspicuous along the lateral margins of the head and prothorax; nigro-piceous, piceous, or castaneous, the eyes and antennae black, the three basal joints of the latter sometimes ferruginous; the head and prothorax densely, finely, the elytra more coarsely, asperato-punctate. Head large, broad, convex, extended on each side behind the eyes, the latter large and somewhat narrowly separated, the frontal suture deep; maxillary palpi stout, the apical joint moderately large, securiform, that of the labial pair extremely broad, its apical side equalling the width of the mentum; antennae slender, rather long, filiform, joint 2 short, 3 a little longer in both sexes, 4-11 elongate, sub-equal. Prothorax not much wider than the head, strongly transverse, rounded at the sides anteriorly, slightly narrowed and sinuate before the base; the two basal foveae short, triangular, placed near the sharp hind-angles, and connected by the fine marginal groove, the lateral margins distinctly crenulate. Elytra much wider than the prothorax, long, gradually narrowed from the base in ♂, sub-parallel in ♀, conjointly rounded

at the apex, flattened on the disc before the middle. Legs moderately long; tibiae rough, setose along their outer edge; penultimate tarsal joint feebly lobed, the basal joint of the posterior pair less than half the length of the tibia. Length $5\frac{1}{2}$ -6, breadth $1\frac{2}{3}$ - $2\frac{1}{10}$ mm. (σ φ .)

Hab.: CEYLON (*Nietner*: φ), Dikoya, alt. 3,800-4,200 ft. (*G. Lewis*: xii.'81-i.'82: σ).

Three males and two females. A large, robust, elongate, dark form, with slender antennae, rather short legs, setulose tibiae, large eyes, a roughly sculptured head and prothorax, and somewhat hispid pubescence. The mandibles are acute and unemarginate at the tip, and the apical joint of the labial palpi is extremely broad. This is one of four peculiar Scaptiids found by Mr. G. Lewis in the mountains of Ceylon, all different from the two described by Motschulsky in 1861 from the same region.

33.—*Scaptia platydera*, n. sp.

(PLATE VII, fig. 8.)

Elongate-oval, broad, flattened above, shining; thickly pubescent, nigro-fuscous, the elytra dark brown (in certain lights appearing streaked with nigro-fuscous, perhaps due to discoloration); densely, finely punctate, the elytra with intermixed, much coarser, punctures towards the base. Head transverse, large, triangular, the post-ocular portion nearly as long as the eyes and extending outwards to beyond them, the eyes moderately large, deeply emarginate, distant, the frontal suture distinct; maxillary palpi stout, joint 4 securiform; antennae moderately long, rather slender, joint 2 short, 3 not so long as 4, 4 and 5 elongate, cylindrical (the others missing). Prothorax very short, more than twice as broad as long, arcuately narrowed anteriorly, the two basal foveae transverse, deep, the median impression shallow, the hind-angles obtuse. Elytra moderately long, very little broader than the prothorax, gradually widened to the middle and arcuately narrowed thence to the rounded apex. Legs slender; penultimate joint of each tarsus broadly lobed, the claws feebly dilated at the base, the basal joint of the posterior pair about half the length of the tibia. Length $6\frac{1}{10}$, breadth $2\frac{3}{4}$ mm. (φ .)

Hab.: NATAL, Frere (*Marshall*).

One specimen. A broad, oblong-oval, nigro-fuscous insect, with a large, basally-dilated, triangular head, stout palpi, a very short, extremely broad prothorax, with two deep basal foveae, a double system of punctuation on the elytra, slender legs, and a rather broad penultimate joint to each tarsus. It has the general facies of a Cistelid.

34.—*Scryptia triangularis*, n. sp.

(PLATE VII, fig. 9.)

Elongate, broad, shining, thickly pubescent; testaceous, the eyes black, the head, prothorax, antennae (joints 1 and 2 excepted), and under surface, sometimes wholly or in part piceous; the elytra with a common, broad, triangular, scutellar patch, the sides to about the middle, and an elongate-triangular, juxta-sutural patch half way down the disc, these markings sometimes connected laterally or reduced to a single triangular median patch, black or piceous; densely, finely, the elytra more coarsely, punctate, the narrow interspaces minutely punctulate. Head broad, short, sub-triangular, hollowed at the base, well developed behind the eyes, and transversely depressed between them, the eyes separated by a little more than their own width as seen from above; antennae pilose, moderately long, slender, sub-filiform, joint 2 short, 3 much longer than 2 and shorter than 4, 4-11 elongate. Prothorax extremely broad, short, the sides rounded anteriorly and parallel at the base, the latter sinuate and with two small deep foveae connected by the conspicuous marginal groove, the disc sulcate down the middle and with a large rounded excavation in front of each of the foveae, the hind-angles sub-rectangular. Elytra long, broad, gradually widened to about the middle, and somewhat rapidly narrowed thence to the apex, depressed below the base, and with the apices a little produced. Legs moderately long; penultimate tarsal joint lobed and rather broad. Length $6\frac{1}{2}$ - $7\frac{1}{2}$, breadth 3 mm. (♀?)

Hab.: BRAZIL, Rio de Janeiro (*Fry*).

Four specimens, varying in colour, according to the development of the dark markings, one example being almost wholly testaceous, the triangular patch on the inner part of the disc of each elytron excepted.

35.—*Scryptia zonitoides*, n. sp.

(PLATE VII, fig. 10.)

Elongate, rather broad, widened posteriorly, shining, closely, finely pubescent; testaceous, the elytra with an elongate humeral streak, a triangular scutellar patch, and a common angulate median fascia (these markings sometimes connected at the base and along the suture), the eyes, the antennae to near the tip, and in one specimen two spots on the disc of the prothorax also, black or piceous; the entire upper surface densely, finely punctate. Head short, broad, sub-triangular, hollowed at the base, well developed behind the eyes, and depressed in the middle between them; eyes very large, strongly transverse, separated by less than half their own width as seen from above; antennae pilose, moderately long, rather slender, sub-filiform, joint 2 short, 3-11 elongate, equal in length. Prothorax strongly transverse, a little wider than the head, rapidly, arcuately, narrowing from the base, convex on the disc anteriorly, the hind angles obtuse; more or less sulcate down the middle, transversely depressed

in the centre before the base, and hollowed on each side of this, the two basal foveae just traceable. Elytra elongate, much broader than the prothorax, widening to beyond the middle, and arcuately narrowing thence to the rounded apex, broadly depressed on the disc below the base. Legs rather stout, moderately elongate; penultimate tarsal joint strongly lobed. Length 6-6½, breadth 2½-2¾ mm. (♀?)

Hab.: AMAZONS, Ega (*H. W. Bates*).

Three specimens, two of them with the dark elytral markings coalescent. Narrower than the variable *S. triangularis*, the eyes smaller and less approximate, the head less dilated behind them, the antennae with a longer third joint, the prothorax not nearly so broad, the elytra more finely punctate, and with the common triangular central portion of the median fascia extending forwards along the suture.

36.—*Scryptia inornata*, n. sp.

Elongate, broad, the head and prothorax dull, the elytra shining, thickly pubescent; piceous or reddish-brown, the head, the margins of the prothorax and abdomen more or less rufescent, the legs, the basal joints of the antennae, and the abdomen testaceous in one example; the head and prothorax densely scabroso-punctate, the puncturing of the elytra much coarser and not so close, the narrow interspaces minutely punctulate. Head short, broad, sub-triangular, well developed behind the eyes and transversely depressed between them, the eyes separated by more than their own width as seen from above; antennae long, slender, filiform, pilose, joint 2 short, 3 much longer than 2 and shorter than 4, 4-11 elongate. Prothorax extremely broad, short, the sides rounded anteriorly and parallel at the base, the latter sinuate and with two deep foveae connected by the fine marginal groove, the disc without other definite depressions. Elytra long, broad, gradually widened to the middle and narrowed thence to the apex, transversely depressed below the base. Penultimate tarsal joint broadly lobed. Length 6½-7, breadth 2¾-2⅘ mm. (♀?)

Hab.: BRAZIL, Rio de Janeiro (*Fry*).

Two specimens, one much darker than the other. Near *S. triangularis*, differing from it in the opaque, densely scabroso-punctate head and prothorax, the latter without depressions on the disc other than the two basal foveae, and the uniformly infusate elytra, the latter having a faint aeneous lustre in the darker individual. *S. inornata* has the general facies of a Dascillid or Cistelid.

37.—*Scryptia (?) cribripennis*, n. sp.

(PLATE VII, fig. 11, ♀.)

♀. Oblong obovate, rather convex, shining, finely pubescent; sordid testaceous, the antennae (joints 1-3 excepted) infusate, the eyes black; head

and prothorax densely, finely, the elytra very coarsely and diffusely, punctate. Head convex, triangular, dilated behind the eyes and unimpressed between them, slightly rounded at the base, the frontal suture distinct, the eyes small, distant, very deeply (marginate; apical joint of maxillary palpi stout, securiform: antennae very slender, rather short, joints 2 and 3 sub-equal in length, the others following moderately long and filiform. Prothorax convex, transverse, truncate at the base, the sides rounded anteriorly and parallel behind, the two basal foveae small, sharply defined. Scutellum small. Elytra moderately long, widened to the middle and rapidly, arcuately narrowed thence to the apex, the latter somewhat acuminate, the interspaces between the irregularly distributed coarse punctures obsoletely punctulate, the humeri obtuse. Legs very slender, the penultimate tarsal joint simple. Length $2\frac{2}{3}$, breadth 1 mm.

Hab.: SOUTH AFRICA, Cape of Good Hope (*ex coll. F. Bates*).

One specimen, provisionally included under *Scryptia*. It agrees very nearly with the description of *S. punctata* Pic from the same locality; but as the author describes the puncturing of the head and prothorax as strong and pustuliform, and the head as depressed between the antennae, and says nothing about the absence of wings and the small eyes, his species must be different from the insect before me. *Trotomma brevitborax* Pic, also from the Cape, must have a more strongly and less densely punctured prothorax, shorter, oval elytra, etc.

An additional representative of this genus from Australia has been detected in Commander Walker's collection since the key to the species described in this paper was published, *antea*, pp. 234, 235 (October, 1916). *S. hirsuta* should follow No. 31 in the arrangement there adopted.

33.—*Scryptia hirsuta*, n. sp.

♂. Elongate-oval, somewhat convex, shining, thickly clothed with long, coarse, decumbent, fulvous hairs: testaceous, the eyes black, the sides of the elytra slightly infuscate; the entire upper surface closely, coarsely punctate, the punctuation of the prothorax sparser than that of the elytra. Head broad, transverse, narrowly extended on each side behind the eyes, the latter very large, separated by about half their own width as seen from above; apical joint of maxillary palpi moderately large, securiform; antennae comparatively short, joint 3 nearly as long as 5, 4-10 rather stouter, gradually becoming a little shorter and more slender, 11 oblong-ovate. Prothorax ample, very short, nearly as broad as the elytra, convex on the disc anteriorly, the two basal foveae small, deep, connected by the marginal groove, the hind angles obtuse. Elytra moderately long, slightly rounded at the sides, rounded at the apex, transversely depressed below the base. Legs comparatively short (the intermediate and

posterior tarsi excepted); anterior tarsi slender; tibial spurs short; penultimate joint of the anterior and intermediate tarsi rather broadly, that of the posterior tarsi very feebly, lobed. Aedeagus narrowly produced at the tip, the latter slightly thickened when seen in profile. Length $4\frac{2}{3}$, breadth $1\frac{3}{4}$ mm.

Hab.: NEW SOUTH WALES, Stanwell Park in the Sydney district (*J. J. Walker*: iii.1900).

One male, in good condition. A comparatively short, broad form, with rather long, coarse pubescence, large eyes, short, stout antennae, and the entire upper surface coarsely punctate. It is not very closely allied to any species of the genus known to me, and might easily be mistaken for a Cistelid. The eyes are less deeply emarginate than in the Australian *S. picturata* and *S. lunulata*, this latter also having a long third joint to the antennae.

BIOPHIDA.

Biophida Pascoe, Journ. Ent., i, p. 53 (1860).

This genus was based upon a single species, *B. unicolor*, from Natal, and provisionally referred by its describer to Melandryidae, the very close affinity with *Scaptia* not being suspected. In Pic's Catalogue of the Scaptiidae (1911), *Biophida* is assigned to its proper position. Certain discrepancies between Pascoe's description and figure* requiring verification, the mouth-parts of a specimen of *B. unicolor* have been dissected out for study, and the following emendations or additions to his diagnosis become necessary:—Labial palpi with an extremely broad, securiform apical joint, the spongy apical face hollowed, and about one-half longer than the inner or outer sides; ligula large, broad, membranous, widely cleft down the middle; mandibles feebly emarginate at the tip; apical joint of maxillary palpi long, cultriform. The toothed tarsal claws separate *Biophida* from *Scaptia*. Three other species from E. Africa are now added, and *Scaptia nigrolimbata* Pic also belongs here. *B. minor* Pic, from Natal, is referred to a separate genus, *infra*.

1.—*Biophida unicolor*.

(PLATE VII, figs. 12, 12a, mouth-parts.)

Biophida unicolor Pasc., loc. cit., p. 54, pl. 3, fig. 4.

Hab.: S. E. AFRICA, Natal; E. AFRICA, Rogoro in the Kikuyu Forest (*C. S. Betton*: 1899), South of Lake George, Uganda, alt. 3,200 ft. (*S. A. Neave*).

* The labial palpi described as "filiform" are figured with a broad, cultriform apical joint.

Var. Antennal joints 1-10, tips of the mandibles, knees, tibiae, and tarsi to near the apex, black. (δ .)

Hab.: E. AFRICA, Mlanje in Nyasaland (*S. A. Neave*: 7.xi.1913).

Seven specimens seen, including the type and variety. *Scaptia pouilloni* Pic. from Dahomey, seems to be a nearly allied species.

2.—*Biophida nigrolimbata*.

Scaptia nigrolimbata Pic., Bull. Mus. Paris, xiii, p. 255 (1907).

Hab.: E. AFRICA, Valley of Ngusi River in Unyoro, and Buamba Forest, in the Semliki Valey, both in Uganda (*S. A. Neave*), Rabai (*K. S. A. Rogers*), Lesammise, Rendile [type of Pic].

Three females in the Museum are referred to this species. They are smaller, less elongate, and less robust than *B. unicolor*, and have the sides of the elytra black, and the third antennal joint much shorter than the fourth.

3.—*Biophida flavida*, n. sp.

Elongate, rather broad, somewhat robust, flattened above, dull, finely pubescent; flavous (the eyes and the tips of the mandibles excepted), the antennal joints 4-11 slightly darker than 1-3; densely, very finely, the elytra a little more coarsely, punctate, the narrow interspaces on the latter alutaceous. Head broad, transverse, well developed behind the eyes, the latter large, separated by about their own width as seen from above, the frontal suture almost obsolete; mandibles short, crenulate within, unemarginate at tip; apical joint of maxillary palpi moderately large, securiform, that of the labial pair very broad; antennae long, rather slender, filiform, joint 2 very short, 3 twice as long as 2 and shorter than 4, 4-11 elongate. Prothorax transverse, large, semi-circular, very feebly sinuate at the base, the two basal foveae small. Elytra long, a little wider than the prothorax, sub-parallel in their basal half, truncate at the tip. Legs rather stout, moderately long, penultimate joint of each tarsus lobed and comparatively long, the basal joint of the posterior pair not very much longer than the rest united, the claws appendiculate. Length 5, breadth $1\frac{2}{3}$ mm. (δ ♀)

Hab.: E. AFRICA, Arusha (*J. F. Jackson*).

One specimen in good condition, but possibly somewhat immature, received by the Museum in 1887. Narrower and much smaller than *B. unicolor* and *B. nigrolimbata*, the elytra sub-parallel, the puncturing not so coarse. *Scaptia rothschildi* Pic. from Mt. Nyro, E. Africa, is evidently a very similar insect, with three rather deep basal foveae on the prothorax.

4.—*Biophida costata*, n. sp.

(PLATE VII, figs. 13, 13a, ♂; 14, ♀ elytron.)

Elongate, sub-parallel-sided, depressed, rather broad, moderately shining, finely pubescent; fusco-testaceous or brown, the mouth-parts, femora, and tarsi in part, testaceous; densely, finely, the elytra rather coarsely and confusedly, punctate. Head transverse, much narrower than the prothorax, well developed behind the eyes, foveate in the middle between them, the frontal suture distinct, the eyes deeply emarginate and separated in the two sexes by about their own width as seen from above; joint 4 of the maxillary palpi cultriform, a little longer than 2; antennae filiform, moderately long, rather slender, joint 2 much shorter than 3, the two together scarcely longer than 4, 4-11 sub-equal. Prothorax broad, strongly transverse, rapidly, arcuately narrowed from the middle forwards, the sides sub-parallel at the base, the latter sinuate, the two basal foveae deep, the disc canaliculate down the middle behind. Elytra long, sub-parallel, wider than the prothorax, rounded at the apex; in the ♀ with a sharply defined sub-marginal ridge extending from the humeral callus to near the apex, the ridge becoming sinuous posteriorly, and curving inwards to the middle of the disc at its point of termination. Legs rather stout; tibial spurs moderately long, thick; penultimate joint of each tarsus widened and lobed, deeply excavate above for the reception of the claw-joint, the basal joint of the posterior pair less than half the length of the tibia, the claws toothed at the base. Length $7-8\frac{1}{5}$, breadth $2\frac{1}{4}-2\frac{3}{8}$ mm. (♂ ♀)

Hab.: E. AFRICA, S.E. Slopes of Kenya, alt. 6000-7000 ft. (*S. A. Neave*).

One pair, captured in February, 1911. A large, elongate, depressed, broad form, with a prominent sub-marginal ridge on the elytra in ♀, the head foveate between the eyes in both sexes, the prothorax short and broad, with two deep basal foveae, and a short median channel between them. The long, tubular, apically bilobed process projecting from the tip of the abdomen in the larger costate example seems to be an ovipositor, and not a part of the ♂ armature.

5.—*Biophida quinquefoveata*, n. sp.

Elongate, sub-parallel-sided, rather broad, flattened above, dull (till denuded), finely pubescent; brown, the head, antennae, and prothorax nigro-fuscous; head and prothorax densely asperato-punctate, the elytra more coarsely, confusedly punctured, with the interspaces minutely punctulate, the puncturing of the under-surface very fine and dense. Head transverse, narrower than the prothorax, well developed behind the eyes, tumid in the middle posteriorly, the frontal suture distinct, the eyes separated by fully their own width as seen from above; joint 4 of the maxillary palpi stout, sub-cultriform,

that of the labial pair broad and securiform; antennae moderately long, filiform, joint 2 very short, not half the length of 3, the two together about as long as 4, 4-11 elongate, sub-equal. Prothorax short, broad, rounded at the sides, narrowed in front, the hind angles obtuse, the base sinuate and conspicuously margined between the two deep foveae, the disc also trifoveate (two of the foveae placed transversely before the middle and one opposite the scutellum before the base) and with a small polished spot in the centre. Elytra very long, much wider than the prothorax, sub-parallel, rounded at the apex. Penultimate joint of each tarsus widened and lobed, the claws toothed at the base. Length $9\frac{1}{2}$, breadth $3\frac{1}{2}$ mm. (♀?)

Hab.: E. AFRICA, Lagari (*C. S. Betton*).

One specimen, captured between March and May, 1900, at "Mile 469." Near *B. costata* (♂), but larger and with much longer elytra, and a rougher head and prothorax, the latter more rounded at the sides and 5-foveate, the vertex of the head tumid and with a small polished spot in the centre (like that on the prothorax), the inter-ocular fovea wanting. *Scraptia maxima* Pic (the type of which is in the Vienna Museum), from Kilimanjaro, is described as having a trifoveate prothorax, and it must be nearly related to the present species; the former, however, is said to be pallid in colour and to have the head impressed.

BIOPHIDINA, n. gen.

Ligula membranous, broad, short, hollowed in the middle in front; terminal joint of labial palpi stout, sub-triangular, the obliquely truncate, spongy, apical face not longer than the inner or outer sides; apical joint of maxillary palpi moderately stout, ovate, very obliquely truncate at the apex; mandibles bifid at the tip; tarsal claws slightly widened at the base; the other characters as in *Biophida* Pasc.

Type: *Biophida minor* Pic.

The non-appendiculate tarsal claws, the simple, sub-triangular, apical joint of the labial palpi, and the feebly emarginate ligula, are the chief characters of this genus. A somewhat similar modification of the labial palpi is to be found in the Tropical American Scraptiid-genus *Evalces*. The type of *Biophidina* has the general facies of a narrow *Isomira*, fam. Cistelidae. *S. africana, antei* p. 265, may have to be transferred to this genus when perfect examples can be obtained for examination.

1.—*Biophidina minor*.

(PLATE VII, figs. 15, 15a, b.)

Biophida minor Pic, L'Echange, XXIV, p. 60 (1903).

Elongate, rather broad, flattened above, shining, closely pubescent; obscure testaceous, darker beneath the eyes and joints 4-11 of the antennae infuscate

or black; densely, very finely punctate, the elytra with intermixed, slightly coarser punctures on their basal half. Head rather small, transverse, somewhat rounded at the base, depressed in the middle between the eyes, the latter moderately large, distant, the frontal suture traceable; antennae comparatively stout, not very long, joint 2 short, 3 considerably longer, but shorter than 4, 4-11 sub-cylindrical, equal in length. Prothorax transverse, large, semi-circular, with two small, deep, basal foveae, and a shallow transverse depression between them. Elytra long, a little wider than the prothorax, sub-parallel in their basal half, and rounded thence to the apex. Legs moderately long, slender; basal joint of posterior tarsi about one-half longer than the rest united. Length $5\frac{1}{3}$ -6, breadth $1\frac{1}{3}$ - $2\frac{1}{3}$ mm. (♀.)

Hab.: NATAL (*ex coll. Pascoe*), Maritzburg (*Mus. Brit.*), Durban [type].

The above description is taken from three specimens—one (♀) from Maritzburg, much narrower than the others, and in good condition, the two labelled "Natal" (♀?) more or less discoloured. The intermixed, distinctly coarser punctures on the elytra and the depression on the head are not mentioned by Pic, but there can be no doubt as to the identification of the species.

EXPLANATION OF PLATE VII.

Fig. 1.	<i>Scaptia sagittifera</i> , n. sp., ♂, Tenasserim	<i>anteá</i> , p. 241
" 2.	" <i>picturata</i> , n. sp., Queensland	" 241
" 3.	" <i>fusconotata</i> , n. sp., ♂, Rio de Janeiro	" 242
" 4.	" <i>munita</i> , n. sp., ♂, anterior leg, Mexico.....	" 247
" 5.	" <i>platycephala</i> , n. sp., Rio de Janeiro	" 249
" 6.	" <i>quadrisignata</i> , n. sp., Assam	" 250
" 7.	" <i>angulata</i> , n. sp., Nilgiri Hills*	" 251
" 8.	" <i>platydera</i> , n. sp., Natal.....	" 266
" 9.	" <i>triangularis</i> , n. sp., Rio de Janeiro	" 267
" 10.	" <i>zonitoides</i> , n. sp., Ega	" 267
" 11.	" (?) <i>cribripennis</i> , n. sp., ♀, Cape of Good Hope ...	" 268
" 12.	<i>Biophida unicolor</i> Pasc., labial palpi, etc., S. Africa; 12a, maxillary palpi, etc.	" 270
" 13.	<i>Biophida costata</i> , n. sp., ♂, E. Africa; 13a, tarsal claw.....	" 272
" 14.	" " ♀, elytron	" 272
" 15.	<i>Biophidina</i> (n. gen.) <i>minor</i> Pic, Natal; 15a, 15b, labial and maxillary palpi, etc.	" 273

Horsell, Woking :

December, 1916.

* Mr. Andrewes has just sent me another *Scaptia* from this locality. It agrees with the description of *S. pallidonotata* Pic, the type of which was from Darjeeling, and is very closely related to *S. angulata*.

RE-ARRANGEMENT OF THE *BAGOINI*.
PRELIMINARY LIST OF THE BRITISH MEMBERS.

BY D. SHARP, M.A., F.R.S.

The *Bagoini* are a reproach to Coleopterists; there being but little agreement as to genera, species and nomenclature. Probably one of the causes of this is that the group is compounded of two distinct tribes. These I propose to distinguish as *Bagoini* and *Pseudobagoini*. After this separation is effected the British forms become easily distinguished, except in the case of a few that are really very close.

Trib. PSEUDOBAGOINI (NOV.).

Hydronomus alismatis.

Abagous (gen. n.), sp. n., two spp. standing as *glabrirostris* and *lutulentus* Gyll.

Parabagous (gen. n.), *frit* Schönh. and sp. n.

Trib. BAGOINI.

Probagous (gen. n.) *heasleri* Newb., *cnemerythrus* Marsh., and *convexicollis* Boh.

Lyprus cylindrus.

Bagous nodulosus, *linosus*, *mundanus*, *brevis*, *lutulosus*.

Elmidomorphus aubei.

There are three species in our catalogue which are not represented in my collection, so that I cannot at present say anything about them, viz., *binodulus*, *diglyptus*, *lutosus*.

I may add that I have in preparation a paper on the subject, and that I shall be very glad of information, and should like to see additional specimens, which I will, if desired, name so far as I can. The type of the tribe *Pseudobagoini* is the S. African genus *Pseudobagous* (nov.) founded on *P. junodi* sp. n. (= *Bagous longulus* pars auctt).

Brockenhurst:

October 27th, 1916.

PHALONIA MANNIANA AND ITS ALLIES.

BY E. MEYRICK, B.A., F.R.S.

Dr. Kennel, in his "Palaearktischen Tortriciden," p. 276, has sunk *notulana* as a synonym of *manniana*, apparently with the tacit approbation of Lord Walsingham, as he bases his conclusion as to their identity on the examination of one of Zeller's original type-specimens

of *notulana* lent from Lord Walsingham's collection and figured in his work. This view surprised me. I have taken both forms commonly near Ramsbury, within a few hundred yards, but in very different situations (wet and dry respectively) and never together; they look very distinct, *notulana* being much darker, with a good deal of dark fuscous marking, *manniana* much yellower, and I have no intermediates. It is possible, however, to argue that the former is a dark marsh form, influenced by difference of food-plant, the form of wing and position of markings being nearly the same, and therefore I looked for some structural distinction. This was soon found in the ciliations of the ♂ antennae; in *notulana* these are about 1, in *manniana* at least 2; the difference is conspicuous, and the distinction fully conclusive; the two species are undoubtedly distinct.

Consideration of Dr. Kennel's work makes me doubt whether he is really acquainted with *manniana* at all; he gives three figures (Pl. XII, 69-71), but I think all are *notulana*, and his description applies entirely to this also. It would seem that the name *manniana* has been often misapplied on the Continent, and that some authors who treat of it (Herrich-Schäffer, for instance) had not the true species before them. Are we sure of the identification ourselves? On this point the evidence seems entirely satisfactory, and is recorded by Barrett in Ent. Mo. Mag. (Vol. XI, p. 192), where he also gives a clear and unmistakeable description; specimens were sent to Zeller, who certified them to be *manniana* (being of course also well acquainted with his own *notulana*) on the strength of types named by Fischer von Röslerstamm, the author of the species, and several others received from Mann himself, "who, I should think, must know the species named in his honour," and agreeing with the original figure.

Unfortunately wrong identifications of this and other species of the genus have caused considerable confusion in the recorded larval habits. By collecting without discrimination various records Dr. Kennel gives in many cases a list of various food-plants, when in fact only one is normal, the others being either exceptional or erroneous. The normal food-plant of *notulana* seems to be *Mentha aquatica*, amongst which I always take it; he cites also other species of *Mentha* and *Lycopus*, on which it may very well feed sometimes, but *Alisma*, *Butomus*, and *Inula* are given probably by confusion with other species. The true *manniana* (which is widely distributed in this neighbourhood) occurs here only on the hills, on dry flowery banks. I have never found one in the day-time, but it can be taken flying after sunset; its food-plant

is certainly none of the plants mentioned above, and I am not aware that it has ever been bred, but I conjecture it to be attached to *Centaurea*.

Dr. Kennel describes and figures *udana* under its own name, and I judge both description and figures to refer to the true species; but he then proceeds to suggest that as all the examples of *udana* which have come before him have been females and all those of *manniana* (= *notulana*) males, it is not improbable that both are sexes of a single species, and adds that this suggestion is accepted by Lord Walsingham ("was auch Walsingham annimmt"). This is a still more astonishing conclusion; there is no question that it is a false one. My examples of *udana* were taken by myself amongst *Alisma* in the brick-pits at Cambridge, and include both males and females, the sexes being quite similar in form and colouring; in the ♂ antennae the ciliations are about 1, much as in *notulana*, the joints somewhat more sub-cordate in form, whilst in *notulana* they are sub-quadrate, but the difference is slight. The species is immediately distinguished from *notulana* and *manniana* by the more elongate wings and different olive-brown colouring. The food-plant is *Alisma*, the other half-dozen plants cited by Dr. Kennel being certainly erroneous. I possess females as well as males of *notulana* and *manniana* also, and in each case the females are quite similar to the males.

I have recorded as identical with *manniana* a species which I have received freely from India and Ceylon (the only *Phalonia* yet made known from the Indian region), though I must admit much uneasiness in accepting the view that an insect of specialised habits could occur both on the Wiltshire Downs and at the mouth of the Ganges. In connection with the above enquiry, however, I was led to make a more critical examination of this species, and I now find it to be distinct from *manniana* and its allies, and therefore describe it as new.

PHALONIA MELLITA, n. sp.

♂ ♀. 9-14 mm. Head, palpi, and thorax pale ochreous or whitish-ochreous. Antennal ciliations of ♂ 1. Abdomen light grey. Fore-wings elongate, posteriorly somewhat dilated, costa gently arched, apex obtuse, termen slightly rounded, rather oblique; pale ochreous, glossy or silvery-iridescent; markings deep yellow-ochreous or golden-ochreous, sometimes tinged with fuscous on costa and dorsum; sometimes a few minute dark fuscous strigulae on costa and dorsum; a more or less extended suffusion along costa from base; an oblique spot or streak from dorsum near base, sometimes nearly obsolete; a moderate or rather narrow median fascia, obtusely angulated above middle, tending to be obscurely interrupted there; usually a more or less developed streak of dark fuscous suf-

fusion along posterior edge of this in disc below angulation; a triangular spot on dorsum at $\frac{3}{4}$; a cloudy transverse spot above tornus; a fasciate streak from $\frac{4}{5}$ of costa to termen below middle, lower portion narrowed or obsolete: cilia whitish-ochreous. Hind-wings grey; cilia whitish-grey, with grey sub-basal shade; in ♂ with slender costal fold to $\frac{2}{3}$, enclosing thin expansible whitish hair-pencil.

CEYLON, Puttalam, Trincomali, Madulsima (*Fletcher, Vaughan, Pole, Grey*); COORG, Dibidi, 3500 feet (*Newcome*); BENGAL, Ganges delta; N. AUSTRALIA, Port Darwin (*Dodd*); sixteen specimens. The wide distribution of this species probably infers attachment to some garden plant, most likely a Composite.

Thornhanger, Marlborough:

November 1st, 1916.

Note on the Stephensian records of Psylliodes cyanoptera Ill.—In the September number of this Magazine, p. 204, Mr. Donisthorpe asks for the original reference to the Stephensian records for this species quoted by Fowler (Col. Brit. Isles, IV, 391). It is much easier to supply than to explain. The exact words are quoted from Steph. Ill., Mandib. IV, 302. They are repeated in a slightly varying form in the Manual, p. 293. "London district; Bristol; Suffolk." Both these quotations refer to *Haltica tripudians* Kirby. G. R. Waterhouse, Cat., p. 95, identifies this species as *Psylliodes cyanoptera* Ill., and definitely states that it is the *tripudians* of the Kirby collection. The difficulty of accepting this identification lies in the fact that Stephens places his *tripudians* Kirby in the genus *Haltica*, which in the "Illustrations" he describes as having "Tarsi postici breves, in apice tibiae inserti," as opposed to his genus *Macrocnema*, "Tarsi postici elongati, ab apice tibiae remoti," by which, as Fowler says, "This very distinct genus [*Psylliodes* Latr. = *Macrocnema* Stephens] may easily be known."—E. G. BAYFORD, 2, Rockingham Street, Barnsley: November 1st, 1916.

Monochamus sartor L. in London: a correction.—We are requested to note that the name of the Longicorn recorded on p. 201 by Mr. R. S. Mitford as *Monochamus sartor* L. should be *M. sutor* L.—Eds.

Hemiptera in Cumberland.—In "The Naturalist" for August, 1916 (pp. 252—257), Mr. F. H. Day, F.E.S., records 173 *Hemiptera* in a preliminary list of these insects in Cumberland, to which Mr. J. Murray (*l.c.* p. 349) adds two more species. Since I handed my list of captures to Mr. Day, I have identified the following six additional species and one variety, which brings the total up to 181 for the county. *Lygus rubricatus* Fall., Great Salkeld, 22.8.1910; *Orthotylus concolor* Kb., Great Salkeld, 27.8.1913; *Heterocordylus genistae* Scop., Great Salkeld, 26.7.1905; *Malacocoris chlorizans* Fall., Great Salkeld, 27.8.1913 (also recorded by Mr. J. Murray; *Onychumenis decolor* Fall.,

Great Salkeld, 16.8.1910; *Plesiodema pinetellum* Zett., Wandel Fell, 2.7.1911, one specimen; *Corixa praeusta* Fieb. var. *wollastoni* D. and S., Sprinkling Farm, 1.7.1903, two examples, the type being not uncommon. When no numbers are given, it may be understood that the species was taken freely.—H. BRITTEN, Myrtle View, Windmill Road, Headington, Oxon: November 12th, 1916.

Psallus vitellinus Scholtz in Oxfordshire. This little Capsid was beaten out of pine branches in fair numbers at Bayswater, near Headington, Oxon. 17.7.1915, and a week later turned up freely on pines at Shotover, Oxon. I am indebted to Mr. E. A. Butler for the identification of this species.—H. BRITTEN.

Limnophilus fuscineris in Co. Monaghan.—I have the pleasure to record the capture of a second example of *Limnophilus fuscineris* Zett. in Ireland, the only previously known specimen from these Islands having been taken by Mr. J. N. Halbert in County Mayo, as reported by me in Ent. Mo. Mag., XLV, p. 233. The new locality is a lake near the Monaghan road, a short distance beyond the village of Emyvale. The insect, which is a ♀ in good condition, was swept on August 10th last from reeds on the margin of the lake, and along with it occurred *Agrypnia pagetana* and some other commoner species. Only a very short time was available for collecting at the lake in question and I had no opportunity of revisiting it. The species has evidently a fairly extensive range in Ireland, the two localities in which it has been found being widely apart.—KENNETH J. MORTON, 13, Blackford Road, Edinburgh: September 22nd, 1916.

An exotic Blattid, *Rhyparobia maderae* Fabr. in Yorkshire.—On September 14th, a live specimen was brought me of *Rhyparobia maderae* Fabr., having been found at the local goods station in some loose packing. It has been identified by Mr. Lucas.—H. LING ROTH, Bankfield Museum, County Borough of Halifax: November 10th, 1916.

The occurrence of *Xenopsylla cheopis* Roths. in Bristol.—Professor Walker Hall and Dr. D. S. Davies of the University, Bristol, have permitted me to record that on August 5th this year they secured two examples of *Xenopsylla cheopis* Roths., on a *Mus norvegicus*, at the rag factory which was the seat of the outbreak of plague in the town of Bristol. It is interesting to note that the rat was infected with plague.—N. CHARLES ROTHSCHILD, Arundel House, Kensington Palace Gardens, W.: November, 1916.

OBITUARY.—Charles Adolphus Briggs, of Rock House, Lynmouth, N. Devon, died on October 17th last. He was born on May 26th, 1849. During the earlier portion of his life he chiefly devoted his attention to *Lepidoptera*, but later took to collecting *Odonata*, *Ephemera*, and *Mollusca*. In 1896 he took up his residence at Lynmouth, and after that paid considerable attention to *Trichoptera* and mosses, till failing health compelled him to rest. On October 13th, 1914, he had a paralytic stroke from which he never thoroughly recovered. He was never married, and for forty years lived with his brother, T. H. Briggs, who

has kindly supplied the above particulars. C. A. Briggs was elected a Fellow of the Entomological Society of London, in 1877, his brother having joined in 1870. Both of them were well known among British Lepidopterists.

Society.

ENTOMOLOGICAL SOCIETY OF LONDON: *Wednesday, October 18th, 1916.*—
Dr. T. A. CHAPMAN, M.D., F.Z.S., Vice-President, in the Chair.

Prof. E. Bugnion, La Luciole, Aix-en-Provence, France, and Rev. Bruce Cornford, 13, Havelock Road, Portsmouth, were elected Fellows of the Society.

Prof. Poulton gave an account of some experiments on spiders with butterfly food, and observations on the attacks of birds on butterflies, in British East Africa, by the Rev. K. St. Aubyn Rogers. Prof. Poulton also called attention to some observations by Dr. R. Hanitsch on the proportions of the female forms of *Papilio polytes* L., on Singapore Island, and exhibited all the females and a selection of the males of series of *P. polytes* f. *romulus* G., on which they were based. Mr. Donisthorpe, an ergatandromorph of *Myrmica laevinodis* which he had taken in his garden at Putney on October 11th. Mr. W. C. Crawley, mermithogynes of *Lasius flavus* and *L. alienus* taken at Porlock; also the alate ♀♀, hitherto unknown, of the common ant Aphids, *Forda formicaria* Heyden and *F. viridana* Buckton, taken at Porlock with *Lasius alieno-niger*. Dr. Cockayne, a ♀ Psychid bred July, 1916, from a larva found on a Japanese dwarf cedar at Hammersmith, together with the larval case. Mr. L. W. Newman, true melanic (unicolorous black) specimens of *Eupithecia lariciata* from Warwickshire; melanic specimens of *Boarmia consonaria* from Kent; dark type, intermediate and melanic specimens of *B. consortaria* from Warwickshire; also, on behalf of Mr. G. B. Oliver, two curious aberrations of the latter species, a ♀ almost entirely cream-coloured, and a ♂ with both right wings heavily, and the left hind-wing slightly, marked with yellow. Mr. H. Main, a pupal cell *in situ* of the beetle *Dytiscus marginalis*, together with a spectroscopic photograph of the pupa in its cell, showing how it rested on its extremities, the rest of the body being unsupported. Mr. Bedwell, on behalf of Mr. C. J. C. Pool, who was present as a visitor, an exceptionally large ♂ of *Emus hirtus* taken near Rochester in September, and a specimen of *Megapenthes lugens* taken by Mr. D. Cumming, in May, 1915, on holly blossom near Lyndhurst; also a living specimen of *Elater coccinatus* from Waltham Abbey, with examples of *E. pomonae* and *E. sanguinolentus*, and the thorax of each species mounted separately for comparison.

The following papers were read:—"Falkland Island *Diptera*," by C. G. Lamb, M.A., B.Sc.; communicated by F. W. Edwards, F.E.S. "Observations on the Growth and Habits of the Stick-Insect *Carausius morosus* Br.," by H. Ling Roth; communicated by Prof. Poulton, D.Sc., F.R.S., etc.—GEO. WHEELER, *Hon. Secretary.*

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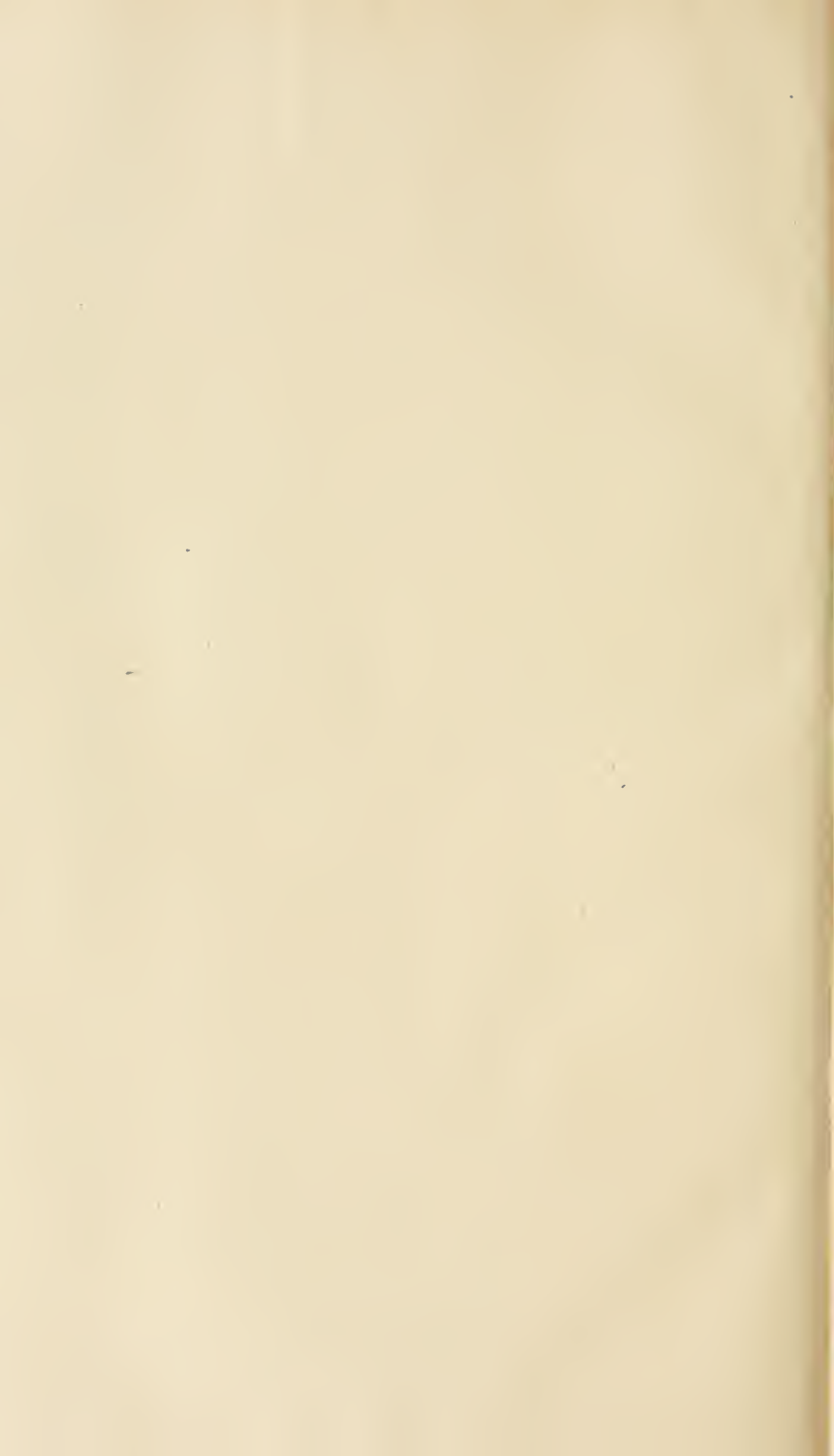
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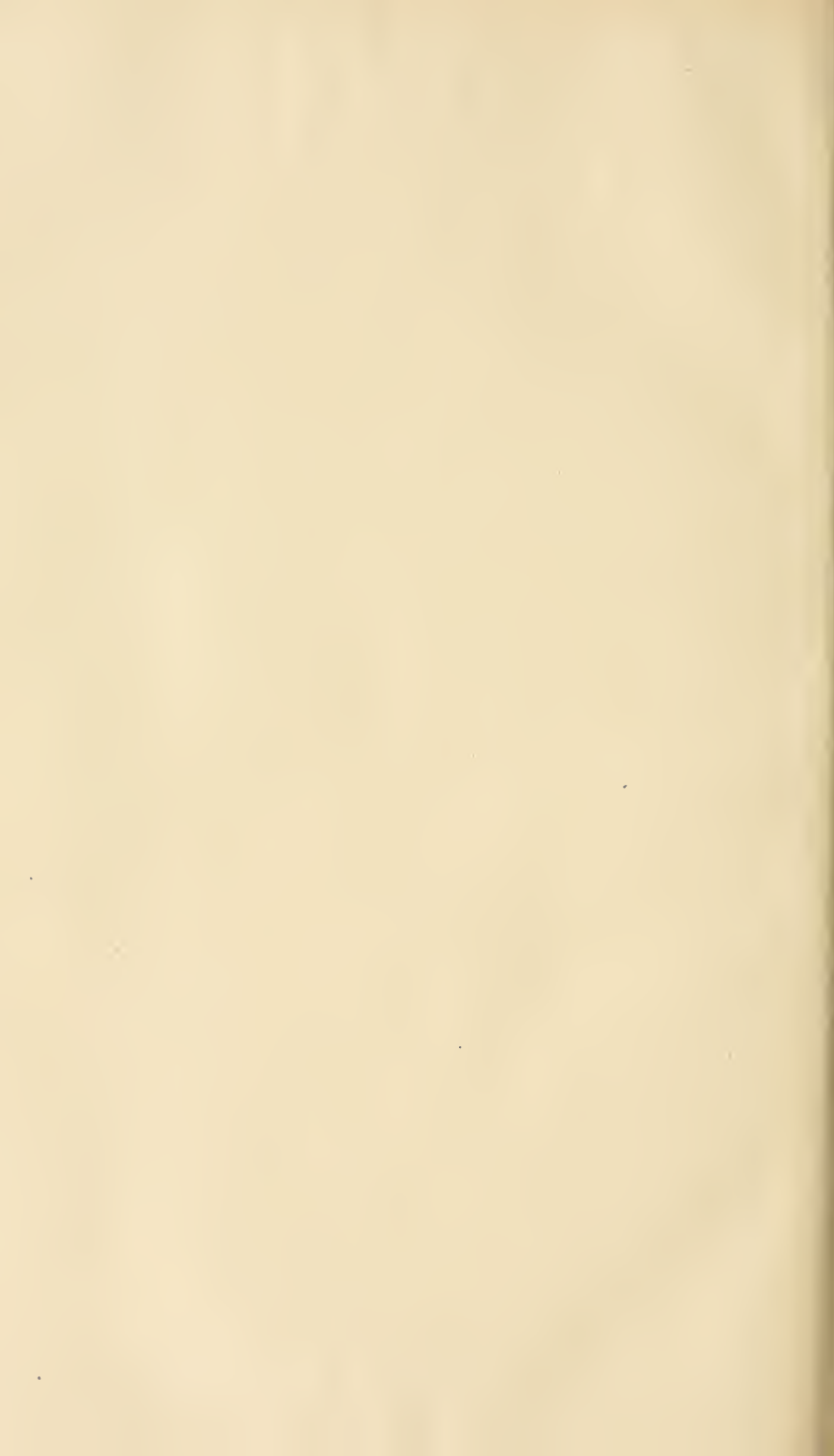
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