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[VOL. XLII.]

“To the attentive eye, each moment of the year has its own beauty. The tribes of birds and insects, like the plants, punctual to their time, follow each other, and the year has room for all.”—*Emerson*.

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THE

ENTOMOLOGIST'S

MONTHLY MAGAZINE:

SECOND SERIES—VOL. XVII.

[VOLUME XLII].

THE COLEOPTERA OF LUNDY ISLAND.

BY NORMAN H. JOY, M.R.C.S., F.E.S.

Lundy Island was first visited by a Coleopterist in June, 1844, when Mr. Wollaston stayed for five days on the island and collected sixty-five species (Zoologist, vol. iii, p. 897); among these were two of special interest, *Psylliodes luridipennis*, Kuts., and *Ceuthorrhynchus contractus*, v. *pallipes*, Crotch, two forms which had not occurred elsewhere. Wollaston again made an excursion to the island in July, 1845, stopping nearly a week, and adding eighty-eight species to his list (Zoologist, vol. v, p. 1753). In the Ent. Mo. Mag., vol. vi, p. 134, Mr. F. Smith gives a description of two short visits in August, 1864, in quest chiefly of *Hymenoptera*, enumerating eight more species of *Coleoptera*; and, again, in Ent. Mo. Mag., vol. xi, p. 111, the same author records the capture in August, 1874, of twenty-two additional species, thus making a total of 183 species. I find, however, that Mr. Smith has made several mistakes in recording a species a second time, and Mr. Wollaston has marked some of his with a ?, so that the complete list should only amount to 164. Considering the shortness of the expeditions made by Wollaston and Smith, and the number and interest of their captures, it is surprising that there is no record of the island having been searched for *Coleoptera* during the last thirty years; and it was on this account that I determined to make a short stay there last August, hoping to add a few more species to the local list; nor was I disappointed, as out of 164 species collected in a little over two days ninety-seven are new to the list. One of these, *Melanophthalma distinguenda*, Com., has not before been recorded from Britain, and another I here describe as a new variety under the name *Stenus ossium*, v. *insularis*, var. n.

Lundy Island, situated off the north coast of Devon, is distant about fourteen miles from Hartland Point, and thirty from the Welsh coast. It is an isolated rock of granite, some $3\frac{1}{4}$ miles long by half a mile broad, rising more than 400 ft. directly from the sea. It is almost treeless, the vegetation consisting chiefly of heather, grass, bramble and bracken, usually the most unproductive ground for *Coleoptera*. There are a few boggy places, which, however, were nearly dried up in August, and several ponds of clear water in the rock which harboured a good number of water beetles. Exposed as the island is to the full force of the Atlantic Ocean one must expect a rough passage out to it, and consider himself lucky if he can leave on the day appointed. There is only one landing place, a little bay well sheltered from the prevailing S.W. winds, but fully exposed to the east, so that a change of wind may mean a delay of many days in getting off. Indeed there are tales of excursionists being detained even for weeks!

I found beetles extraordinarily plentiful both in species and individuals, and nowhere more so than on the western cliffs, where Wollaston says that the continual south-westerly gales seem to be inimical to all life but bird-life. I passed a whole day in exploring about half a mile of this coast, and spent most of the time on the very edge of the cliff while examining the roots of grass and plants. This was most fascinating collecting; beetles were everywhere, and everything had to be bottled; and when one found time to rest for a moment it was to glance downwards at the Atlantic waves breaking against great granite rocks four hundred feet directly below, or to occasionally watch a fine buzzard or peregrine falcon sail by on outstretched wings. The almost dried up carcass of a sheep that had fallen into a crevice in the rock near here was a lucky find. Several species new to the island were shaken out of the wool and bones, including *Clambus pubescens*, Redt., and *Cercyon terminatus*, Marsh.

Examining grass and moss in an ordinary grazing meadow was most productive, and about two hours were thus spent on the last day when sitting under a wall to get out of the rain, anxiously waiting for the excursion steamer from Ilfracombe to come in sight. I had no time to explore the north end of the island, where, however, the land is very bare. The cliffs on the east side are not nearly so steep as on the west, and are covered with very thick vegetation. I was somewhat surprised at taking *Apteropeda orbiculata*, Marsh., and *Encephalus compligans*, Westw., by sweeping here in the morning.

The local *Psylliodes* and *Ceuthorrhynchus* were feeding in some

numbers on the wild cabbage, which seems only to grow at the south-east corner of the island. The *Ceuthorrhynchus* I found was accompanied by the type form, seven specimens belonging to the type out of thirty-four taken. It is curious to note that just two-thirds of my specimens were maimed in some way, one antenna or a tarsus being often missing.

Wollaston remarks on the fact that none of the characteristic beetles of the North Devon coast are found on the island, and many species occur on Lundy which are absent from the neighbouring Devonshire coast. This is not so surprising when we consider how very different the two coasts are geologically. There is no sand on Lundy Island, and no granite on the North Devon coast. He suggests that the Coleopterous fauna more nearly resembles that of the Welsh coast (where, however, granite does not occur either); and he instances the abundance of *Oteniopus sulphureus*, L., in both localities. I only had two days' collecting on the North Devon coast, so can form no opinion on this point, but it is just worth recording that I found the somewhat local *Falagria thoracica*, Curt., very common both on Lundy and at Woolacombe. Since writing the above I have had the opportunity of seeing the MS. of the Devonshire list of *Coleoptera*, and I find there are twenty-four species recorded from Lundy Island which are not recorded from the rest of the county.

Lundy Island is evidently an exception to the rule that the insect life on an island is poorer both in individuals and in species than the adjoining mainland, for I do not think I have ever seen beetles more numerous. There must be exceptional conditions prevailing to account for its possessing two species not found elsewhere in the British Islands, and two distinct varieties peculiar to it, and also for this reason it is probable that it has for a very long time been separated from the mainland. The climate no doubt is very favourable, being even more equable than on the north coast of Devon, and it has a considerably less rainfall. As might almost be expected, the *Phytophaga* are on the whole abnormally small; all my specimens of *Crepidodera ferruginea*, Scop., belong to a distinctly small race.

As Wollaston's Lundy list of *Coleoptera* is not easily accessible, and as so many of the names are now obsolete, I have thought it best to give a complete list of the *Coleoptera* of the island, marking my own captures not included in Wollaston's and Smith's lists with an * I have little doubt there is still a large number of species to be discovered.

I have to thank Canon Fowler for much help in the identification of many of my specimens, and Mr. Tomlin for working out Wollaston's old names.

Cicindela campestris, L.; *Carabus granulatus*, L., *C. nemoralis*, Müll.; **Notophilus biguttatus*, F., **N. substriatus*, Wat., *N. aquaticus*, L.; *Nebria brevicollis*, F.; *Badister bipustulatus*, F.; **Bradycellus harpalinus*, Dj.; **Harpalus rufibarbis*, F., **H. ruficornis*, F., *H. æneus*, F., **H. rubripes*, Duft., *H. latus*, L., **H. tardus*, Pz., *H. honestus*, Duft.; *Anisodactylus binotatus*, F.; *Pterostichus versicolor*, Stm., *P. madidus*, F., *P. vulgaris*, L., *P. nigrita*, F., *P. strenuus*, Pz., **P. striola*, F.; **Amara tibialis*, Pk., *A. trivialis*, Gyll., *A. continua*, Th., *A. plebeia*, Gyll.; *Calathus cisteloides*, Pz., *C. melanocephalus*, L.; *Anchomenus albipes*, F., *A. viduus*, Pz.; *Olisthopus rotundatus*, Pk.; **Bembidium lampros*, Hbst.; *Trechus lapidosus*, Daws., *T. minutus*, F.; *Demetrias atricapillus*, L.; *Dromius linearis*, Ol., **D. nigri-ventris*, Th.; *Metabletus foreola*, Gyll.; *Haliplus lineatocollis*, Marsh.; **Laccophilus obscurus*, Pz.; **Hydroporus gyllenhali*, Schiöd., **H. palustris*, L., *H. erythrocephalus*, L., *H. rufifrons*, Duft., *H. memnonius*, Nic., *H. planus*, F.; *Agabus nebulosus*, Forst., *A. chalconotus*, Pz., *A. bipustulatus*, L.; **Acilius sulcatus*, L.; **Hydrobius fuscipes*, L.; **Anacæna limbata*, F.; **Helochares punctatus*, Shp.; *Laccobius minutus*, L.; *Berosus luridus*, L. (?); *Limnebius truncatellus*, Thunb.; *Helophorus aquaticus*, L., *H. æneipennis*, Th., *H. brevipalpis*, Bed.; **Sphæridium bipustulatum*, F.; *Cercyon littoralis*, Gyll., *C. hæmorrhoidalis*, F., **C. unipunctatus*, L., **C. terminatus*, Marsh., **C. analis*, Pk.; *Megasternum boletophagum*, Marsh.; *Aleochara fuscipes*, F., **A. cuniculorum*, Kr., *A. lanuginosa*, Gr., **A. succicola*, Th., *A. nitida*, Gr., *A. grisea*, Kr.; **Microglossa suturalis*, Sahlb.; *Drusilla canaliculata*, F.; **Homalota circellaris*, Gr., **H. analis*, Gr., **H. trinotata*, Kr., **H. sericea*, Muls., **H. atramentaria*, Gyll., **H. sordida*, Marsh., **H. fungi*, Gr.; **Gnypeta labilis*, Er.; **Falagria thoracica*, Curt.; **Encephalus complicans*, Westw.; **Oligota punctulata*, Heer; *Tachyporus obtusus*, L., **T. formosus*, Mat., *T. solutus*, Er., **T. chrysoelinus*, L., **T. humerosus*, Er., *T. hypnorum*, F., **T. pusillus*, Gr., *T. brunneus*, F.; **Tachinus rufipes*, De G., **T. marginellus*, F.; *Quedius tristis*, Gr., *Q. rufipes*, Gr., *Q. boops*, Gr.; *Ocyopus olens*, Müll., *O. cupreus*, Ross., **O. ater*, Gr., *O. compressus*, Marsh.; *Philonthus intermedius*, Bois., **P. æneus*, Ross., **P. politus*, F., **P. varius*, Gyll., **P. cephalotes*, Gr., **P. cruentatus*, Gmel., *P. varians*, Pk., **P. agilis*, Gr., **P. trossulus*, Nord.; *Castus xantholoma*, Gr.; *Xantholinus glabratus*, Gr., *X. linearis*, Ol.; *Stenus speculator*, Lac., **S. ossium*, var. *insularis*, var. nov., *S. impressus*, Germ., **S. latifrons*, Er.; *Oxytelus complanatus*, Er., **O. tetracarinus*, Block; *Homalium rivulare*, Pk., **H. allardi*, Fairm., **H. excavatum*, Steph., **H. striatum*, Gr.; **Clambus pubescens*, Redt.; *Neerophorus humator*, Goez., *N. vestigator*, Hers.; **Silpha tristis*, Ill.; **Choleva watsoni*, Spence; **Scydmanus collaris*, Müll.; **Ptenidium nitidum*, Heer; **Subcoccinella 24-punctata*, L.; *Coccinella 11-punctata*, L., **C. 7-punctata*, L.; *Hyperaspis reppensis*, Hbst.; *Scymnus suturalis*, Thunb., **S. testaceus*, Mots.; **Rhizobius litura*, F.; **Mycetæa hirta*, Marsh.; *Orthocerus muticus*, L.; **Hister cadaverinus*, Hoff.; *Brachypterus pubescens*, Er., *B. urticæ*, F.; *Cercus rufilabris*, Lat.; *Epuræa æstiva*, L.; **Omosita colon*, L.; *Meligethes viridescens*, F., *M. lugubris*, Stm., **M. obscurus*, Er.; **Conionomus nodifer*, Westw.; **Enicmus minutus*, L., *E. transversus*, Ol.; *Corticaria*

crenulata, Gyll.; *Melanophthalma gibbosa*, Hbst., **M. distinguenda*, Com., **M. fuscata*, Hum.; **Cryptophagus setulosus*, Stm., **C. affinis*, Stm.; **Micrambe vini*, Pz.; *Atomaria fuscipes*, Gyll., **A. munda*, Er., *A. atricapilla*, Steph., **A. berlinensis*, Kr., **A. apicalis*, Er.; **Ephistemus gyrimoides*, Marsh.; *Byrrhus pilula*, L.; *Parnus prolifericornis*, F.; **Aphodius erraticus*, L., *A. fossor*, L., *A. ater*, De G., **A. rufipes*, L.; *Geotrupes typhæus*, L., **G. stercorarius*, L., *G. sylvaticus*, Pz.; *Serica brunnea*, L.; *Cetonia aurata*, L.; *Lacon murinus*, L.; *Melanotus rufipes*, Hbst.; *Adrastus limbatus*, F.; *Agriotes sputator*, L., *A. lineatus*, L.; *Dolopius marginatus*, L.; *Corymbites holosericeus*, F.; *Telephorus hæmorrhoidalis*, F.; *Rhagonycha testacea*, L.; *Psilothrix nobilis*, Ill.; *Ptilinus pectinicornis*, L.; **Lema melanopa*, L.; *Cryptocephalus fulvus*, Gæz.; *Chrysomela banksi*, F., *C. varians*, Schal., *C. hyperici*, Forst.; **Phædon tumidulus*, Germ.; *Longitarsus luridus*, Scop., *L. melanocephalus*, De G., *L. femoralis*, Marsh., **L. pusillus*, Gyll., *L. tabidus*, F., **L. jacobææ*, Wat., **L. gracilis*, Kuts., *L. lævis*, Duft.; *Haltica oleracea*, L.; *Phyllotreta atra*, Pk.; *Sphæroderma cardui*, Gyll.; *Apteropeda orbiculata*, Marsh.; *Mantura chrysanthemii*, Koch; *Crepidodera ferruginea*, Scop.; **Chætocnema hortensis*, Fourc.; **Plectroscelis concinna*, Marsh.; *Psylliodes luridipennis*, Kuts., **P. napi*, Koch, *P. dulcamaræ*, Koch, **P. chalconera*, Ill.; *Helops striatus*, Fourc.; *Cistela murina*, L.; *Cteniopus sulphureus*, L.; *Meloë proscarabæus*, L.; *Rhynchites minutus*, Hbst.; **Apion cruentatum*, Walt., *A. hæmatodes*, Kirb., *A. rufrostre*, F., *A. apricans*, Hbst., **A. bohemani*, Th., *A. nigritarse*, Kirb., *A. æneum*, F., *A. radiolus*, Kirb., *A. carduorum*, Kirb., *A. striatum*, Kirb., *A. scutellare*, Kirb., *A. marchicum*, Hbst., *A. violaceum*, Kirb., *A. humile*, Germ.; *Otiorrhynchus ligneus*, Ol., **O. sulcatus*, F., *O. rugifrons*, Gyll.; *Strophosomus retusus*, Marsh.; *Polydrusus chrysomela*, Ol.: **Philopeton geminatus*, F.; *Sitones hispidulus*, F., *S. flavescens*, Marsh., *S. puncticollis*, Steph., *S. sulcifrons*, Thunb.; *Hypera punctata*, F., **H. polygoni*, L.; *Tychius lineatulus*, Steph., *T. tomentosus*, Hbst.; *Miccotrogus picirostris*, F.; *Sibinia primita*, Hbst.; *Anthonomus comari*, Crotch; **Mecinus pyraëter*, Hbst.; *Orobitis cyaneus*, L.; *Cæliodes quadrimaculatus*, L.; *Ceuthorrhynchus assimilis*, Pk., *C. ericæ*, Gyll., *C. erysimi*, F., *C. contractus*, Marsh., and v. *pallipes*, Crotch, *C. quadridens*, Pz.; *Ceuthorrhynchidius troglodytes*, F., *C. dawsoni*, Bris.

Description of *Stenus ossium*, v. *insularis*, var. nov.†

This variety differs from the type form in being decidedly smaller, narrower, and more shining; the elytra especially are narrower in proportion to the thorax, and have the depressions much less marked; the punctuation of the thorax, elytra, and hind body is not quite so thick; and the femora have the ring of black less developed.

Bradfield, Reading:

December, 1905.

† I did not take the type form on the island.

NOTES ON *TORTRIX PRONUBANA*, HB.

BY EUSTACE R. BANKES, M.A., F.E.S.

At the request of Mr. W. H. B. Fletcher, who has most generously added to my collection the example of *Tortrix pronubana* recorded by him in Ent. Mo. Mag., ser. 2, xvi, 276 (1905), I append some information about this handsome species, which may be readily recognised by the rich orange colour of the hind-wings. These notes are mainly an abridgement from the more detailed account of it given by Millière in his "Iconographie et Description de Chenilles et Lépidoptères Inédits," i, pp. 382-5 (1859), but the description of the imago (δ) is made from the Bognor specimen.

IMAGO.

δ . *Exp. al.*, 15.7 mm. *Antennæ* moderately ciliated, dark brown, annulated with whitish, with a whitish lateral stripe from base to apex externally. *Head and thorax* dark red-brown. *Fore-wings* rich brownish-grey with two oblique dark red-brown fasciæ, one stretching from the middle of the costa, where it is narrowest, to the tornus, above which it unites with the other, which extends broadly along the termen, being widest on the costa, and obscurely reticulated with bluish-grey; dorsum dark red-brown towards the middle; cilia ochreous-red, more red at the base, but blackish-grey at the tornus. *Hind-wings* rich orange, with a broad black marginal line, and some scattered black scales; cilia orange, with a deep orange basal line dusted with black along the middle. *Underside* of both fore- and hind-wings rich orange, with the dorsum and lower half of the termen of the former broadly blackish-brown, this colour stretching far up the wing above the tornus; cilia of all the wings rich orange, slightly deeper at the base, but blackish-brown at the tornus of the fore-wing. *Abdomen* black, ringed with ochreous; anal tuft orange.

The ♀ , according to Millière, is a little larger than the ♂ , and is paler, especially on the fore-wings, on the under-sides of which the dorsal margins, instead of being broadly black, are merely tinged with dark grey.

Von Heinemann (Schmet. Deutsch. u. d. Schweiz, Kleinschmet., B. i, H. i, pp. 37-8) says that the ground-colour of the fore-wings varies from ochre-yellow to cinnamon-brown, and I gather that their markings are also rather variable.

LARVA.

Fusiform, wholly green. *Dorsal area*, between the subdorsal lines, from the 2nd to the 10th segment, dark green. *Lateral area*, between the subdorsal and the spiracular lines, glaucous-green. The spiracular line alone is well defined; it is broad, continuous, wavy, and yellowish-green. *Ventral surface* inclining to bluish. *Head* large, heart-shaped, testaceous, bordered with brown from cheek to cheek. *Ocelli* large, black. *Prothoracic plate* with three cuneiform spots pointing forwards. *Spiracles* minute, white, black-ringed. *Trapezoidals* pale green, fairly distinct. *Hairs* long, whitish. *Legs* and *prolegs* greenish (Millière's description condensed).

The larva, which hatches out about the end of November, feeds at first on the parenchyma of a tender leaf, resting beneath it during the day, and after the second or third moult it devours all the edible parts of the leaves, spinning them together and living between them. It grows slowly during the winter, becoming full-fed in February or March, when it pupates, either amongst moss, or between the united leaves of its food-plant. It is polyphagous, and has been found on *Aristolochia* (spp. var.), *Arbutus unedo*, *Asphodelus racemosus*, *Rosmarinus officinalis*, *Euphorbia* (spp. var.), *Thymus vulgaris*, *Robinia pseudacacia*, *Rhus coriaria*, *Pistacia lentiscus*, *Passerina thymelæa*, and in great abundance on *Smilax aspera*: these plants represent no less than seven distinct Natural Orders, viz., *Aristolochiaceæ*, *Ericaceæ*, *Liliaceæ*, *Labiatae*, *Euphorbiaceæ*, *Leguminosæ*, *Anacardiaceæ*, and *Thymeleaceæ*! Millière says that 75% of his larvæ yielded the Dipterous parasite, *Morinia bigoti*, Mill.

PUPA.

Elongated, entirely black, slightly lustrous, with the abdominal segments showing a roughened surface, and the anal extremity blunt, rather raised, and armed with minute hooks (Millière).

The moth emerges, in Southern Europe, from the middle of February to the end of April. One can only suppose that Mr. Fletcher's capture is a representative of a second generation, although Millière doubted whether the insect had more than one brood, even in the South of France. He mentions that *T. pronubana* is exclusively southern, and, in the well-known "Catalog" by Staudinger and Rebel (1901), where it follows *viridana*, it is given as an inhabitant of Southern Europe, North-West Africa, and Asia Minor. The occurrence of this species in England is, therefore, all the more remarkable, and leads one to suppose that it must have been more or less recently imported from the "sunny south" with plants, and to hope that it will succeed in permanently establishing itself with us.

Norden, Corfe Castle :
November 6th, 1905.

SUPPLEMENTARY NOTE.

When writing the above, I had forgotten some interesting notes on this species by the Rev. F. E. Lowe, published in Ent. Rec., xii, 316-7 (1900). In Guernsey Mr. Lowe finds the moth abundant in September amongst *Euonymus (japonicus?)*, Nat. Ord. *Celastrineæ*, E. R. B.), on which it is clear that the larva there feeds. The males fly from 8-10 a.m. in bright sunshine, but the females are very lethargic. The eggs are vivid green, and laid on the leaves in patches. In Ent. Rec., xvii, 340, where the capture of a specimen at Eastbourne, by Mr. H. Cooper, last autumn is mentioned, Mr. Tutt states that *T. pronubana* is double-brooded in the south of France, and this is doubtless the case elsewhere. It may have reached England with plants from the Channel Islands.—E. R. B.: December 18th, 1905.

ON THE BRITISH SPECIES OF *HYDROTÆA*, Dsv.

BY PERCY H. GRIMSHAW, F.E.S.

(Continued from Vol. XLI, p. 245).

8.—H. *ARMIPES*, Flin. *Male*: *Eyes* bare, contiguous, arista slightly and gradually thickened at base, practically bare. *Thorax* bluish-black, shining, but not highly polished, shoulders dusted with greyish. *Abdomen* covered with a usually dense yellowish-grey or bluish-grey tomentum, base of 1st segment and a tapering dorsal stripe black. *Front femora* on the ventral surface near the base with about a dozen very peculiar and characteristic bristles, which are stout, with an enlarged and truncated apex, and arranged roughly in two rows, the two nearest base much the longest and stoutest. *Middle femora* on basal half of ventral surface with about four bristles similar to the last. *Hind femora* on ventral surface with a single median strong spine, with an enlarged and truncated apex like those on the other femora; *hind tibiæ* with an antero-ventral row of about eight extremely long and fine hairs, which are regularly disposed, and occupy the apical half, ventral surface with a row of very short fine hairs in apical two-thirds, and an ante-median tuft of about a dozen very long and fine bristles. *Wings* hyaline or slightly tinged with yellowish-brown, *calyptra* slightly tinged with yellow, *halteres* black. *Size*, 5–6 mm.

Female: *Frons* black, *ocellar triangle* cinereous, slightly shining, but not polished. *Thorax* cinereous, very slightly shining, in front with a trace of two blackish lines. *Abdomen* uniformly cinereous and slightly shining. *Front femora* with a complete row of seven to nine postero-ventral bristles. *Middle femora* with a row of five to six ventral bristles near base; *tibiæ* with two posterior bristles at about one-fourth and one-half from apex respectively. *Hind femora* as in ♂, except that the ventral spine is absent; *tibiæ* with two dorsal bristles, one sub-apical and the other about the middle, also one antero-ventral median bristle a little longer than the latter, and slightly nearer the apex. *Wings* more hyaline than in ♂, *calyptra* hardly tinged with yellowish.

Appears to be common and widely distributed. I have seen specimens from many parts of the country, from Eastbourne to the Forth district, and Mr. Verrall records it as far north as Inverness. The dates range from May 6th to October 27th. I received four females from Mr. Verrall, two of which were sent as *meteorica*, L., and one as *albipuncta*, Ztt. After comparing these with a female taken *in cop.* by Dr. J. H. Wood I found that they belonged to the present species, and my opinion was confirmed by the use of Stein's paper. From *albipuncta*, Ztt., the female may be distinguished by its dark halteres, and from *meteorica*, L., by the characters given in the key.

9.—H. *ALBIPUNCTA*, Ztt. (*fasciculata*, Meade). *Male*: *Eyes* bare, contiguous; arista slightly thickened at base, only slightly pubescent or almost bare. *Thorax* shining black, shoulders whitish-cinereous. *Abdomen* bluish-cinereous with a distinct

black dorsal stripe. *Front femora* on ventral surface with four to five strong spines near base, their apices blunt and very slightly enlarged. *Middle femora* with two to three strong ventral spines near base, similar to those on the front femora. *Hind femora* about the middle of the ventral surface with a pair of closely applied spines as long as the greatest breadth of the femora, and with blunt apices; *hind tibiæ* on the ventral surface with short fine hairs in apical two-thirds, and about the middle a characteristic tuft of three or four strong bristles, which converge at the apex, and are about three times as long as the tibia is broad. *Wings* tinged with yellowish-brown; calyptra sometimes faintly tinged with yellow, halteres brownish-yellow. Size, 4—5½ mm.

Female: *Frons* and *ocellar triangle* dark slaty-grey, not shining. *Thorax* blackish-cinereous, slightly shining, with a faint indication in front of three narrow blackish stripes, shoulders light cinereous. *Abdomen* cinereous, with the faintest trace of a dark dorsal stripe. *Middle femora* as in the preceding species; *middle tibiæ* with two posterior bristles, at one-fourth and one-half from apex respectively, and one anterior bristle at about one-third from apex. *Hind femora* as in ♂, except that the ventral spines are absent; *hind tibiæ* with a single subapical dorsal, one median antero-dorsal, and one to two post-median antero-ventral bristles. *Wings* quite hyaline, calyptra as in ♂, halteres brownish-yellow, and even lighter than in ♂.

Of this species I have examined eighteen males and one female. It appears to be widely distributed but not common. The single female was taken *in cop.* by Dr. J. H. Wood in his garden at Tarrington, May 18th, 1902, and this sex was previously unknown. The males were taken chiefly in the South of England, *e. g.*, Ivybridge, Newmarket (Verrall); Hay, Torcross (Yerbury); Felden, Herts (Piffard); one Ilkley (Meade), and one Burley-in-Wharfedale, Yorkshire (P. H. G.); and lastly, one in Arran (Verrall), which is the only Scotch specimen I have seen. Verrall gives Tongue in Sutherland as a locality. The dates range from May 9th to October 10th.

10.—H. MILITARIS, Mg. (*impeva*, Lw.). *Male*: *Eyes* bare, contiguous, arista distinctly pubescent, very slightly and gradually thickened towards base. *Thorax*, including shoulders, deep shining black, with hardly a trace of tomentum. *Abdomen* bluish-cinereous, base of 1st segment and a slender dorsal stripe blackish, the latter sometimes only indicated by a brownish streak. *Front femora* with a row of about a dozen very strong postero-ventral bristles in basal half. *Middle femora* with a series of about six very strong sub-basal bristles on the anterior edge of ventral surface, and co-extensive with these about the same number of smaller and weaker spines on posterior edge of same surface; those of anterior row stand on little warts or bosses, which are very prominent and characteristic. *Middle tarsus* with a fringe of long, wavy hairs at the apex of 3rd, and on the whole of the last two segments. *Hind femora* on the postero-ventral surface with a dense row of short fine hairs near base, and two very long and fine hairs at one-third and two-thirds from base respectively. *Hind tibiæ* with three to four long antero-ventral bristles in apical half. *Wings* hyaline, or slightly tinged with brownish, posterior transverse

vein unusually long, quite straight, and rather oblique, a little more than its own length from the middle transverse vein, so that the last two sections of the 4th longitudinal vein are of approximately equal length. Across the end of the discal cell is a *dusky patch of microscopic hairs*, which is characteristic of this species. This patch is continued across the 5th longitudinal vein almost to the hind margin of the wing, and its inner edge runs exactly parallel to the posterior transverse vein. *Calyptra* with the margin of the lower scale *strongly tinged with orange*. *Halteres* with blackish head and lighter stem. Size, $5\frac{1}{2}$ — $6\frac{1}{2}$ mm.

Female: *Frons* dull black, or sometimes with a slight reddish-brown tinge behind the antennæ, usually with a very slight greyish tomentum when viewed from the front; *ocellar triangle and orbits* shining, but not conspicuously so. *Thorax* black and polished, unicolorous, shoulders slightly greyish. *Abdomen* uniformly blackish-cinereous, but *apical segment* lighter, being covered with cinereous tomentum. *Front tibiæ* with a subapical dorsal bristle, and a small antero-dorsal bristle at or a little beyond middle. *Middle tibiæ* with one small antero-dorsal bristle at one-fourth from apex, three about equidistant postero-dorsal bristles, and one ventral bristle at about one-fourth from apex. *Hind femora on postero-ventral surface* with a few short hairs at base and apex, and *two long, fine hairs as in ♂*, but not quite so conspicuous; *hind tibiæ* with one subapical dorsal, two antero-dorsal, and two postero-dorsal bristles, a dense series of tiny postero-dorsal bristles near apex as in ♂, and two to three antero-ventral bristles in middle portion. *Wings* as in ♂, but *posterior transverse vein is upright*, not oblique, and shorter, patch of microscopic hairs absent; last section of 4th longitudinal vein a little longer than penultimate. *Calyptra* and *halteres* as in ♂.

A very distinct and tolerably common species. I have seen over sixty specimens, from localities ranging from Devonshire and the New Forest to Golspie, and bearing dates from June 8th to August 20th. It was also taken by Haliday in Ireland.

11.—H. TUBERCULATA, Rond. *Male*: *Eyes* bare, contiguous; arista slightly pubescent and thickened at the base. *Thorax* blue-black and polished. *Abdomen* blue-black, when seen from behind with a very slight tomentum, which leaves an *indistinct central dorsal stripe*, which is broad on the 2nd segment and much narrower on the 3rd. *Front femora* with two rather inconspicuous teeth, the anterior one bifid at the tip; *front tibiæ* with a fringe of fine and short postero-ventral hairs in apical half. *Middle tibiæ* with two to three postero-dorsal bristles in apical half, middle third of *anterior surface* with a regular fringe of short erect hairs, *posterior surface fringed in its apical three-fourths* with regular fine hairs, which are slightly recumbent, as long as the postero-dorsal bristles, and nearly twice the length of the hairs in the anterior fringe. *Hind femora* with a row of *antero-ventral bristles*, of which about *five to six nearest the apex are very long and conspicuous*, the rest extremely short; *hind tibiæ* with one long dorsal bristle at one-third from apex and one small one quite near apex, one antero-dorsal, and one anterior bristle about middle. *Wings* usually with a strong brownish-yellow tinge, last section of 4th longitudinal vein usually *three times as long as the penultimate*, *calyptra brownish-yellow*, *halteres* blackish. Size, 5— $5\frac{1}{2}$ mm.

Female: *Frons* deep black, with only a slight trace of greyish tomentum; *ocellar triangle* and *orbits* shining; sides of face black and highly polished opposite base of antennæ, below dull with grey tomentum. *Thorax* black, more highly polished than in the male. *Abdomen* shining black, not so bluish as in the male. *Middle tibiæ* with two to three postero-dorsal bristles in apical half. *Hind femora* with five or six long antero-ventral bristles in apical half; *hind tibiæ* with one dorsal bristle at one-third from apex, two antero-dorsal bristles, one of which is subapical and the other about the middle, and one antero-ventral bristle about the middle. *Wings* hyaline, venation as in male; *calyptra* clearer than in male; *halteres* blackish.

This interesting species, which has not hitherto been recognised as British, was sent to me in both sexes by Dr. J. H. Wood and Mr. C. W. Dale. By the former it has been taken at Ashperton Park, Shobdon Marsh, Woolhope and Stoke Wood (all, I believe, in Herefordshire); while the latter sent me specimens from Glanvilles Wootton, Chichester and Charmouth, some of which were taken no less than fifteen years ago! The dates of capture range from May to September 24th.

(To be continued).

Notes on Irish Coleoptera.—While spending a holiday last June at Rosses Point, Sligo, I had the pleasure of capturing four beetles which are new to the Irish list. These are: *Philonthus lepidus*, Grav., *Stenus incrassatus*, Er., *Platystethus capito*, Heer, and *Saprinus immundus*, Gyll.; the first and last were captured in *stercore bovino*, the other two crawling on the sand among herbage. There is a fine stretch of sandhills at Rosses Point with a level plain behind, where were numerous suitable spots for *Bledius*. Of this genus I obtained five species, viz., *arenarius*, Payk.; *pallipes*, Grav., *fuscipes*, Rye, *longulus*, Er., and *erraticus*, Er., but none were in any profusion except *arenarius*; *Dyschirius politus*, Dej., and *D. globosus*, Herbst, were plentiful, and I also obtained a few *D. impunctipennis*, Daws. Mrs. Johnson came upon a couple of *Tachypus pallipes*, Duft., one afternoon; we returned to the spot several times before we really got at them, and then we found plenty, both there, i.e., on the headland at Drumcliff Bay, and in a depression among the sandhills. I think they were only emerging, for many of those taken were somewhat immature. They were not easy to detect, from their habit of sitting quite still beside a stone under a plant. I took a single example of *Xantholinus cribripennis*, Fauvel, in *stercore bovino*; in fact Staphylinids were mostly thus met with; seaweed was a complete failure. *Aphodii* were pretty plentiful, but as on a former occasion I could only get one of *A. fœtens*, F., while *A. pusillus*, Herbst, was plentiful, and I got a good supply of them; of the others I need only mention *A. scybalarius*, F., and *A. depressus*, Kug. *Longitarsus lævis*, Duft., was taken in some numbers by sweeping among ragwort, &c. Mrs. Johnson took a specimen of *Nacерdes melanura*, Schmidt, but as she supposed it to be merely an extra-sized *Telephorus fulvus*, she neglected to secure more examples.

Rhynchophora were not at all well represented. I had hoped to meet with the large white form of *Philopædon geminatus*, F., but could only find a few of the type; no others need be mentioned but *Sitones griseus*, F. It will be noticed that I have not mentioned any water beetles, and this for the very good reason that they were almost unrepresented, none but the commonest species were taken, and these not in any number. Evidently they were in the larva or pupa stage, most likely the latter, for I saw hardly any larvæ. The locality is one which I am satisfied would repay further search; owing probably to the cold, late, wet spring, insects were late, and not at all abundant.

Among some beetles sent to me by a friend from Wexford was a specimen of *Pæderus caligatus*, Er., a species not hitherto recorded from Ireland.

My captures at home have not proved of any interest, and a day at Lough Neagh proved most disappointing, not even my old friend *Pelophila* turning up, though I think Mrs. Johnson and I turned every stone that could possibly have concealed it. I have to thank Mr. J. J. Walker for kind help with some of my Sligo captures.—W. F. JOHNSON, Acton Glebe, Poyntzpass: November 7th, 1905.

Further records of some Suffolk Coleoptera.—Since the publication in 1899 of Mr. Morley's "Coleoptera of Suffolk," I have had few opportunities of working up the fauna of the county, but sundry visits of a day or so brought to light, *inter alia*, the following species; those marked * are additions to the county list, the others being noted because of the scarcity of recorded localities for the species in the county: *Dichirotrichus obsoletus*, Dej., is to be found not uncommonly at Benaere Broad. *Platyderus ruficollis*, Marsh., Lowestoft Denes, rarely. *Cymindis axillaris*, F., locally common at the roots of marram grass on the Kessingland Sandhills in 1899, and rarely on the Herringfleet Hills this year. *Dromius sigma*, Rossi, in some small numbers on several occasions at Oulton Broad, but it is extremely local. *Deronectes depressus*, F.,* one specimen at Barnby Broad, 6.ix.99, in a ditch, with numerous *D. assimilis*, Pk. A single ♂ *Hydaticus transversalis*, Berg.,* occurred in the same ditch, 10.iv.03. *Gyrinus elongatus*, Aubé, at Oulton. *Hydrophilus piceus*, L., locally abundant at Barnby Broad, April, 1903. *Enochrus bicolor*, Gyll., not uncommon in many places in the Lowestoft district. *Aleochara cuniculorum*, Kr., at Corton Cliffs in a sand martin's burrow. *Ocyusa incrassata*, Kr.,* one specimen at Oulton Broad, 27.xii.01. *Ischnoglossa prolixa*, Grav., Oulton Broad. *Philonthus proximus*, Kr., in *Cossus* burrows at Oulton Broad. *Philonthus fumarius*, Grav.,* one specimen at Benaere Broad, 23.viii.02, in flood refuse. *Cryptobium glaberrimum*, Herbst,* at the same locality in 1899 and 1902. *Stilicium geniculatus*, Er., in haystack refuse at Barnby, thus confirming Stephens' record of the species for the county. *Stenus guttula*, Müll., on the Corton Cliffs, commonly. *Coprophilus striatulus*, F., at Oulton Broad. *Lesteva muscorum*, Duv.,* taken by Mr. W. E. Sharp in flood refuse at Oulton Broad in April, 1903. *Bythinus puncticollis*, Denny, Barnby Broad. *Bryaxis sanguinea*, L., commonly at Benaere and Oulton Broads. *B. helferi*, Schmidt, is not uncommon at Benaere Broad. *Choleva fusca*, Panz.,* a ♂ at Oulton Broad, in June, 1898. *Cryptarcha strigata*, F., in *Cossus* borings in an alder at Oulton Broad. *Tenebrioides mauritanicus*, L., *Læmophlæus ferrugineus*, Steph., and *Silvanus surinamensis*, L.,* abundant in a flour mill at Lowestoft in August last. *Cryptophagus populi*, Payk.,*

one specimen at Barnby Broad, 20.viii.03, under the bark of a small dead fir. *C. affinis*, Sturm, at Oulton Broad. *C. cellaris*, Scop., not uncommon under sacks in the flour mills above mentioned. *Atomaria basalis*, Fr.,* fairly abundant in haystacks on Oulton Marshes. *A. apicalis*, Steph., in the same locality. *A. gutta*, Steph., in refuse at Benacre Broad. *Telephorus thoracicus*, Ol.,* two specimens at Oulton Broad, July, 1898. *T. ovalis*, Germ., not uncommon in the same locality. *Ptinus tectus*, Boield.,* *Niptus crenatus*, F., and *Rhizopertha pusilla*, F.,* abundant, in August last in the flour mill at Lowestoft, and *Anobium paniceum*, L.,* scarce at the same place. *Donacia thalassina*, Germ.,* two specimens at Oulton Broad, 5.viii.03, and *D. braccata*, Scop., not uncommon on reeds at the same place. *Hydrothassa aucta*, F.,* not uncommon in haystacks on the Oulton Marshes on several occasions. *Longitarsus castaneus*, Duft.,* one specimen at Oulton Broad in flood refuse, 28.iii.02. *Phyllotreta tetrastigma*, Com., at Oulton Broad. *Chaetocnema sahlbergi*, Gyll.,* one specimen at Oulton Broad in sphagnum, 21.v.04. *Tribolium ferrugineum*, F., *T. confusum*, Duv.,* and *Latheticus oryzae*, Wat.,* in the flour mill at Lowestoft; the two latter species in vast numbers. *Tetratoma fungorum*, F., in a fungus on an alder at Barnby Broad in company with *Mycetophagus multipunctatus*, Hell. *Apion trifolii*, L., at Oulton Broad. *Hypera suspiciosa*, Herbst,* a ♀ at Oulton Broad in flood refuse, 28.iii.02. *Eirirrhinus scirpi*, F.,* one specimen at Benacre Broad in reed refuse, 5.ix.05. *Bagous glabrirostris*, Herbst, two specimens at Barnby Broad in refuse. *Sibinia primita*, Herbst, a single specimen on the Kessingland sandhills. *Gymnetron villosulus*, Gyll., at Oulton Broad. *Eubrychius velatus*, Beck, at Benacre Broad. *Litodactylus leucogaster*, Marsh.,* one at Oulton Broad, 8.ix.00. *Phytobius quadrituberculatus*, F., from the same place, and *Calandra granaria*, L., and *C. oryzae*, L., both common in the flour mill before referred to.—E. C. BEDWELL, "Elmlea," Clevedon Road, Northon, Surrey: October 18th, 1905.

Otiorrhynchus rugifrons, Gyll., in *Miller's Dale*.—On the 9th of May last I captured a single specimen of this usually maritime species in Miller's Dale, Derbyshire; it occurred amongst dwarf plants at the edge of a broad slab of limestone. This seems to be the most inland locality at which it has hitherto been found in Britain. Canon Fowler, in his "Col. Brit. Islands," gives only two localities at a distance from the coast, viz., Lancaster and Bath.—J. KIDSON TAYLOR, 35, South Avenue, Buxton: November 27th, 1905.

Amara anthobia in the London District.—As *Amara anthobia* is such a recent addition to the British list, a record from the London district may be of interest. On May 6th I took a female specimen at Carshalton, as it was running over a path, but at the time thought it was merely *familiaris*. On comparison with the South Kensington specimens it seems very distinct from *lucida* in size, and in the possession of the scutellary pore, and agrees in all respects with the Leighton specimens of *anthobia*, so I feel sure as to its identity.—H. G. ATTLEE, 153, Beechcroft Road, Upper Tooting, S.W.: November 21st, 1905.

Tortrix pronubana, Hb., at *Eastbourne*.—On October 12th last my friend Mr. Harold Cooper sent me a fine male specimen of *Tortrix pronubana*, Hb., which he

had taken some twelve days before at rest on a curtain in his drawing-room, at Eastbourne. In Staudinger's "Catalog" this insect is reported from South Europe, North-west Africa, and Asia Minor; but in the late Dr. Mason's collection I found in a drawer containing a number of foreign types two specimens of *pronubana*, ♂ and ♀, labelled from Guernsey.—SELWYN IMAGE, 20, Fitzroy Street, W.: December 2nd, 1905.

Aculeate Hymenoptera at Fillans, Perthshire: June 9th to July 5th, 1905.—Favoured by gloriously fine weather (after four consecutive wet seasons spent in the Highlands), I am able to make a substantial addition to my Fort William list of captures recorded in the Ent. Mo. Mag. for December, 1904.

St. Fillans is charmingly situated in the Perthshire Highlands, sheltered by the hills on all sides it enjoys a climate exceptionally mild and genial for Scotland. Wild flowers of great variety are abundant, and here and there one finds little patches of gravel and sand bank so dear to Aculeates; yet with all these advantages one has to confess that Aculeates (with the exception of a very few species) are extremely rare. On the other hand, *Diptera* are far too numerous and much too energetic in their personal attentions, and are at times a positive nuisance.

Amongst the *Diptera* there were a number of species closely resembling Aculeates, mimics or under-studies, but in this case the principals were not to be found. Have they been supplanted and suppressed by the irrepressible *Diptera*, or will their turn come later on? This may suggest a little problem for future observation and study. Saw-flies were common and more in evidence than I have usually found south of the Tweed.

Again and as ever I have to thank Mr. Edward Saunders for his kindness in naming my captures:—

Formica rufa, Linn., 2 ♀, *F. fusca*, Linn., common; *Lasius flavus*, De Geer, common; *Myrmica rubra*, Linn., common; *Leptothorax acervorum*, Fab., not uncommon; *Pompilus pectinipes*, V. de L., rare; *Salius parvulus*, Dahlb., rare; *Crabro dimidiatus*, Fab., rare, *C. vagus*, Linn., rare, *C. anxius*, Wesm., rare, *C. pal mipes*, Linn., rare; *Nysson spinosus*, Fab., one specimen; *Ceropales maculata*, Fab., one specimen; *Vespa vulgaris*, Linn., rare, *V. rufa*, Linn., rare, *V. norvegica*, Fab., common; *Andrena albicans*, Kirb., rare, *A. coitana*, Kirb., rare, *A. analis*, Panz., rare, *A. fucata*, Smith, rare, *A. minutula*, Kirb., rare; *Nomada ochrostoma*, Kirb., rare, *N. flavoguttata*, Kirb., rare, *N. bifida*, Thoms., rare, *N. fabriciana*, Linn., rare; *Bombus hortorum*, Linn., rare, *B. lapidarius*, Linn., rare, *B. terrestris*, Linn., common; *B. pratorum*, Linn., common, *B. agrorum*, Fab., very common; *Psithyrus campestris*, rare, *P. quadricolor*, Lep., rare.—G. A. JAMES ROTHNEY, "Pembury," Tudor Road Upper Norwood: October 28th, 1905.

Food and habits of Xanthandrus comtus, Harris.—In the July Number of Ent. Mo. Mag. (1905), p. 150, I gave some details of this Dipteran as a parasite of *Hastula hyerana* at Hyères. Perchance this may not have been seen by students of *Diptera*, being imbedded in Notes on a moth.

At Hyères, *Hastula hyerana* may be described as having a gregarious larva and the fly larva preyed upon those of the moth, following them in their burrow and destroying large numbers of them. This was a somewhat isolated observation.

as regards the fly, and I am glad to be able now to supplement it with further observations, which go to show that this is the usual, possibly the only, manner of life of *Xanthandrus comtus*, and justify my publishing a further note on the species, for the benefit of students rather of *Diptera* than of *Lepidoptera*.

In Sicily this spring I looked for and found larvæ of *H. hyerana*, which were by no means rare, but here, instead of being gregarious, they were quite solitary, a fact to be dealt with in further notes on *H. hyerana*. As regards *X. comtus*, however, the result was that I found no trace of the fly in connection with it. I attributed its absence to the fly being possibly absent from the Sicilian fauna, but I also thought that possibly the isolation of the individual larvæ, rendered them here an unsuitable prey for this parasite.

I was lucky enough to meet with proof that the latter was almost certainly the reason that *H. hyerana* is here free from its attacks.

Having collected some larvæ of *Acroclita consequana*, I found some time after I had had them at home, that larvæ of *X. comtus* were present with them, and I bred specimens.

Now it so happens that *A. consequana* in the Riviera, is a solitary larva, and there I never met with *X. comtus* with it. But in Sicily it is gregarious, gregarious in this sense, that though each larva occupies its own special bud or shoot, a bush of *Euphorbia* in which it occurs, usually has a large number of larvæ on it, up to a good many dozen, the *Euphorbia* bushes it affects being large and thick, and from three to five or more feet high, quite different from the more herbaceous growth of the species of *Euphorbia* on which one finds it in the Riviera.

X. comtus, therefore, occurs in Sicily, and we may, I think, assume that it would attack *H. hyerana*, if that species afforded a sufficient number of larvæ on one plant. Of course, it is possible that it does attack *H. hyerana* and other solitary larvæ here, but it is inevitable that when it does so the larvæ would perish when it had destroyed its solitary prey and could find no others.

These flies emerged from April 15th onwards, much the same dates as those bred from *H. hyerana* at Hyères.

It so happened, however, that I again met with the larva of *X. comtus* this year. On August 8th, in the valley below Le Lautaret, towards Monetier, at about 5500 ft., I found two or three bushes of *Rhamnus pumilus*, of which every shoot, nearly every leaf, contained a half-grown Tortrix larva, probably of *Ancylis derasana*. A day or two after I brought some of these home, there appeared amongst them larvæ of *X. comtus*, of which I bred two some weeks later. Here again the prey of the fly was a quasi-gregarious Tortrix larva. So abundant were these larvæ, that I concluded they were full fed or nearly so, and of some small species; for the simple reason that there would be no food for them if they had to grow to any size, however, they grew very much larger, and it is certain that if the fly allowed any larvæ to escape it, then it benefited these survivors, which must otherwise have perished of starvation.

There is a possibility of mistake in piecing together portions of life-histories from the Mediterranean coast and 6000 ft. elevation in the Alps, but it is clear that *X. comtus* feeds especially on the larvæ of Tortrices when there are many on a plant. It seems also most likely that there are several broods during the season. By collecting Tortrix larvæ of similar habits in places where *X. comtus* occurs, it ought

not to be difficult to show how far its habits are the same in England as in the other localities in which I have met with it.—T. A. CHAPMAN, Betula, Reigate : October, 1905.

A further note on the late J. W. Douglas.—The late Mr. Douglas in his early days was an ardent Lepidopterist. In 1842 he added *Notodonta tritophus* to the British list, and recorded it in the "Entomologist" for that year. Newman also states in his "British Moths," p. 231, "the caterpillar was once taken at St. Osyth, in Essex, by Mr. Douglas, who succeeded in rearing the moth." He was also the first to take *Pachnobia alpina* in Britain, as Messrs. Humphreys and Westwood, in their "British Moths," state: "The specimen from which their figure was made was that taken by Mr. Douglas on Cairn Gower, Perthshire, in 1839." With the exception of one captured by James Foxcroft in 1854, Mr. Douglas' specimen remained unique up to 1874, when others were taken. But Mr. Douglas' chief work was amongst the *Micro-Lepidoptera*, and his Monograph of the old and then difficult genus, *Gelechia*, in the Transactions of the Entomological Society for 1849, was at the time a very useful paper. In the same volume he figured and described *Anchylopera subarcuana*; in fact, he was so good a Micro-Lepidopterist that Stainton associated him with himself as one of his assistants in the "Natural History of the Tineina," and named after him a *Depressaria*, and also the genus *Douglasia*. Mr. Douglas was also a good Coleopterist, and wrote an interesting article on the food and habits of *Velleius dilatatus* in hornets' nests (Ent. Mo. Mag., vol. xv, p. 260). *Anisoxya fuscula* at Lee (Ent. Mo. Mag., vol. xii, p. 83), was also a notable capture. It may be as well to call to mind also his article on the Colorado Beetle (Ent. Mo. Mag., vol. xiii, p. 181). In the *Neuroptera* his best capture was *Boreus hyemalis*, at Croydon (Ent. Mo. Mag., vol. iv, p. 156). His paper on the *Psyllidæ* (Ent. Mo. Mag., vol. xiii), and on *Aleurodes* (Ent. Mo. Mag., vol. xiv), filled a gap which was very much wanted; well written and containing a fund of information are his articles on Entomological localities, interspersed with suitable poetical quotations from Shelley, Horace, &c., altered and adapted to circumstances.—C. W. DALE, Glanvilles Wootton : November 1st, 1905.

Review.

A NATURAL HISTORY OF THE BRITISH BUTTERFLIES; THEIR WORLD-WIDE VARIATION AND GEOGRAPHICAL DISTRIBUTION. A TEXT BOOK FOR STUDENTS AND COLLECTORS. By J. W. TUTT, F.E.S. Parts 1 and 2, pp. 1—8, 81—124. London: Elliot Stock, 62, Paternoster Row, E.C. Berlin: Friedländer und Sohn, 11 Carlstrasse, N.W.

Two parts of Mr. Tutt's long-expected work on the limited number of Diurnal *Lepidoptera* included in the fauna of the British Islands are before us, the first of these bearing the date November 1st, 1905. In each part four pages are devoted to general considerations of the group, the two parts already issued containing a lucid and highly interesting account of the eggs and egg-laying habits of Butterflies, and the commencement of a chapter by Mr. A. E. Tonge on his method of photographing the eggs themselves—a highly successful example of which is given on Plate I. Mr

Tutt commences the descriptive portion of his work with the *Urbicolides*, his reasons for adopting the Linnean title for the superfamily hitherto generally known as the *Hesperiides*, and familiarly as the "skippers," being fully set forth on p. 82. An excellent general account of the superfamily is followed by the consideration of three species—*Adopæa lineola*, *A. flava* (*thauomas*), and *Thymelicus actæon*. These are treated with the same exhaustive fullness of detail—bibliographical, distributional, and biological—with which we are already familiar in the four volumes of the "Natural History of the British Lepidoptera," so well known and highly appreciated by all students of the Order. This is a sufficient indication of the scope and value of the work now under notice, and it would appear that at least we shall be in possession of that long hoped-for desideratum—a complete and up-to-date account of our British Butterflies, compiled from all sources, ancient and modern. Mr. Tutt is to be heartily congratulated on his successful execution of the work so far, and we trust that his health will enable him to complete the present portion of his great contribution to our knowledge of our native *Lepidoptera* at a not far distant date.

Societies.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: The first meeting of the Autumn Session was held in the Royal Institution, Liverpool, on Monday, October 16th, the President, Mr. SAMUEL J. CAPPER, F.E.S., in the Chair, and was probably the largest and most successful in the history of the Society. The following exhibits were particularly noteworthy: Mr. W. A. Tyerman showed a lovely bred series of *Pyrameis cardui* from Waterville, Ireland. Mr. F. N. Pierce, series of *Abraxas grossulariata* with many vars. from Wallasey larvæ. Dr. W. Bell, two cases of beautifully preserved larvæ on their food-plants. Mr. W. Mansbridge, bred series of *Peronea permutana*, *P. aspersana*, and *P. hastiana* from Wallasey; *Catoptria expallidana* (Wallasey), *Pædisca corticana*—part of a long and variable series—(Delamere), and *Ephippiphora populana* (Crosby). Mr. C. E. Stott, a light var. of *Dicranura vinula* bred from a batch of Blackpool ova. Mr. Richard Wilding, a series of *Polia chi* from Montgomeryshire. Mr. C. F. Johnson, some very dark vars. of *Macaria liturata* (Delamere), one black and one asymmetrically marked var. of *A. grossulariata* from Stockport larvæ, bred series of *Acronycta leporina*, including very dark suffused specimens (Rixton Moss), and of *Boarmia repandata* and *Acidalia contiguarua* (N. Wales). Mr. G. L. Cox, captures in Hunts, including *Toxocampa pastinum*, *Acidalia rubiginata*, *Dicycla oo* with var. *renago*, *Hadena atriplicis*, *Cymatophora octogesima* and *C. or.* Dr. P. F. Tinne, melanic forms of *Aplecta nebulosa*, *A. grossulariata*, *Xylophasia polyodon*, red vars. of *Smerinthus populi* and specimens of the Tarantula spider (British Guiana), and of a *Mygale* which preys on humming birds. Mr. J. E. Robson, *Synia musculosa*, *Micra parva*, *Leucania extranea*, *L. vitellina* and *L. favicolor*, *L. albipuncta* (Bournemouth), *Xylomyges conspicillaris* (Taunton), *Pachetra leucophæa* (G. T. Porritt) and *Anerastia bankesiella* (E. R. Banks). Dr. Cotton, *Zygæna pilosella*

and *Cucullia chamomillæ* from Abersoch, *Xanthia cerago*, and *X. silago* (Eccleston, Lancs.), *Odontopera bidentata* ab. *nigra*, and a very handsomely banded *Noctua festiva* with dark margins. Mr. F. C. Thompson, long series of *Tapinostola fulva*, *Eupithecia venosata*, *Dianthæcia capsincola* and *Miana arcuosa*, all from Eccleston. Dr. P. Edwards, series of *Calligenia miniata*, *Cleora lichenaria*, *Larentia cæsiata* and *Acidalia imitaria*, all from South Devon; Mr. R. Tait, jun., bred series of *Angerona prunaria*, *Pericallia syringaria*, and *Eriogaster lanestris* (Monkswood), *Acidalia contiguaria* and *Agrotis ashworthii* (North Wales), *Melanippe rivata* and *M. procellata* (Sidmouth), and a bred var. of *O. potatoaria* from Wallasey. Mr. B. H. Crabtree, bred series of *Agrotis ashworthii* and *A. agathina* (North Wales), *O. bidentata* ab. *nigra*, *A. grossulariata* and *Dianthæcia cucubali* (Manchester), *Hydrelia unca* (Ulverston), and *Argynnis selene* (Windermere).

In *Coleoptera*, Mr. J. F. Dutton showed a collection made by Mr. George Ellison at Stromness, including a melanic form of *Anchomenus parumpunctatus*, *Donacia discolor*, *Chrysomela sanguinolenta*, *Otiorrhynchus blandus*, *O. maurus*, and *Ptinus tectus*. Dr. H. H. Corbett, *Quedius longicornis*, *Monohammus sutor*, *Orsodacna cerasi*, *Hyperaspis reppensis* and *Acanthocinus ædilis*, all from Doncaster, and sub-fossil remains of *Hydrophilus piceus* from the peat of Hatfield Moor; a case of *Coleoptera* collected in the North of France, by Messrs. W. G. Dukinfield and C. B. Williams. Mr. H. St. J. K. Donisthorpe, *Dibolia cynoglossi*, *Adrastus pusillus* and *Dinarda hagensi*. Mr. J. R. le B. Tomlin, *Psylliodes luridipennis* and *Ceuthorrhynchus contractus* var. *pallipes* from Lundy Island, and *Anophthalmus gentilei*, a blind species from caves in North Italy.

On behalf of the Liverpool School of Tropical Medicine, Mr. R. Newstead exhibited the life-cycle of the Tsetse fly (*Glossina palpalis*, Rob. Desv.), also living pupæ of this species and of *G. fusca*, all from Kasongo (Upper Congo), taken by Drs. Dutton and Todd. Mr. W. J. Lucas sent a pair of the rare dragon-fly, *Ischnura pumilio* from the New Forest. Mr. Oscar Whittaker, three excellent photographs of cockroaches and a scarce Hemipteron, *Aradus depressus*, taken at Pettypool by Mr. C. R. Billups. Dr. R. J. Cassal sent specimens of a very rare Trichopteron, *Limnophilus elegans*, from the Isle of Man. Mr. E. J. B. Sopp, *Forficula lesnei* taken on the yellow horned-poppy at Swanage (Tomlin), *F. pubescens*, *Ectobia panzeri* with egg capsules from St. Alban's Head (Tomlin), and a series of life-history cards of British beetles.—J. R. le B. TOMLIN and E. J. B. SOPP, *Hon. Secretaries*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY
Thursday, September 12th, 1905.—Mr. HUGH MAIN, B.Sc., President, in the Chair

Mr. T. M. B. Carr exhibited a variety of *Aglais urticæ* taken at Chalfont Road in which the blue marginal spots are absent and the black basal area is more extended than usual. Mr. Moore, the insects taken by him during the Society's Field Meeting at Clandon, on July 15th. Messrs. Harrison and Main (1) *Apatur iris* bred from a New Forest larva hibernated on sallow in a sleeve; (2) *Cæcynympha typhon* (*davus*) from Cheshire and the Isle of Lewis, the former showing

the ocelli much more pronounced; and (3) *Erebia æthiops (blandina)*, two specimens bred from ova laid by a Yorkshire ♀. Mr. Colthrup, a very fine variety of *Polyommatus corydon* in which the marginal markings of the hind-wings were developed and coalesced into radiating streaks. Mr. J. W. Kaye, a fine bred series of *Thecla pruni* from Monkswood larvæ. He pointed out the variable and unstable character of the orange markings of the ♀. Mr. Joy, a bred series of *Cyaniris argiolus*, being about half of a brood of which the remainder were apparently going over the winter as pupæ, and gave notes on his method of breeding. Mr. Turner read a paper entitled "Notes on the genus *Coleophora*," and illustrated each species mentioned by a life-history showing imago, cases at different stages, position in life, and the leaves showing larval depredations.

Thursday, September 28th, 1905.—The President in the Chair.

Mr. Edward Hill, of Dorville Road, Lee, was elected a Member.

Mr. Stonell exhibited a number of varieties of British *Lepidoptera*, including pale *Orthosia suspecta*, pale and dark *Noctua sobrina*, *Tæniocampa gracilis*, var. *pallida*, &c. Mr. Cowham, a fine richly banded *Dicycla oo* from Woodford.

Messrs. Harrison and Main (1), *Nemeophila russula*, a series bred from Delamere Forest ova; and (2) *Callimorpha dominula*, bred from Deal. Mr. Sich, the two specimens of *Argyresthia illuminatella* from Hailsham, Sussex, which had been determined by Mr. Meyrick as new to the British fauna. Mr. Kaye (1), a pair of black *Boarmia gemmaria (rhomboidaria)*; and (2) a much suffused *Cleora glabraria* from the New Forest. Mr. Ashdown, specimens of the local Hemipteron, *Eysarcoris melanocephalus* taken in Surrey, and the rare *E. æneus* from the New Forest. Mr. West, various *Coleoptera*: *Sibinia potentillæ* on *Spergula arvensis*, *S. primita* on grass, and *Rhinoncus bruchoides* on *Polygonum*, by sweeping in Darent Wood in August. Mr. Joy, a fine variety of *Cupido minima*, having the usual submarginal row of dots on the hind-wings elongated into streaks of considerable but varying length. Mr. West (Ashted), a photograph showing a cluster of *Mania maura* in a corner of a room, where for years they had been accustomed to assemble. Mr. R. Adkin, specimens of *Enmelesia unifasciata* that had emerged in August of this year from pupæ of 1900. Some individuals had emerged in 1901, 1902, 1903 and 1904, and a few pupæ still remain over. Mr. F. Noad-Clarke read a paper, "Practical Hints in Microscopical Manipulation."

Thursday, October 26th, 1905.—The President in the Chair.

Rev. E. Tarbat exhibited a specimen of *Pseudoterpna pruinata (cytisaria)* from Morteheo, in which the usual green colour was replaced by a rich yellowish-brown; it was in bred condition. Mr. Kaye, an extremely light form of *Boarmia abietaria*, bred from a Box Hill larva. It was noted that this species was generally much darker now than years ago in that locality, but none were as light as the specimen shown. Mr. Step, New Zealand "vegetable caterpillar" and the fungus *Cordyceps robertsii*, which attacked it. Mr. West (Greenwich), the following *Hemiptera*: *Drymus sylvaticus* var. *ryei*, uncommon under dead leaves; *D. pilicornis*, very local; and *Berytus crassipes*, rare, under stones; all from Box Hill. The remainder

of the meeting was devoted to an exhibition of lantern slides by the members, illustrating animals and plants in nature, protective resemblance in insects, insect metamorphoses, and views, &c., taken during the Field Meetings.

Thursday, November 9th, 1905.—The President in the Chair.

Mr. Stonell exhibited (1), a picked series of *Heliophobus hispidus*, to show the very slight variation in British specimens; (2) a long series of *Tæniocampa gothica* and its var. *gothicina*, extremely varied, some of the latter form having the "gothica" mark obsolete; (3), *Callimorpha dominula*, with yellow hind-wings; (4), *Ægeria (Sesia) tabaniformis* from the Gregson collection; (5), extremely dark forms of *Agrotis nigricans*; and (6), a melanic *Larentia multistrigaria*. Mr. Moore, a collection of *Orthoptera* from South Africa. Messrs. Harrison and Main, a short series of *Acidalia aversata* bred from a ♀ taken at Bude. Six were reddish and banded like the parent, five were ordinary putty coloured, four with no band, one with a very dark band. Mr. R. Adkin (1), specimens of *Pararge egeria* from Shaldon, Sept. 21st, 1905, one of which was extremely dark compared with others taken at the same time; (2), a series of *Dryobota (Hadena) protea*, reared from ova; he read notes on the breeding and habits of the larvæ. Mr. Main, pupa cases of *Pyrameis atalanta* and *P. cardui*, and also pupæ of *Pieris napi*, showing great variation in the number and intensity of the black markings. Mr. Goulton, a box of insects he was presenting to the Society's collections, including a series of *Geometra vernaria*. Mr. Rayward, a very fine series of bred *Polyommatus bellargus* from Reigate, and contributed notes. Mr. Scourfield, F.R.M.S., then gave an address on "Mendel's Law of Heredity," and exhibited specimens and diagrams in illustration of his remarks.—HY. J. TURNER, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: Wednesday, November 15th, 1905.—Mr. F. MERRIFIELD, President, in the Chair.

Mr. W. R. Dewar, Government Entomologist, Orange River Colony; Mr. William George Sheldon, of Youlgreave, South Croydon; and Mr. Francis C. Woodbridge, of Northcroft, Cornwall Road, Uxbridge; were elected Fellows of the Society.

Mr. Arrow exhibited a flower-frequenting beetle from the Transvaal, illustrating a remarkable device for the cross-fertilization of flowers, one of the front feet being tightly clasped by the curiously formed pollinia of an *Aselepias*. Mr. Arrow remarked that he had seen no similar instance among the *Coleoptera*. Mr. W. J. Kaye, a remarkable specimen of *Agrotis tritici*, bearing a close resemblance to *A. agathina*. It had been taken this year at Oxshott flying over heather in company with *agathina*, and was a good example of syncretic resemblance brought about by the common habit of resting on heather. Mr. W. J. Lucas, a specimen of *Forficula auricularia* taken by Mr. R. A. R. Priske at Deal, in September, 1905, having the left cercus normal, while the right was that of var. *forcipata*. Dr. F. A. Dixey, forms of South African Pierine butterflies, taken by him this year in Natal and Rhodesia, during the dry season of the present year, together with specimens

of the same species for comparison, taken in the same localities during the rains. He said that the exhibit illustrated the fact now widely recognised that these forms varied in general correspondence with the meteorological conditions prevailing at the different seasons. Mr. Edward Harris, series of *Hemerophila abruptaria*, bred through two seasons by him, and showing the proportion of melanic in light forms from combinations of the several parents—light and dark. Mr. Selwyn Image, a ♂ specimen of *Tortrix pronubana*, Hb., taken by Mr. Harold Cooper at Eastbourne, either at the end of September or the beginning of October last, and sent to him on October 12th. The insect, which is about the size of *T. bergmanniana*, is new to the British list. Commander J. J. Walker communicated a paper entitled "Hymenoptera-Aculeata collected in Algeria by the Rev. A. E. Eaton, M.A., and the Rev. F. D. Morice, M.A.; Part ii, Diptera," by Edward Saunders, F.R.S., F.L.S.

Wednesday, December 6th, 1905.—The President in the Chair.

Dr. O. M. Reuter, of Helsingfors, Grand Duchy of Finland, was elected an Honorary Fellow of the Society.

Mr. Charles William Mally, M.Sc., Associate of the Society of Economic Entomology of Washington, U.S.A., Government Entomologist for the Eastern Province of the Cape Colony, and Mr. Howard Powell, of Rue Mireille, Hyères, France, were elected Fellows of the Society.

Mr. K. Jordan exhibited a series of varieties of the Mediterranean *Carabus morbillosus*, showing all intergradations from the ordinary *morbillosus* with broad prothorax and costate and catenulate elytra to the Moroccan *aumonti*, which has a narrow thorax and smooth elytra. Mr. H. St. J. Donisthorpe, specimens of *Ptinus pusillus*, Sturm, recently discovered in a corn factor's shop at Edmonton. This species, which is common in France and Germany, has not been recorded hitherto in Britain. Mr. A. J. Chitty, a hermaphrodite Proctotrupid, probably one of the *Spilomicrinæ*, Ashm.; a sand-wasp without wings taken by Mr. Pool, running on a beech trunk, and named by Mr. E. Saunders as *Didineis lunicornis*, F.; and a ♂ specimen of *Apion semivittatum*, Gyll. (*germari*, Walt.), taken many years ago by Mr. Walton near the Tivoli Gardens, Margate, together with a ♀ of the same species discovered while sweeping long grass near the Chequers Inn, Deal, on September 26th, 1904. Mr. F. B. Jennings, a ♂ and ♀ example of the Dipteron *Helophilus transfugus*, L., taken from thistle heads in the marshes at Edmonton last July, and a specimen of *Stenopteryx hirundinis*, a parasite on swallows and martins, found on Box Hill, Surrey, in August. Mr. G. T. Porritt, specimens of *Odontopera bidentata* ab. *nigra*, and stated that the melanic form was rapidly increasing in the Wakefield district of South Yorkshire. Dr. F. A. Dixey, specimens of South African Pierine butterflies taken by him in the dry season this year, further illustrating their forms; and with them, for comparison, specimens taken by other collectors during the rains. Mr. O. E. Janson, a ♂ and ♀ of *Ornithoptera chimæra*, Rothsch., and some remarkable species of *Delias* collected recently by Mr. A. S. Meek in the mountain region of British New Guinea. Commander J. J. Walker, on behalf of Mr. A. M. Lea, Government Entomologist of Tasmania, a specimen of the Buprestid beetle *Cyria imperialis*, Don., having, in

addition to the normal fore-leg on the left side, two supplementary fore-legs originating from separate coxæ. Mr. G. C. Champion, living ♂ and ♀ examples of *Tetropium crawshayi*, Sharp, bred by the Rev. G. A. Crawshay from eggs deposited in July last in the bark of a larch at Leighton Buzzard. Mr. E. R. Banks, the unique specimen of *Depressaria emeritella*, St., from an unknown locality, on which the species was added to the British List many years ago; a specimen of *Cerostoma asperello*, L., discovered by Mrs. Hutchinson near Leominster, on September 21st, 1881, and only taken, as regards Britain, in Dorset (formerly), and Herefordshire (very rarely), and various specimens recently acquired from the collection of the late Dr. P. B. Mason and labelled by Haworth himself, showing the method of explaining his identification of the species, treated by him in his "Lepidoptera Britannica," published 1803—1828. Mr. A. Bacot, long series of *Tryphæna comes* bred through three generations, and brought together to test the relative proportions of melanic to non-melanic forms and the possible range of variations to be obtained from a single pair of parents, announced that all the results of the second and third generations seemed to be capable of "Mendelian" explanation. Mr. R. Shelford, larvæ of *Collyris emarginatus*, Dej., from Borneo, and said that it was certainly unusual to find a predaceous larva with mouth-parts qualified to excavate burrows in wood. He also showed larvæ and pupæ of *Mormolyce* together with a specimen of a fungus (*Polyporus*) split open to show the lenticular chamber excavated by the larva, to which access was obtained by so small an orifice that it was surprising that the emerged beetle could squeeze through. Professor E. B. Poulton contributed further notes by Mr. A. H. Hamm, which tended to confirm the opinions that *Pieris rapæ* chooses for prolonged rest a surface on which it will be concealed. A discussion followed on the protective instinct developed in insects as regards surroundings for rest, in which the President, Professor E. B. Poulton, Mr. H. J. Elwes, Col. J. W. Yerbury, and others joined. Mr. William John Lucas, diagrams of the instars and also of the mouth parts of the imago, to illustrate the paper read by him "On the Emergence of *Myrmeleon formicarius*." Mr. Martin Jacoby, a paper entitled "Descriptions of New Species of African *Halticinae* and *Galerucinae*." Mr. Claude Morley, a paper "On the Ichneumonidous group *Tryphonide schizodonti*, Holmgr., with Descriptions of New Species."—H. ROWLAND BROWN
Hon. Secretary.

ANTIPODEAN FIELD NOTES.

III.—A SKETCH OF THE ENTOMOLOGY OF SYDNEY, N.S.W.

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

(Continued from vol. xli, page 270).

Two plants, both among the most remarkable forms in the Australian flora, may be specially alluded to as each possessing a little Coleopterous fauna of exceptional interest. The first of these is the "Burrawong" (*Macrozamia spiralis*, Mig.), of the natural Ord

Cycadææ, a plant not unlike a dwarf palm, with somewhat prickly fern-like fronds four or five feet long, growing shuttlecock-fashion from a very short stem, and producing large "cones" of bright red fruits, the hard kernels of which were formerly much esteemed as food by the aborigines after due preparation. This plant is not common near Sydney, but on March 9th, 1901, I found it at Woy Woy, on the Hawkesbury estuary, growing in great abundance in open sandy "bush." On the fronds a fine large brown Sagrid, *Carpophagus banksiæ*, Macl., occurred in some numbers, as well as a curious and very active little stout yellow and brown Buprestid, *Xyroscelis crocata*, Lap. et Gory, without any of the metallic lustre of its allies, and looking like a small splinter of wood at first sight; I afterwards found it freely on the *Macrozamia* at Fremantle, W. A. By searching at the base of the fronds, among the young shoots which form a sort of "heart," two very interesting weevils, *Tranes sparsus*, Boh., and *T. internatus*, Macl., were found commonly, also a singular snow-white Coccid (*Dactylopius* sp.) which secreted a large quantity of sticky white wax, and was accompanied by a very pallid species of the Nitidulid genus *Brachypeplus*. I found the two latter insects subsequently in the Illawarra, in the heart of the "cabbage palm," *Livistona australis*.

The well known "Grass-trees" (*Xanthorrhæa hastilis*, R. Br., *X. australis*, R. Br., &c.), the abundance and singular appearance of which give a distinctive character to the drier parts of the Sydney "bush," are, especially when dead and decaying, the exclusive habitat of a number of very interesting *Coleoptera*.* The stem or trunk of a "Black-boy," as the plant is often called, may attain a height of six feet or more with a diameter of fully a foot, and when living it is crowned with a great mop-like tuft of coarse rigid foliage, sufficiently like grass to account for its popular name; from this head protrudes a slender spike sometimes six feet long, crowded towards its end with very numerous minute greenish-white, somewhat lily-like flowers. When dead, the trunk may be said to consist of a cylindrical core of an open fibrous texture, usually saturated with moisture, and about three inches in diameter; this is enclosed in a shell or case of a radiated structure, formed of the persistent bases of the leaves, permeated with the fragrant yellow resin of the plant, and almost always charred on the outside by past bush fires. Between this outer case, which, when old, is easily demolished by a good kick, and the core,

* Cf. Froggatt, The Entomology of the Grass Trees, Proc. Linn. Soc. N.S. Wales, 1896, pp. 73-87, pl. IX.

there is often a good deal of water which smells disagreeably of putrefaction, and usually swarms with large Dipterous larvæ (*Orthoprosopa*, &c.). Here, as well as between the horizontal layers of the outer case, the flat shining black *Hololepta sydnensis*, Mars., one of the finest of the *Histeridæ*, is often found in considerable numbers, along with a *Xantholinus (erythropterus, Er.)* and a *Quedius*, both with red elytra, while the core harbours commonly two or three smaller forms of *Histeridæ (Platysoma, Abræus, &c.)*, also the larva of the handsome shining brown Cetoniad, *Micropæcila cincta*, Don., and rarely, the perfect beetle. The larva of *Trigonotarsus rugosus*, Bdv., a very large and stout rough brown Calandrid weevil, one of the finest of its group, is occasionally found in the rotten stems, but I only once met with the beetle on the foliage of the plant. In the dry woody flower-stems the pupæ, as well as the imago of the handsome cylindrical grey Longicorn, *Sympyhetes solandri*, Fab., are sometimes not uncommon, and a slender black Cossonid weevil, *Aphanocorynes depressus*, Woll., is constantly present. Throughout the summer the pretty little white-spotted dark blue Buprestid, *Cisseis 12-maculata*, Fab., may be found in plenty feeding on the foliage with, more rarely, the curious spiny weevil *Acantholopus marshami*, Kirby.

The real season for *Coleoptera* at Sydney may be said to commence in September—a month of genial but not excessive warmth, occasional showers, and long spells of unclouded sunshine. This and the following month are undoubtedly the finest and most pleasant of the whole year, and the time to see the Australian “bush” to best advantage. A large proportion of the bushes and small trees now come into flower, and the dry sandstone wastes covered with a shrubby vegetation, at other times rather dull and uniform in aspect burst all at once into a perfect blaze of bloom. The early Australian spring is also the flowering-time of a great many fine annual plants and the air is laden with the fresh scent of the young *Eucalyptu* foliage, and with the still more delicious perfume of acres of golden blossomed “wattles” (*Acacia* spp). With the flowers, a host of beetles, chiefly plant-feeders, make their appearance, but only a few of the leading forms of these can be here referred to. Among the many species which resort to the wattle-bloom, are the earliest of the numerous and highly characteristic local forms of the *Buprestidæ*; these include some beautiful little metallic-green species of *Ethon* and *Melobasis*, others occurring on the yellow-flowered Leguminous shrubs of the genus *Pultenæa*. With them are various Longicorns, mostly of small size, some of these (*Ochyra, Zoedia*, ar

the beautiful but very scarce *Aphneope sericata*, Pasc.) having a striking superficial resemblance to the numerous ants found in their company. A little later in the season, the large and very handsome frosted-green weevil, *Chrysolophus spectabilis*, Fab.—well meriting its local name of the “Australian Diamond-beetle,” abounds on the wattle foliage, and even more plentifully in some places, the large rough spiky dark-brown weevils of the genus *Leptops* (*L. tribulus*, Fab., *L. hopei*, Fahr., &c.) ; the first-named of these the Sydney boys call “wattle-pigs.” The conspicuous bright-red *Rhinotia hæmoptera*, Kirby, several species of *Belus*, not unlike *Lixus* in aspect, but usually more elongate in build, and a host of smaller forms of *Rhynchophora*, frequent the wattles, and a very singular little shining black weevil, *Myrmacielus formicarius*, Chev., rather like an exaggerated *Apion*, may be found commonly walking on their trunks, usually in company with ants. Several brilliant little metallic-green “chafers” of the genus *Diphucephala*, and the Buprestidæ *Cissee similis*, Saund., *C. leucosticta*, Kirby, *C. cupripennis*, Chev., *Agrilus australasiæ*, G. et G., and (at Ourimbah) the lovely little velvety-green *Nascio multissima*, Olliff, are more or less plentiful ; and among the Longicorns are the large stout marbled-grey *Penthea vermicularia*, Don., the smaller grey species of *Hebecerus*, and the beautiful sage-green *Lymphyletes nigrovirens*, Don. The large silky-brown *Pachydissus ericeus*, Newm., is sometimes found under the loose wattle-bark, but apparently not common near Sydney, though its larva is very destructive to the trees in some parts of the colony. Numbers of *Hytophaga* of moderate or small size (*Cryptocephalus*, *Ditropidus*, *Laphodes*, *Calomela*, *Paropsis*, &c.) and of *Coccinellidæ*, including some rather fine forms of *Rhizobius*, and the celebrated *Novius cardinalis*, Muls., are to be beaten off the wattles throughout the summer.*

The various species of *Eucalyptus*, especially the young shoots or “whipstick gums” that spring up from the stumps of large trees when felled, produce a great variety of interesting *Coleoptera* by beating or shaking into the umbrella, and of these perhaps the most noticeable from their diurnal habits, and among the most abundant, are the species of the Rutelid genus *Anoplognathus*. Of these the earliest to appear is the beautiful but not very common *A. velutinus*, G. et G., a large light-brown species covered with irregular white pubescence which gives the insect a curious mealy look. This is succeeded

* c.f. “Insects of the Wattle Trees,” by W. W. Froggatt, F.L.S. Agricultural Gazette of S. Wales, July, 1902, pp. 1-20.

by the splendid "King-beetle," *A. viridiæneus*, Don., brilliant metallic-green with red legs, nearly an inch and a half long and of very stout build, and perhaps the finest species of the genus; and the smaller but somewhat similar *A. analis*, Dalm., the most abundant species in the neighbourhood of Sydney. *A. porosus*, Dalm., *rugosus*, Kirby, *olivieri*, Dalm., and *chloropyrus*, Drap., the last being the smallest as well as the latest to appear, are of a light ochreous or brown colour with greenish or opaline reflections, and the first two of these abound even in the city gardens, attacking among other trees the Peruvian *Schinus molle*. All these beetles, with the exception of *A. velutinus*, lose much of their beauty when dead and dry, and this is also the case with the fine Melolonthid *Xylonychus eucalypti*, Boisd., which is, when alive, of a very beautiful though fugitive pale verditer-green tint; the apple-green colour of *Schizognathus prasinus*, Boisd., another handsome and not rare species, being much more permanent. About Christmas, the two fine dark-bronze species of *Repsimus*, *æneus*, Fab., and *manicatus*, Swartz, conspicuous for the almost monstrous development of the hind femora of the ♂, appear; the latter species especially abounding at Rose Bay and other open places to such an extent as to bend down by their weight the small branches on which they congregate in clusters of hundreds of individuals; and when the bushes are shaken or stirred up, they fly off with a loud hum like a swarm of bees. The *Rhynchophora* attached to the gum-trees include a great variety of singular forms, the large rough brown convex species of *Cherrus*, and the curious spiky *Eurhynchus*, being perhaps the most conspicuous. In the *Phytophaga* are very many pretty species of *Cryptocephalus* and the allied *Cadmus*, the small pubescent, metallic-green species of *Edusa*, the lovely *Endomychus*-like scarlet and black *Phyllocharis cyanicornis*, Fab. (found in the Illawarra but rarely), and most characteristic of all as well as most numerous in species and individuals, the eminently Australian genus *Paropsis*. It is not unusual for seven or eight species of these pretty, convex, almost hemispherical beetles, to fall into the umbrella when a single small *Eucalyptus* bush is shaken, and the range of variation in size and colour-pattern in the various forms is very striking. Some, as *P. sexpustulata*, Marsh., *reticulata*, Marsh., *marmorata*, Oliv., &c., are fine insects, fully equal in size to our *Chrysomelæ*, while others (*P. hamadryas*, Stål, *chlorotica*, Chap., &c.) are no bigger than a large *Scymnus*; several species bear so close a resemblance in shape, size, and detail of colouring to the forms of *Coccinellidæ* that occur with them, as only to be distinguished from them on a close inspection. A large section of the genus is characterized, when alive, by brilliant

golden or other metallic markings, but these disappear entirely in dried specimens, the insects fading to a uniform dull-brown tint; and the beautifully delicate green tint of one or two species found on the "wattles" is equally fugitive.

Many other native trees and shrubs yield their quota of interesting *Coleoptera*. Thus on the "Sassafras" in the Illawarra and elsewhere are found the beautiful golden-yellow ladybird *Thea galbula*, Muls., a *Stenus* (*cæruleus*, Wat.) of a most brilliant deep metallic-green colour, and a fine large shining black *Apion*, probably *A. albertisi*, Pasc.; while a handsome nodose brown weevil of considerable size and very stout build, *Amisallus tuberosus*, Boh., is obtained not rarely by beating *Clematis aristata*, R. Br., in blossom. On the "Port Jackson Fig" (*Ficus australis*, Willd.), a very pretty little black and white species of *Balaninus* (*amænus*, F.) is common in early summer; and by splitting open the small twigs of this tree, *Hylesinus porcatus*, Chap., may be obtained freely enough. The conspicuous golden-yellow cones of flowers of the curious *Banksias* (locally termed "honeysuckle"), though full of honey and attractive to many insects, do not appear to be particularly so to *Coleoptera*, a few weevils (*Myossita*, &c.) being all that I have ever found on them. One of the finest of the Australian *Buprestidæ*, however, *Cyria imperialis*, Don., is exclusively attached to the *Banksia*, and passes its early stages in the solid wood of the tree, often inflicting a large amount of damage.* The perfect beetle appears about the middle of November, and from its large size and brilliant deep yellow colour banded with black, is a most conspicuous object, either flying in the hot sunshine, or basking, as it loves to do, on the foliage of the dwarf *Banksias*; it does not appear to be attracted by flowers of any kind. *Carpophagus banksiæ*, Mael., also occurs on the leaves of these trees. The "she-oaks" (*Casuarina* spp.) produce, besides many small but interesting weevils, &c., three noteworthy species of *Buprestidæ*; *Germanica casuarinæ*, Blkb., a little linear bronzy-black fellow, barely a line in length, the smallest member of the family with which I am acquainted; *Paracephala murina*, Thoms., a cylindrical dull-bronzy *Agrilus*-like form, which may be bred from large hard woody galls on the twigs of the plant; and a very beautiful little yellow-spotted deep blue species of the curious genus *Astræus*. This latter insect, when beaten into the umbrella, skips about actively much after the fashion of an *Orchesia*, a habit unique among the *Buprestidæ*, as far as my experience goes.

(To be continued).

* Cf. French, "Handbook of the Destructive Insects of Victoria," Part III, p. 67, pl. XLIV figs. 1-4. Melbourne, 1900.

MESOPHLEPS SILACELLUS, Hb., A LEPIDOPTEROUS GENUS
AND SPECIES NEW TO BRITAIN, IN SUSSEX.

BY EUSTACE R. BANKES, M.A., F.E.S.

I have great pleasure in adding to the List of British *Tineidæ* the pretty *Mesophleps silacellus*, Hb., which was taken sparingly on the downs near Brighton, during June and July last, by my friend Mr. A. C. Vine, who subsequently sent me some specimens for determination. A comparison of these with Hübner's and Duponchel's figures, and then with the series in the Frey and Stainton (continental) collections, proved that they were unquestionably referable to this species, and it is highly satisfactory to find that one, at least, of the six Palæartic species of the genus *Mesophleps* is indigenous to Britain. In Staudinger and Rebel's Catalogue (1901), this genus, which stands between *Paltodora* and *Ypsolophus*, is assigned to Herrich-Schäffer, with the reference "Hb. 1818" inserted in brackets, but it may well be attributed to Hübner, though with the approximate date "circ. 1827" instead of "1818," for in spite of the title-page of the Verz. bek. Schmet., being dated "1816," it is certain that the part relating to the *Tineidæ* was not published until about ten years later. Hübner (*op. cit.*, p. 405) characterizes *Mesophleps* as having the shallow indentation near the middle of the costa of the fore-wings marked with a dark line, but Herrich-Schäffer (*Syst. Bear. Schmet. Eur.*, v, 43) separates it more satisfactorily, and says that it is only distinguished from *Gelechia* by the palpi, of which the middle joint has sharply-pointed scales above and below, those above towards the base being the longest and most erect, while the terminal joint is short and slender, and springs obliquely aside from the end of the middle one.

It may be useful to add a description of this attractive species, made from specimens most generously added to my collection by Mr. Vine out of the very limited number that he secured.

Antennæ dirty raw sienna-brown, narrowly annulated with fuscous. *Palpi* with the long, porrected, thickly-sealed, middle joint, whitish above and internally, dark brown beneath and externally, and the slender, short, rather erect, middle joint whitish, obscurely clouded with brown near the apex externally. *Head* whitish. *Thorax* and *tegulæ* pale straw-yellow. *Fore-wings* rather long, narrow, and of nearly uniform width to the tornus, pale straw-yellow, with a black spot on the fold, and two, in a line, beyond and above it on the disc; the outer half of the costa is more or less clouded with walnut-brown, and this clouding, interrupted at the apex, extends irregularly along the termen, and stretches inwards so as to form a blotch beneath the outer discal black spot; cilia brownish straw-yellow (sometimes par-

tially brown-speckled) up to a deep fuscous dividing line, and dark brown beyond it, but paler at the tornus; this deep fuscous line *appears* to mark the actual termen of the wing, but in reality the termen, which is often impossible to trace from above though clearly visible from beneath, lies about .75 mm. inside this line. Under-side silky brownish-grey, more brown towards the costa posteriorly, with the dorsum broadly pale ochreous; cilia grey-brown with an ill-defined darker line. *Alar. exp.*, 13.5—17.5 mm. *Hind-wings* trapezoidal, very broad posteriorly with the termen somewhat emarginate below the apex, satiny-grey; cilia ochreous-grey. Under-side concolorous with upper-side. *Abdomen* dorsally grey, with the first two segments clothed with short hair-like golden-brown scales except along the anterior margin, ventrally fuscous. The rather long ovipositor of the ♀ is often extruded in dried specimens.

The ground-colour of the fore-wings seems to be constant, but in some individuals the spots and the brown clouding (which varies somewhat in shade) are much less well pronounced than in others. The fore-wings show a little variation in the colour of the under-side, and much in expanse in both sexes, though the females average larger than the males.

Mr. Vine, who only found the moth in one restricted spot, tells me that it is on the wing from about 7 to 8.30 p.m., during favourable weather, and that its flight is so slow and heavy that it has no chance of escaping the net. In Stainton's "Tineina of Southern Europe," it is given as occurring "in dry grassy places towards evening," early in May (p. 58), and "on mountain-slopes and pasture-fields" in May and June (p. 92). In the "Catalog" by Staudinger and Rebel, *M. silacellus* is entered as an inhabitant of Central and Southern Europe, Galicia, Livonia, Northern and Central Italy, Dalmatia, and Bithynia. Unfortunately I have failed to find any notes on its life-history, which appears to be entirely unknown; we must hope, however, that, through Mr. Vine's energy, it will be discovered before long.

The imago bears no resemblance to any other species in the British List, although some of our earlier authors, including Haworth and Stephens, erroneously applied Hübner's name, whether as "*silacea*" or "*silacella*," to *Metzneria lappella*, L., of which *M. metzneriella* was regarded by Haworth as a variety.

It seems truly remarkable that the well-worked County of Sussex should have yielded the three latest additions to our Lepidopterous fauna, viz., *Argyresthia illuminatella*, *Tortrix pronubana*, and *Mesophleps silacellus*!

Norden, Corfe Castle:

December 18th, 1905.

HELP-NOTES TOWARDS THE DETERMINATION OF BRITISH
TENTHREDINIDÆ, &c. (12).

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

(Continued from Vol. XL, p. 248).

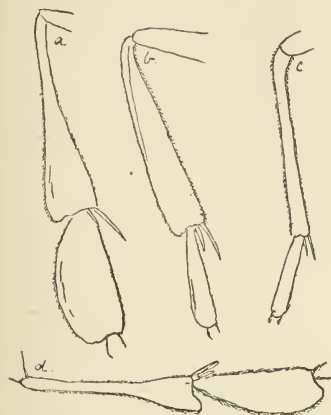
NEMATIDES (continued); MICRONEMATUS, CRYPTOCAMPUS,
CRÆSUS, HOLCOCNEME.

In my last paper (November, 1904) I defined the *normal* Genera of *Nematides* as those in which (a) the humeral cell is petiolate, and (b) the intercostal nerve strikes the subcosta distinctly before the point at which the latter receives the cubitus. Of these normal Genera Cameron admits three, viz., *Cræsus*, with three British species, *Euura*, with five, and *Nematus*, with no less than 107. Thomson treats the whole of them (and also *Dineura*) as subdivisions of his enormous genus *Nematus*; while Konow revises Thomson's subdivisions in certain cases, but on the whole accepts them and erects them into Genera, thus breaking up the whole unwieldy mass into eleven genera of manageable extent, and distinguished by real (though minute) differences of structure and to some extent by their general "facies," viz., *Cryptocampus*, Htg., *Pontania*, Costa, *Pteronus*, Jur., *Amauronematus*, Knw., *Cræsus*, Leach, *Holcocneme*, Knw., *Nematus*, Jur., *Pachynematus*, Knw., *Lygæonematus*, Knw., *Pristiphora*, Latr., and *Micronematus*, Knw.

Three of these genera can usually be separated from the rest on a single character. Thus, *Cryptocampus* (= *Euura*, C.) lacks the *second cubital nerve*, so that the 2nd and 3rd cubital cells are confluent, and form one exceedingly elongate area. The same condition, however, may occur in abnormal specimens of almost any genus. And a beginner must beware of confusing the absence of a *second* cubital n. with the absence of a *first* (as often in *Pristiphora*). In both cases the result is *three cubital cells instead of four*; but the proportions of the three cells to one another are utterly different in the two cases.

Cræsus, and its close ally *Holcocneme*, are separated by a much more satisfactory difference—the structure of their hind legs. In *Holcocneme* these have the tibiæ and tarsi considerably dilated and flattened, or rather hollowed out, from base to apex, and in *Cræsus* the same character is carried to a paradoxical extent; while in all the other genera the leg-joints are parallel-sided, slender, and cylindrical. (See fig. 10). Exactly similar differences exist, of course, among the Aculeates (e. g., *Apis*, *Halictus*, *Vespa*, &c.).

FIG. 10.—HIND TIBIA AND METATARSUS OF



(a). *Cræsus septentrionalis*, L., ♀.

(b). *Holcoeneme crassa*, Fall., ♀.

(c). *Pteronus miliaris*, Pz., ♀.

(d). *Cræsus latipes*, ♀.

MICRONEMATUS, KONOW.

Another genus which is easily separated from the rest is *Micronematus*. I know only one British species, viz., *monogyniæ*, Htg. This is an excessively small insect (2 to 3 mm. long), black, except that the legs are partly white, with a broad ovate abdomen, emarginate clypeus, claws armed with subapical tooth (not bifid), short pilose saw-sheath (♀), and short filiform antennæ (*i. e.*, they do not taper towards the apex as they manifestly do in the vast majority of the Nematids). Mr. Cameron's description of his *N. hibernicus* seems to suit this insect, but the absence or faintness which he notes of the 1st cubital n. is not a constant character. I have specimens both with and without it. (See Cam., vol. iv, p. 191). On the whole I believe that *hibernicus*, C., is a *Micronematus monogyniæ*, Htg., like my own specimens, and that his *crassispina* (*nec* Thoms.) is probably the same, although in vol. iv he classes it as a *Pontania*, which it can hardly be if its saw-sheath is "not projecting beyond apex of abdomen." Neither in *hibernicus* nor *crassispina* does Mr. Cameron mention the claw characters; and though he tells us in Vol. iv that the former is *not* a *Micronematus*, he does not enumerate it under any of the other genera. I have taken *monogyniæ* at Box Hill in early spring at *Prunus spinosus* flowers, and the late Mr. Beaumont often sent me specimens of it. The stigma is unicolorous, and dusky, or even black in fresh specimens, but seems to fade after death.

CRYPTOCAMPUS, Hartig.

Returning to *Cryptocampus*, of which, as of *Micronematus*, the species are small and black-bodied on the whole, but in which the

abdomen is narrow and elongate, the stigma pale at the base, and (as said above) the 2nd cubital n. absent. I only know for certain three of its species as British, which I distinguish as follows:—

TABLE FOR BRITISH *CRYPTOCAMPUS* SPECIES.

1. Face, including clypeus, quite black in both sexes *ater*, Jur.
- At least the apex of clypeus in the ♀, and nearly the whole face in the ♂, whitish or yellowish 2.
2. Larger—often quite 5 mm. long. Apex of saw-sheath (♀) viewed from above (not laterally) rounded. Claws (according to Thomson) with sub-apical tooth, and genæ buccate *medullarius*, Htg.
(= *pentandre*, Thoms. and Cam.).
- Smaller—scarcely 4 mm. long, or less. Apex of saw-sheath (♀) viewed from above sharply pointed. Claws bifid..... *saliceti*, Fall.

Ater is probably identical with *angustus*, C. A specimen in Dr. Capron's coll., called *angustus*, so far as I can see, does not differ from others named for me by Konow as *ater*. In some of these the tegulæ are absolutely black, in others merely a little dusky.

I do not know the species described by Cameron as *nigritarsis* and *flavipes*, nn. spp., and think it better in these papers to say as little as possible about forms unknown to me in nature. But I may mention that Konow considers that the latter = *testaceipes*, Br., an insect which I have not seen.

From *Cryptocampus* we ought, perhaps, to pass next to the genus most closely allied to it, viz., *Pontania*. But, as I have already mentioned the leg-character by which *Cræsus* and *Holcoeneme* species may be so easily recognised by collectors, I will endeavour to dispose of these two genera now, reserving *Pontania*, &c., for my next paper.

CRÆSUS, Leach.

With *Cræsus* (though we have apparently only three species, and those the same that are described by Cameron) I have had for some time past great trouble. This was due partly to mistakes into which I was led by Mr. Cameron's statements as to the coloration of the species, which are sometimes incorrect, and even self-contradictory,* and partly to an unlucky accident, by which some specimens bred by Miss Chawner separately from larvæ of *latipes* and *septentrionalis* got somehow confused and wrongly labelled—at least, that was the conclusion to which I came after long puzzling over them, and on sending them to Herr Konow for his opinion he assured me that such must undoubtedly have been the case.

* He says, *e. g.*, that in *latipes*, ♂, "the apex of the abdomen is entirely brownish-red," and shortly after that it has "part of the sixth" (? segment) "and the seventh and eighth entirely black."

I believe that now, after a long correspondence with Herr Konow, I can separate the species with tolerable certainty. But it must be admitted that the imagines of *latipes* and *septentrionalis* are sometimes excessively hard to distinguish; and but for the fact that their larvæ are totally dissimilar, it would be almost impossible to regard them as specifically distinct.

(To be continued).

A NEW GALL-INHABITING BUG FROM BENGAL.

BY DR. G. HORVÁTH.

Mr. T. T. Kieffer has been kind enough to send me for determination an Indian species of *Tingitidæ*, which I found to be undescribed. With my best thanks to Mr. Kieffer, I am glad to give the description of this new species as follows:—

STEPHANITIS GALLARUM, n. sp.

Vesicula antica et membranis marginalibus pronoti elytrisque hyalinis albidoreticulatis, pilis brevibus erectis griseis parce vestitis; capite nigro, bucculis albidis, fere ubique æque altis et antice ultra apicem tyli paullo prominulis; antennis flavo-testaceis, articulo quarto nigro, articulo tertio articulo hoc $2\frac{1}{3}$ longiore: pronoto disco dense subtilissimeque punctulato, fusco-castaneo, antice nigro, vesicula antica oblongo-ovata, parum elevata, ante basin antennarum vix extensa, carinis discoidalibus rectis, parallelis, carina mediana parum elevata, humili, cum vesicula antica æque alta, uniseriatim areolata, carinis duabus lateralibus sat distinctis, sed haud areolatis et antrorsum usque ad lineam transversam fictam, ad apicem posticum vesiculæ anticæ ductam extensis, membranis marginalibus late explanatis, irregulariter triseriatim areolatis, apicem versus latioribus, extus leviter arcuatis, antice oblique truncatis et paullo productis, angulo apicali externo rotundato, processu postico basi nigricante, apice hyalino, areolato; elytris abdomine multo longioribus et latioribus, mox ante medium fascia transversa subinterrupta, ante apicem litura obliqua, prope marginem suturalem vitta abbreviata et pone apicem spatii discoidalibus macula subtriangularia nigro-fuscis, plus minusve confluentibus notatis, vesicula discoidalibus parum elevata, membrana costæ lata, basi biserialiter dein triseriatim, ad sinum costalem quadriseriatim et ante apicem triseriatim areolata; corpore subtus nigro, limbo postico segmentorum pectoris brunneo, margine antico prosterni, carinis sternalibus pedibusque flavo-testaceis, tarsis apice nigricantibus. ♂. ♀. Long. corp. 3, cum elytris $4\frac{1}{2}$ mill.

This species differs from the other *Stephanitis* by the less developed pronotal hood and by the little elevated median carina of the pronotum, the two lateral carinæ being long and much produced forwards. It was found by Prof. A. Haas in the vicinity of Kurseong, Bengal, and is there very common on the galls of *Machilus gamblei*.

I profit by this occasion to make some synonymical remarks on

the genus *Stephanitis*. This genus was founded in 1873 by C. Stål (Enum. Hem., iii, pp. 119 and 123) for two species from Europe (*pyri* Fabr., and *oberti*, Kol.) and one from Brazil (*mitrata*, Stål). But a year afterwards the same author restricted (Öfv. Vet.-Ak. Förh., 1874, p. 53) his genus to the two European species. It seems that this fact has escaped the attention of Mr. G. C. Champion, who has fixed (Trans. Ent. Soc. Lond., 1898, p. 58) *S. mitrata* as the type of *Stephanitis*, removing from it the two European species. As a consequence of this arrangement Mr. G. W. Kirkaldy has proposed (Entomologist, 1904, p. 280) for the last two species the generic name *Mæcenas*.

It is evident, however, that the name *Stephanitis* must be reserved for the Palæarctic (and Oriental) genus, with which the genus *Cadamustus*, established by Mr. W. L. Distant (Ann. Soc. Ent. Belg., 1903, p. 47) for two Indian species is synonymous. In consequence it is the Neotropical genus which requires a name, and for which I propose the name *Calliphanes*. The synonymy of the two genera will be:—

1. *Stephanitis*, Stål (= *Cadamustus*, Dist., = *Mæcenas*, Kirk.).
Type: *pyri*, Fabr.
2. *Calliphanes* n. (= *Stephanitis*, Champ., nec Stål). Type:
mitratus, Stål.

Budapest, Hungarian National Museum :

December, 1905.

RARE DRAGON-FLIES IN NORFOLK.

BY H. J. DOBSON, F.E.S.

No Neuropterist can read Mr. G. T. Porritt's articles on his captures in the Norfolk Broads for two seasons without a desire to visit these lovely waters, hence I determined to learn something of the rare *Odonata* that make their home in the midst of the Broads.

I selected the first week in July last as likely to bring me the most success, and arrived on the spot on the afternoon of the 5th. In the evening I made arrangements with a man for the coming day to row me to various Broads and parts of the river that Mr. Porritt had kindly informed me were likely to yield the best things; however, on the 6th my boatman failed to turn up, and it was 12 o'clock before I could secure another, who fortunately took a keen pleasure in the

hunt, and moved the boat with great skill. In the course of half an hour I had sighted *Æschna isosceles*, but that was as far as I got; seeing and catching being two very different things with these crafty insects.

The next dragon-fly I saw, which stirred up my ambition to secure it, was *Libellula fulva*, and it was no small pleasure to pin it in my collecting box. The total result for the day was *Æschna isosceles* (3 ♂, 1 ♀),¹ *Orthetrum cancellatum* (5 ♂, 1 ♀), *Libellula fulva* (6 ♂), and *Brachytron pratense* (1 ♀). The female *O. cancellatum* was secured after much trouble, while depositing her eggs on a water lily leaf. The following morning we were on the water by 10.30 o'clock, the day was exceedingly hot with scarcely a breeze. I found the weather suited the dragon-flies better than it did me, for although I put more hours into sport, yet I put fewer captures into my box, for the brilliant hot sunshine made them very shy. In one instance we tried for three-quarters of an hour to take an *Æ. isosceles*, gently and quietly moving the boat till we got within four yards of it, but always to find it moved as quickly as the boat did; at last a false stroke with the net settled the question for ever, as it always does with this insect, for let it once know you want it, away it flies out of sight.

While our boat was gliding among the water lilies in trying to take this insect I noted *Lestes sponsa*, and plenty of *Erythromma naias*, *Agrion pulchellum*, *A. puella*, and a few *Libellula quadrimaculata*. I took a very nice suffused specimen of the last species, and also secured one *Cordulia ænea*. My total bag of the three rare species for this day numbered only ten, so I determined to go over the same water again on the following day. We started at the same time, and the weather was a repetition of the previous day. I secured after several hours close searching two *Æ. isosceles*, which brought my number up to seven. *O. cancellatum* was well in evidence, I saw three ♀s, all of which are now in my cabinet; I also took a couple of ♂s of the same species, and the same number of *L. fulva*. Of the last insect I had now secured eleven, but I regret that not a single ♀ was among the number.

It will be observed that this article treats only of *Odonata*, but I may add that I devoted a good deal of time to *Hymenoptera* and *Lepidoptera*; and while "sugaring" for the latter I had some very interesting experience with *Æ. isosceles*. It appeared to me that many of these fine dragon-flies leave the water at sunset and come into the lanes to get their evening meal prior to roosting in the tops of high trees.

On July 10th I watched some half-dozen whirling round a tree, catching scores of small flies; they kept well out of the reach of my net, and finally disappeared at seven minutes to 9 o'clock, but this time hardly conveys a fair idea of how late they may remain on the wing, inasmuch as it was just as dark on this evening at a quarter-past nine as it was on the previous day at a quarter to ten p.m. I was sorry I had to leave the locality on the next morning, or otherwise I think I might have had some good evening sport with this very local *Æschna*.

Ivy House, New Malden, Surrey :

November 6th, 1905.

NOTES ON SOME COLEOPTERA IMPORTED INTO OUR
NORTHERN PORTS.

BY RICHARD S. BAGNALL, F.E.S.

Owing to the large amount of timber which comes into the chief northern ports, Newcastle, Hartlepool, and Sunderland, many interesting beetles of foreign origin have been discovered about our quays and timber yards. This imported timber, which is chiefly used for "pit-props," comprises pine, fir, larch, birch, and sometimes alder, and is shipped from the Baltic ports, &c. In the light of the recent remarkable captures in Britain of certain Longicorns (previously unknown as indigenous), I think a list of these imported insects will prove to be interesting, as many of the Longicorns herein recorded may yet be found breeding with us, and perhaps owe their origin to the Hartlepool "pit-props," which are used in collieries far and wide. The species recorded from Hartlepool were mostly captured by Mr. Gardner, to whom I am greatly indebted for his kindly help in preparing these notes. Mr. Donisthorpe has been kind enough to identify several of those recorded in the following list, which also includes those recorded by Bold.

Macronychus (?) *parumoculatus*, Hardy: an evidently exotic species found by Hardy in an old collection of beetles, said to have been made in the Newcastle district. *Chrysobothris chrysostigma*, L.: Mr. Gardner has taken an example of this European Buprestid at Hartlepool. *Nitidula flexuosa*, F.: sands at South Shields (Bold). *Sinoxylon anale*, Lesne: an Indian Bostrichid injurious to bamboos, &c.; several examples were recently found in some furniture (at Newcastle) which originally came from India. *Semanotus undatus*, L.: Hartlepool, two examples. *Tetropium luridum*, L., var. ? : Hartlepool, several specimens. *Callidium violaceum*, L., *Phymatodes variabilis*, L.: several specimens of each species have occurred at

Hartlepool; I have had the larvæ of *C. violaceum* sent me from Liverpool. *Clytus arcuatus*, L.: Bold records two examples from the district; Mr. Gardner has taken it not infrequently at Hartlepool, and I have heard of the "hornet-beetle" (which I can only refer to this species) as having been found with timber at Sunderland. *Molorchus minor*, L.: Mr. Gardner has taken about a dozen specimens of this interesting and peculiar Longicorn at Hartlepool. *Leptura testacea*, L., *Strangalia pubescens*, F., and *S. revestita*, L.: Hartlepool, one example of each; *S. revestita* is in the doubtful list of Beare and Donisthorpe's "Catalogue." *S. aurulenta*, F.: a few taken by Mr. Robson at Hartlepool, "probably" introduced with birch. *Acanthocinus ædilis*, L.: In the Entomologist's Annual, 1874, p. 55, Mr. Gardner gives an interesting account of seeing this species in great numbers at Hartlepool: I have other records from Newcastle, Sunderland, Hartlepool, Durham, Winlaton, and Burnopfield, and have recently had it sent me from Long Houghton, Chester Moor, Byer Moor, Winlaton, and other colliery districts. *Pogonochærus fasciculatus*, De G.: taken in great numbers at Hartlepool, and probably imported from Norway; I also have two or three other species of the genus not yet determined. *Monohammus sartor*, F.: one example has been taken at Sunderland, whilst several have occurred at Hartlepool. *M. sutor*, L.: I have notes of this species from Hartlepool, Sunderland, Durham, Newcastle, Stockton, and near Burnopfield. *M. titillator*, F.: Mr. Robson has taken an example of this fine Longicorn at Hartlepool. *Saperda scalaris*, L.: Hartlepool, probably introduced with alder. *Calligrapha signatipennis*, Stål: a Mexican species, recorded by Bold as having been found in a greenhouse (imported with plants?) near Newcastle. *Blaps gages*, L.: the second example recorded from Britain; taken by Mr. Frank Winter, Newcastle, from a case of St. Michael oranges from Ponta Delgada, Azores; I had the insect sent me for identification whilst still alive. I afterwards learned that this huge *Blaps* had been immersed for some time in a bath of chloroform, with which the captor thought he had successfully killed it. Our common species (*B. mucronata*), too, seems quite indifferent to most poisons or anæsthetics. *Pissodes gyllenhali*, Schön.: Sunderland, with pit props (small larches and Scotch firs) from Norway; Bold speaks of it being exhibited by a miner as "the Norway wood louse." *P. piniphilus*, Herbst: Sunderland and Hartlepool. *Cryphalus tilix*, Panz.: one example, Hartlepool (or Teesdale?). *Pityogenes chalcographus*, L.: the examples recorded from Sunderland are, I feel sure, introduced; Mr. Gardner has seen this small Scolytid flying in clouds in the Hartlepool timber yards. *Tomicus sexdentatus*, Börn: one example, Hartlepool (or Teesdale?). *T. typographus*, L.: Hartlepool (or Teesdale?); Mr. Newbery kindly identified these *Scolytidæ*, and, excepting the *Pityogenes*, there is some doubt as to whether they were imported or not; Mr. Gardner unfortunately did not keep data of these captures, and considering my recent (indigenous) finds of the same family, viz., *Dryocætes autographus*, Ratz. (Gibside), *D. alni*, Georg. (Derwent Valley), *Tomicus acuminatus*, Gyll. (near Hylton), and *T. laricis*, F. (near Gibside), there is no reason why the insects above mentioned should not occur with us, though for the present I prefer to regard them as introduced.

Of course, many other species, mostly of a cosmopolitan character have been introduced into the Northumberland and Durham district, of which I may mention the following:—*Calosoma sycophanta*, L. (Newcastle), *Carpophilus*, *Orthocerus*, *Læmophlæus ferrugineus*, Steph., *Silvanus surinamensis*, L., *S. bidentatus*, F.

(Newcastle), various *Dermestes*, *Attagenus*, *Gibbium*, *Anobium paniceum*, L., *Rhizophorthera*, *Lyctus canaliculatus*, F. (Hartlepool), *Tribolium ferrugineum*, F., *Gnathocerus*, *Palorus ratzeburgi*, Wiss., *Alphitobius diaperinus*, Pz., *A. piceus*, Ol. (Hartlepool), *Bruchus pisi*, L. (Newcastle), *B. rufimanus*, Boh., *Murmidius ovalis*, Beck (Benton), *Lucanus cervus*, L. (Sunderland, ♂ and ♀), *Pissodes notatus*, F. (from Scotland ?), &c.

Truly this is a land of refuge for poor cast out foreigners !

The Groves, Winlaton-on-Tyne :

November 9th, 1905.

Some Buckinghamshire Coleoptera.—North of that great bend of the Thames which runs up from Maidenhead round to Reading, the outliers of the Chiltern hills come down in complicated undulations almost to the river valley. Here are repeated the familiar features of the North Downs—the steep, hot slopes, the dry, brookless coombs, the rough, scanty vegetation of the chalk—its viper's bugloss, its St. John's-wort and masses of marjoram. But these hills are crowned in all their heights and covered over half their slopes by detached and frequent beech woods; the trees supply the staple industry of the district whose centre is High Wycombe, and in the form of kitchen chairs are exported over half the globe. These woods are generally traversed by numerous footways; gamekeepers and enclosures are infrequent, and the whole region appeals with considerable force to the itinerant Entomologist. I was so fortunate as to spend a few days among these valleys last year, and although, of course, their Coleopterous fauna is very similar to that of other chalk districts, a record of some of the less common species captured may not be without interest, as they have been, so far as I am aware, unexplored.

My collecting was limited to a day or two in March and in September, and with the exception of a little sweeping on the latter occasion, was restricted almost entirely to sifting dead leaves in the woods and to cutting and shaking out the thick moss which grew by the sides of them.

The first process was not unremunerative, the dead beech leaves lay in thick masses in the hollows, and sifting them over a sheet was an easy task. Besides common species which I do not enumerate, *Badister sodalis* was abundant, *Choleva wilkini*, very common; *C. spadicea* and *C. angustata*, rare. Among the *Staphylinidæ*, *Oxyptoda spectabilis*, *Mycetoporus lucidus*, *Euryporus picipes* (which I had never before taken), *Quedius lateralis*, *Q. picipes*, *Q. fumatus*, *Philonthus fumigatus*, and *P. umbratilis*, perhaps deserve mention. *Medon brunneus* also was very abundant among these leaves.

Moss along the borders of the woods and on the banks of the deep cut lanes produced *Lebia chlorocephala*, *Pselaphus heisei* and *Bryaxis fossulata* (commonly), *Bythinus burrelli* (rarely), *Cerylon fagi*, *Subcoccinella 24-punctata*, *Mniophila muscorum* (frequent), *Apion ebeninum*, *A. filirostre*, *A. flavimanum*, *Liosoma oblongulum* (rarely), *Tychius junceus*, and *Trachyphlæus squamulatus*; here also unexpectedly occurred a specimen of *Lathridius bergrothi*, perhaps introduced in the seed corn with which the adjacent field had been sown.

A few hours' sweeping in September resulted in the abundant capture of a dark form of *Longitarsus pusillus*. This appears to be the *Thyamis collaris* of Stephens, and is probably synonymous with *L. reichei* of British Collections. Other more or less common contents of the net worth notice were *Microrula melanocephala*, *Meligethes lugubris*, *Phyllotreta consobrina*, *Longitarsus pulex*, *Apion pallipes*, *A. trifolii*, *A. aprieans*, *A. atomarium*, *A. vicinum*, *A. ononis*, and *A. waltoni*, *Ceuthorrhynchidius horridus*, *Cœliodes cardui*, and *Rhinoncus bruchoides*. In a fungus on a tree stump, *Gyrophæna strictula* was abundant, and *Haploderus cælatus* swarmed in a heap of hedge trimmings.

From a Coleopterist's point of view, the defect of so well wooded a district is the absence of old and decayed timber of any kind—a fact explained by the constant and systematic felling of most of the timber as it reaches a certain size for the chair factories; the absence of water is of course a feature common to all chalk districts.

The above samples, however, taken during a few hours, and at by no means the best times in the year, suggest a not uninteresting fauna to the student and fair results to the collector, as the reward of systematic work in this district.—W. E. SHARP, South Norwood: *January, 1906.*

Coleoptera from old birds' nests.—I have had exceptional opportunities this autumn for examining old nests in hollow trees, and have found several species of *Coleoptera* which are generally regarded as very rare in some numbers. The three chief trees I examined were: 1. A very ancient and quite hollow elm, which contained an old owl's nest and a great quantity of *débris* and rotten wood. 2. An ash, which had probably been weakened by a lightning stroke and then attacked and hollowed out by *Dorcus parallelipedus*, L., which was still at work in it. At the bottom of the hollow was a large heap of wood *débris*, bats' dung, and old straw from a starling's nest. 3. A beech with an old green woodpecker's hole in the trunk, which had been occupied by the usual sequence of lodgers, viz., green woodpeckers, starlings, and bats. At the bottom of the hole there was a small quantity of *débris*, consisting chiefly of the remains of insects rejected by the bats, and bats' dung. Four species of *Coleoptera* I found in all these trees, viz., *Hister meridarius*, Hoff., *Dendrophilus punctatus*, Hbst., and *Trox scaber*, L., which were common, and *Quedius brevicornis*, Th., of which I took 16 specimens altogether.

Coleoptera from the rotten wood and owl's nest in elm tree:—*Microglossa gentilis*, Märk. (in numbers); *Quedius ventralis*, Ahr. (1); *Philonthus fuscus*, Gr. (1); *Choleva colonoides*, Kr. (30); *Euplectus punctatus*, Muls.; *Gnathoncus nannetensis*, Mars.; *Attagenus pellio*, L.; *Ischnodes sanguinicollis*, Pz.

Coleoptera from ash tree:—*Microglossa pulla*, Gyll.; *Quedius microps*, Gr.; *Hapalaræa pygmæa*, Pk.; *Clambus pubescens*, Redt.; *Neuraphes rubicundus*, Schm. (7); *Euplectus punctatus*, Muls.; *E. nanus*, Reich.; *Ptenidium gressneri*, Er.; *Abraeus granulum*, Er.; *Cryptophagus bicolor*, Stm., and a large number of larvæ of what I hope will prove to be *Eryx ater*, F., as many remains of this beetle were also found.

Coleoptera from bat's nest in beech:—*Microglossa marginalis*, Gyll. (1); *Philonthus fuscus*, Gr. (3); *Quedius ventralis*, Ahr.; *Ptenidium gressneri*, Er.

Neuraphes rubicundus I have before taken in association with bats (see Ent. Mo. Mag., Vol. xl, p. 279, where it is recorded erroneously as *N. carinatus*, Muls.).

Philonthus fuscus I took from the intact but damp and rotten wood; I have taken it before in such situations and under damp bark in company with *Quedius ventralis*. *Quedius brevicornis* was always found in the loose débris, in just such a place as one would expect *Q. microps*, Gr., a species it much resembles in habits. As I find I took *Microglossa suturalis* from the fresh nest of a great-tit in June, I have obtained all the five members of this genus in birds' nests during the year.

I examined the débris from another hollow ash, which contained a nest of the honey bee, but did not find a single insect.—NORMAN H. JOY, Bradfield, near Reading: November 26th, 1905.

Coleoptera from a wine cellar.—I have on several occasions examined a wine cellar near here with small results; but a few minutes' sifting there in October this year produced: *Hypocyptus ovulum*, Heer; *Orthoperus atomarius*, Heer; *Mycetæa hirta*, Marsh.; *Anommatus 12-striatus*, Müll.; *Lathridius bergrothi*, Reitt.; *Enicmus minutus*, L.; *Corticaria fulva*, Com.; *Atomaria nigriventris*, Steph.; *Niptus hololeucus*, Fall.; and *Pentarthrum huttoni*, Woll. It is interesting to note that six of these species are without pigment, *i.e.*, are of a light yellow colour.—ID.

Smicrus filicornis, Fairm., at Bradfield, Berkshire.—Canon Fowler has kindly identified a small Trichopterygid which I took in March this year as *Smicrus filicornis*, Fairm. It was obtained by sifting dead leaves and bracken.—ID.

Ptinus tectus, Boield., in Scotland.—In the early part of November my friend, Mr. Evans, sent me some specimens of a species of *Ptinus* which he had taken freely in a flour mill near the Carnegie Park, Dunfermline, on October 28th. The specimens were soon identified as *tectus*. I paid a visit to Dunfermline on Nov. 25th and found that the insect was abundant all over the flour mill; with it occurred *Cryptophagus cellaris*, Scop., and *Niptus hololeucus*, Fall.; both these species, however, were far less abundant than the *Ptinus*. During the present month I contributed a short paper to the Royal Physical Society of Edinburgh on the introduction of *P. tectus* into Great Britain and gave details as to the rapid way in which it appeared to be spreading throughout the country. During the meeting I was informed that a specimen of the species had been taken by Mr. G. Ellison in August, 1905, at Stromness, in the Orkneys, among hops in a bakehouse. All the places in which this species has been taken in Great Britain so far, are either seaports or in the immediate neighbourhood of ports.—T. HUDSON BEARE, 10, Regent Terrace, Edinburgh: December 19th, 1905.

Megaconus formosus, Gr., as British.—Stephens records this species from near Swansea. He writes (Ill. Mand., vol. v, p. 168), "Very rare in England; taken near Swansea, and I believe within the metropolitan district." There is a specimen in the Stephensian Collection labelled "Swansea," and there is no reason to suppose it was not taken there.—HORACE DONISTHORPE, 51, Kensington Mansions, London, S.W.: December, 1905.

Cubocephalus nigriventris, Thoms., parasitic on *Tetropium*.—When I was working for the *Tetropium* discovered at Market Bosworth by Mr. Bouskell, I dug an Ichneumon out of the cell of the beetle, which I gave to Mr. Morley. He now tells me this is *Cubocephalus nigriventris*, Th., and has never been bred anywhere before. It has been observed in Norfolk and Devon, and its range extends throughout Northern and Central Europe. The Ichneumon has red legs, as also has Mr. Bouskell's form of *Tetropium* (*T. gabrieli*, Weise?), and is probably rare in this country.—ID.

Diptera in Dumbartonshire in 1905.—During the past summer I devoted considerable time to collecting *Diptera*, the records of which are very incomplete for the West of Scotland. I met with considerable success, adding many species to our rather meagre list. In the *Dolichopodidae* I met with about 50 species, including *Dolichopus festivus*, *D. signatus*, *D. griseipennis*, *Hercostomus nigripennis*, *Hypophyllus obscurellus*, *Gymnopternus celer*, *Chrysotus cilipes*, *Argyra confinis* (six specimens), *Porphyrops micans*, *Hydrophorus nebulosus*, *Liancalus virens*, *Campsicnemus loripes*, *C. scambus*, *Ectomus alpinus*, and *Teuchophorus spinigerellus*, all of which are new to the local list. In the other families I also turned up a few additions to the list, viz., *Pollenia vespillo*, *Cyrtoneura pabulorum*, *Pogonomyia alpicola*, *Phorbia muscaria* (at sallow bloom), *Macrorchis means*, *M. meditata*, *Hylomyia flavipennis*, *Chortophila buccata*, *Mydæa longitarsis?* (1 ♀), *Mydæa vespertina*, *Hydrotæa militaris*, *H. similis*, *Paloptera saltuum*, *Spilographa zoe*, *S. alternata* (bred from hips of wild rose), *Verrallia aucta*, *Platypera atra*, *Urellia stellata*, *Chilosia honesta*, *C. bergenstammi*, *C. grossa*, *C. albipila*, *Conops 4-fasciata*, *Helomyza rufa*, *H. ustulata*, *Blepharoptera spectabilis?*, *Pegomyia latitarsis*, *P. hæmorrhoum*, *Merodon equestris* (flying among *Narcissi* at Strathloven), *Syrphus guttatus* (very common at *Spiræa* in garden at Strathloven), *Chrysogaster splendens*, and *C. solstitialis* (both occurred along with *guttatus*), *Macquartia affinis*, *Cæloomyia mollissima* (very common in several parts of the locality), *Sepsis punctum* (one specimen), and *Carphotricha guttularis* (two specimens), *Xylota sylvarum* (one specimen), *Platychirus discimanus* (common at sallow on the hills in May), *Tephritis miliaris*, *Balioptera tripuncta* (one specimen), *B. combinata* (common), *Empis borealis*, flying alongside hill streams early in the year, *Clinocera fontinalis*, common in marshes, along with *Parhydra litoralis*. All of these species are new to our published list. I have a large number of specimens still unnamed, and I hope that before the next season opens I may be able to identify all of them. Already I possess 100 species that have not been previously recorded for the Clyde district, and that number will, I have no doubt, be augmented by half, as the result of a season's collecting.—J. R. MALLOCH, Bonhill, Dumbartonshire: December, 1905.

Retarded emergence of Leiocampa dictæoides, Esp.—In November, 1903, I received three pupæ of *Leiocampa dictæoides* from Kent; these yielded perfect imagines during 1904, on the following dates: June 12th (♀), June 13th (♀), and July 14th (♂), all three pupæ having been kept in the same cage throughout! July 14th seems a remarkably late date for a species that is normally out in May and June, and had the freshly-emerged moth been captured at large then it would have been only natural to suppose that it was an early representative of the second

brood, which is sometimes fully out at the beginning of August. The approximate hour of emergence of one of the three specimens is quite unknown, but of the other two, one left the pupa between 8 and 10 p.m., while the other was expanding its wings at 10.50 p.m. From Mr. Tutt's "Practical Hints," ii, 49, we learn, however, that the imagines resulting from some larvæ, collected by the Rev. C. F. Thornewill in 1891, emerged during the afternoon.—EUSTACE R. BANKES, Norden, Corfe Castle: *January 6th*, 1906.

[In Yorkshire we are never surprised to see either *L. dictyoides* or *L. dictæa* on any date between the end of May and middle of July.—G. T. P.]

Abundance of Limnophilus elegans in the Isle of Man.—Referring to the note on *Limnophilus elegans* (Ent. Mo. Mag., July, 1905, p. 47) Dr. R. T. Cassal followed up his discovery with vigour last June, and soon found that the species was quite an abundant insect in the Northern portion of the Isle of Man. He was able to fill up my series with 30 additional specimens, and had still enough left to enrich the collections of others of our Trichopterists. For a species, the British known specimens of which, up to last year, could probably have been counted on the fingers of one's hands, this is very satisfactory. Another less noteworthy, but yet interesting species which Dr. Cassal sent me for determination, among his captures in the same district in 1905, was *Limnophilus xanthodes*.—GEO. T. PORBITT, Huddersfield: *January 5th*, 1906.

Tortrix pronubana in Guernsey.—This pretty species was not noticed in Guernsey before the autumn of 1898, when the Rev. F. E. Lowe took two specimens. Since that time it has become abundant, appearing in the perfect state during September and October. The larvæ are usually found feeding on the leaves of *Euonymus* in hedges, but in the summer of 1900 I had a number of these larvæ brought to me which had been found in a greenhouse feeding on grapes. Several bunches were each tenanted by two or three larvæ which had spun the berries together and were living between them.—W. A. LUFF, Brock Road, Guernsey: *January*, 1906.

Tortrix pronubana, Illb.—The following additional information as to the food-habits of this species may be of interest. In a letter to me dated August 9th, 1899, Mr. W. A. Luff, of Guernsey, wrote as follows: "A short time ago a gentleman brought me several *Tortrix* larvæ which he said were doing great damage to the grapes in his greenhouse, eating into the ripe berries. I was successful in breeding one specimen of the moth which turns out to be *Tortrix pronubana*, the species captured by Mr. Lowe last year."—E. N. BLOOMFIELD, Guestling Rectory: *January 9th*, 1906.

A Butterfly Passenger.—In the first week of August on going over from Ryde to Stokes Bay I saw a beautiful ♂ specimen of *Lycæna argiolus* on board the steamboat, flying merrily up and down the deck, and occasionally settling on the various pots of flowers that were on board.—C. W. DALE, Glanvilles Wootton: *January 13th*, 1906.

Obituary.

Mrs. Emma Sarah Hutchinson.—It is with deep regret that we have to record the death, after a long illness, of Mrs. E. S. Hutchinson, whose name has been familiar to two generations of English Lepidopterists. The daughter of Commander Thomas Gill, R.N., a distinguished naval officer, she was born in 1820, at Llyswen Vicarage, Breconshire, and married, in 1847, the Rev. Thomas Hutchinson, Vicar of Kimbolton, Herefordshire. There being no Vicarage house, they resided at Grantsfield, where Mr. Hutchinson, who held the living for 62 years, and was an ardent botanist, died in July, 1903, aged 88, and his widow passed away on December 10th last, in her 86th year.

Much interested from an early age in Natural History, the subject of our notice gave no special attention to the insect world until her eldest son, when five years old, captured with great delight a specimen of *Ourapteryx sambucaria*. The spark was thus fanned into a flame which never died out, and she thenceforth devoted herself with untiring zeal and energy to the study of the *Lepidoptera*, though by no means neglecting her garden, of which she was passionately fond.

Mrs. Hutchinson, who showed exceptional skill in rearing butterflies and moths, added considerably to our knowledge of the life-histories of various local species, including, to use the names that she employed, *Vanessa c-album*, *Eupithecia consignata*, *E. irriguata*, &c., either by recording her own observations, or by supplying friends with ova or larvæ wanted for description. Numerous collections have been enriched by her with these and other treasures, such as *Acidalia degeneraria*, while "The Entomologist" and "The Young Naturalist" contain scattered notes from herself or her children in which are recorded their captures, in the Leominster district, of many rarities, e.g., *Acronycta alni*, *Dicranura bicuspis*, *Xylina semibrunnea*, the two above-named *Eupitheciæ* and *Cerostoma asperella*, for which the only other known British locality is Glanvilles Wootton, Dorset, where, however, it has not been seen since 1831. It is worthy of mention that, after obtaining ova from a female captured in 1874, she, with her daughter's assistance, continued to rear *E. consignata* until the time of her death, no fresh blood being ever introduced—a wonderful instance of the closest in-breeding being successfully carried on for 31 years without any loss of fertility or diminution in size!

By her kindness, liberality, and enthusiasm, Mrs. Hutchinson endeared herself to many personal friends, and to a still wider circle of correspondents, amongst whom were numbered, of a past generation, Doubleday, Newman, Stainton, Buckler, Hellins, and other noted Entomologists.

During her long life our esteemed friend suffered many sorrows and bereavements, all borne with exemplary resignation and fortitude, as evidenced by letters penned to the writer during some of her darkest days. Of her family of three sons and four daughters, all of whom inherited their parents' love of Natural History, one son and three daughters pre-deceased her, and, during the last three and a half years of her life, she lost husband, son, daughter, and sister-in-law! To her eldest son, Mr. Thomas Hutchinson, an ex-President of the Woolhope Naturalists' Field Club, as well as to his brother and sister, we would offer the sincere sympathy of British Entomologists.—EUSTACE R. BANKES.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *October 16th*, 1905.—Mr. G. T. BETHUNE-BAKER, President, in the Chair.

Reference was made to the death of Mr. J. W. Douglas, who was one of the Honorary Members of the Society, and had been so since its commencement.

Mr. W. Harrison showed *Pheosia tremula*, Cl. (*dictæa*, Esp.), from Selby Oak, which he thought was a new locality for it, also a series of *Nonagria typhæ*, Thub., from Sandwell Mill Pond, and other local insects. Mr. G. H. Kenrick, a small collection of butterflies made in Mexico during a recent hurried visit to that country; he remarked that the first three butterflies he saw on leaving the city of Mexico to collect were *Pyrameis atalanta*, L., *P. cardui*, L., and *Vanessa antiopa*, L. Mr. N. S. Searle, various *Lepidoptera* from Norfolk, *Cirrhædia xerampelina*, Hb., and *Arsilonche venosa*, Blch., from Feltwell Fen, and *Leucania obsoleta*, Hb., from Denner. Mr. J. T. Fountain, some larvæ which he believed to be *Apamea unanimitis*, Tr.; they were found in abundance on the Stratford Canal, near Yardley, living in tubes turned up out of the leaves of a sedge-like grass.

November 28th, 1905.—The President in the Chair.

Rev. F. D. Morice exhibited the whole of his collection of British and Palæartic *Chrysididæ*; the British species filled one box, and comprised a nearly complete set of those known to occur in this country, including such rarities as *Hedychridium coriaceum*, Dahlb., of which five specimens were shown, probably all that have been taken in this country; the Palæartic series filled six boxes, and were a wonderfully rich and complete lot. Mr. G. T. Bethune-Baker, a very fine collection of *Lepidoptera* received from New Guinea, and also by means of a lantern a number of slides illustrating the country in which the specimens were taken.—COLBRAN J. WAINWRIGHT, *Hon. Secretary*.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: The second ordinary meeting of the Winter Session was held in the Royal Institution, Liverpool, on Monday, November 20th, 1905, the Vice-President, Mr. RICHARD WILDING, in the Chair. Communications were read from Miss Hannah Johnson and Mr. C. W. Dale. Eleven new Members were elected, and seventeen candidates for membership were proposed. Lantern demonstrations were given by Messrs. Oscar Whittaker and Oulton Harrison. Mr. Whittaker's fine series of Micro-slides, specially prepared by himself, dealt with the Orders *Coleoptera*, *Diptera*, and *Hemiptera*. Amongst the subjects shown were excellent preparations of the antennæ of *Hydrophilus piceus*, *Acilius sulcatus* and *Melolontha vulgaris*; maxillary palpi of *Acilius sulcatus* and *Creophilus maxillosus*; antenna, tongue, tarsus of fore-leg, &c., of the Hover-fly, *Eristalis tenax*; head of the common gnat, *Culex pipiens*, showing the beautifully feathered antennæ of the male; parasites, of different ages, from the peacock; a series of slides of *Corixa geoffroyi*; fore-leg of *C. præusta*; elytra of *C. sahlbergi* and *Notonecta glauca*; antennæ of *C. geoffroyi* and *N. glauca* arranged for comparison, &c. Much information of an interesting and instructive character was imparted during the exhibition. Mr. Oulton Harrison's demonstration consisted of

a long and beautiful series of lantern slides from photographs of Lepidopterous ova, larvæ, and imagines, by Mr. Hugh Main, B.Sc. Amongst those shown and described were the following: magnified ova of *H. abruptaria*; *A. atropos*, on potato; pupæ of *M. stellatarum*; *C. lychnitis*, feeding on black mullein seeds; *D. vinula*, resting for moulting; *E. versicolor*; *M. pisi*; *O. potatoaria*, on coltsfoot; ova of *B. rubi*, on sweet gale; larvæ of *G. quercifolia*; *S. lubricipeda*; magnified antenna of *O. antiqua*, and female of the same species depositing her eggs; exposed pupæ of *N. arundinis* in stems of bulrush; larvæ of *P. smaragdaria* on sea worm-wood; a series of photographs of moths at rest, to show the protective value afforded by the various tree-trunks, lichens, &c., on which they usually settle; larvæ, at different ages, chrysalids, and imago of *P. machaon*; winter and summer forms of the pupa of *L. sinapis*; chrysalis of *L. sibylla*; a series of slides showing larvæ of *P. atalanta* in their natural surroundings, also pupæ and imagines of the same species; ova of *M. aurinia* on the devil's-bit scabious, &c., &c. The undermentioned exhibits were shown: *Cabera pusaria* and the variety *rotundaria*, by Mr. W. Mansbridge, in exhibiting which he dealt with the question of specific or varietal value for the latter insect. Three specimens of *Limnophilus elegans*, one of the rarest of the European caddis-flies, captured at Ballaugh, Isle of Man, and presented to the Society by Dr. R. T. Cassal. *Pterostichus parumpunctatus*, from Gibside (R. Bagnall); *Thanasimus fornicarius* from Monks Wood (R. Tait, junr.); and the earwig, *Apterygida media*, from Huntingfield, Kent (H. St. J. K. Donisthorpe) by Mr. E. J. B. Sopp, F.R.Met.S.—E. J. B. SOPP and W. DELAMERE HARRISON, Hon. Secretaries.

ANNUAL MEETING.

The Annual Meeting was held in the Royal Institution, Liverpool, on Monday, December 18th. In the absence of the President, Mr. S. J. CAPPEE, F.E.S., Mr. RICHARD WILDING, Vice-President, occupied the Chair. The following were elected Members of the Society: The Right Hon. Lord Avebury, P.C., D.C.L., LL.D., George Arnold (University of Liverpool), Eustace R. Bankes, M.A., F.E.S., Geo. C. Champion, F.Z.S., F.E.S., Thos. A. Chapman, M.D., F.Z.S., Chas. W., Dale, F.E.S., Rev. H. S. Gorham, F.Z.S., F.E.S., Herbert Goss, F.L.S., F.E.S., Martin Jacoby, F.E.S., Gervase F. Mathew, F.L.S., F.E.S., R.N., Professor Raphael Meldola, F.R.S., F.C.S., F.E.S., Frederic Merrifield, F.E.S., President of the Entomological Society of London, Claude Morley, F.E.S., David Sharp, M.A., M.B., F.R.S., H. R. Sweeting, Colonel Charles Swinhoe, M.A., F.L.S., F.E.S., Gerald M. Taylor, M.A., Rev. A. Thornley, M.A., F.E.S., Commander J. J. Walker, M.A., R.N., F.L.S., and Lieut.-Colonel John W. Yerbury, R.A., F.Z.S., F.E.S.

The Secretary then read the Report of the Council, an eminently satisfactory one. The Treasurer, (Dr. J. Cotton) then presented his Balance Sheet which showed a substantial and increased balance at the bank.

The Annual Address by Mr. Horace St. J. K. Donisthorpe, F.Z.S., F.E.S., Vice-President, was then communicated.

On the motion of the Chairman a very cordial vote of thanks was accorded Mr. Donisthorpe, whose paper it was resolved to print in full in the proceedings of the Society.

The following officers were elected to serve during 1906: *President*, Samuel

J. Capper, Esq., F.E.S. *Vice-Presidents*: Professor T. Hudson Beare, B.Sc., F.E.S., F.R.S.E.; Richard Wilding; J. H. Bailey, M.B., Ch.B.; E. J. B. Sopp, F.R.Met.S., F.E.S.; Professor E. B. Poulton, M.A., D.Sc., F.R.S., and J. R. Charnley, F.Z.S., F.E.S. *Hon. Treasurer*: J. Cotton, M.R.C.S., L.R.C.P., L.S.A. *Hon. Secretaries*: H. R. Sweeting, M.A.; W. Mansbridge E.E.S., and W. Delamere-Harrison. *Hon. Editor*: J. R. le B. Tomlin, M.A., F.E.S. *Hon. Librarian*: F. N. Pierce, F.E.S. *Council*: H. St. J. K. Donisthorpe, F.Z.S., F.E.S., A. Tippins, W. A. Tyerman, B. H. Crabtree, F.E.S., J. Kidson Taylor, J. F. Dutton, W. Webster, M.R.S.A.I., F. R. Dixon-Nuttall, F.R.M.S., Rev. T. B. Eddrup, M.A., C. E. Stott, R. Tait, jun., and P. Edwards, M.R.C.S., L.R.C.P., L.S.A. The following were re-appointed Recorders: *Coleoptera*, J. R. le B. Tomlin; *Hymenoptera*, Edward Saunders, F.R.S., F.L.S., F.E.S.; *Lepidoptera*, F. N. Pierce; *Diptera*, C. R. Billups, M.R.C.S., L.R.C.P., and E. E. Lowe, F.L.S.; *Neuroptera*, W. J. Lucas, B.A., F.E.S., *Orthoptera*, E. J. B. Sopp, and *Hemiptera*, Oscar Whittaker.

Exhibits were shown as follows: British *Lepidoptera* by Mr. R. Tait, jun. Three cases of West African *Lepidoptera*, captured on the Gold Coast during May, 1905, by Mr. W. A. Tyerman. *S. carpini*, as a weasel, a case of mimicry, by Dr. P. Tinne. The stick insect, *Tirachoides spectabilis*, from New Guinea, by Mr. J. J. Richardson. *Mecostethus grossus*, L., from the New Forest, presented to the Society by Mr. W. J. Lucas. *Creophilus maxillosus*, L., with a red thorax, from Ashton-on-Mersey, in November (R. Tait, Jun.), a perfect specimen of the green cockroach, *Panchlora virescens*, Thunb., captured amongst bananas in Manchester (H. Garnett), and the Central American earwig, *Apterygida linearis*, Esch., from the Liverpool Docks, by Mr. Sopp, and identified by Mr. Malcolm Burr.—E. J. B. Sopp, J. R. le B. Tomlin, W. D. Harrison, *Hon. Secretaries*.

FURTHER NOTES

ON THE CAPTURE OF *AMARA ANTHOBIA*, VILLA,
AND THE COMPARATIVE MORPHOLOGY OF *A. FAMILIARIS*, DUFT.,
A. ANTHOBIA, AND *A. LUCIDA*, DUFT.

BY THE REV. GEORGE A. CRAWSHAY, M.A.

(Concluded from No. 494, *Ent. Mo. Mag.*, page 161.)

On presenting specimens of *A. anthobia* to British Coleopterists I find that some difference of opinion exists as to its specific value, a few being inclined to regard it as a variety either of *A. familiaris* or of *A. lucida*.

It is interesting to note, in connection with this, that Schaum united *anthobia* and *familiaris* under one species (Ins. Deutschl. i, p. 533), while Dejean united *lucida* and *familiaris*. The large majority of Coleopterists, however, appear to regard *anthobia* as distinct. I have carefully examined 300 examples of *anthobia* taken

by various Coleopterists at Leighton, Deal, Shirley, King's Lynn, Oxford, New Forest, Chatham, Paris District, &c.; 350 examples of *familiaris*, chiefly from Leighton; upwards of 100 *lucida* from Deal, Isle of Wight, S. Issey (Cornwall), King's Lynn, Southport, &c., and I am of opinion that *anthobia* is a fairly good species. It possesses distinctive characters, some of which are a little difficult perhaps to detect in isolated individuals, but apparent when viewed in a good series, and when series of each species are set beside each other for comparison.

Various continental Coleopterists have described the insect, but no description I have seen seems to me to bring out fully the differentiating characters of the three species.

(1) *Size*—Both Putzeys (Mém. Soc. Roy. Sci. Liège, 1866, p. 184) and Ganglbauer (Die Käfer von Mittel-europa, i, p. 320) make *anthobia* of the same size as *familiaris*. In my experience it is intermediate between *familiaris* and *lucida*. The three species overlap, but *anthobia*, in the examples before me, never attains the greatest size of *familiaris*; it averages about $\frac{1}{2}$ mm. less, in length, than this species, nor does it occur as small as the smallest *lucida*.

The following statistics of averages taken on a hundred specimens of each species (all the *familiaris* and *anthobia* being from Leighton, and the *lucida* from various localities) show this:—

	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.
	$4\frac{3}{4}$	: 5	: $5\frac{1}{4}$	: $5\frac{1}{2}$	: $5\frac{3}{4}$	: 6	: $6\frac{1}{4}$	: $6\frac{1}{2}$	: $6\frac{3}{4}$	: 7	: $7\frac{1}{4}$
<i>A. familiaris</i> (100)	1	:	0	:	1	:	22	:	26	:	19 : 16 : 14 : 1
<i>A. anthobia</i> (100).....	2	:	2	:	7	:	14	:	39	:	19 : 16 : 1
<i>A. lucida</i> (100).....	7	:	11	:	14	:	34	:	23	:	11

Average size, approximately.

Range.

<i>A. familiaris</i>	$6\frac{1}{2}$ mm.	.....	$5\frac{1}{4}$ mm.	—	$7\frac{1}{4}$ mm.
<i>A. anthobia</i>	6 mm.	.....	5 mm.	—	$6\frac{3}{4}$ mm.
<i>A. lucida</i>	$5\frac{1}{2}$ mm.	.....	$4\frac{3}{4}$ mm.	—	6 mm.

It was the smaller size of *anthobia* as compared with *familiaris* that first induced me to take a few specimens of the former for examination.

(2) *Coloration*—(a) where the three species take a bronze shade *anthobia* is always of a brighter shade than either *familiaris* or *lucida*. Moreover, a dark greenish-blue shade occurs rarely in *lucida*, which I have not seen in either of the others.

(b) *Anthobia* is always the most shining of the three, the ♂ being slightly but perceptibly more so than the ♂♂ of *familiaris* and *lucida*, and the ♀ more markedly so than the ♀♀ of the two

latter species. This lustre seems to be due to a more superficial reticulation of the upper surface in *anthobia*.

(c) In the colour of the legs *anthobia* is distinct, the red being of a colder and more umber shade than is the case with the other two species.

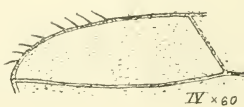
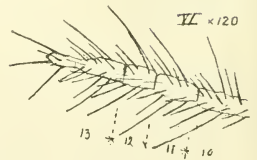
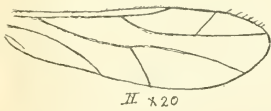
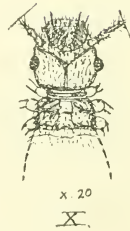
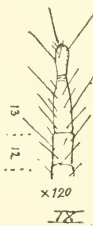
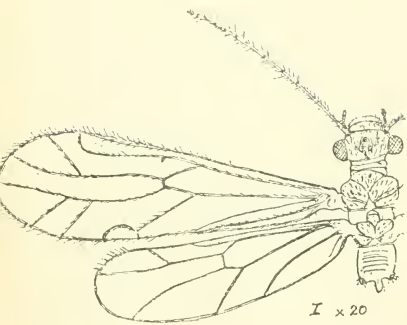
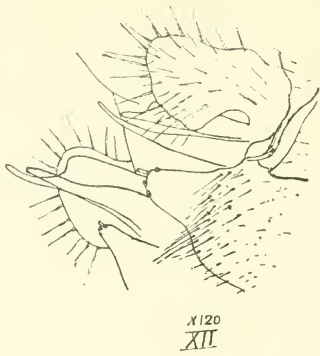
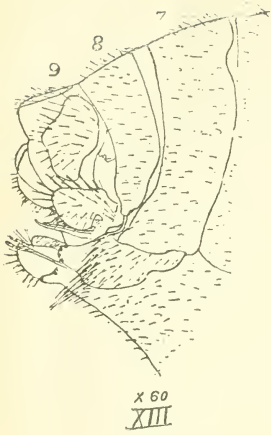
This character is constant in my long series taken at Leighton Buzzard, and is best distinguished when a number of individuals of each species freshly killed are placed close together on their backs in separate batches, and the batches side by side. In this way the black under-sides show up the different shades of red in the legs, which are mostly folded over them. The difference is visible when the batches are composed either entirely of mature specimens or of specimens of all degrees of immaturity mixed. I have submitted batches of *anthobia* and *familiaris* to different people who have readily distinguished this difference, among them Mr. E. A. Waterhouse. This gentleman first called my attention to the greater brightness of the ♀ *anthobia* as compared with the ♀ *familiaris* in some thirty examples which I had sent him.

(3) *General outline*—In *anthobia* the elytra have the appearance of being wider behind the middle than in *familiaris* or *lucida*. This, I think, is actually due to the narrowing of the elytra at the base proportionately, to meet the contracted base of the thorax, whereas in *familiaris* and *lucida* the thorax is widest at the base, and the base of the elytra proportionately so. This character is not sexual. It is variable and very marked in some individuals.

(4) *Smaller thorax*—As a rule the thorax in *anthobia* is not only shorter but smaller than in *familiaris* and *lucida*, thus enhancing the heavy appearance of the insect behind.

(5) *Prescutellary pore*.—As to other differentiating characters mentioned by Putzeys and Ganglbauer, the prescutellary pore is an excellent character by which Bedel separates the species from *familiaris* and *lucida*. It is umbilicate, piliferous, attached to the base of the scutellary stria, or, in some cases, situated close beside it. I find that, in one per cent. (I have seen three in 300 specimens), one of these pores may fail, but never, in my experience, both. On finding one specimen in my first eighteen minus a pore, I expected, in a large number of examples, to find a case in which both were absent; but I have not seen an insect bearing the characters of *anthobia* without the pore being present on one or other elytron. In the instances where one pore was absent all the other characters of *anthobia* were present in a marked degree.

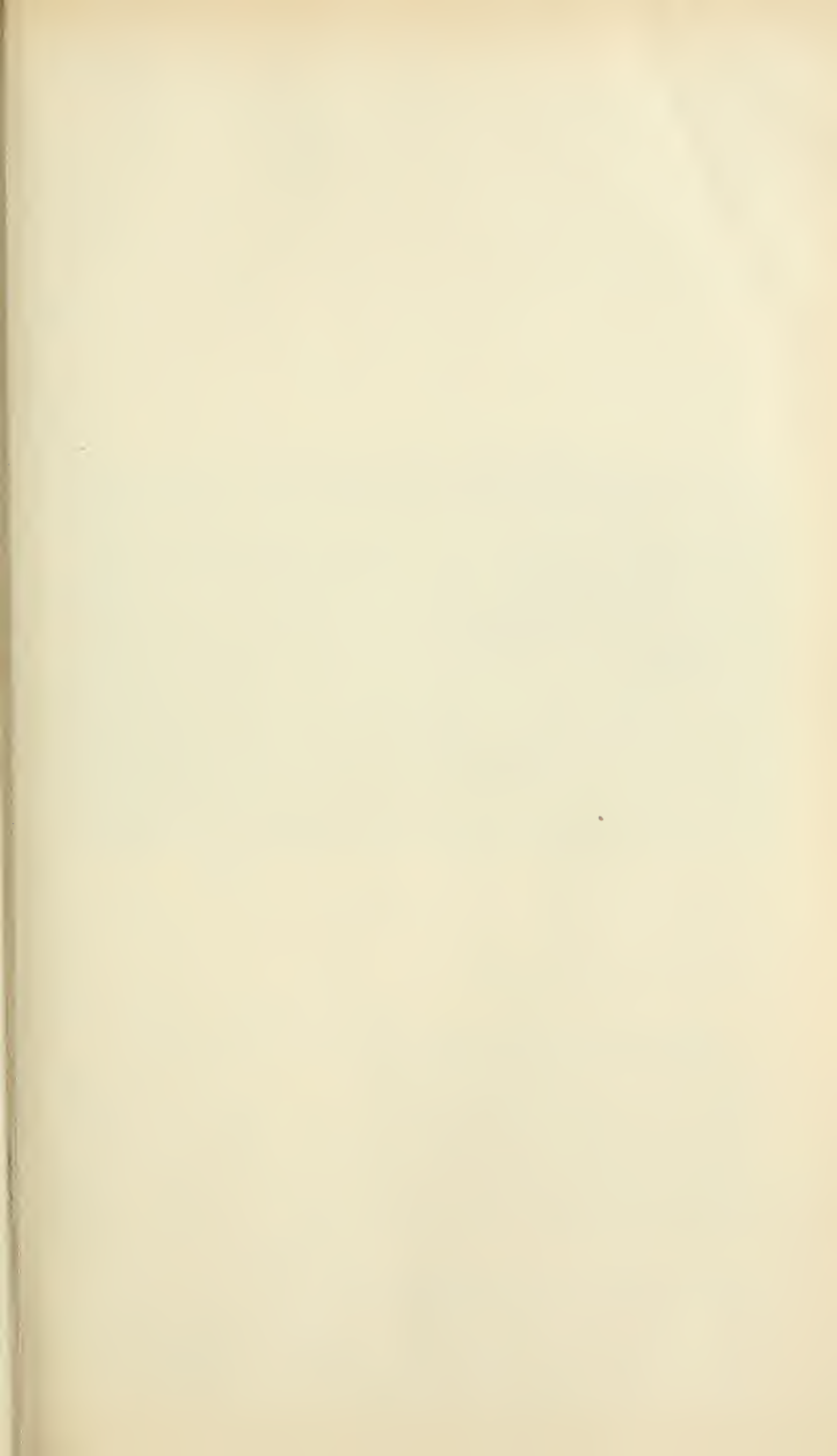
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REUTERELLA HELVIMACULA, ENDERL.



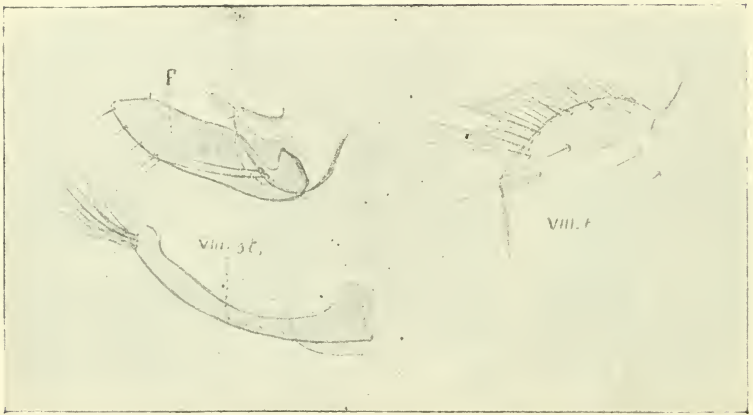


FIG. A.

FIG. B.

CERATOPHYLLUS INSULARIS, ROTHSCH., *n. sp.*

M. Bedel informs me that he knows of no exception to the rule of two pores, and the specimens he sends me bear both. I have already recorded an instance of the abnormal number of three pores occurring in *anthobia* in the region of the scutellum, the additional one being situated at the base of the sutural stria on one clytron.

On the other hand, rare exceptions to the rule of no prescutellary pores occur in *lucida*. I have seen one in about 120 examples in which the insect bears one prescutellary pore.

In *familiaris* exception to the rule of no prescutellary pores proves extremely rare. I have come across none in 350 examples of my own. Mr. Champion has kindly communicated to me a specimen from his collection bearing two pores rather similar to those of *anthobia*, but all the other characters of *familiaris* are present in this insect.

(6) *Prominent eyes*—marking out *anthobia* and *lucida* from *familiaris*.

There seems to be little or no variation in this character.

(7) *Thoracic foveæ impunctate*.—A character differentiating *anthobia* from *familiaris* and *lucida*. It is constant in all cases of *anthobia* which have come to my notice. I observe, however, that about 5 per cent. of *familiaris* may be impunctate also, and a slightly larger percentage of *lucida*.

(8) *Margins of thorax*.—In common with *lucida*, *anthobia* has the anterior margin of the thorax straighter than *familiaris*, and consequently the anterior angles less prominent. Marking it out from both *familiaris* and *lucida*, *anthobia* has the sides of the thorax in front straighter and the base contracted, whereas the thorax is widest at the base in *familiaris* and *lucida* and contracted in front. This character is somewhat variable.

As a rule I think it is a comparatively easy matter to distinguish the three species, but, should a combination of abnormal characters occur in *lucida* which I have known to occur separately in that species, such as the thoracic foveæ impunctate, sides of the thorax at the base slightly contracted, and in front not strongly narrowed, together with the presence of a prescutellary pore, it might be difficult to tell it from abnormal *anthobia*.

I do not know how far the difference in the shade of the legs would tell in the case of old specimens cleaned up. I have only observed it in fresh examples.

Since dealing, in the first part of this note, with the various

captures of *anthobia* in Britain, Dr. Sharp has kindly communicated to me 14 specimens taken at Deal, 1863-72, one specimen from Shirley, and Mr. Atmore one specimen taken by himself at King's Lynn, all hitherto unrecorded.

Leighton Buzzard :

December 19th, 1905.

EDITORIAL.

The vacancy on our staff, caused by the recent death of our colleague, the late Mr. J. W. DOUGLAS, has been filled by Mr. JAMES E. COLLIN, F.E.S.

In view of the numerous and important papers on *Diptera* which appear in our pages, we feel assured that our readers, no less than ourselves, will welcome the addition to our number of so competent a worker in the Order as Mr. COLLIN has proved himself to be.

ANTIPODEAN FIELD NOTES.

III.—A SKETCH OF THE ENTOMOLOGY OF SYDNEY, N.S.W.

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

(Concluded from page 27).

But the most productive by far of all the Australian flowers are those of the Myrtaceous shrubs belonging to the genera *Leptospermum* ("tea-tree") and *Angophora* ("native apple"), two or three species of which are found abundantly in suitable situations throughout the Sydney district. The blossoms of the larger *Eucalypti*, though perhaps equally attractive to insects, are as a rule too high out of reach to be readily worked; and the allied "turpentine-tree," *Metrosideros leptopetala*, F. von M., abundant at Belmore and elsewhere near Sydney, comes into flower rather too early in the season for the bulk of the *Coleoptera*. A few of the early *Buprestidæ*, including the yellow-spotted *Stigmodera elongata*, Saund., and *10-maculata*, Kirby, may also be taken in September on the beautiful pink blossoms of *Eriostemon myoporoides*, De C. (*Rutacæ*). About the middle of October the *Leptospermum* produces a great profusion of delicately scented small white flowers, not very unlike those of the hawthorn in appearance, which in the low country are usually nearly or quite over by mid-December, though at this time the blossom is in perfection in the

Blue Mountains at an elevation of about 3000 feet. All orders of Insects, the *Coleoptera* especially, find in these flowers an almost irresistible attraction, and those of another Myrtaceous shrub, *Kunzea corifolia*, Reich. (the "tick-bush"), abundant in waste places, are not to be despised; but in this respect both are surpassed by those of *Angophora cordifolia*, Cav., *par excellence* the favourite flower of the Australian Coleopterist. The *Angophora* is usually a gnarled and crooked-growing shrub or small tree, mostly found in dry rocky situations, its leaves bearing a sufficient resemblance in appearance to those of the apple-tree to account for its local name. The creamy-white, many-stamened flowers, which appear from the middle of November to the end of the year, are produced in large flat crowded corymbs, and in such abundance as to render a patch of blossoming *Angophora* a conspicuous object at a long distance in the "bush." The flowers are full of honey, and possess a sweet and rather spicy fragrance, combined with an odour reminiscent of that of ivy-bloom, and somewhat oppressive under a hot sun. The shrub, too, seems to flourish and bloom most profusely on ground over which a bush fire has passed, so that in working it one soon gets covered with a sticky mixture of honey, charcoal, and perspiration, which, combined with the number of small beetles and other creatures that manage to get down one's back, makes the searching of *Angophora* not altogether a pleasant operation; beating *Leptospermum* is much cleaner work. But the abundance and variety of insect life attracted to these flowers in favourable weather is nothing short of marvellous, and I have seen few, if any, more impressive Entomological sights than that of a good bush of *Angophora* on a sunny morning, with its blossoms fairly bending down with the weight of its Coleopterous visitors. Perhaps the most numerous of these individually are the little "chafers" of the genus *Phyllotocus*, especially the smooth ochreous and black *P. macleayi*, Fisch., which comes down into the umbrella when the bushes are shaken, literally in quarts; indeed, it is usually better not to use the umbrella for *Angophora* at all, but to search the flowers and select the insects wanted out of the crowd, using a butterfly net for the capture of the more active species. *P. macleayi* is at times almost as abundant on *Leptospermum* as on *Angophora*, and this is also the case with the *Buprestidæ*, the most attractive and characteristic group of beetles met with at this time of year. So well represented in Australia are these beautiful insects, that fully 70 species have come under my notice in the Sydney district alone, and an afternoon's work at a good locality, such as Manly or Mosman,

will usually produce twenty or more distinct forms ; the majority of these belong to the great genus *Stigmodera*, and six or eight species of this genus are often to be seen at once on a single corymb of blossom. The great range of size in *Stigmodera*, from the huge yellow-margined, brown *S. grandis*, Don., sometimes fully two inches long, to the little green and golden-yellow *S. virginica*, Er., measuring barely three lines in length, is very striking, and not less so is their endless variety of colour and pattern. Of the larger species, the commonest is the handsome *S. macularia*, Don., bright yellow when alive with black thorax and numerous large and deep, almost confluent black punctures on the elytra ; the closely allied and very similar, but more regularly punctured *S. jacquinoti*, Bdv., being much more local and rare. *S. variabilis*, Don., another abundant species appearing rather late in the season, well deserves its specific name, as it is not easy to find two specimens alike ; in colour it varies from pale ochreous to almost scarlet, and from quite immaculate elytra to a bold pattern of heavy transverse black bands. A rare variety is entirely black, but this I have never met with. Some of the forms of this species closely approach in appearance the beautiful *S. affinis*, Saund., and *S. limbata*, Saund., both of which appear to be very scarce near Sydney, and the fine *S. thoracica*, Saund., is still more so, though occasionally found on *Eucalyptus* blossom. Another handsome species is *S. vertebralis*, Bdv., pale yellow with dark blue thorax and broad sutural stripe ; it is fairly common, and very partial to the flowers of *Kunzæa*. Considerably smaller than the above species, but still of fair size, are *S. semicincta*, Lap. et Gory, a beautiful miniature of *S. grandis*, but of less than half its length ; *S. undulata*, Don., a very abundant species, ochre-yellow with a bold black pattern on elytra ; *S. indistincta*, Saund., and *S. kirbyi*, Guér., deep blood-red or scarlet with transverse blue-black markings ; *S. burchelli*, L. et G., *cruenta*, Kirby, and *producta*, Saund., gaily varied with red, yellow, and black ; *S. rufipennis*, Kirby, with uniform brick-red elytra and shining black thorax, and the beautiful *S. klugi*, L. et G., deep shining blue with two transverse golden-yellow macular fasciæ on the elytra. *S. spinolæ*, L. et G., red, with the elytra longitudinally shaded with black, and *S. costipennis*, Saund., dull black with ochreous transverse fasciæ, are remarkable for their deeply grooved elytra ; the latter is somewhat rare, as is also *S. pertyi*, L. et G., a very handsome species, dark green with red thoracic margins and subapical elytral band. Smaller forms still are *S. amphichroa*, Bdv., and *cæruleiventris*, Saund., vivid scarlet transversely banded with blue-black ; *S. lutei-*

pennis, L. et G., with pale yellow elytra narrowly tipped with violet-black; *S. vicina*, Saund., shining black with two broad transverse yellow bands; *S. bella*, Saund., not unlike the preceding, but dull, and having the apical band broadly clouded with scarlet; and the remarkable *S. kerremansi*, Blkb., dark green with broad red apex to elytra. The commonest of the small species, which may be taken in almost any number, are *S. assimilis*, Hope, and *octospilota*, L. et G., black, with six or eight yellow spots; *S. cyanicollis*, Bdv., yellow or red with greenish-blue suture and transverse bands; and *S. crenata*, Don., yellow, with margins of elytra reddish, broadly banded with black. In the National Park may be found several species that are absent or very rare nearer Sydney, as *S. rotundata*, Saund., and *octomaculata*, Saund., both ochreous with variable black spots or bands; *S. grata*, Saund., a lovely orange-banded green form, common in the Blue Mountains, and *S. skusei*, Blkb., with a bold blue-black cruciform pattern on a bright yellow ground. Even more beautiful than any of these, if possible, are the resplendent metallic green and purple *Curis aurifera*, L. et G., and *C. caloptera*, Bdv., the latter being an especially lovely insect, and found not rarely on *Leptospermum* close to Sydney. The above descriptions will, I hope, give some faint idea of the variety and beauty of the Sydney *Buprestidæ*, which can, however, be seen to perfection only on their favourite flowers under the brilliant summer sun of Australia; their colours, with but few exceptions, being but inadequately represented in the dead and dry specimens in the cabinet.

Next to the *Buprestidæ*, the *Cetoniadæ* attract perhaps the most attention, though only seven species of this family have occurred to me in the Sydney district. Of these the largest is *Diaphonia dorsalis*, Don., a stout chestnut-brown insect with broad black suture, which is often to be seen flying in the city itself. *Micropæcila cincta*, Don., already alluded to in connection with the *Xanthorrhæa*, is fairly common on the *Angophora*, and still more so are the plain dull black *Cacochroa gymnopleura*, Fisch., and its light brown variety *concolor*, Gory et Perch. The little black-spotted ochreous *Polystigma punctata*, Don., is usually abundant, especially at Manly; and equally so is *Eupæcila australasiæ*, Don., one of the most beautiful of the commoner Australian beetles, with its complicated lyrate pattern of golden-yellow on an olive-green ground. *Glycyphana brunnipes*, Kirby, a little dark green species spotted with white, is also common enough, as is the tiny *Microvalgus lapeyrousei*, G. et P., perhaps the smallest member of its family.

Longicornes are also largely in evidence on these attractive blossoms, and of these perhaps the most conspicuous are the three handsome species of *Tragocerus*, *spencei*, Hope, *fasciatus*, Don., and *bidentatus*, Don., all of which occur sparingly enough to be regarded as good captures whenever met with; a still finer species, *T. lepidopterus*, Schreib., is said to have been formerly not rare near Sydney, but is now very seldom to be found, and I never had the good fortune to fall in with a specimen. Several species of *Hesthesis*, of which one of the most common is the large grey-banded black *H. murina*, Pasc., are remarkable for their greatly abbreviated elytra, and the close mimetic resemblance which they present, especially when on the wing, to the various forms of *Hymenoptera* that frequent the same flowers. *H. murina* especially is a close mimic of one of the largest species of *Thynnus*, and the very fine *H. ferruginea*, Bdv. (which I have taken at the National Park), has when flying a most deceptive resemblance to one of the large wasps of the genus *Priocnemis*. *Distichocera* is another conspicuous genus, of which the finest is *D. macleayi*, Newm.; the ♂ of this beetle is deep-black, and the ♀ bright ferruginous-red, the smaller and commoner species, *D. maculicollis*, Kirby, and *D. thomsonella*, White, differing in a similar manner in the two sexes; the males of all the species are remarkable for their broadly flattened and serrate antennæ. *Eroschema poweri*, Newm., is an excellent mimic of the red-and-black forms of *Lycidæ* (*Metriorrhynchus*) which are very numerous on the flowers; indeed, it is not easily distinguished from them at first, except, when caught, by its harder texture. Many pretty little species of the genera *Aridæus*, *Syllitus*, *Stenoderus*, *Pytheus*, *Trichomesia*, *Pempsamacra*, *Brachytria*, *Amphirrhöë*, *Uracanthus*, &c., are to be obtained more or less plentifully, but the most beautiful of all are the little *Obrida fascialis*, White, broadly banded with scarlet on the deep-black elytra, and especially the lovely little cinnabar-red and dark-blue *Telocera wollastoni*, White, which has the terminal joints of the antennæ flattened out into a broad spatulate club, very unusual in the tribe of beetles to which it belongs. The *Elateridæ* are represented by, among many others, the conspicuous red and black species of *Anilicus*, and the curiously marked, but scarce, *Ophidius elegans*, Cand., and *O. histrio*, Bdv.; a small greenish pubescent species of *Megapenthes*? is sometimes so abundant on *Leptospermum*, that hundreds may be seen in the umbrella at once. Many small but prettily marked Malacoderms of the genera *Selenurus*, *Carphurus*, *Balanophorus*, *Laius*, *Telephorus*, &c., are common, and the *Cleridæ* are copiously represented by beautiful metallic or

bronzy-green species of *Thanasimus*, *Aulicus*, *Lemidea*, and *Eleale*, and by the more variegated forms of *Zenithicola*, *Scrobiger*, *Stigmatium*, *Cleromorpha*, &c. The brilliant metallic-green species of the genus *Atractus* are the most conspicuous among the *Heteromera*, and *Tanychilus*, *Allecula*, *Ananca*, *Pseudolytus*, *Zonitis*, and other more soberly coloured forms of this section abound, while *Mordella* is represented by a large number of species, some of considerable size, and as active as they always are. Some weevils, such as *Oxyops*, *Haplonyx*, &c., are constantly found on the *Angophora*, and the handsome shining yellow and black Sagrid, with greatly enlarged hind femora, *Mecynodera coxalgica*, Bdv., is a common and conspicuous species.

It will easily be seen by the foregoing remarks, how fully and pleasantly the collector is occupied during the comparatively brief period in which these flowers are in their prime, and how copious an Entomological harvest may be gathered in this most interesting locality. With the coming of the new year, the great bulk of the blossom is over, and though fairly productive bushes of *Leptospermum* may occasionally be met with even late in February, the best season for *Coleoptera* may be regarded as at an end.

"Aorangi," Lonsdale Road,
Summertown, Oxford:
January, 1906.

LATHROBIUM LÆVIPENNE, HEER: AN ADDITION TO THE
BRITISH LIST OF COLEOPTERA.

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

In August last I captured in a sandpit near Oxted a red wing-cased *Lathrobium*, which I imagined at the time to be *L. angustatum*. More careful scrutiny, however, after the insect was set, dispelled this belief, and I found it impossible with certainty to refer the specimen to any of our British members of the group, I owe to Mr. E. A. Newbery, who saw the beetle, the suggestion that it might be *L. lævipenne*, Heer, and this identification has been confirmed by Herr L. Ganglbauer, to whom I submitted the specimen.

The red wing-cased *Lathrobia* can perhaps hardly be considered one of the easiest groups of the *Staphylinidæ*, and I should not be surprised if the present species existed in British collections under some other name.

L. lævipenne was described by Heer in 1841 (Fauna Col. Helv., p. 240), who, after a description equally applicable to several other members of the group, says:—

“Mas. Abdom. segmento ultimo subtus apice profunde emarginato. Statura minore, elytris nonnisi summa basi nigris, punctatura subtiliore a *L. fulvipenne*, capite pronotoque subtilius punctatis, elytris brevioribus a *L. rufipenne*.”

Mulsant and Rey (Brévipennes, Pédériens, pp. 43—45) give the special specific characters of the species as follows:—

“♂. Le 6^e arceau ventral largement impressionné dans son milieu sur toute sa longueur, largement échancré en angle à son bord postérieur qui est relevé en faite en son milieu, avec l'échancrure limitée de chaque côté par un dent très saillant, ciliée de noir, prolongée en arrière. Le 5^e largement et faiblement impressionné sur son milieu, largement et légèrement échancré au sommet.

♀. Le 6^e arceau ventral subarrondi à son bord apical, simple ainsi que le 5^e.

OBS. Avec l'aspect du *boreale*, elle s'en distingue facilement par sa taille moindre, par ses antennes plus courtes et submoniliformes, et surtout par les armures du 6^e arceau ventral des ♂.”

The species in our list to which *L. lævipenne* comes nearest are *L. boreale*, Hoch., *L. fulvipenne*, Grav., and *L. rufipenne*, Gyll.

L. angustatum, Lac., is easily separated off from these by its long antennæ and much more finely and closely punctured head, and size and shape of course sufficiently distinguish *L. elongatum*, L. *L. lævipenne*, besides the sexual characters detailed in the above extracts, appears to be more obviously distinguishable:—From *L. boreale*, Hoch., by its narrower and rather less closely punctured thorax, and by the much coarser and thicker pubescence of the hind body (I confess I fail to fully appreciate the antennal differences given above by Mulsant and Rey); from *L. fulvipenne*, Grav., by its smaller size, and more brightly coloured and relatively shorter elytra; and from *L. rufipenne*, Gyll. (a very rare species in Britain), by its rather larger size, less closely punctured head, and relatively shorter elytra.

In my specimen, a female, the elytra are of a clear red, with only a slight darkening round the scutellum, but I can readily believe that the colour of the elytra, or rather the proportion of red and black varies in this species as it does in most of its immediate congeners.

On the continent *L. lævipenne* seems to occur principally in Bavaria and Switzerland, but is generally a rare insect.

In this group as represented in Britain the two species which appear most difficult to separate satisfactorily are *L. boreale*, Hoch., and *L. fulvipenne*, Grav. Specimens, however, which I believed to be referable to the former insect sent me by Mr. Britten from Cumberland were returned by Herr Ganglbauer as *L. geminum*, Kr., which is generally considered to be synonymous with *L. boreale*, Hoch. It differs from *L. fulvipenne*, Grav., in its shorter and more parallel-

sided head, and also in the distinctly less rugose elytral punctuation, but I cannot see that the colours of the elytra are more sharply defined in one species than in the other.

9, Queen's Road, South Norwood :

February, 1906.

REUTERELLA HELVIMACULA, ENDERL.

A NEW GENUS AND SPECIES TO THE LIST OF BRITISH *PSOCIDÆ*,
AND THE DISCOVERY OF ITS HITHERTO UNKNOWN MALE.

(PLATE I).

BY H. L. F. GUERMONPREZ.

On August 12th, 1892, I took at Bognor, Sussex, a ♂ *Psocid*, differing from any up to the present known to me. I had not been fortunate enough to see another until last autumn, when Mr. Edward Saunders kindly sent me in September a ♂, one of a dozen, which he had taken on an oak stem at Chobham, Surrey, on August 7th, 1905. Since then he has forwarded for my inspection two ♀s from half a dozen ♀s and nymphs taken at same time and place as the ♂s. These ♀s I have compared with a ♀ example of *Reuterella helvimacula*, Enderl., kindly sent by Dr. Günther Enderlein, its acute discoverer, and as they appear identical and considering that these ♀s, found at the same time and place as the ♂ and with similar antennal structure, are of the same species as the ♂, I conclude that these ♂s are specimens of the hitherto undiscovered ♂ of *Reuterella helvimacula*, Enderl., in which opinion Dr. Enderlein, to whom specimens of the ♂ have been submitted, agrees. Dr. Enderlein suggested that the ♂ would prove winged. The fortunate discovery by Mr. Saunders of the ♂s and ♀s in company has supplied the missing link. The following description and illustrations are from the dried, pinned, and carded specimens, and are therefore somewhat imperfect.

Reuterella, Enderl., Zoolog. Anzeiger, 1903, p. 132.

The ♂ differs from *Cæcilius* (Curtis, 1837), Kolbe, 1880, in the radial and median veins not anastomizing for part of their length in either anterior or posterior wings, but being connected by a short transverse veinlet (= discal cross vein); and in the margin of posterior wings being destitute of hairs, with the exception of a fringe on the margin of cell of radial fork (= 2nd sub-marginal cell).

Reuterella helvimacula, Enderl. (1901), (*Leptella helvimacula*) Zoolog. Jahrb, 1901, p. 539; 1903, p. 375. Zoolog. Anzeiger, 1903, p. 133.

♂ *Imago*. Expanse, tip to tip of fore-wings 5 mm. Antennæ, head, thorax, abdomen, and legs light brown in colour, with the callosities of thorax, a suffusion round ocelli and parts of abdomen darker; all coarsely hairy. Eyes and the three ocelli blackish. Antennæ 13-jointed, half the length of anterior wings, pilose, with long diverging forward directed hairs, from one to three times as long as width of joint, two or three on each joint being much longer than the others; the first joint about as broad as long, the second slightly broader and longer and notched at the apex, the third three times as long as second and not quite so broad as first, the fourth to twelfth gradually diminishing in length and width, while the thirteenth is two and one-half times as long as twelfth, constricted in middle and the tip swollen into a papillaform or nipple-shaped prolongation bearing three long diverging hairs and two or three short ones, the basal part haired as rest of antennæ. Maxillary palpi 4-jointed, light brown.

Tarsi 2-jointed, second joint half the length of first. Tarsal claws with a small tooth beneath midway. Wings hyaline, their entire surface set with microscopic hairs, which are rather closer and stronger in pterostigma, and on the wing margins become thickened and scaly, causing the margin to appear toothed. Veins brownish. Tooth on radius dark. Veins on margin of anterior wings with a row of hairs, excepting costa from base to nearly pterostigma and anal, which are hairless; in addition to this row a marginal fringe extends from before commencement of pterostigma round termen of wings to dorsal margin near junction with anal vein. The costal vein over pterostigma is thickened to double its width and dotted with scattered hairs from scaly bases. There is a long hair on about centre of area of terminal enlargement of pterostigma. Veins and margins of posterior wings hairless, with the exception of a row of six to eight hairs forming a fringe on margin of cell of radial fork (= 2nd sub-marginal cell).

In the left anterior wing of the ♂ from Chobham the radial and median veins anastomise almost in a point (Fig. VII). The right posterior wing of the Bognor and both posterior wings of the Chobham specimen have the discal or connecting veinlet absent (Fig. II). And the areole of right anterior wing of the Bognor specimen is imperfect, not reaching to margin (Fig. III). These are interesting aberrations.

♀ *Imago*. Length, labrum to telson $1\frac{1}{4}$ mm. Wingless. Antennæ, head, prothorax and meso- and metathorax below and on sides brown. Meso- and metanotum yellow. Segments one to seven of abdomen yellow with brown markings, eight and nine black-brown. Eyes small, blackish. Ocelli wanting. Head channelled in centre of vertex, channel forked in front forming division from frons. Labrum coarsely, frons and clypeus thickly haired. Hairs on vertex more scattered. Thorax and abdomen with fewer hairs. Anal appendages with long spiny hairs. Antennæ short, about half length of insect, similar in structure to those of ♂ only smaller.

(PLATE I). P. 49

EXPLANATION OF FIGURES.

- I. *Reuterella helvimacula*, Enderl. ♂ from Bognor specimen. Legs and right wings and antenna not drawn × 20.
- II. Do. Right posterior wing, showing absence of discal cross vein × 20.
- III. Do. Part of right anterior wing showing imperfect vein of posterior areole × 20.
- IV. Do. Fringe of posterior wing × 60.
- V. Do. Thickening of costal vein and portion of radius with pterostigmal tooth × 60.
- VI. Do. Terminal joints of antenna × 120.
- VII. Part of left anterior wing of Chobham ♂ showing connection of radial and median veins × 20.
- VIII. Hind tarsus of Chobham ♂ × 60.
- IX. Terminal joints of antenna, ♀ × 120.
- X. Head and thorax of ♀ × 20 (antennæ broken).
- XI. Antenna of Dr. Enderlein's ♀ × 40.
- XII. Anal appendages of Dr. Enderlein's ♀ seen nearly laterally × 80.
- XIII. Terminal abdominal segments of Dr. Enderlein's ♀ seen nearly laterally × 40.

Dalkeith, Bognor, Sussex :
January 16th, 1906.

A NEW BRITISH FLEA: *CERATOPHYLLUS INSULARIS*, SPEC. NOV.

BY THE HON. N. CHARLES ROTHSCHILD, M.A., F.L.S.

(PLATE II).

Similar to *C. gallinæ*, Schrank. Black-brown. The metathoracic epimerum bears five bristles (1, 3, 1). On the first abdominal sternite there are on each side about six short hairs proximally of the post-median bristle. The first segment of the fore-tarsus is shorter than the second, being almost square and bearing several long bristles on the hinder-side. The first mid-tarsal segment differs from that of all allied species in bearing on the hinder-side four pairs of long bristles and some short ones. There are fewer hairs on the ventral surface of the first and second hind-tarsal segments than in *C. gallinæ*, the first segment bearing, in the new species, three or four such hairs, and the second segment one or two.

The eighth tergite (Fig. B.) has along the edge about 20 hairs, the last three or four and one or two central ones being longer than the others. On the lateral surface there are two long bristles near the apical edge, one beneath the stigma, and one or two proximally near the ventral edge (not drawn in figure). The eighth sternite (Fig. A., viii. st.) bears ventrally before the apex a cluster of about

ten bristles, the membranous, hairy, apical flap being broad. The finger of the clasper (Fig. A., *F*) is slenderer than in *C. gallinæ*. It bears four hairs at the ventral edge, all being of about the same length, none being prolonged as in *C. gallinæ*. We are indebted to Mr. N. H. Joy, of Bradfield, near Reading, for one ♂ taken from a hole in a hollow tree near Reading; the hole had been occupied consecutively by a woodpecker, an owl, and a starling.

Tring Park, Tring :

January 20th, 1906.

HYMENOPTERA ACULEATA TAKEN BY COL. YERBURY, R.A.
IN SCOTLAND, 1905.

BY EDWARD SAUNDERS, F.R.S.

Colonel Yerbury with his usual good fortune has succeeded during his last season's stay in Scotland in capturing two of our rarest *Aculeates*—*Pemphredon wesmaeli*, Mor., and *Crabro carbonarius*, Dahlb.; of the former, in British Collections, I have only known of one specimen, a female without locality label, which formed part of Shuckard's Collection, standing with specimens of *shuckardi*, Mor., under the old and now discarded name of *unicolor*, F. This individual, which is now in my possession, is peculiar in having the emargination of the clypeus unusually large and deep (almost semicircular), so that when I received Colonel Yerbury's captures, in which it has only a very slight, narrow emargination, I hoped to have had a new species to record. I could not, however, determine them to my satisfaction from the descriptions of any of the Palearctic species, so I sent them to Dr. Kohl, of Vienna, for his opinion. He returned them to me as *P. wesmaeli*, Mor. I then sent him Shuckard's example; this he has returned with the observation that after a careful examination of all his specimens he finds that the emargination of the clypeus in *wesmaeli* is unusually variable, and he considers both forms to be referable to that species. I have therefore reluctantly to refrain from adding another new species to those which Colonel Yerbury has already discovered; but it is most satisfactory to get a definite locality for *wesmaeli* and to secure more specimens of it; these were taken at Nethy Bridge in June and July. It is very distinct from our other species, approaching in size *Pemphredon lugubris*, Dahlb.; it is, however, easily distinguished by its square vertex and very largely punctured, not rugose, mesonotum, as well as by the position of the second recurrent nervure, which is received either in the first submarginal cell near its apex, or unites with its actual apical nerve, from *shuckardi*, Mor., its larger size, the much coarser puncturation of the mesonotum and the emarginate clypeus will easily distinguish it.

Dr. Kohl has asked me to point out that in his treatise "Zur Kenntniss der Pemphredonen," in Ann. K. K. Naturh.: Hofmuseums, V, p. 50, under *P. austriacus*, Kohl, when pointing out the distinctions between that species and *wesmaeli* he omitted to mention that in *austriacus* the centre of the clypeal emargination is

indicated by a small tooth, which gives the emargination a bisinuate form. *C. austriacus* has not yet occurred in this country. The form of the clypeus is peculiarly difficult to realize in this genus on account of the long hairs which clothe it. Dr. Kohl tells me that he has been obliged to denude specimens in order to make sure of their exact shapes.

Of *Crabro carbonarius* one ♂ and three ♀s were taken, a ♂ and ♀ at Brodie, 9 and 10.vi.05, and two ♀s at Nethy Bridge, 26.vi.05. Colonel Yerbury's original specimen was taken at Aviemore, 28.vi.00, and since then a ♂ and ♀ have been taken by Mr. King at Aviemore in July and August, 1903. Other species interesting for their localities, and which have not been taken on his former excursions, are: *Myrmica rubra*, v. *sulcinodis*, one ♀, Nairn, 26.vii.05; *Agencia hircina*, one ♀, Nethy Bridge, 8.vii.05; *Crabro tibialis*, one ♂, Aviemore, 24.vii.05. Many other species were obtained, but they have been previously recorded.

St. Ann's Woking:

February, 1906.

Coleoptera in Cumberland in 1905.—Although collecting during the past season in this county was not of a very remunerative character, still it was better than in 1904, and a fair number of moderately interesting species were met with, some of which I will here briefly refer to.

Notiophilus substriatus, Wat., was found on the shingly side of a stream. In similar places various *Bembidia* were common, e.g., *monticola*, Stm., *prasinum*, Duft., *stomoides*, Dj., and *schüppeli*, Dj., *B. testaceum*, Duft.,* which I have been on the look-out for during the past two or three seasons, occurred on the Irthing, but one specimen only. *B. nigricorne*, Gyll., was abundant on high-lying moors in September. It is a species one seems only to meet with in early spring and autumn. *Bradycellus collaris*, Pk., was found in small numbers as usual on similar ground. Among the larger *Carabidæ* I may mention that *Nebria gyllenhali*, Sch., with red elytra and black legs, occurred freely, in company with mature specimens in spring, but a search for a fresh specimen or two in September, when Mr. W. E. Sharp was at work on the variation of the species, was fruitless. I think, with Mr. Sharp, that this form at any rate is only the result of immaturity, as I have found that specimens kept alive a short time invariably darken. At Keswick I met with *Ocyusa incrassata*, Muls.,* and near Penrith, *O. maura*, Er., both in moss. All three species of *Ocalea* were taken at different times in flood refuse with odd specimens of *Chilopora longitarsis*, Er., and *Callicerus obscurus*, Er.* *Myrmedonia humeralis*, Pk., was common in spring in moss near ants' nests. Many species of *Homalota*, were taken, including *currax*, Kr., *gregaria*, Er., *longula*, Heer,* *cambrica*, Woll.* (common), *tibialis*, Heer, *oblongiuscula*, Shp.,* *pilicornis*,* Th., *lavana*, Muls.,* *orbata*, Er.,* &c. *Gnypeta cærulea*, Sahlb., I took in flood refuse in November. *Falagria sulcata*, Pk., very scarce here before, was captured in plenty in September in rotting straw. One fine and calm day at Silloth in September, when beetles were abundant, the interesting *Diglossa sinuaticollis*, Muls.,* was captured freely running on the wet beach just where the tide

had receded. *Hypocyptus punctum*, Mots.,* one only, I found in dry dung. *Mycetoporus longulus*, Mann., was taken on the wing in June, and *Quedius puncticollis*, Th., swept from long grass in September. *Staphylinus erythropterus*, L., was picked up on roads. *S. stercorarius*, Ol., in dung, and odd specimens of *Ocypus similis*, F., and *O. fuscatus*, Gr., under stones.

Philonthus debilis, Gr., only taken in Cumberland once previously, was common at Silloth in some old straw, where also occurred *Leptacinus linearis*, Gr., and *L. batychnus*, Gyll.* In moss *Cryptobium glaberrimum*, Hbst., was of occasional occurrence, and among many species of *Stenus* may be mentioned *fuscipes*, Gr., common, *argus*, Gr., common, *niveus*, Fauv., common (unaccompanied by *pallitarsis*, Steph.), *bifoveolatus*, Gyll., sparingly, *latifrons*, Er., common.

Both species of *Ancyrophorus* occurred in flood refuse in autumn. *Les-teva sharpi*, Rye,* I took one specimen of on the shores of Tindale Tarn, but of *Olophrum fuscum*, Er.,* I got a nice series by pulling up reeds in the Eden Valley.

Among the *Pselaphidæ* several things of interest came under observation. *Pselaphus dresdensis*, Hbst., was not uncommon again in its old haunts on Newton Moss, where also *Euplectus ambiguus*, Reich.,* occurred. *E. sanguineus*, Denny,* was taken at Silloth in old straw. By working the short moss on the sandhills in the latter locality a few *Agathidium marginatum*, Stm., were obtained, and on the beach below seaweed *Ptenidium punctatum*, Gyll.* while the before-mentioned straw also yielded *Acritus minutus*, Hbst., rather sparingly, but *Omosita colon*, L., abounded.

One of my best captures in June was a single specimen of *Enicmus brevicornis*, Mann.,* but I believe my neighbour Mr. Britten has taken several since in various localities in the county. *Atomaria atricapilla*, Steph., was common, *A. fuscipes*, Gyll., rare. In February, *Aphodius tessulatus*, Pk., was abundant in sheep-droppings at Wanfell. Among the Longicorns nothing of particular interest was taken except a fine, freshly-emerged ♂ of *Acanthocinus ædilis*, L., in one of the main streets of Carlisle, in all probability introduced into the town in timber. The genus *Donacia*, F., was well to the fore with two new county records in *impressa*, Pk.,* and *obscura*, Gyll.* Of the first-named I took a single specimen in moss in April, near Keswick, and the latter was taken near Penrith in May, first by Mr. Smith, a local botanist, and then by Mr. Britten; in all about 10 or 12 specimens. *D. dentipes*, F., occurred rather freely, as also did others of the genus. *Longitarsus holsaticus*, L.,* was rather common on lousewort, but very local, and *L. piciceps*, Steph.,* was taken at Silloth. *Phyllotreta tetrastigma*, Com., was swept in the summer and taken in flood refuse in the autumn. *Mantura obtusata*, Gyll., was met with in grass tufts in December. Among the weevils the most interesting was perhaps *Sitones lineellus*, Gyll.,* which was found in some numbers at roots of *Lotus corniculatus* on the Solway sandhills in September. Although some few of the specimens captured were somewhat abraded, others were in beautiful condition. There is considerable difference in size among the specimens in my series, several being hardly half the size of others. *Phytobius muricatus*, Bris., was found again in September, very few however. *Apion confluens*, Kirb.,* occurred on *Matricaria* at Silloth, and *A. hydrolapathi*, Kirb., on dock, the latter not having been found with us since the days of T. C. Heysham, a contemporary of Stephens.

I got a good series of *Orchestes ilicis*, F., and one or two var. *nigripes*, Fowl,* from oak in the Eden Valley, with a few *O. avellanæ*, Don., with which I will end this short summary of my year's collecting. Those marked with an asterisk are new records for Cumberland.—F. H. DAY, Goodwin Terrace, Carlisle: *December 20th*, 1905.

Quedius riparius, Kelln., in *Derbyshire*.—A single specimen of this insect, originally taken by the late Mr. W. G. Blatch at Porlock, Somerset, in 1896, was captured by me on August 28th, 1904, amongst flood refuse, on the margin of the river Wye, about a mile from Bakewell, having probably been washed down from the banks of one of the neighbouring mountain streams; this example has been identified by Mr. E. A. Newbery.—J. KIDSON-TAYLOR, 35, South Avenue, Buxton: *January 21st*, 1906.

Chrysomela cerealis, L., &c., on *Snowdon*.—A short visit to Snowdon in September last was, owing to climatic conditions, very unproductive, my most notable captures being *Chrysomela cerealis*, L., very sparingly at roots of wild thyme, *Lesteva sharpi*, Rye, under a stone on the mountain side, and *Acidota crenata*, F., in moss on an old tree in the wood where the path commences the ascent near Llanberis.—ID.

Occurrence of Argyresthia illuminatella, Zell., in *Britain*.—With reference to Mr. E. Meyrick's interesting note under the above heading (*Ent. Mo. Mag.*, Ser. II, xvi, 226), he will, I know, forgive me for pointing out that his statement, that "earlier records" of the occurrence of *Argyresthia illuminatella* in Britain "were based on the species now known as *atmoriella*," is not in accordance with the facts, which are as follows. In *Ent. Mo. Mag.*, Ser. II, v, 50-51 (1894), we were distinctly told that *A. illuminatella* was there added to the British list on the strength of three Scotch specimens, taken at Forres by Salvage, and these three specimens, which I afterwards examined, were subsequently stated by the same authority, in *Ent. Mo. Mag.*, Ser. II, vii, 98-99 (1896), to be neither *illuminatella*, Z., nor *atmoriella*, Bnks., but examples of the form which, although without the rufescent suffusion of the wings mentioned in his original description, was included by Zeller in his series of *præcocella*, Z., and which, it may be added, occurs commonly in Britain in company with the type. Having been the cause of the temporary disappearance of *illuminatella* from our List, it is particularly gratifying to me to see it at length reliably reinstated therein.

Of the earlier records of *A. illuminatella* in Britain, the one by Mr. J. W. Tutt in *Ent. Rec.*, vi, 34 (1895), with which, however, my comments in *op. cit.*, vii, 200, should be compared, alone remains uncanceled. This was based on a solitary individual bred from among shoots of "fir" (*i. e.*, of Scotch fir, as proved by his remark that they bore "cones" of *Retinia resinana*) received from Scotland, but since Mr. Tutt's efforts to oblige me with a sight of the moth have hitherto proved futile, and it seems clear from his note that he merely assumed its identity with *illuminatella* because he had misread the paper (*Ent. Mo. Mag.*, *l. c.*) wherein this species had been, *though*, as was afterwards proved, *erroneously*, reported from Scotland a few

months before, no reliance can be placed on the unconfirmed record, and the most reasonable supposition is that the imago bred by him was *Ocnerostoma pinariella*, Z., which, although not given in Meyrick's Handbook (1895) as found in Scotland, may well be expected to occur there.—EUSTACE R. BANKES, Norden, Corfe Castle : *January 5th, 1906.*

Re-occurrence of Sterrha sacraria, L., in the Isle of Purbeck.—When partridge-shooting near here on September 6th last, I happened, whilst looking for a bird that I had just killed, to disturb from amongst the rank aftermath in a grass meadow, at about 3.30 p.m., a small yellow Geometer, which, on its settling again close to hand, was instantly recognised as *Sterrha sacraria*. Owing to the length and density of the herbage, amongst which it had taken refuge, it proved at first impossible to get a box near the moth without frightening it, but after two or three ineffectual attempts to do so, at each of which it flitted up but fortunately alighted again within a few yards, the prize was, to my intense satisfaction, duly secured, and proved to be a male specimen in such absolutely perfect condition that it was impossible not to believe that it had been bred upon the spot. By a most curious coincidence, the only other example of *S. sacraria* that I have ever seen alive is an equally fine and perfect male that was boxed by myself exactly ten years—all but *a single day*—previously (viz., on September 7th, 1895. See Ent. Mo. Mag., Ser. II, vii, 19), in the next field but one to the scene of my recent good fortune, and only some 250 yards or so from the actual spot! Then also, I happened to flush the moth whilst walking in pursuit of partridges, and my brother, Mr. Arthur E. Bankes, was, in September last, an eye-witness of the capture. It seems probable that in each of these years a female *S. sacraria* must have flown over from the Continent during the summer, and that the individual that crossed my path was one of her progeny, though in both seasons repeated efforts to discover others were not rewarded with success. On each occasion I was, at the time, keeping a particularly sharp look-out for this rarity, owing to my having previously disturbed several specimens of *Aspilates ochrearia (citraria)*, the sight of which always serves me as a special reminder that its somewhat similarly coloured, though rather smaller, relative may occur at the same time.

When at rest, *S. sacraria* cannot fail to attract attention from its habit of folding its wings in the same peculiar roof-like manner as *Cilix glaucata (spinula)*.

The two specimens alluded to above are the only ones captured in the Isle of Purbeck, and in the rest of Dorset only two others are known to have been secured.—ID.

Phalonia manniana, F. R., in the Isle of Purbeck.—The best Tortricid that has adorned my setting-boards during the past distinctly disappointing season is *Phalonia manniana*, of which I took a female specimen, slightly rubbed (probably by the net), on July 14th last, at 7.50 p.m., by sweeping amongst the long and dense mixed herbage in a bog on the Isle of Purbeck heath district. It has been my good fortune to capture the only three specimens of this rarity that have been met with in the County of Dorset, the others having been netted, the first in a heath-bog, and the second in a damp spot bordering, and reclaimed from, the actual heath-land, in the Isle of Purbeck, on June 24th, 1889, and July 10th, 1903, respectively (*vide* Ent.

Mo. Mag., Series II, i, 193 ; xv, 254). All three spots lie within a radius of about one-sixth of a mile from a point taken between the two that are furthest apart, and I hope the day may come when I shall succeed in discovering the head-quarters of the species—if, indeed, it has any more definite head-quarters in this district—and get some clue as to its food-plant.—ID.

Retarded emergence of Leiocampa dictæoides.—I see that Mr. Eustace Banks in his note on the emergence of *Leiocampa dictæoides* considers July 14th a remarkably late date. In this district the insect is fairly common, and I have bred and taken some hundreds during the last twenty years. I find that the bulk of emergences and captures occurred in the first fortnight in July, although I have taken it as late as September 3rd, and as early as April 30th. I took one last year on August 12th. If kept under as natural conditions as possible and not forced they almost invariably emerge during the first three weeks in July. There is, I am practically certain, no second brood here, as I have on several occasions obtained early larvæ, which pupated about the middle of July and did not emerge until the next year.—RICHARD FREER, Rugeley: *February*, 1906.

Rhyacophila munda, McL., and *Halesus guttatipennis*, McL., in Scotland.—In a small lot of *Trichoptera* recently submitted to me by my friend Mr. William Evans, there was a *Rhyacophila* which at once aroused my curiosity. It proved to be *Rhyacophila munda*, McL., just about the last species that I should have looked for in the east of Scotland, having regard to its previously recorded distribution. It was discovered by McLachlan in 1861 in South Devon, and in 1863 he again found it in North Wales. It also occurs at the Exmoor streams. For a long time it remained in the position of a species apparently peculiar to our Islands, but this was hardly likely to be the case, and its discovery by M. René Martin in the Department of Indre, France, put an end to its claims to be considered exclusively British (*Ent. Mo. Mag.*, vol. xxiv, p. 262, 1888). Further, it was taken by Mr. Theobald in the Island of Sark in 1890 (*Ent. Mo. Mag.*, vol. xxviii, p. 74, 1892). These records all seem to point to a southern and western distribution, and its occurrence in the east of Scotland is certainly as unexpected as it is interesting. The precise locality where the single ♂ was taken is Cowie's Linn., a deep ravine near Eddleston, Peeblesshire, and the date September 24th, 1904.

An almost equally interesting capture has been made by Mr. Evans this autumn. While collecting at Cobbinshaw Reservoir on November 8th he met with a *Trichopteron* in considerable numbers, and secured over a dozen specimens. The day was cold but sunny, and about noon the insects were taking short flights, rising from and alighting on the stones and grass at the sides of the loch. The species, as Mr. Evans had supposed, is *Halesus guttatipennis*, McL.

This insect has a somewhat curious history. It was described by McLachlan in 1865 from a single ♂ example taken somewhere in the North of England. Stein applied the name to a different species taken by him in Silesia. Mr. McLachlan, with an undue want of confidence in his original description, and not being able to re-examine the type, accepted in his Monograph the Silesian insect as *guttatipennis*, while the true insect, which had become known from Switzerland, was called *mu-*

coreus. A subsequent re-examination of the type revealed the mistake. As a British species *guttatipennis* remained practically unknown, and it was not until 1895, when Mr. Dennis, of York, found it in November of that year (Porritt, Ent. Mo. Mag., vol. xxxii, p. 41), at Pickering, in Yorkshire, that something certain was learned about its habits. Mr. Porritt took it in profusion at the same place in November of the following year, and subsequently it was recorded from Gloucestershire, where it had been taken by Mr. James Edwards on September 26th, 1896, and from Marlborough, Wilts., by Mr. Meyrick, taken by him in the first half of October. The two last mentioned dates must be regarded as early for this species. As indicated, it occurs in Switzerland, and it has also been found in Belgium, but I cannot at the moment recall any other continental localities.—KENNETH J. MORTON, 13, Blackford Road, Edinburgh: December 12th, 1905.

Unusual dates for Halesus radiatus in the Isle of Man.—In most parts of Britain *Halesus radiatus* is regarded exclusively as a late summer and autumn species, and here I have never seen it before September, when it is very abundant. But the following dates, representing its capture in the Isle of Man by Dr. R. T. Cassal, suggest the possibility that it is either double brooded with him, or else that it hibernates. One specimen June 3rd, two specimens June 4th, one specimen June 5th, one specimen August 24th, and three specimens September 27th, 1904; one specimen April 29th, and one specimen October 5th, 1905. I believe that as yet no Trichopteron is known to hibernate as an imago in Britain, though the late Mr. McLachlan suspected, from the number of early spring captures, that *Stenophylax permixtus (concentricus)* does so. Of this I am doubtful myself, because the closely allied *Stenophylax vibex* occurs here freely in April, and is then indeed apparently much commoner than in the autumn.—GEO. T. PORRITT, Huddersfield: February 9th, 1906.

Obituary.

The Rev. Joseph Greene, M.A., F.E.S.—It is with much regret that we announce the decease, at his residence, Rostrevor, Clifton, Bristol, at the ripe age of 82, of the Rev. Joseph Greene. Probably few men have done more than he to advance the study of our insect fauna, and his name for two generations has been a "household word" among British Lepidopterists. As long ago as 1850 we find him contributing to the "Zoologist" a note on rare *Lepidoptera* at Lower Guiting, on the Cotswolds; and in the same periodical (1857, pp. 5384—5398) appeared his classic paper "On pupa digging," a method of collecting which he carried out systematically with great success, and with which his name will always be associated. This paper was reproduced in full in his well-known little book "The Insect Hunter's Companion, first published in 1870, which has reached a third edition, and is universally recognised as one of the most useful and most pleasantly written works on practical insect collecting. Up to a recent date Mr. Greene was a frequent contributor to the pages of the Entomological Magazines, and occasionally to our

own; his interest in our *Lepidoptera* continued to the end, and when from failing health no longer able to collect actively, he occupied himself in breeding vast numbers of *Abraxas grossulariata*, obtaining thereby many fine varieties. We believe he was also the first to breed the rare *Xylina conformis* in England. At the time of his decease Mr. Greene was almost the oldest Fellow of the Entomological Society, having been elected in 1850. Personally he was of a retiring disposition, but his high sense of probity, his liberality, and willingness to give any information or assistance in his power to his brother Entomologists were conspicuous; and by all who knew him his loss will be sincerely deplored.

We are indebted to his friend Mr. A. B. Farn, who revised and extended the third edition of the "Insect Hunter's Companion," for valuable assistance in preparing this notice.

Captain Frederick Wollaston Hutton, F.R.S., died at sea, near the Cape of Good Hope, on October 27th, 1905, in his 69th year. A nephew of the distinguished Coleopterist, Thomas Vernon Wollaston, he early devoted his attention to Entomology, among other branches of science, and the singular little weevil, *Pentarthrum huttoni*, Woll., discovered by him in Devonshire as long ago as 1853, was dedicated to him by its describer. In 1855 he joined as ensign the 23rd (Royal Welsh) Fusiliers, in which regiment he saw active service in the Crimea, and retired from the Army in 1866. Emigrating to New Zealand shortly afterwards, some years were spent by him on the Geological Survey of these Islands, when he acquired that intimate knowledge of their Fauna and Flora for which he became so distinguished. In 1880 he settled at Christchurch, where for some years he occupied the Chair of Professor of Zoology in the University of that city; and in 1893 he became Director of the Canterbury Museum, Christchurch, which, under his superintendence, has become one of the richest and best arranged institutions of its kind in the Colonies. Early recognised as one of the first men of science in New Zealand, he contributed many important papers on the Geology and Natural History of that most interesting region to various scientific publications, especially to the Transactions of the New Zealand Institute. Of these latter, several relate to Entomology, notably a valuable synopsis of the *Diptera Brachycera* of New Zealand (Vol. XXXIII, pp. 1-95). His last work, the "Index Faunæ Novæ Zelandiæ" (London, 1904), is a valuable enumeration of the forms of animal life of those islands, including a full and carefully drawn up list of all the insects known to inhabit New Zealand at the time of publication.

Captain Hutton was elected a Fellow of the Royal Society in 1892, and joined the Entomological Society of London in 1902. He was a man of very genial and engaging personality, and the writer of this notice, who had the privilege of making his acquaintance in New Zealand, recalls with gratitude many characteristic acts of kindness received from him. Last year, though in declining health, he visited England after an absence of nearly forty years, and received a hearty welcome from his numerous scientific friends; and it was on his return voyage to his adopted home that his decease took place.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *January 15th, 1906.*—Mr. G. T. BETHUNE-BAKER, President, in the Chair.

Mr. James Simkins, Brooklands, Solihull, was elected a Member of the Society.

Mr. A. H. Martineau exhibited the gall and sexual forms of *Biorhiza terminalis*, Fab., and also the root gall and aggamie form of the same species, known as *Biorhiza pallida*. Mr. Gilbert Smith showed living specimens of the newly described British longicorn beetle, *Tetropium crawshayi*, Sharp. Mr. J. T. Fountain, a box of *Lycenidæ* from various localities. It included var. *salmacis*, Stph., from Castle Eden Dene, and also one specimen of the same variety, which he said he had taken at Weston-super-Mare. Mr. G. T. Bethune-Baker, a box of *Lepidoptera* from the Fiji Islands, including some striking *Sphingidæ*; also six species of *Hepialidæ*, from the Fiji Islands. He pointed out that the scent-glands at the base of the wings of these *Hepialidæ* were strongly developed, and said that when he received the specimens the scent was still quite strong and resembled incense. Mr. S. H. Kenrick, several cabinet drawers from his collection, containing fine series of various *Pieridæ*, including in particular some of the species received by him from his collector in New Guinea.—COLBRAN J. WAINWRIGHT, *Hon. Secretary.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: Meeting held at the Royal Institution, on Friday, January 12th, in conjunction with the Liverpool Science Students' Association and the Liverpool Microscopical Society.

Charles Stacey Colman, Esq., M.A., The College, Bishop's Stortford, was elected a Member of the Society.

The following Members contributed exhibits: Mr. R. Wilding, a drawer of British *Aphodii*. Mr. E. J. B. Sopp, a series of life-history cards of various British beetles, showing their ravages in certain products of commercial importance; the most interesting being *Triplax vnea*, under holly bark; *Pentarthrum huttoni*, in old ash wood; *Bruchus rufimanus*, in beans; *B. pisi* in peas; *Anobium paniceum*, in liquorice and coriander seed; *Lasioderma serricorne*, in cigar; *Dryocætes autographus*, in bark; the last two being of very rare occurrence. Dr. J. Cotton, cocoons of *Dicranura vinula* and *D. bifida*. Mr. F. N. Pearce, an educational case of butterflies and moths, rare books, and a beautiful series of insect appendages, which were shown under the microscope. Mr. Wm. Mansbridge, a drawer of North American butterflies; and Mr. J. J. Richardson, a drawer of exotic hawk moths.—H. R. SWEETING and WM. MANSBRIDGE, *Hon. Secretaries.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *Thursday, November 23rd, 1905.*—Mr. HUGH MAIN, B.Sc., President, in the Chair.

Mr. F. G. Bellamy, of Eltham, was elected a Member.

This meeting was devoted to a Special Exhibition of varieties and notable captures. Mr. J. P. Barrett exhibited series of *Aporia crategi* taken in 1871 in the New Forest, and in 1901, 2, 3, 4, and 5, in East Kent, together with a variety of

Argynnis adippe from Three Bridges, with the markings of the hind-wings run into streaks and considerably suffused with black; a form of *Melanargia galathea*, having the black marking almost wholly confined to the marginal and submarginal areas of all four wings, and a specimen of *Xylina conformis* taken in 1904 in East Kent. Mr. Tonge, photo-micrographs of the ova of all the British species of the genera *Ennomos*, *Uporabia*, *Cheimatobia*, *Anisopteryx*, and *Hybernia*. Mr. R. Adkin, a series of *Anthrocera (Zygæna) filipendulæ*, to illustrate the gradual change in the colour, from the typical rich crimson through shades of terra-cotta and pinkish-yellow, to a pale clear yellow; also an example in which the four basal spots were united into an irregular elongated patch. He also showed a *Pararge megæra*, in which the apical ocellated spot was absent from the right fore-wing, there being only a minute black dot. It was also without the ocellus on the under-side. Mr. Hy. J. Turner, a collection of butterflies from South America, chiefly belonging to the *Ithomiinæ*. Mr. A. Harrison and Mr. H. Main (1) series of *Aplecta nebulosa*, bred from larvæ taken in Delamere Forest; (2), series of *Hypsipetes sordidata* from Windermere, Delamere, and Seal, bred, and Barmouth captured, only the first series showed any considerable variation; (3), a black variety of *Agrotis exclamationis* from Lancashire; (4) a melanic series of *Cymatophora duplaris* from Simonswood Moss, where only dark forms seems to occur now; (5) a *Melanippe fluctuata* with only the costal portion of the central band remaining, and with brownish ground colour; and (6) a specimen of *Acronycta leporina* from Delamere Forest, with black thorax and abdomen, and with fore-wings much suffused with black. Mr. Stanley Edwards, a collection showing the various groups of the *Heliconinæ*. Mr. West of Greenwich, his collection of British *Hemiptera*, some 431 species, many of which were particularly interesting, as having been taken in the near neighbourhood of London. Mr. F. B. Carr, a bred specimen of *Lasiocampa quercûs*, in which the scales were extremely ill developed. Mr. Harrison, on behalf of Mr. E. Harris of Chingford, bred series and generations of *Hemerophila abruptaria* from ova laid in May, 1904, from the pairing of a dark female with a light male, and from ova obtained by pairings of this first generation. Dr. Chapman, bred specimens of *Arctia villica*, var. *konekwai*, from Sicily. Mr. Hare, a very dark variety of *Boarmia repandata* from Basingstoke. Mr. G. B. Browne (1), a dark form of *Elloppia fuscaria*; (2), bred specimens of *Cabera pusaria v. rotundaria*; (3), an extremely dark form of *Acronycta ligustri* from Lee; (4), dark forms of *Trachea piniperda*; and (5), a varied series of *Lithostege griseata*. Mr. Chittenden, dark forms of *Triphæna comes*, bred from Forres larvæ and a yellow form of *Tiliacea aurago* from Ashford, Kent. Mr. Rayward, several *Anthrocera filipendulæ* with the sixth spot almost suppressed, and a most brilliant form of *Polyommatus bellargus* from Reigate. Mr. Dobson, the species of dragon-flies which he had taken last summer on the Norfolk Broads, viz., *Libellula fulva*, *L. quadrimaculata*, *Orthetrum cancellatum*, *Æschna isosceles*, *Brachytron pratense* and *Cordulia ænea*. Mr. Joy, a specimen of *Cupido minima*, in which the submarginal spots on the under-side of the hind-wings were elongated into partial rays. Mr. South, varieties of (1) *Amphidasys betularia*, with unusually well-defined transverse lines; (2) *Oleora glabraria*, a much suffused form; (3), *Boarmia cinctaria*, with the two medial lines approaching below the middle; (4), *Tephrosia punctularia*, of a pale ochreous colour; and (5), *Ematurga atomaria*, aberrations from Oxshott. He also showed a series of *Aglais*

urticae bred from larvæ fed on hop; they were unusually small. Mr. Barnett, some large Buprestid *Coleoptera*, with examples of the extremely large ova of the same. Mr. Bacot, very extensive series and generations of *Triphæna comes*, originating from parents bred from larvæ collected in Aberdeenshire.

Thursday, December 13th, 1905.—The President in the Chair.

Messrs. Harrison and Main exhibited a series of *Cleoceris viminalis*, bred from Windermere larvæ, showing variation from pale grey to very dark, with captured pale specimens from Barnmouth; they also showed *Plusia moneta* from Chertsey and Reigate larvæ. Mr. Stonell (1) melanic specimens of *Phigalia pendaria* from Delamere Forest, *Odontopera bidentata* from Skelmanthorpe, and *Camptogramma bilineata* from Sheffield; (2) *Polyommatus icarus*, ♀s with ♂ coloration; (3) *Lycæna arion* from North Cornwall; (4) *Nonagria cannxæ* from Norfolk; and (5) *Eupithecia pernotata* taken at Loughton in 1876. Dr. Chapman, larvæ sent to him by Mr. Murray from Carnforth; they were so densely hairy as to appear almost solid. They appeared to him to be larvæ of *Nemeophila plantaginis*, although he had never known them to hibernate at such an advanced stage in this country. Mr. Murray did not think they were this species. A Continental record was mentioned of the species hibernating full fed, when it was densely haired. Mr. Adkin, series of melanic *O. bidentata* from Durham larvæ, some of which showed whitish lines or markings. Mr. Goulton, photographs of larvæ *in situ* on their food-plant. Mr. H. Moore, nest of the Durban White Ant (*Termes bellicosus*). Mr. Barnett, dark forms of *Mellinia circellaris*, *Boarmia gemmaria* (var. *perfumaria*), and a varied series of *Hybernia defoliaria*, some being brilliantly banded, all from West Kent. Mr. Fremlin, *Sirex juvenicus* from Maidstone. The Reports of the Field Meetings held at Reigate and Oxshott were read.—H. J. TURNER, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: The Annual General Meeting was held on Wednesday, January 17th, 1906, at the Rooms of this Society, 11, Chandos Street, Cavendish Square. Mr. F. MERRIFIELD, the President, read an Address on the General Operation of Temperature on the Growing Organism of Lepidopterous Insects, based on a series of experiments, especially with reference to the remarkable limitations imposed by climatic and artificial conditions. The Report of the Society showed that for the first time in its history, the number of Ordinary Fellows had reached 500. The Officers and Council were elected for the Session 1906-7 as follows: President: Mr. F. Merrifield. Hon. Treasurer: Mr. A. H. Jones. Hon. Secretaries: Mr. H. Rowland-Brown, M.A., and Commander J. J. Walker, M.A., R.N., F.L.S. Librarian: Mr. G. C. Champion, F.Z.S. Other Members of the Council: Mr. G. J. Arrow, Mr. A. J. Chitty, M.A., Mr. J. E. Collin, Dr. F. A. Dixey, M.A., M.D., Mr. H. Goss, F.L.S., Mr. W. J. Kaye, Mr. H. J. Lucas, B.A., Professor E. B. Poulton, D.Sc., M.A., F.R.S., Mr. L. B. Prout, Mr. E. Saunders, F.R.S., F.L.S., Mr. R. S. Standen, F.L.S., and Mr. C. O. Waterhouse.—H. ROWLAND BROWN, *Hon. Secretary*.

Wednesday, February 7th, 1906.—Mr. F. MERRIFIELD, President, in the Chair. The President announced that he had nominated Mr. Herbert Goss, F.L.S.,

Mr. Edward Saunders, F.R.S., F.L.S., and Mr. Charles Owen Waterhouse, as Vice-Presidents for the Session 1906-7.

Mr. H. J. Carter, B.A., of "Aseham," Darling Point, Sydney, New South Wales, and the Rev. William Henry Heale, of Wolstanton Vicarage, Stoke-on-Trent, were elected Fellows of the Society

The decease of the Rev. Joseph Greene, M.A., was announced.

Mr. W. E. Sharp exhibited a specimen of *Lathrobium lævipenne*, Heer, new to the British list, taken by him in a sandpit near Oxted, Surrey, in August, 1905, and for comparison therewith the nearest members of the group to which it belongs, *L. boreale*, Hoch., *L. fulvipenne*, Grav., and *L. angustatum*, Lac. Dr. F. A. Dixey, specimens of South African butterflies belonging to the *Nymphalinx*, *Acræinx*, *Danainx*, and *Papilioninx*, and remarked upon the odours attaching to them which he and Dr. Longstaff had observed in the field. He drew attention to the significance of the fact that scents of an agreeable nature (as in *Pierinx* generally, *Mycalesis safitza*, &c.) were as a rule confined to the male sex, while those of a disagreeable or disgusting character (as in *Acræinx* and many *Papilios*) were often common to both sexes. A discussion followed on the organs and uses of scent as purposes of attraction and defence in insects generally, in which the President, Mr. J. W. Tutt, Dr. T. A. Chapman, Mr. G. Bethune-Baker, Mr. M. Burr, Mr. G. J. Arrow, and other Fellows joined. Dr. G. B. Longstaff, four species of *Acræa* taken in South Africa during the visit of the British Association, viz.: (1) *A. anemosa*, Hew., from the Victoria Falls, and Mochudi in Bechuanaland; (2) *A. alboradiata*, Auriv., previously known to Mr. Roland Trimen by two females only, and considered by him as a variety of *anemosa*; (3) *A. atolmis*, Westw., to which he gave the names of *atolmis* and *acontias*, although there seems no doubt they are one species; and (4) *A. atergatis*, Westw. Professor E. B. Poulton exhibited and read a note upon two *Diptera*, identified by Mr. G. H. Verrall as a *Chortophila*, which had been observed following the bee, *Andrena labialis*, Kirb., by Mr. A. H. Hamm. He stated that new and interesting light had been thrown on the observation by Col. Yerbury, who pointed out that both flies were males. At first sight it seemed astonishing that the bees should be pursued by the males of inquiline flies; but he suggested the males in this way find their way to the burrows, where they meet the females, which have also reached them in the same manner, or where more probably they lie in wait for the freshly emerging females. Mr. W. G. Sheldon, a collection of *Rhopalocera* made by him in Spain during July and August, 1905, together with typical European specimens for comparison, including an aberration of *A. aglaia*, with the black blotches on the superiors enlarged and banded, and with dark suffused ground colour on all wings; and an interesting series of *L. corydon* and vars. *hispana* and *polonus* from Albarracin, with intermediates between all these forms, and also British, French, and Swiss typical specimens for comparison. Dr. G. B. Longstaff read a paper "On some Bionomic Points in certain South African Lamellicorns." Mr. Roland Trimen, F.R.S., communicated a paper "On some new, or hitherto unfigured species, of South African Butterflies." Commander J. J. Walker communicated a paper entitled "Some Observations on the Reproduction of Hemiptera-Cryptocera," by Claydon Hewett, B.Sc.—H. ROWLAND BROWN, *Hon. Secretary*.

ON THE BRITISH SPECIES OF *HYDROTÆA*, DSV.

BY PERCY H. GRIMSHAW, F.E.S.

(Concluded from vol. xlii, page 11).

12.—*H. VELUTINA*, DSV. *Male*: *Eyes bare, contiguous, arista bare, except for a very slight pubescence at the base. Thorax, including shoulders and pleuræ, shining black. Abdomen with bluish-grey rather inconspicuous tomentum, and a black dorsal stripe which commences as a broad triangular patch on the 2nd segment, becoming narrow on the next two, and ceasing about the middle of the apical segment. Front femora, with two small inconspicuous and blunt teeth, near base of ventral surface with one very long, one a little shorter, and a row of four still shorter stout bristles, all of which latter are blunt and slightly enlarged at the tip; front tarsi with long, fine hairs at the apex of each joint (one on each side), 1st joint also with one on the middle of the anterior side and several on the posterior side. Hind femora long and curved, slightly thicker near the apex; hind tibiæ with one subapical dorsal bristle, one fine antero-dorsal about the middle, two postero-dorsal in apical half, and one strong subapical antero-ventral bristle. Wings more or less tinged with yellowish-brown, posterior transverse vein distinctly flexed, last section of 4th longitudinal vein twice as long as the penultimate; calyptra strongly tinged with orange; halteres black. Size, 6½ mm.*

Female: *Frons black, ocellar triangle with grey tomentum, sides of face often with a shining black spot on each side, opposite base of antennæ. Thorax shining black. Abdomen black, with a slight greyish tomentum, which is only distinct towards the apex. Very like the ♀ of *militaris*, but distinguished by the absence of the anterior bristle on the middle tibiæ, while the last section of the 4th longitudinal vein is twice as long as the penultimate, and the pre-sutural inner dorso-central bristles of the thorax are more distinct.*

This fine species is evidently extremely rare. I have only seen two males, taken at Ulverston in June, 1897, by the late Dr. Meade, and kindly lent me for examination by Professor Miall. Not having seen a female I am unable to describe the bristles on the legs, while the short description given above is taken from Stein's Monograph.

13.—*H. METEORICA*, L. *Male*: *Eyes bare, contiguous, arista only slightly thickened, but distinctly pubescent in basal half; face, dark, never whitish or silvery. Thorax dull velvety-black, never highly polished. Abdomen blackish, with a very slight brownish-grey tomentum, 1st segment and an indistinct tapering dorsal stripe black. Front femora with two conspicuous and very acute teeth of unequal size, the larger one distinctly swollen at base. Middle femora with a row of strong postero-ventral bristles in basal half; middle tibiæ with two posterior bristles at one-fourth and one-half from apex respectively. Hind femora with a series of about four strong antero-ventral bristles near apex, and a row of about seven fine erect postero-ventral hairs regularly disposed along basal half; hind tibiæ with one subapical dorsal bristle, a regular row of fine, short antero-dorsal hairs, which run from base to middle and are there terminated by a single stronger bristle, a single*

postero-dorsal bristle a little beyond middle, and a single antero-ventral bristle at one-fourth to one-third from apex. *Wings* hyaline or tinged with yellowish-brown, last section of 4th longitudinal vein about two and a half times as long as the penultimate; *calyptra* strongly tinged with yellowish-brown; *halteres* black. Size, 5—5½ mm.

Female: *Frons* dull black, *ocellar triangle* and *orbits* cinereous. *Thorax* blackish-cinereous and slightly shining. *Abdomen* conical and pointed, with cinereous or olive-cinereous tomentum, unicolorous. *Front femora* with a complete row of about eight strong postero-ventral bristles. *Middle femora* with four to five erect ventral bristles in basal third, followed by a regular row of very small decumbent ones, which point towards apex; *middle tibiæ* with two posterior bristles at one-third and two-thirds from base respectively (sometimes a little closer together about the middle). *Hind femora* with three long antero-ventral bristles in apical third, with a few irregular small ones, in basal portion; *hind tibiæ* with one subapical and one median dorsal, one subapical and one median antero-dorsal, and one large antero-ventral bristle at one-third from apex. *Wings* hyaline; *calyptra* with yellowish margins; *halteres* black.

This is a widely distributed but not very common species. I have examined over thirty specimens, taken in all parts of the country, from Devonshire and the New Forest to Arran and the Edinburgh district, also Ireland. It seems to be an early species, most of the specimens having been taken in May, but the dates range from May 2nd to September 9th.

14.—*H. CINEREA*, Dsv. *Male*: *Eyes* bare, contiguous; *arista* slightly thickened and distinctly pubescent for the greater part of its length. *Thorax* black and slightly shining on its anterior two-thirds, *posterior third* cinereous, sending forward two narrow cinereous lines, which reach as far as the suture, shoulders light cinereous. *Abdomen* covered with conspicuous light bluish-cinereous tomentum, basal half of 1st segment and a broad interrupted central stripe black. *Front femora* as in *H. meteorica*. *Middle femora* on posterior surface with a complete row of long, fine hairs above and a row of about sixteen very strong spine-like bristles below, extending along the basal two-thirds, and gradually diminishing in length as they approach the apex; *middle tibiæ* with two posterior bristles at one-fourth and one-half from apex respectively, with sometimes a smaller one between them. *Hind tibiæ* as in *H. meteorica*, but there are sometimes two postero-dorsal bristles, one median and the other post-median. *Wings* hyaline or very slightly tinged with yellowish-brown; *calyptra* whitish hyaline, never tinged with yellowish-brown; *halteres* yellowish-brown. Size 5½—6mm.

Female: Unknown.

This well marked species is evidently rare. I have only seen five specimens, viz., a male taken by Mr. Verrall at Newmarket, May 29th, 1886, and four males from Padstow, Cornwall, taken by Mr. C. G. Lamb in July, 1901. Mr. Verrall included it in his "List" as *H. dentimana*, Mg.

15.—*H. IRRITANS*, Flu. *Male*: *Eyes* with a few short, scattered hairs, contiguous; *arista* distinctly pubescent for almost its whole length. *Thorax* blackish or blackish-olivaceous, slightly shining, when seen from behind covered with yellowish-cinereous tomentum, which leaves three broad black indistinct stripes; shoulders yellowish-cinereous; inner dorso-central (= "acrostichal") bristles almost as long and conspicuous as the outer. *Abdomen* olive-brown, covered with dense yellowish-cinereous tomentum, which leaves a smooth longitudinal central stripe of the brownish ground-colour. *Front femora* with two teeth, the anterior one large and blunt, the posterior one small and inconspicuous, a row of four to six very long postero-ventral bristles in basal half (among which are a few shorter ones) and a complete row of short and fine, erect, widely spaced ventral bristles; *front tibiæ* distinctly curved, with two deep ventral excavations in basal third, and a shallow one about the middle, so that there appear to be two triangular projections, which are much more conspicuous than in any other species, also with two long fine subapical postero-ventral bristles; *1st joint of tarsus* with a regular fringe of anterior and posterior stiff pubescence, amongst which are a few long fine hairs. *Middle tibiæ* when seen from the dorsal aspect very slightly hollowed beyond middle of anterior surface, basal two-thirds of same surface with a fringe of moderately long stiff pubescence; *1st joint of middle tarsus* with a dense ventral cushion of stiff slightly curved bristles. *Hind femora* long, subclavate and slightly curved; *hind tibiæ* slightly bent in middle, with a fine dorsal bristle at one-third from apex, antero-dorsal surface regularly fringed with stiff hairs, one to two fine postero-ventral bristles at one-third from apex, antero-ventral surface with three regularly disposed, erect, conspicuous bristles near apex, and finally a thick cushion of stiff hairs occupying apex of ventral and postero-ventral surfaces. *Wings* hyaline or tinged with yellowish-brown, usually strongly tinged with yellow at base, last section of fourth longitudinal vein about twice as long as the penultimate; *calyptra* strongly tinged with yellowish-brown; *halteres* yellowish-brown. Size, $5\frac{1}{2}$ — $6\frac{1}{4}$ mm.

Female: *Frons* blackish and thickly covered with yellowish-cinereous tomentum; *orbits* and *ocellar triangle* light yellowish-cinereous; silvery spot at base of antennæ large and conspicuous; *arista* distinctly pubescent. *Thorax* thickly covered with yellowish-grey tomentum, four rather indistinct longitudinal stripes of olivaceous ground-colour, the two middle ones sometimes coalescing to form a band, inner dorso-central bristles large and conspicuous, usually only a single pre-sutural pair. *Abdomen* uniformly olive-cinereous, no trace of dorsal stripe or other markings. *Front tibiæ* with only a single subapical dorsal bristle; *middle tibiæ* with two posterior bristles at one-fourth and one-half from apex respectively. *Hind tibiæ* with one subapical dorsal, one median antero-dorsal, one median postero-dorsal, and one antero-ventral bristle at one-third from apex. *Wings* hyaline, slightly tinged with yellow at base; *calyptra* tinged with yellowish-brown, but not so strongly as in ♂; *halteres* light yellowish-brown.

This species is to be found almost everywhere, being one of the commonest of British *Diptera*. The females are most troublesome and persistent, following one in clouds and well deserving of their

specific name. Most of the specimens I have seen were taken in June and July, but the species is found well into October.

16.—H. CURVIPES, Fln. *Male*: *Eyes bare*, or at most with a few hardly visible short, scattered hairs; *arista* distinctly pubescent for the greater part of its length. *Thorax covered with yellowish-cinereous or bluish-cinereous tomentum*, which leaves four very indistinct longitudinal stripes of olivaceous ground-colour, shoulders light cinereous. *Abdomen translucent yellow* with a narrow blackish-cinereous and slightly shining *dorsal stripe* and light cinereous apical segment, which colour sometimes also extends on to the apical half of the 3rd segment. *Front femora with two strong and conspicuous sub-basal ventral bristles*; *front tibiæ* in middle of *postero-ventral surface* with a slightly elevated *polished black ridge*, immediately beyond which on *ventral surface* is an *oval polished concavity*; *1st joint of tarsus* with a few long fine hairs. *Middle femora* with about six extremely long bristles at base of anterior surface, and three to four strong and conspicuous *postero-ventral spines* placed at wide regular intervals and occupying about middle third. *Hind femora long, slightly curved and subclavate*; *hind tibiæ strongly bent ventrally* and slightly enlarged in apical half, on *ventral surface* a little beyond middle a very characteristic *pencil of about six long, stiff bristles*, which converge at apex, where they unite and form a *conspicuous hook*, towards apex of tibia this pencil is followed by a short row of about six very short stiff erect bristles. *Wings distinctly tinged with yellowish-brown*, posterior transverse vein slightly bent outwards in upper half; *calyptra yellowish-hyaline*; *halteres orange-yellow*. Size, 7—7½ mm.

Female: *Frons black*, covered with yellowish-cinereous tomentum; *ocellar triangle light cinereous* and slightly shining; *arista* distinctly pubescent. *Thorax* as in ♂, inner dorso-central bristles more distinct. *Abdomen* with 1st segment dull yellow, except a rather broad dorsal stripe and the hind margin, which are olivaceous-cinereous, 2nd segment of the latter colour with a small basal patch on each side more or less dull yellow, remaining segments olivaceous-cinereous, with sometimes a trace of yellow on each side of base of 3rd. *Middle tibiæ* with two posterior bristles at one-fourth and one-half from apex respectively. *Hind tibiæ* with one subapical dorsal, one median antero-dorsal, one median postero-dorsal, and one rather smaller post-median antero-ventral bristle. *Wings* more hyaline than in ♂, posterior transverse vein straighter; *calyptra* and *halteres* as in ♂. Size, 6—7 mm.

This well marked and easily recognised species appears to be rare. I have only seen ten specimens, seven of which were taken by Dr. J. H. Wood in Stoke Wood. Among the examples sent me by Mr. Verrall were a male from Woolhope, taken by Col. Yerbury, and two females from Howle Hill (? Shropshire). I am not aware of any Scotch records.

17.—H. GLABRICULA, Fln. *Male*: *Eyes bare, closely contiguous*, proportionately very large and occupying more of the head than in the preceding species; *jowls exceedingly small*; *arista quite bare*. *Thorax with shoulders shining black*,

unicolorous. *Abdomen black and highly polished*, 1st segment and base of 2nd with a very slight tomentum (causing a rather dull appearance) with a very faint central stripe of polished black which is better seen from behind, 3rd segment with an extremely narrow dull transverse band at base, 4th highly polished throughout. *Front femora* with two small teeth; a row of about six long postero-ventral bristles in basal half. *Middle tibiæ* with two posterior bristles only, one of which is median and the other at one-fourth to one-third from apex. *Hind tibiæ* with one subapical dorsal, one median antero-dorsal, and one very tiny median postero-dorsal bristle, a row of about six short and regular postero-ventral bristles in apical half, and two to three much longer and more conspicuous antero-ventral bristles, which are widely spaced so as to extend from middle to about one-fourth from apex. *Wings hyaline*, veins (including costa) yellowish-brown, last section of 4th longitudinal vein about three times as long as penultimate; *calyptra* yellowish-hyaline; *halteres* black. Size, 3—3½ mm.

Female: Not having seen an example of this sex I can only state that, according to Stein the *frons* has a *shining black* middle stripe, the *orbits* are likewise *shining black*, there is a distinct white spot over the base of the antennæ; *thorax and abdomen shining black*; *wings and calyptra* yellowish. Judging from the ♂, I assume that the middle tibiæ are without anterior bristle, a character which would at once separate this species from the next.

The only specimens I have seen of this, the smallest of the species of *Hydrotæa*, are three males taken by Mr. Verrall at Newmarket on July 11th and 12th, 1901. It is abundantly distinct from the next, although regarded as the same by the late Dr. Meade.

18.—H. PARVA, Meade. *Male*: *Eyes bare, contiguous*; *jowls* very narrow as in *H. glabricula*; *arista* bare or nearly so. *Thorax black*, slightly shining and with a faint olivaceous tinge; *shoulders distinctly cinereous*. *Abdomen shining olivaceous*, when seen from behind covered with a light *bluish cinereous tomentum*, which leaves the *base of the 1st segment and a dorsal stripe* on the remaining segments *black*. *Front femora* with two small but distinct teeth, a complete row of short and fine ventral hairs, among which stand three to four very long and conspicuous bristles in basal half. *Middle femora* with two to three very long and strong blunt ventral spines at one-fourth to one-third from base; *middle tibiæ* with two posterior bristles, one of which is median and the other at one-fourth to one-third from apex, and a *single anterior bristle* at one-fourth to one-third from apex. *Hind femora* with two to three very long and fine postero-ventral bristles at about one-fourth from apex; *hind tibiæ* with a single subapical dorsal bristle, a single small median antero-dorsal bristle, a single small median postero-dorsal bristle, a *very long, fine and characteristic posterior bristle a little before the middle*, and a row of four conspicuous antero-ventral bristles, which are widely and regularly spaced so as to occupy all but the basal third or fourth, the one nearest the base the longest, the others gradually smaller as they approach the apex. *Wings* usually *slightly tinged with yellowish-brown*, last section of 4th longitudinal vein about two and a half times as long as penultimate; *calyptra* whitish-hyaline; *halteres* black. Size, 3½—4 mm.

Female: *Frons black*, when viewed from the front a slight cinereous tomentum visible; *ocellar triangle, orbits*, and upper part of sides of face *polished black*; a large and conspicuous silvery spot above base of antennæ; *arista* practically bare. *Thorax* as in ♂, but almost bare, except for the bristles, which are strong and conspicuous. *Abdomen uniformly shining blackish*, with a slight olivaceous tinge and a trace of cinereous tomentum. *Middle femora* with two to three strong sub-basal ventral bristles; *middle tibiæ* exactly as in ♂. *Hind femora* with two to three long and conspicuous antero-ventral bristles occupying apical third; *hind tibiæ* with a single subapical dorsal, a single small median antero-dorsal, and a single postero-dorsal bristle, which is usually post-median and sometimes at one-third from apex, three to four strong and conspicuous antero-ventral bristles, which occupy about the apical half. *Wings* hyaline. *Calyptra* and *halteres* as in ♂.

I have seen twenty-eight specimens of this perfectly distinct species, all from the southern counties of England. Dr. J. H. Wood kindly submitted to me examples from Woolhope, Leech Pool, and Whitchurch; Mr. Verrall, specimens taken by Dr. Wood in the same localities, and also a ♂ from Coombe Marsh; the British Museum contains examples from Torcross and Woolhope, obtained by Col. Yerbury, and which I examined through the kindness of Mr. Austen; while Mr. Claude Morley sent me a ♂ and ♀ I believe from the Ipswich district. The dates of these specimens range from June 19th to August 31st.

The Royal Scottish Museum, Edinburgh:

August, 1905.

COLEOPTERA FROM FAIR ISLE, NORTH BRITAIN.

BY PROF. T. HUDSON BEARE, B.Sc., F.E.S.

I have recently had the pleasure of examining and naming a small collection of *Coleoptera* made by Mr. W. Eagle Clarke on Fair Isle, a small island lying midway between the Orkneys and the Shetlands. This island is one of the least visited of all the inhabited islands of the British seas, as there is no regular communication by steamer with it; it is about $2\frac{3}{4}$ miles long, and averages about 1 mile in width. Except for a short distance on its southern coast it is surrounded by lofty cliffs, which range from about 100 to 600 feet in height. There are no trees or shrubs of any description on the island, and a very small portion of it—between 200 and 300 acres of extent only—is under cultivation; the bulk of the island is barren, covered with stunted heather and grass. There are about 100 inhabitants, crofter-fishermen, living in the same primitive fashion as their

forefathers. Mr. Eagle Clarke spent five weeks on the island, from September 2nd to October 7th, 1905, with Mr. Norman B. Kinnear. Previous to their visit practically nothing was known regarding the fauna and flora of this island, and very little about the geology. The problem that these gentlemen set themselves to solve was as to whether the island was zoologically a member of the Shetland group or of the Orkney group. As a result of their investigations they have come to the conclusion that it is both zoologically and geologically an outlier of the Shetland group; but it will be observed from the list of species of *Coleoptera* given below that very little light has been thrown on this question by the collection of beetles made by Mr. Eagle Clarke, as all the species are common throughout the kingdom, with the exception of *Otiorrhynchus blandus*, which is a sub-alpine species, but is fairly common throughout Scotland. Perhaps the most interesting point in regard to the collection of *Coleoptera* from this remote island was the large number of specimens of *Ocypus olens* and of *Xantholinus glabratus* found by Mr. Eagle Clarke; there were from twenty to twenty-five specimens of each of these species.

The following species occurred:—*Carabus catenulatus*, Scop.; *Notiophilus biguttatus*, F.; *Loricera pilicornis*, F.; *Nebria brevicollis*, F.; *Pterostichus niger*, Schal.; *P. nigrita*, F.; *Amara aulica*, Pz.; *A. opricaria*, Pk.; *Calathus cisteloides*, Pz.; *C. melanocephalus*, L.; *Anchomenus albipes*, F.; *Bembidium littorale*, Ol.; *B. bruxellense*, Wesm.; *Trechus minutus*, F.; *v. obtusus*, Er.; *Aleochara succicola* Thoms.; *Tachyporus hypnorum*, F.; *Tachinus rufipes*, De G.; *Quedius tristis*, Gr.; *Q. molochinus*, Gr.; *Creophilus maxillosus*, L.; *Ocypus olens*, Müll.; *Cafius xantholoma*, Gr.; *Xantholinus glabratus*, Gr.; *X. linearis*, Ol.; *Othius fulvipennis*, F.; *Lathrobium fulripenne*, Gr.; *Otiorrhynchus blandus*, Gyll.; *Sitones flavescens*, Marsh.; *Aphodius contaminatus*, Hbst.; *A. punctato-sulcatus*, Stm.; *Geotrupes sylvaticus*, Pz.; *Chrysomela staphylea*, L.; *Silpha opaca*, L.; *Choleva grandicollis*, Er.; *Agabus bipustulatus*, L.

Mr. Eagle Clarke says that *Ocypus olens* swarms in the houses at Fair Isle, and is quite a pest; it is not confined to the houses of the crofters, with their earth floors, but also swarms in the laird's house. This is an interesting new point in the life history of this species.

Edinburgh: March, 1906.

A correction.—In the Victoria History of Sussex which has just been published it is said that the fine and strange looking Dipteron, *Alophora hemiptera*, F., has been bred from *Bombyx neustria*; this, I am sorry to say, was a mistake of my own. As far as I am aware the *Alophora* has not been bred either in Britain or on the Continent.—E. N. BLOOMFIELD, Guestling: February, 1906.

HELP-NOTES TOWARDS THE DETERMINATION OF BRITISH
TENTHREDINIDÆ, &c. (12).

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

(Concluded from page 33).

TABLE FOR BRITISH *CRÆSUS* SPECIES.

1. Mesopleuræ shining (generally smaller than the other spp.)*varus*, Vill.
— Mesopleuræ dull, somewhat rugosely punctured2.
2. Vertical area more swollen and squarer in both sexes ($1\frac{1}{2}$ times broader than long). Hind tibiæ and metatarsi (noticeably in the ♀ ♀, and just appreciably in the ♂ ♂) dilated more suddenly, and to a greater extent, reaching their maximum dilatation sooner, and rounded away again more gradually towards the apex, than in the other species. (See fig. 10a)*septentrionalis*, L.
- Vertical area flatter, and quite twice as broad as long in both sexes. The dilatation of the hind tibiæ and metatarsi (especially in the ♀ ♀) more gradual, their maximum dilatation quite near the apex, where it abruptly ceases. (See fig. 10d.)*latipes*, Vill.

Measuring the metatarsi of *septentrionalis* and *latipes* ♀ ♀ under the microscope, I find that in *septentrionalis* they are a little more than twice, and in *latipes* a little less than three times, as long as broad. (The exact figures are $\frac{3}{2}$, against $\frac{3}{2}$). Their outline in the former is roughly semioval, in the latter more clavate (subtriangular). The colour-characters usually employed in distinguishing the *Cræsus*-species are of little value. Generally *varus* ♀ has quite red femora, *septentrionalis* ♀ quite black ones, and *latipes* ♀ black ones, with a large red mark within. But *septentrionalis* ♀ also goes red at times, and the ♂ ♂ of all the species have the femora largely, if not entirely, red. (The original description of *varus* professes to be that of a ♂; but, strange to say, no example of that sex has ever since occurred, and the type specimen seems to have disappeared!). The wings of *varus* are clear; but in both the other species they are clouded, more or less in different specimens. Cameron says, that *latipes*, ♂, has the antennæ "faintly brownish beneath at the point," but my own specimens do not bear this out. There is generally more black at the apex of the abdomen in *latipes* ♂, than in *septentrionalis* ♂, but its extent varies in both.

Miss Chawner, who has repeatedly reared all three species from larvæ found at or near Lyndhurst, has kindly given me full accounts of the habits and appearance of these larvæ, which agree with those to be found in Cameron's Monograph. *Varus* is always found on alder, the black larva of *latipes* always on birch, the bluish-green and yellow larva of *septentrionalis* occurs on many different trees.

HOLCOCNEME, KONOW.

All the species of *Holcocneme* are large and rather striking insects, with a "facies" of their own which when once appreciated is easily recognised. Though near to *Cræsus*, they could hardly be confounded with that genus. Their hind-legs are much less dilated (see fig. 10), and they have not the peculiar parti-coloured tibiæ (white at base and black at apex) which are universal in the latter genus. At least, this is so with the three species known to me as British, which are easily distinguished as follows:—

TABLE FOR BRITISH *HOLCOCNEME* SPECIES.

1. Clypeus slightly emarginate only. Pronotum, tegulæ, legs for the most part, and usually the base of the abdomen, red*lucida*, Pz.
— Clypeus sharply excised. Prothorax, tegulæ, and abdomen quite black2.
2. Hind calcar half as long as the metatarsus (fig. 10c).....*crassa*, Fall.
— Hind calcar short, only one-third as long as the metatarsus...
cæruleocarpa, Htg.

Erichsoni, described by Cameron as British, is also a *Holcocneme*, but I never saw it. Here (in Surrey) I take *lucida* very frequently, *crassa*, seldom. *Cæruleocarpa* I have never found, but it has been sent to me occasionally for determination.

 HELP-NOTES TOWARDS THE DETERMINATION OF BRITISH
TENTHREDINIDÆ, &c. (13).

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

NEMATIDES (continued); *PONTANIA*, *NEMATUS*.

Of the Nematid genera which we have still to consider, *four* (*Pontania*, *Nematus*, *Pteronus*, *Amauronematus*) have the clypeus emarginate and the claws bifid; *one* (*Pachynematus*) has the clypeus emarginate, but the claws with subapical tooth; while *two* (*Lygæonematus* and *Pristiphora*) differ from all the preceding in that they have a clypeus which is not emarginate but truncate. Apart from these characters, each genus has a certain "facies" of its own, which with practice one may learn to recognise; but any one desiring to avoid mistakes in his determinations is advised to commence always by looking first to the clypeus, and secondly to the claws.

PONTANIA, Jur.

This genus contains a number of small species, most of which, if not all,* are gall-makers. Their saws (♀)—considering the size of the insects—are large and strong, with sheaths which viewed *laterally*

* There appears to be some doubt whether *P. bipartita* makes galls.

are long, but, viewed *dorsally*, not very broad. As mentioned in my last paper, they are very nearly related to *Cryptocampus*, which they resemble both in habits and general appearance. In fact, though easily separated from that genus by the different wing-neuration, they really stand much nearer to it on the whole than to several of the genera with which in that particular respect they agree.

Their specific determination is not easy, the really reliable characters being few and minute, and the coloration often variable. A great many species have been described by various authors (generally on more or less untrustworthy colour characters), but the number of really distinct and constant forms among them is probably much more limited. The genus was revised by Konow in 1901, and the following Synoptic Table adopts his views as to the correct nomenclature and distinguishing characters of such species as occur in this country. As will be seen from the synonyms in brackets he "sinks" a good many of the forms described by Mr. Cameron. On the other hand he revives one name (*femoralis*, Cam.), which Mr. Cameron introduced, but afterwards withdrew under the impression that his species was identical with one previously described by Thomson.

SYNOPTIC TABLE OF BRITISH *PONTANIA* spp.

- | | |
|--|--|
| 1. Scutellum more or less elevated, and distinctly punctured | 2. |
| — Scutellum flat, and practically impunctate | 5. |
| 2. Abdomen entirely luteous (or nearly so) | 3. |
| — Abdomen black above, luteous beneath. Legs pale. Breast black... | |
| | <i>scotaspis</i> , Först. |
| 3. Head (except lower part of face and a mark behind each eye) and thorax for the most part black..... | |
| | <i>bipartita</i> , Lep. |
| | (? <i>aurantiacus</i> , C.). |
| — Head luteous (except a black vertical mark including the ocelli and the area behind them). Thorax with little black, except on the meso- and metanotum and scutellum | |
| | <i>xanthogastra</i> , Först. |
| | (? <i>bipartitus</i> , C.). |
| 5. Hind calcaria long and evidently curved. Body black, pale at apex below. Saw-sheath of ♀ (in lateral view) sharply acuminate | |
| | <i>leucosticta</i> , Htg. |
| — Hind calcaria straight..... | 6. |
| 6. Antennæ of ♂ not compressed, thin, nearly filiform, about as long as the body. Saw-sheath of ♀ produced (in lateral view) into a long sharp point... | |
| | <i>viminalis</i> , Htg. |
| | = <i>ischnocerus</i> , Thoms., nec C. |
| | (<i>leucostigma</i> , <i>nigrolineatus</i> , <i>purpureæ</i> , ? <i>bridgmanii</i> ,* ? <i>alienatus</i> , C.). |
| — Antennæ of ♂ compressed, setiform, shorter than body. Saw-sheath of ♀ rounded, or, at most, angulated at apex (viewed laterally)..... | 7. |

* The description of *bridgmanii* is mysterious. The ovipositor is described first as "short," and then as "much longer than that of *herbaceæ*," which latter is elsewhere said to be "certainly longer than in any of the other species."

7. Stigma unicolorous-yellow *vesicator*, Bremi.
 (*vesicator, togatus*, C.).
 — Stigma white, with the apex more or less infuscated 8.
8. Very small ♀ (about 3 mm. long) with exceedingly long saw-sheath, "longer than the belly" (Konow), "terebra et cercis longissimis" (Thoms.). Femora generally clouded beneath. Ventral surface quite black, except the narrow basal part of the saw-sheath, which is yellowish. (I do not know the ♂)...
proxima, Lep.
 = *dolichurus*, Thoms.
 (*gallicola, herbaceæ, albicarpus*, C.).
- Larger species (4—5 mill. long) saw-sheath of ♀ shorter, but still long—occupying at least half the ventral surface 9.
9. Femora for the most part black *femoralis*, Cam.*
 (*ischnocerus*, C, *nec* Thoms.).
- Femora quite pale 10.
10. Transverse frontal ridge (midway between ocelli and insertions of antennæ) thick, obtuse, interrupted by a narrow longitudinal sulcation across its middle. (Common species, very variable in colour, according to Konow, and described under many names)..... *salicis*, Christ.
 (*interstitialis, salicis cinereæ, vacciniellus*, C.).
- Frontal ridge narrow, sharp, and unbroken *bella*, André.
 (*bella, baccarum*, C.).

NEMATUS, L. (sec. Knw.).

The group of species to which the generic name *Nematus* is confined in Konow's system is remarkably uniform and distinct. They are all about of the same size (6—7 mm. long). The ♂♂ may be known at once by the fact that their last ventral segment is not, as in other Nematids, drawn out into the form of a narrow triangle, but broadly truncated, so that it ends not in a point nor nearly so, but in a long transverse line which is even more or less sinuated inwards, though the convexity of the segment makes this situation a little difficult to realize except in particular points of view. The ♀♀ have an equally striking character in the great development of the saw-sheath. This, viewed laterally, is excessively long, and, viewed dorsally, excessively broad—at the base in all the species, and in all but one at the apex also. In some cases the stigma has a very peculiar coloration, yellow with a dusky base. The third cubital cell is commonly long and parallel-sided. The ground colour of the body in all our species is luteous or testaceous, varied to a greater or less extent (especially above) with black.

Four British species are known to me, and these are easily distinguished. They are the same which Thomson records from Scandinavia, and may be tabulated as follows:—

* Described in Fauna Scot., 1878. In the Monograph it is called *ischnocerus*, Thoms., but according to Konow, it is not that species. (I do not know it except from the descriptions).

SYNOPTIC TABLE OF BRITISH *NEMATUS* spp.

1. Wings infuscated with black, thorax (including pronotum) black in both sexes, abdomen reddish-orange, ♀ saw-sheath (viewed from above) extremely broad right up to the apex, which is truncate rounded*abdominalis*, Pz.
— Wings yellowish or hyaline; pronotum more or less marked with yellow ...2.
2. Abdomen above more or less streaked transversely with black. Saw-sheath of ♀ tapering from a broad base to a narrow apex (subtriangular, viewed from above). Mesonotum of ♂ black; that of ♀ generally entirely luteous, but sometimes (? = *caledonicus*, C.) with black markings...*acuminatus*, Thoms.
— Abdomen not streaked with black. Saw-sheath of ♀ broad at the apex as in *abdominalis*3.
3. Mesonotum in both sexes luteous, with a black longitudinal stripe on each lateral lobe*bilineatus*, Kl.
— Mesonotum black in the ♂, entirely luteous in the ♀*luteus*, F.

Easily as the above species can be separated by colour characters, the only important "structural" distinction among them seems to be that between the triangular saw-sheath of *acuminatus* and the subquadrate ones of the other three species. *Abdominalis*, *luteus*, and *bilineatus* are all attached to the alder; the first two often occurring on it (in this neighbourhood) simultaneously and in great numbers. *Bilineatus* I have never taken; it is perhaps a more northern form. Mr. Routledge has taken it near Carlisle.

Acuminatus is attached, Mr. Cameron thinks, to the birch. All my specimens of it were received from Mr. Thornley, taken on Ben Nevis. Among them were ♂♂, which sex Mr. Cameron says he does not know. Occurring alone they might easily be passed over as ♂♂ of *luteus*, but the edges of the dorsal abdominal segments are black as in the ♀♀.

NOTE ON OTHER SUPPOSED BRITISH *NEMATUS* spp.

In Cam. Mon., vol. iv, three more species are enumerated as belonging to *Nematus* in Konow's sense. These are—

1. *Caledonicus* (described in vol. ii, p. 159).
2. *Aurantiacus* (described as *antennatus* in vol. ii, p. 155, not identical with the species described in vol. ii, p. 173, as *aurantiacus*).
3. *V-flavum* (described in vol. ii, p. 142).

1.—*Caledonicus*, from the description, appears to me to be only a form of *acuminatus*, ♀, which has been sent to me along with normal ♂♂ and ♀♀ of the same species by the Rev. A. Thornley, taken with them on Ben Nevis.

2.—*Aurantiacus* = *antennatus*, C. (olim). Of this in vol. iv Mr. Cameron says “Konow is no doubt right in sinking this as a synonym of *aurantiacus*, Htg.”

In Konow's Catalogue (1890) *aurantiacus*, Htg. (with *antennatus*, C., as a synonym) was given as a *Nematus*; but since (in 1900) and again in the Revision of *Pontania*, Konow has adopted another view of *aurantiacus*, Htg., and now regards it as a *Pantania* (viz., *bipartita*, Lep.). He also quotes *aurantiacus*, C., as a synonym of *bipartita*, Lep., referring however, I suppose, not to the *aurantiacus* = *antennatus* of Cam., vol. iv, but to another species described in Cam., vol. ii, under the name of *aurantiacus*, Htg. I cannot make out from vol. iv to which of Konow's genera Mr. Cameron considers the latter species to belong; he only says “it is not *aurantiacus*, Htg.,” but gives no further characters nor reasons for his change of opinion.

As to *antennatus*, C., it is said to have the stigma “testaceous with a black base, which looks as though it were a true *Nematus*. But its other characters by no means suggest that genus, e. g., clypeus “transverse” (in opp. to “incised”), 3rd cubital cell “not much longer than broad,” &c. It is strange, also, if it be a *Nematus*, that Mr. Cameron should say nothing whatever about its saw-sheath. Without information on this point, it seems useless to hazard any conjecture as to the possible affinities of the species.

3.—*V-flavum*. The various notices of this species in Mr. Cameron's work are very puzzling and difficult to reconcile. In vol. iv it is treated as a *Nematus* in Konow's sense, and said to belong “to the group of *luteus*.” In vol. ii it is described as a member of “the group of *betulæ*,” “and said to be” allied to *conjugatus*.” The two latter species both belong, however, to *Pristiphora*, and neither of them has the slightest similarity to a *Nematus* sec. Konow. Afterwards, in the same volume, it re-appears in yet another group, coupled with two species of *Pteronus* and one of *Pachymenatus*.

Not one of the characters by which it is defined is at all suggestive of a true *Nematus*—the clypeus is called truncate, the stigma unicolorous, and of the saw-sheath it is only said “not so black and hairy” (i. e., as that of *conjugatus*).

Herr Konow tells me he knows nothing like *V-flavum* as described by Cameron, and altogether I can only leave the riddle of its affinities unsolved.

On the whole, then, my impression is that we cannot claim for the British list any other real *Nematus* than the four which belong also to the Scandinavian Fauna, viz., *abdominalis* (= *ventralis*, Thoms.), *luteus*, *bilineatus* (= *klugii*, Thoms.), and *acuminatus*.

SUFFOLK LEPIDOPTERA IN 1905.

BY THE REV. E. N. BLOOMFIELD, M.A., F.E.S.

Although I am not able to record many additions to our County list, yet a good number of interesting species have been taken. For these I am indebted to the same correspondents as last year. The Rev. A. P. Waller records captures at Hemley, Waldringfield, and Shingle Street; Mr. H. Lingwood, at Needham Market and Dunwich; Dr. Crowfoot, at Beccles. Mr. Claude Morley has sent me a few good species from the Suffolk Broads, while Mrs. Mann, of Bungay, has sent me a long list of species taken, for the most part, in a moth trap in her own garden, which is close to the Waveney River.

I can only mention two RHOPALOCERA, *Argynnis paphia*, L., Bungay, in Mrs. Mann's garden, a species which is rare in Norfolk and the northern part of Suffolk; and *Vanessa antiopa*, L., taken at Waldringfield, September 29th, in battered condition.

BOMBYCES.—*Ino statures*, L., at Lowestoft, *Lithosia stramineola*, Dbl., and *Spilosoma urticæ*, Esp., at Bungay; Mr. G. P. Hope took a few *Setina irrorella*, Clerck, at Shingle Street, and found the larvæ of *Bombyx castrensis*, L., very abundant at one spot feeding on *Plantago maritima*, Mr. Waller says he could have taken hundreds. Neither of these two species have been met with lately in Suffolk, the last record being by Mr. Hele in "Notes about Aldeburgh, 1870." *Stauropus fagi*, L., two larvæ, which died, and *Clostera curtula*, L., larvæ on aspen, are recorded from Needham Market.

NOCTUÆ.—*Leucania straminea*, Tr., and *L. phragmitidis*, Hb., were both fairly common at Hemley, where Mr. Waller took the buff form of *L. favicolor*, Barr., and some good varieties of *Senta maritima*, Tausch. *Noctua castanea*, Esp., were taken at Dunwich, *N. stigmatica*, Hb., and *Tethea subtusa*, F., Hemley, at sugar, and *Dianthæcia nana*, Rott., at Bungay, rather common at the flowers of Bladder Campion.

GEOMETRÆ.—*Selenia lunaria*, Schiff., *Acidalia rubiginata*, Hufn., and *A. subsericeata*, Haw., at Bungay; *A. emutaria*, Hb., at Hemley, very local. *Emmelesia unifasciata*, Haw., and *Eupithecia pygmeata*, Hb., at Bungay, *E. togata*, Hb., at Dunwich, *Cidaria sagittata*, F., three on *Thalictrum* in Mrs. Mann's garden, *Coremia quadrifasciaria*, Clerck, several, and *Chesias rufata*, F., in moth trap in April, both at Hemley.

PYRALIDES, &c.—*Herminia cribralis*, Hb., Hemley, in the marshes, *Aventia flexula*, F., at Bungay; *Pyralis costalis*, F., eight taken at sugar, and *Scoparia truncicolella*, Stn., also at Bungay.

CRAMBI.—*Crambus contaminellus*, Hb., Hemley and Bungay; *Homæosoma sinuella*, F., *H. binævella*, Hb., and *H. nebulella*, all at Bungay, the latter also at Hemley. *Ephestia elutella* v. *roxburghi*, *E. ficulella*, Barr., *Rhodophæa advanella*, Zinck., and *R. suavella*, Zinck., all at Bungay.

The more noticeable TORTRICES are *Tortrix diversana*, Hb., one only; *T. costana*, F., in the marshes, and also bred from larvæ feeding on the seed pods of the Yellow Flag (*Iris*) and *Phtheochroa rugosana*, Hb., all at Hemley; *Sericoris littoralis*, Curt., Shingle Street, in fair numbers. *Orthotania antiquana*, Hb., Hemley and Bungay; *Phoxopteryx uncaua*, Hb., *Grapholitha nigromaculana*, Haw., *Stigmatonota internana*, Gn., *Dicrorampha simpliciana*, Hw., *Eupœcilia atricapitana*, Stn., *E. geyeriana*, H.-S., *E. notulana*, Zell., **E. roseana*, Haw., and *E. degreyana*, McL., all at Bungay in the moth trap, and *Cochylis smeathmanniana*, F., at Hemley.

The TINEÆ are fairly well represented: *Epichnopteryx radiella*, Curt., Oulton Broad; *E. reticella*, Newm., Easton Broad and Hemley; *Adela *rufimitrella*, Scop., Barnby Broad, all in May; *Hyponomeuta vigintipunctata*, Retz., *Orthotelia sparganella*, Thnb., *Depressaria conterminella*, Zell., and *D. albipunctella*, Hb., at Bungay; *Gelechia *cuneatella*, Zell., and *G. (Recurvaria) nanella*, Hb., at Beccles; *G. (Teleia) notatella*, Hb., and *Argyresthia ephippella*, F., at Bungay; *Cecophora lunaris*, Haw.; *Argyresthia *spiniella*, Zell.; *A. conjugella*, Zell.; *A. curvella*, *Ornix *torquillella*, Zell., and *betulæ*, Stn., at Beccles; *Coleophora *therinella*, Tgstr., at Beccles; *C. *adjunctella*, Hodgk., Aldborough, in May, 1904; and *Laverna ochraceella*, Curt., Ipswich, 1904 Claude Morley; *Elachista *albifrontella*, Hb., and *atricomella*, Stn., Beccles.

Guestling Rectory:

February, 1906.

An apparatus for collecting small Arthropods.—In the "Entomological News" for February, 1906, Prof. L. O. Howard, the American Government Entomologist, gives an interesting account of an apparatus used by Prof. Antonio Berlese (who has also described it himself in Vol. II of the "Redia"), of Florence, for collecting small insects, Chelifers, Arachnids, &c., in large numbers from decaying leaves, manure, moss, bark, &c., brought home for examination. The method followed is to place this material upon a wire sieve fixed near the upper end of a large metal funnel, the apex of which is connected by a piece of rubber tubing with a small tube or bottle containing alcohol. The funnel is passed through a vessel containing water, and the water heated to 60° C. at least by a lamp, the heat drawing all the living creatures downwards into the funnel, from the sides of which they fall into the small bottle of alcohol at the bottom. Prof. Howard adds an illustration of the Berlese apparatus for direct heating, and of another for indirect heating, both of which he has tried with success. These methods of the learned Italian and American Entomologists remind me of a much simpler one used many years ago by the late R. Lawson, of Scarborough, who obtained enormous numbers of many rare species from the siftings of flood-refuse from the mountain streams of his own neighbourhood, as well as from haystack rubbish, &c. Lawson used a long, conical or balloon-shaped, suspended canvas bag, placing the stuff to be operated on on a sieve near the top, and fixing a tube or bottle, with or without alcohol, at the bottom outlet. Instead, however, of heating the sides of the funnel-shaped bag,

he placed rags saturated with ammonia above the material on the sieve before tying up the mouth. This had the same effect in driving all the living creatures downwards, to fall eventually into the tube below. The objection perhaps to all these methods of obtaining insects wholesale, is that vast numbers of specimens of the commonest species have to be looked over, or killed, before the rarer forms can be selected. Prof. Howard's paper will, I am sure, interest Entomologists who wish to collect minute beetles, &c., in rough weather, when a bag of siftings could be much more profitably examined at home.—G. C. CHAMPION, Horsell, Woking: *March 16th, 1906.*

Thyamis curta, All., as a British insect.—This insect was brought forward as British by Mr. J. R. le B. Tomlin in March, 1904 (*Ent. Mo. Mag.*, xl, pp. 60 and 179) on specimens taken by himself and Dr. Harold Bailey at Colby, Isle of Man. These were identified by M. Bedel as *curta*, All. As the species has been since alluded to as British by Mr. Chitty, Prof. Beare, and others, and has been included in the latest British Catalogue, I propose to show that there was some error in M. Bedel's identification, and that at present, at least, the insect has no claim to a place in the British list. Mr. Tomlin well describes the Colby insect as having the appearance of a miniature *T. melanocephala*. Mr. Champion (*Ent. Mo. Mag.*, xli, p. 92) states that he has long had specimens in his collection as *T. atriceps*, Kuts., an insect regarded by M. Bedel (*Faune Seine*, v. 311) as synonymous with *T. melanocephala*, De G. It is evident that the Colby *Thyamis* will not answer to Allard's description of *T. curta*, All. (*Mon. des Alticides*, p. 410), in which, in reference to the elytra, he says: "Elles sont d'ordinaire testacées comme le pronotum, mais quelquefois la suture est étroitement ferrugineuse ainsi qu'une partie des bords latéraux." Bedel (*Faune Seine*, v, 190) has as follows: "Elytres entièrement pâles ou testacés." With a view to making the matter more certain, I sent two of the Colby specimens to M. Bedel for re-examination, and he has returned them as "certainly not *curta*," and was good enough to let me see authentic examples of the latter, with which the Colby insect evidently had nothing in common. I may add that Mr. Tomlin is quite satisfied that *T. curta* was introduced in error.—E. A. NEWBERY, 12, Churchill Road, Dartmouth Park, N.W.: *February 5th, 1906.*

Coleoptera in the Newbury District.—The *Coleoptera* of this district have been very little worked, I believe, so the following notes may be of interest.

I have collected here for over two years, but as my time is very limited a great many species are probably overlooked. In the *Geodephaga*, for instance, I have done practically nothing; the only three species at all worthy of mention are *Bradycellus placidus*, common in reed-beds, *Badister sodalis*, and *Lebia chlorocephala*, the latter species having turned up singly on five occasions.

Water beetles I have not worked much, and have taken little of note. *Agabus femoralis* was common in a pond at Coldash on April 17th, 1904, together with *Bidessus geminus*, *Helochares punctatus*, and *Hydrochus angustatus*, while *Hydroporus marginatus* occurred under a brick in a swiftly running stream near Kintbury with plenty of *Elmis æneus* and *Limnius tuberculatus*.

Among the Staphylinidæ may be included *Ocyusa picina* and *O. incrassata*, *Homalota scapularis* and *H. humeralis*, *Medon apicalis*, one specimen in haystack refuse in company with scores of *Habrocerus capillaricornis* on September 17th, 1904, and a single *Pseudopsis sulcata* occurred in a similar locality on October 8th, 1905. The following species have occurred in sphagnum in the spring of 1905, viz.: *Megacronus cingulatus*, *Mycetoporus punctus*, and *Phytobius denticollis*, Gyll., and in the autumn, *Actobius cinerascens*, *A. procerulus*, *A. signaticornis*, *Stenus kiesewetteri* (one), *Hyperaspis reppensis*, *Chrysomela didymata*, and four *Trachys troglodytes*, on October 30th, 1904.

Evening sweeping as a rule is very unproductive, but several local species have been met with, some of the better ones being *Anisotoma badia*, *ovalis*, *litura*, and *parvula*; one *A. rugosa* was found crawling over a mossy stump at Streatley on October 29th last; *Agaricophagus cephalotes*, *Triarthron märkeli*, *Colon viennense* and *brunneum* have also occurred. *Pselaphus dresdensis* was met with on February 21st, 1904, in flood refuse, but owing to an injured knee I was unable to search for more. *Aphodius putridus*, *Plagiogonus arenarius*, and *Heptaulacus villosus* are the only *Lamellicornia* worth mentioning, and *Elater elongatulus*, *E. sanguinolentus*, *Aphanisticus pusillus* and *Cryptohypnus 4-pustulatus* the best of the *serricornia*.

On June 22nd, 1904, *Lampyrus noctiluca* was in great abundance on the chalk downs near Streatley, a friend and myself counting no fewer than 117 in a distance of half a mile or so when returning from a "mothing" expedition. *Dasytes niger* was found in flowers of pink in a small garden, *Anthocomus rufus* was common in reed-beds, *Haplocnemus impressus*, *Tillus elongatus*, *Thanasimus formicarius*, and *Axinotarsus ruficollis* were also met with.

The genus *Cis* was represented by *C. alni*, *micans*, *hispidus*, *bidentatus*, and *nitidus*, with *Rhopalodontus fronticornis* and *Eumearthron cornutum*, while *Sphindus dubius* is sometimes not uncommon in small powdery fungi. The only Longicornis of any interest are *Asemum striatum*, under fir bark, and *Molorchus minor* and *Phytæcia cylindrica*, taken on the wing. *Donacia crassipes*, *bidens*, *sparganii*, *lemnæ*, and *comari* (in Sphagnum), are occasionally met with, but are very local and scarce. *Longitarsus holsaticus* turns up in ones and twos, *L. agilis*, *dorsalis*, *flavicornis*, and *pellucidus* also occur more or less sparingly.

Among the *Heteromera*, the only species of any interest are *Tetratoma desmaresti*, *Mordella fasciata*, and *Mordellistena abdominalis*.

In 1904 *Rhinomacer attelaboides* was taken in two localities, but I was unable to find it last year. Among the *Apions*, the best include *subulatum*, *genistæ*, *urticarium*, *cruentatum*, *pabipes*, *hookeri*, *flavimanum*, *vicinum*, *atomarium*, *scutellare*, *livescerum*, *waltoni*, *pubescens*, *tenuis* and *ebeninum*; *Trachyphloeus squamulatus*, *T. alternans*, *Ceuthorrhynchus marginatus*, and *Ceuthorrhynchidius terminatus*, occur rarely in moss. *Polydrusus sericeus* and *Mecinus circulatus* were found near Andover. *Orchestes iota* is fairly common on *Myrica gale*, and *O. saliceti* rare on dwarf willow.

Gymnetron villosulus, *Nanophyes lythri*, and *Cionus tuberculosus* occur in the low-lying meadows near the canal, and *C. thapsus* is not uncommon near Streatley. *Ceuthorrhynchus euphorbiæ*, *resedæ*, and *punctiger*, and *Ceuthorrhynchidius pyrrhorhynchus* and *melanarius* are the best in their respective genera.

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All the species of *Phytobius*, with the exception of *P. muricatus*, Bris., appeared last season, but none of them in any numbers.

I am greatly indebted to Messrs. J. J. Walker and G. C. Champion for naming a great many of my specimens, and also to Dr. Joy, who has been most kind in assisting me in many ways.—P. HARWOOD, Gloucester Road, Newbury: February, 1906.

Notes on Irish Coleoptera.—Since my last communication I have been working at moss from various localities, and with some success. In a bag of moss from O'Meath, Co. Louth, I found a specimen of *Quedius puncticollis*, Thoms., the best thing in the bag, besides this I took *Bembidium mannerheimi*, Sahl., *Mycetoporus splendidus*, Grav., and *Sitones cambricus*, Steph. In various bags of moss got in this neighbourhood I found plenty of beetles, but not many that were of interest. *Anchomenus gracilis*, Gyll., was fairly common, but *Bembidium obtusum*, Sturm, occurred sparingly. In each bag I got specimens of *Choleva angustata* F., *C. agilis*, Ill., and *C. tristis*, Panz. The only other capture worth mentioning is *Barypeithes sulcifrons*, Boh., a species I had not met with in Co. Armagh previously. Last month I had the pleasure of spending a few days at Summer Hill, Co. Fermanagh, a delightful spot for the Coleopterist. While rambling about the demense I found a fine old beech tree with a healthy fungus on its trunk, nicely within my reach; in this I found several *Scaphisoma boleti*, Panz. There were a good many of these little beetles running about on the fungus, but not having a proper collecting bottle I did not get as many as I would have wished. I had taken the precaution of bringing my moss bag with me, and filled it to the fullest extent with most beautiful moss, which produced a great number of beetles. I had hoped to have met with *Pselaphus dresdensis*, Herbst, but was disappointed. I took a number of *P. heisei*, Herbst, so the other may be there to. It was in January that I took so many *P. dresdensis* at Armagh, so that it is not at all improbable that the difference of time might be the cause of its non-appearance. I also took *Badister sodalis*, Duft., but only a single specimen. *Hydroporus angustatus*, Sturm, *Homalota fungi*, Grav., v. *clientula*, Er., *Philonthus sanguinolentus*, Grav., *Lathrobium longulum*, Grav., *Cryptobium glaberrimum*, Herbst. I was glad to meet with this again for I had not done so since I left Armagh; *Evæsthetus ruficapillus*, Lac., *Stenus lustrator*, Er. (the curling pubescence on the abdomen is very beautiful), *S. nitens*, Steph., *S. fuscipes*, Grav., *Trogophlæus corticinus*, Grav., *Bythinus puncticollis*, Denny, *B. bulbifer*, Reich., *Scydænus collaris*, Müll., *Halyzia conglobata*, L., *Scymnus suturalis*, Thunb., and *S. limbatus*, Steph., *Atomaria basalis*, Er., *Galerucella calvariensis*, L., *G. tenella*, L., both were present in some numbers. *Longitarsus melanocephalus*, All., there were a great many of this species, while the only other representative of the genus was a solitary *L. luridus*, Scop. Weevils were represented by a number of common species; *Strophosomus coryli*, F., and *Sciaphilus muricatus*, F., being first in point of numbers. Judging from the results of the bag of moss, the locality is one which promises and will reward further investigation. As there are many small lakes, streams, and drains, water beetles are likely to be well represented.—W. F. JOHNSON, Acton Glebe, Poyntzpass:

Occurrence of Henoticus serratus, Gyll., in North Wales.—During a short visit to Llanberis in September last, I was fortunate in capturing three specimens of this rare Cryptophagid. They were taken by sweeping in a marshy spot near Nantperis, where there were several dwarf willows, alders, &c. I have to thank Mr. Newbery for kindly identifying the species.—J. KIDSON-TAYLOR, 35, South Avenue, Buxton: March 9th, 1906.

Quedius nigrocæruleus, Rey, from Norfolk.—The other day I found among my series of *Quedius mesomelinus*, Marsh., a quite distinct looking specimen, which, however, did not exactly agree with the descriptions of either of the lately introduced allied species. Mr. Newbery has pronounced it to be *Q. nigrocæruleus*, Rey, in spite of the elytra being quite black. It was taken at Barton Broad, Norfolk, in August, 1904.—NORMAN H. JOY, Bradfield, near Reading: March 6th, 1906.

Hymenoptera near Hastings.—During a short stay at Hastings last August, I visited a few localities that used to be favourite haunts of Aculeates. Insects were, however, very scarce. Probably the very strong winds prevailing at the time kept many of them from appearing. On August 1st, *Pompilus plumbeus* was fairly common on the Camber sand-hills, but *P. chalybeatus* was represented by one ♂ only. A few species of *Bombus* were common on *Echium*, *B. hortorum* and its var. *harrisellus* being very abundant. *Dasygaster hirtipes* also occurred. At Bexhill, on August 8th, *Pompilus unicolor*, 4 ♀, 3 ♂, on *Daucus*, were my best captures. Others were *Megachile argentata* and *Saropoda bimaculata*, both common, and the brown and yellow variety of *Nomada solidaginis*.—G. E. FRISBY, 9, Fengates Road, Redhill: February 19th, 1906.

The host of Nomada solidaginis.—Last August, *Nomada solidaginis* was very abundant on Redhill Common, flying over mixed patches of *Erica* and *Calluna*. At the same time and place, *Andrena fuscipes* also occurred freely. Thinking that they might be associated I watched carefully on several occasions, but only once, on August 19th, was I able to detect the *Nomada* entering a burrow of the *Andrena*. Smith records this *Nomada* as being associated with *Halictus leucozonius*.—ID.

Aculeate Hymenoptera at Lyme Regis.—For the last three years I have visited Lyme during the month of July to discover if the descendants of the rarities recorded by F. Smith fifty years ago were still to be found. I am glad to say that I have succeeded in finding all of them, though some appear to be very scarce. *Pompilus unicolor*, Spin., was taken only in 1903, *Didineis lunicornis*, Fab., in 1904, and *Methoca ichneumonides*, Latr., last year. *Gorytes laticinctus*, Lep., the new *Halictus semipunctulatus*, Sch., and *Stelis 8-maculata*, Sm., were also taken during the search for the above, as well as the 160 species recorded in the Ent. Mo. Mag. (1904, p. 13; 1905, p. 21, and in the following list):—

Formica fusca, Linn., *Lasius fuliginosus*, Latr., *niger*, Linn., *flavus*, De Geer, *Methoca ichneumonides*, Latr., *Pompilus approximatus*, Sm., *gibbus*, Fab., *ungicularis*, Thoms., *pectinipes*, V. d. Lind., *Trypoxylon figulus*, Linn., *Pemphredon lugubris*,

Fab., *shuckardi*, Mor., *Crabro clavipes*, Linn., *Odynerus melanocephalus*, Gmel., *trifasciatus*, Oliv., *Halictus punctatissimus*, Schk., *minutus*, Kirb., *Nomada armata*, H.-S., *Osmia bicolor*, Schk., *Stelis aterrima*, Panz., *phæoptera*, Kirb.

The district must therefore be considered a very good one, as the last three seasons have certainly been poor ones. One ♂ *Methoca ichneumonides*, Latr., was captured carrying a ♀, between two and three o'clock in the afternoon.—EDW. B. NEVINSON, 5, Bentinck Terrace, Regent's Park, N.W.: *February*, 1906.

Halesus guttatipennis in Derbyshire and Lincolnshire.—To the localities for *Halesus guttatipennis* enumerated by Mr. K. J. Morton (*Ent. Mo. Mag.*, March, 1906, p. 66), I can add Lathkildale, near Bakewell, Derbyshire, from where I have specimens in my series taken by Mr. S. L. Mosley on October 19th, 1898. I have also a specimen taken by Mr. James Eardley Mason at Alford in Lincolnshire, as long ago as November 9th, 1889.—GEO. T. PORRITT, Huddersfield: *March 7th*, 1906.

Obituary.

Charles William Dale, F.E.S.—It is with much regret that we announce the death of Mr. Charles William Dale, who passed away at Sherborne, on February 20th last, at the age of 54. Inheriting from his father, the late Mr. James C. Dale (whose name appears repeatedly in his friend John Curtis' "British Entomology"), the love of Natural History in general, and of Entomology in particular, he followed closely in his footsteps, collecting—almost entirely in their imaginal states—all orders of insects, with which he early became familiar. His opportunities for doing so were exceptionally good, his boyhood and youth being spent at home, and his educational studies making no very severe tax upon his time; he had also the advantage of the use of his father's fine collections, of which, on the death of the latter, all the British ones passed to him in 1872. When about 30 years of age, Mr. Dale entered Oxford University, but after a short residence, spent chiefly at Wadham College, he returned home to Glanvilles Wootton Manor House, near Sherborne, where practically his whole life was spent, and around which the family estates lay.

Many notes from our friend's pen, chiefly on the capture of rare and interesting species, have appeared in the Entomological magazines, the last being only dated "January 13th, 1906," and published in the February number of this periodical, and occasional papers were read by him before the Dorset Field Club, one having been promised for a meeting that was held two days after his death. His most important works were "The History of Glanvilles Wootton, including its Zoology and Botany" (1878), "The *Lepidoptera* of Dorsetshire" (1886), with a Second Edition (1891), and "The History of our British Butterflies," which was issued as a Supplement to "The Young Naturalist." These showed great industry, and include a large number of valuable records, though the fact that they contain a good many erroneous entries must always be a source of regret, and of difficulty, to the specialist. But where such very extensive knowledge is aimed at, depth and accuracy cannot fail to be more or less sacrificed, and we do not remember any

Naturalist of modern times whose acquaintance with British animate nature was so wide. Mr. Dale was, in addition, an ardent devotee of cricket and lawn tennis, and for some years was frequently seen in the hunting-field. He was never married, and a nephew and niece, the children of his younger and only brother, Edward, whose tragic death took place at Salisbury some two years ago, are left to mourn his loss. His valuable collections are bequeathed to the Oxford University Museum, provided that certain specified conditions are complied with.—EUSTACE R. BANKES.

Reviews.

THE VICTORIA HISTORY OF THE COUNTIES OF ENGLAND: A HISTORY OF SUSSEX. INSECTA, edited by HERBERT GOSS, F.L.S., &c., pp. 128, folio. London: A. Constable & Co., Limited, 1906.

Sussex is the third of the English counties treated of in the "Victoria History" that we have as yet had occasion to notice, and from its favourable situation and varied physical features, it would naturally be expected to be one of the most productive and interesting of all in the Entomological sense. This is fully borne out by the fact that the "Insecta" occupies nearly 130 pages of the section of the work devoted to the Natural History of the county. The Editor has been fortunate in obtaining the co-operation of many well-known resident (and other) Entomologists, in making the enumeration of all the Orders of Insects more complete than in either of the previous volumes noticed, and especial use has been made of the excellent lists compiled, chiefly by the Rev. E. N. Bloomfield, for the Hastings Natural History Society. While several districts appear to have been exceptionally well investigated, others, especially in the north and west of the County, are comparatively unworked, and many interesting additions may be expected from these parts. The various Orders are all well represented, the lists of the *Lepidoptera* and *Coleoptera* being as usual the most complete, and the latter reaching the fine total of 2080 species; while a good start has been made with the *Diptera* in the enumeration of 950 species by Mr. J. H. A. Jenner. Localities are given for the more interesting and uncommon forms in all Orders, an excellent practice, which we hope to see continued as far as possible in the forthcoming volumes of the "History"; and we may congratulate all concerned in the work on the thoroughness with which it has been carried out.

TWENTY-NINTH ANNUAL REPORT AND PROCEEDINGS OF THE LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY, SESSION 1905. "Visiter" Printing Works, Southport.

The Annual Report of this active and flourishing local Society for the past year includes three papers of much interest, one of which "Some Notes on Manx Coleoptera" by Mr. J. R. Le B. Tomlin, has already appeared in our pages. Mr. E. J. B. Sopp gives a very full and readable account of the early stages of the large water-beetle, *Dytiscus punctulatus*; and the Vice-Presidential Address of Mr. H. St. J. Donisthorpe at the Annual Meeting, treats of the Myrmecophilous *Coleoptera* of Great Britain, a subject he has made especially his own. This last embodies a full list of our British "ant's nest beetles," with copious notes on each species, based

on the author's personal observations, bringing our knowledge of these most interesting little creatures fully up to date; and the paper is one that should be in the hands of every Coleopterist.

Societies.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: The Meeting held in the Royal Institution, Liverpool, Monday, February 19th, Mr. RICHARD WILDING, Vice-President, in the Chair, took the form of a joint meeting with the Liverpool Microscopical Society. Prof. Geo. Henry Carpenter, B.Sc., F.E.S., was elected a Member of the Society.

The following exhibits were made, viz.: By Dr. J. Cotton, a long series of *Triphæna fimbria* and *T. pronuba*. The series represented the range of variation as met with in the St. Helen's district very fully, the rarest form shown being of a unicolorous dull brown, with none of the usual markings visible. Mr. F. N. Pierce, microscopical preparations to show the difference between the androconial scales and the ordinary scales of *Thecla rubi*; the dissimilarity between the form and depth of the scars, left on the removal of the scales, was also strikingly illustrated. Mr. E. J. B. Sopp, British Phytophagous *Coleoptera*, including series of *Chrysomela cerealis*, *Hydrothassa hannoverana*, and other local and scarce species; also a photograph of the egg capsule of *Periplaneta americana*, taken by Mr. Hugh Leighton Buzzard. Mr. W. A. Tyerman, three cases containing about 100 butterflies and moths, taken by himself on the Gold Coast during April, 1905. Mr. McPhail, Mr. F. N. Pierce, and other Members of the Microscopical Society showed many slides illustrating insect morphology.—H. R. SWEETING and WM. MANSBRIDGE, *Hon. Secretaries*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: January 11th, 1906.—Mr. HUGH MAIN, B.Sc., F.E.S., President, in the Chair.

Mr. J. W. Schoon, of Bayswater, and Mr. A. A. Dobson, of New Malden, were elected Members.

Mr. Hy. J. Turner exhibited ♂ examples of *Morpho cypris* from South America. Mr. South, a reproduction of a photograph of the ova of *Pieris brassicæ*, showing the larva just emerging. He called attention to the actual appearance of the egg and the erroneous figure which had done duty for so many years. Mr. Tonge, a capital photograph of the life-history of *Sesia (Macroglossa) stellatarum*, ova, larva, pupa, and imago. Mr. Main, a long and variable series of *Noctua festiva*, bred from Lancashire larvæ, and a photograph of the egg capsule of *Periplaneta americana*. Mr. Kaye, a remarkable specimen of *Agrotis tritici*, bearing a close resemblance to *A. agathina*. It was taken with the latter species flying over heather at Oxshott, and was a good example of syncryptic resemblance brought about by the common habit of resting on heather. Mr. R. Adkin read the Report of the Field Meeting held at Seal on May 27th, and Mr. Carr communicated the Report of the Field Meeting held at Chiselhurst and St. Paul's Cray on Sept. 16th.

Thursday, January 25th, 1906.—The President in the Chair.

ANNUAL GENERAL MEETING.

The Balance Sheet showed the financial condition to be very satisfactory, there being some £42 balance. The Report of the Council was read, showing that the meetings had been well attended, the exhibits varied and interesting, that nine Papers and Addresses, three lantern demonstrations, and five Reports had been given to the Society; that five field meetings had been held, and that the library and collections were constantly being referred to by the Members. The following gentlemen were then declared elected as Officers and Council for the year: *President*, R. Adkin, F.E.S.; *Vice-Presidents*, W. J. Kaye, F.E.S., and Hugh Main, B.Sc., F.E.S.; *Treasurer*, T. W. Hall, F.E.S.; *Librarian*, A. W. Dodds; *Curator*, W. West; *Hon. Secretaries*, Stanley Edwards, F.L.S., F.Z.S., and Hy. J. Turner, F.E.S.; *Council*, F. B. Carr, T. A. Chapman, M.D., F.Z.S., F. Noad Clark, A. Harrison, F.L.S., F.Z.S., A. Sich, F.E.S., E. Step, F.L.S., and W. West, L.D.S. Mr. Main read his Presidential Address, then introduced Mr. Adkin, the new President, who took the Chair.

ORDINARY MEETING.

Mr. Bellamy exhibited (1), a very fine "black" form of *Anthrocera trifolii*, captured at Ringwood on June 25th, 1899, afterwards ascertained to be the var. *obscura*; (2) an extreme form of *Polyommatus corydon*, var. *fowleri*, from Swanage, July 30th, 1899, in which the spots on the white border of the hind-wings are almost absent; and (3) a yellow form of *Callimorpha dominula*. Mr. Turner, a number of species of butterflies, taken by Dr. Chapman in late July, at Larche and Lauteret, including *Colias palæus*, *Polyommatus damon*, *P. escheri*, *P. orbitulus*, *Epinephele lycæon*, *Erebia lappona*, &c. Mr. Edwards, the pupa cases of *Cionus scrophulariæ* among the seed vessels of *Scrophularia nodosa*, showing the remarkable resemblance; also specimens of *Papilio patros* and *photinus*. Mr. Lucas, specimens of the Stag-beetle, *Lucanus cervus*, dug up from their cocoons at Kingston, in early January. Mr. Tonge, for Mr. Vine, a pale yellow bipupillate form of *Epinephele janira*, and a photographic life-history of *Euchloë cardamines*.

ENTOMOLOGICAL SOCIETY OF LONDON: March 7th, 1906.—MR. F. MERRIFIELD, President, in the Chair.

The Rev. George Wheeler, M.A., of Les Tourelles, Territet, Switzerland, was elected a Fellow of the Society.

Mr. H. W. Andrews exhibited two specimens of *Microdon latifrons*, Lw., a rare Dipteron taken in the New Forest in June, 1905. Mr. H. M. Edelsten, examples of *Nonagria neurica*, Hb., and *N. dissoluta*, var. *arundineta*, Schmidt, from Germany with (?) var. *arundineta* from Central Asia, for comparison with *N. dissoluta* and *N. var. arundineta* from Kent, Cambridge and Norfolk. Mr. L. B. Prout showed and read a note on a variable series of *Gynopteryx gladiaria*, Guen., and its varieties. Mr. A. J. Chitty, combs of the honey bee formed on a branch of a nut tree, the bees

having swarmed late in the year. After July they deserted the combs, and having consumed all the honey contained in them, again swarmed on a neighbouring tree. Prof. R. Meldola, F.R.S., a specimen of *Prodenia littoralis*, Boisd., which had emerged in a breeding cage kept, with many others, by Major R. B. Robertson, at Boscombe, Hants, for the reception of caterpillars found in that district. The moth emerged on July 16th, 1905. The species, which is figured in Hampson's "Moths of India," is said to have a distribution extending from the Mediterranean subregion throughout the tropical and subtropical zones of the Old World. Mr. O. E. Janson, a *Mantis* on a portion of the bark of a tree as found by Mr. F. Birch in Trinidad, who stated that its close resemblance to a withered leaf was evidently a protection for aggressive purposes. Mr. M. Burr, a series of *Callimenedæ*, a small family of *Orthoptera*, consisting of two genera. *Dinarchus* with the single species *D. dasypus*, Illig., and *Callimenes*, of which all the known species were included, with the exception of *C. inflatus*, Br., from Asia Minor. Mr. H. Rowland-Brown, ♀ specimens of *Argynnis niobe*, var. *eris*, from the Pyrenees, Cevennes, and South Tyrolese mountains. He drew attention to the remarkable form of the example taken at Gavarnie, in July, 1905, of which the coloration of the upper-side of all the wings was ruddy-copper red shot with blue upon the nervures. He also remarked that whereas specimens of *eris* and other Argynnids from the mountainous regions of Central France showed a tendency to maintain constant pale forms, those from the Pyrenees are more highly coloured, while the high Alpine forms of Central Europe inclined to melanism. Prof. E. B. Poulton, F.R.S., an original note-book of Burchell's taken to South Africa in 1812. He said that it established the date of the author's birthday, hitherto unknown, to be July 12th, while it also recorded for the first time the superstitious dread of the native Hottentot for the "Death's Head Moth," known locally as the "Devil Bee." Dr. F. A. Dixey, specimens of Pierine butterflies from South Africa, India, and Asia Minor to illustrate how the under-sides in the dry season forms of the group are apt to take a red tinge, and it was especially interesting to note that the same tendency was manifest in all species collected from such widely-separate regions. Mr. C. O. Waterhouse, a note on the migration of *Lepidoptera*, extracted from a report on "The Pearl Oyster of the Gulf of Manaar—*Avicula (Meleagrina) fucata*," by Henry Sullivan Thomas, F.L.S., F.Z.S., &c., extracted from the "Madras Journal of Literature and Science" for the session 1886-87. Colonel C. T. Bingham read a note on "A Plague of Ants in the Observatory district, Cape Town, South Africa," and illustrated his remarks with specimens of the insects referred to by him. Dr. G. B. Longstaff read a paper "On some Rest Attitudes in Butterflies," illustrated by numerous specimens arranged upon backgrounds of specially-tinted sandpaper approximating to the natural surroundings of the insects in their various habitats. A discussion followed, in which the President, Prof. Poulton, Dr. Chapman, Mr. H. Rowland-Brown, and other Fellows joined. Dr. T. A. Chapman read a paper entitled "Observations on the Life History of *Trichoptilus paludum*, Zell." Prof. E. B. Poulton, F.R.S., read a paper by Mr. Frank P. Dodd "On some Parasitic Hymenopterous Insects of North Queensland," and exhibited a number of interesting specimens to illustrate his remarks.—H. ROWLAND-BROWN, *Hon. Sec.*

ACULEATE HYMENOPTERA FROM BURGOS, OLD CASTILE,
COLLECTED DURING THE TOTAL ECLIPSE OF THE SUN,
AUGUST 30TH, 1905.

BY THE REV. A. E. EATON, M.A.

WITH A LIST OF THE SPECIES OBTAINED.

BY EDWARD SAUNDERS, F.R.S.

The population of Burgos was augmented on the day of the eclipse by some thousands of visitors, many of whom had travelled all night. Among them, from Bordeaux, arrived a party of the British Astronomical Association, led by Mr. Nield, prepared to photograph and otherwise observe the sun's corona and other matters. They had arranged to erect their instruments upon the Campo de Siliala, about two kilometres southward from the centre of the city, at an altitude (according to an Aneroid Barometer) of about 3000 ft. above the sea, whence an extensive view is obtainable from S.E. to N.W. southerly and westerly. A cordon of mounted troops was to guard them from intrusion of passers by.

Accordingly, at 9.30 a.m., amidst a concourse of sight-seers, the party having breakfasted and gleaned from shops the rudiments of lunch, set out from the city for their destination—a straggling procession of travel-worn objects, newly washed, headed by a Spaniard bearing a deal packing case of optical apparatus on his shoulder, and closed by an unattached English bug-hunter, net in hand and mat basket on back, with an Oxonian. The plateau was reached about 10 a.m., the troops pushing on in advance along the dusty road to establish their cordon. Already numbers of spectators had arrived, and more still kept coming from the town, until the Campo was as crowded as a racecourse. Amid the throng outside the area patrolled, two English ladies, observing with telescopes set up on the borders of the common, were soon almost buried out of sight by dense rings of interested onlookers.

Entomologically the Campo de Siliala and its outskirts seemed likely to yield more bees and wasps than *Lepidoptera* or *Orthoptera*. The butterflies appeared to be mostly species of wide range—*Vanessa antiopa* and *atalanta* and *H. comma* among them. So hardly anything but bees and wasps went into the killing bottles. The flowers were all autumnal, the bulk of the herbage gone to seed. Ranging over the ground with net and bottle amongst the crowd, for at least a couple of hours, proved rather an ordeal; for until the critical period

of total eclipse drew near, more attention was paid by passers by to the netsman than to celestial affairs. To justify the sanity of his occupation, occasional peep-shows had to be accorded, through a lens, of the contents of collecting bottles, with explanations — one per cent. verbal to 99 per cent. dumb show. This encroached upon the time available for collecting, because when family parties made a stand, mothers and grandmothers always wanted THE BABY to see everything. But there could not have been more agreeable people; and a Hymenopterist among them was interested in the species secured. Even sentries strolled aside for a peep, and saluting returned to their posts, greatly gratified.

Within twenty minutes, or thereabouts, of totality, *Bombus* and hive bees ceased to be seen. Ants went to sleep on shoots of a yellow flowered *Ononis*, when it grew darker.

Daylight by this time was rapidly failing. The night had been clear; but clouds in the early morning had begun to form over the northern mountains, *stratus*, moving slowly southwards beneath far-reaching streamers of lofty *cirrus*. And now large portions of the sky were overcast with broken cloud, and showers here and there began to fall.

The heights above Burgos, through a field glass, look black with spectators: the royal family is there. The sun is clouded over, and the rain has arrived. The light is like that of an arctic midnight in the shadow of mountains in July. A large break in the clouds is approaching; will it arrive in time?

Balloons, now set free, float slowly eastwards from the town. The glass shows their occupants discharging ballast in all haste, hoping to rise above the drifting scud; but the falling temperature lessens their buoyancy and retards their ascent.

It grows darker. The lucky break in the clouds is reaching the sun. Beautiful and delicate colouring of remarkable transparency lights up the edges of the clouds and pervades the sky, like tints of sunset amidst broken clouds in the west after rain. Near the northern and north-westward horizon black-purple *stratus* floats in a sky of yellow amber.

There, at last, comes the shadow of totality, darkening the distance in that direction, overspreading the landscape and mounting upwards like the shade of night pursuing the afterglow of sunset. It reaches the city. The sun is gone out, but his dwindling light still lingers on the distant mountains south-eastwards, till the shadow sweeps onwards and over them.

Now look upwards. The earth-light dimly reddens the moon encircled by the corona. Venus beams forth brilliantly from a blue-black sky of *quasi* night. The air is humid; no other star is visible to the unaided eye.

The $3\frac{1}{2}$ minutes of totality are almost ended. It grows lighter in the north-west; lighter at Burgos. Suddenly, at the moon's edge, out bursts a dazzling bead of incandescent silver. Totality is over. South-eastwards all was blue as the eastern sky at break of day, till the shadow sped over the mountains out of sight. By the time that the shadow of totality was passing off, a Casella's pocket thermometer showed a fall in temperature of about 30° F., from about 80° F. to 50° F.

LIST OF SPECIES CAPTURED.

Sphæx albisectus, Lep., ♂. *Tachysphæx panzeri*, v. d. Lind., ♂. *Cerceris ferreri*, v. d. Lind., ♀. *Pterochilus chevrieranus*, Sauss., ♀. *Colletes ligatus*, Ev., ♀. *Sphécodes subquadratus*, Smith, ♂. *Halictus scabiosæ*, Rossi, ♂; *interruptus*, Pz., ♂; *platycestus*, Dours., ♀; *punctatissimus*, Schk., ♀; sp. ?; *virescens*, Lep., ♂. *Andrena thoracica*, F., ♀, 3; *hypopolia*, Per., MS., 2 ♀. *Panurgus arctos*, Er., 3 ♂ 1 ♀. *Megachile maritima*, K., 2 ♀. *Anthidium laterale*, Ltr., ♂. *Bombus terrestris*, L., 2 ♀; *cullumanus*, K., ♂, 2 ♀; *læsus*, Mor., 4 ♀. *Apis mellifica*, L., ♀.

Of the above, *Bombus cullumanus* and *læsus* are both interesting captures; the workers of *cullumanus* have got the 1st and 2nd abdominal segments clothed with yellow hairs as in our British examples.—E. S.

March, 1906.

A NEW SPECIES BELONGING TO THE GENUS *ANTICHIRA*, ESCHSCHOLTZ.

BY THE REV. W. W. FOWLER, D.Sc., M.A., F.L.S.

ANTICHIRA NEVINSONI, sp. n.

Oblongo-ovata, convexa, læte olivaceo-viridis, capite obscuriori; prothorace longitudine duplo latiori, apicem versus gradatim sat fortiter angustato, basi ad scutellum utrinque fortiter sinuatâ; scutello magno; elytris separatim flavo-testaceo regulariter marginatis, lineis tribus longitudinalibus in disco cujusque flavo-testaceis, exteriori brevi, intermediâ marginem basalem attingente, minutissime distanter seriatim punctatis; pygidio virescente, leviter punctato; corpore subtus viridi-æneo, metasterno processu sat longo instructo, ad apicem obtuse rotundato; prosterno et mesosterno sat dense, metasterno parcins piloso; pedibus viridi-æneis, femoribus plus minusve pilosis, tibiis spinis parvis nigris seriatim instructis.

Oblong-ovate, strongly convex, of a bright olivaceous green colour, with the head darker; prothorax unicolorous, twice as broad as long, with the sides gradually

and evenly but rather strongly narrowed towards apex, which is about half as broad as the base, base with a strong sinuation on each side of the base of the scutellum; scutellum large; each elytron evenly margined all round with yellow-testaceous, and with three longitudinal lines of the same colour, the outer one being the shortest, and the intermediate one touching the basal margin: the surface is smooth, with a few rows of minute punctures; pygidium green, closely punctured; under-side æneous-green; metasternum with a rather long process in front, which is obtuse and rounded at apex; prosternum and mesosternum with thick and long pilosity, the metasternum being less strongly and the abdomen very sparingly pilose; legs æneous-green, femora more or less pilose, intermediate and posterior tibiæ with rows of strong small black spines on the sides.

Long., 30 mm.; lat. ad. hum., 16 mm.

HABITAT: Yurimaguas, Peru.

This is one of the most distinct and beautiful of the *Rutelidæ*; apparently it does not possess a stridulating apparatus, and there are no oblique ridges upon the sides of the abdomen, and it cannot therefore be placed in the genus *Macraspis*, as revised and reconstituted by Dr. Ohaus; most of the species of *Antichira* are placed by Dr. Ohaus under the last named genus on this character.

The type specimen, which is apparently unique, is in the fine collection of my friend Mr. B. G. Nevinson, after whom I have much pleasure in naming it.

Earley Vicarage, Reading:

February 16th, 1906.

EUPLECTUS TOMLINI, SP. N.: A BEETLE NEW TO BRITAIN.

BY NORMAN H. JOY, M.R.C.S., F.E.S.

Rufo-testaceous, with elytra,* antennæ and legs lighter; finely pubescent; head large, very transverse, strongly and thickly punctured, hind angles prominent, frontal furrows not deep; antennæ rather long; thorax about as long as broad, distinctly narrower than head without eyes, much contracted behind, strongly and thickly punctured, sides finely crenulate, dorsal furrow deep, not quite reaching apical or basal margins, lateral foveæ distinct; elytra ample, longer than together broad, finely but distinctly punctured, with scutellary stria complete and one strong stria on each reaching about half way to apex; hind body narrower than elytra, very finely punctured throughout, with basal depressions on first segments narrow and feeble. Long., $1\frac{3}{4}$ mm.

Male with fifth ventral segment of abdomen deeply and sharply emarginate in middle, with a conspicuous round fovea on each side of the emargination, and having the base of the emargination projecting backwards in the form of a rounded lobe

* The elytra in cabinet specimens hardly appear to be lighter than the rest of the body, but in life they are conspicuously so.

which is surmounted by two small membranous hairs; sixth segment short, transversely depressed at base and widely emarginate; last segment with two more or less obsolete foveæ; intermediate tibiæ with a small tooth on the inner side near apex. In the female the ventral segments of the abdomen are simple.

I took sixteen examples of this species in February last from an old starling's nest which I found in the hollow limb of an elm, and I subsequently bred about fourteen others from the same nest. Mr. Donisthorpe kindly examined one of them for me, and as he was unable to identify it with any of the European forms, I sent two specimens to Herr Reitter. He informs me that the species is new to science, and suggests *E. punctatus*, Muls., as its nearest ally. In the very peculiar male characters, however, the present insect more nearly resembles *E. karsteni*, Reich., the ventral segments of the abdomen being nearly of the same general form, but having the foveæ, emarginations, &c., much more strongly developed. It differs from *E. karsteni* also in being considerably larger and much more strongly punctured, and from *E. punctatus* by its relatively broader head and stronger punctuation. The only other species to which *E. tomlini* seems at all nearly related is *E. frivaldszkyi*, Sauley; but this latter, according to Ganglbauer, has two square foveæ on each side of the fifth abdominal segment (he makes no mention of any emargination), the thorax almost smooth, &c.

E. tomlini seems to be a well-marked species, and is easily distinguished from the other British members of the genus by having the head without the eyes distinctly broader than the thorax, and by its strongly punctured thorax with crenulate sides; the male characters also are characteristic.

Bradfield: April 10th, 1906.

A NEW BRITISH ARCTIID.

BY DR. T. A. CHAPMAN, F.Z.S.

In the Ent. Mo. Mag. for last month (March), p. 70, is a report of my exhibiting two larvæ at the South London Entomological Society. They were sent me by Mr. H. Murray of Carnforth, who said he found them on a waste piece of ground there, and that he had captured a similar one at the same place a few years ago. He adds

later, "I am quite sure the larvæ I sent you are not British *plantagin*is larvæ, I have had thousands during the last twenty years and could not mistake it."

Having some *N. plantagin*is larvæ hibernating, I forced some of these and have just bred a specimen, and easily saw that they were totally different.

They are certainly no other British species. By reference to Abbot and Smith's "Insects of Georgia," and to Holland's "Moth Book" and other authorities, I remain in practically no doubt whatever that these larvæ are of the North American species *Pyrrharctia isabella*, apparently a common species in many parts of North America.



The photograph presented herewith is natural size, by Mr. Hugh Main, who now has the larvæ, and will I hope rear them.

The larva (still I believe with some feeding to do) is much larger than a full-grown larva of *plantagin*is, has a remarkably dense and level-topped coat of hairs, and has these deep black at each end, with five middle rings deep brick-red, not merely a short dorsal patch as in *plantagin*is, but the whole ring.

As Mr. Murray met with this larva some years ago, it would follow that the species is not merely there for one season, but has more or less established itself, and is therefore at least as much entitled to a place on our list as *Anosia erippus*, *Plusia ni*, &c., &c.

Betula, Reigate :

April, 1906.

NOTES ON *EPIBLEMA (PÆDISCA) SORDIDANA*, HB., WITH DESCRIPTIONS OF THE LARVA AND PUPA.

BY EUSTACE R. BANKES, M.A., F.E.S.

Having had the good fortune to meet with some imagines of this local species in the Isle of Purbeck, Dorset, on October 25th, 1902, and having failed to find any English description * of the larva or

* The only description known to me is a very brief one, in Dutch, by Snellen [De Vlind. v. Nederland, Microlep., p. 340 (1882)], who merely states that the larva is "blue-grey, with black spots, head, and plate."—E. R. B.

pupa, I visited the spot on June 9th last, and from larvæ, about full-fed, chosen out of the large number then collected on alder (*Alnus glutinosa*), made the following description on June 10th:—

LARVA.

Length, when moderately stretched, 16 mm. *Greatest breadth*, 2.5 mm. *Head* highly polished, brownish-black, rather narrower than prothorax; ocelli indistinctly paler. *Prothorax* with the anterior margin whitish in front of the *plate*, which is large, highly polished, brownish-black, bisected by a narrow whitish line. The *thoracic* and *abdominal segments* together form a mass which is stout in the middle, and tapers off gradually towards the head, and abruptly near the anal extremity; their colour, which is greyish-white laterally, is pale bluish-grey dorsally, with the pulsating vessel showing through the skin as a central ill-defined darker bluish-grey line. *Skin* smooth, but not glossy. *Tubercles* large and conspicuous, dusky-brown, polished. *Spiracles* small, circular, brownish-black, polished. *Penultimate abdominal segment* dorsally with a small blackish-brown, polished, elliptical-oval, central plate. *Anal segment* with a large, polished, brownish-black, dorsal *plate*, emitting a few rather long pale brownish hairs, and with a small, polished, dusky-brown, elliptical-oval plate on each side above the clasper. *Hairs* pale brown, but few, and mostly short and inconspicuous. *Ventral surface* greyish-white, concolorous with the sides, the segmental interstices, which mostly show darker, being pale bluish-grey, concolorous with the dorsal area. *Legs* highly polished, externally brownish-black, narrowly ringed with whitish at the joints, internally paler. *Pro-legs* greyish-white, with the extremities brown, and with two dusky-brown bars across each side externally.

None of the adult larvæ showed any variation worthy of mention. Various young individuals, of which the smallest was only 6 mm. in length when at rest, were examined, and all exactly resembled the full-fed ones, except that they were somewhat paler, the ground colour dorsally being greyish-white instead of pale bluish-grey, and proportionally lighter elsewhere.

The larva only frequents and feeds on the youngest and most tender leaves on the alder bushes. Having selected one such leaf at the end of a shoot, it takes up its position on the upper surface along the midrib, and by spinning white silk threads across from side to side, it gradually, owing to the contraction of the silk, draws the two sides of the leaf together over itself like a tent, and as soon as the margins are sufficiently close, it unites them firmly together throughout their length with strands of white silk, the leaf, when the process is complete, somewhat resembling a very short and broad pea-pod. The larva lives inside the domicile thus formed, and feeds on the anterior portion of the inhabited leaf, gradually eating it away from the apex downwards. When an appreciable part, often amounting to about one-half, of the leaf has been devoured, so that the

habitation no longer affords sufficient protection, its owner deserts it, and wanders off in search of another suitable leaf, which, in its turn, is treated in a similar manner. Well-grown larvæ are frequently found inhabiting extremely small leaves, and from the number of empty domiciles that are met with, often near a tenanted one, it is clear that a larva generally makes use of several leaves before it becomes full-fed. Occasionally, though rarely, instead of behaving in the manner described above, the larva spins the young selected leaf face downwards over the basal portion of the upper surface of a neighbouring larger leaf, securely joining them together with silk all along the margins of the smaller one, and lives between them, devouring the apical portion of the younger leaf from the tip downwards. This exceptional habit, which is, of course, only possible in the special instances where a suitable second leaf happens to grow in the right position, is prompted, so far as I could judge, by the fact that the leaf first selected is rather too small to be satisfactorily treated in the usual way. All the larvæ collected, numbering 220, and of all sizes from full-fed down to less than half-grown, were, with the above-mentioned rare exceptions, living and feeding in the manner first described. Even when its domicile is partially opened, the larva shows no disposition to vacate it, but generally ejects from its mouth a comparatively large drop of a most nauseous-looking dark brown fluid, which would doubtless repel many of its natural foes. It appears to be remarkably lethargic in nature, though in confinement, among distasteful surroundings, it proved itself decidedly active and energetic.

Snellen states [De Vlind. v. Nederland, *Microlep.*, p. 340 (1882)] that the larva pupates in the ground, but no earth was supplied to my captive larvæ, and they spun their cocoons in the tight folds of the muslin bag in which they were kept, or among the tightly packed mass of decaying leaves that accumulated in the bottom of it. The surrounding material, whether muslin or leaf, was firmly fastened to the cocoons, and wrapped closely and completely round them even on their inner sides, which, in the case of cocoons spun in folds of muslin, &c., are almost invariably left to some extent free. This peculiar habit is all the more remarkable because of the extremely dense, tough, and doubtless waterproof nature of the cocoon itself, which is made of white or yellowish-white silk, and is elliptical in shape, being generally about 11—12 mm. long, by 4—4.5 mm. in greatest breadth.

The larvæ clearly remain unchanged in their cocoons for some

weeks, for although all mine had spun up by June 27th, some of them having done so directly after capture, none of the few cocoons then opened contained pupæ. On August 2nd, however, several cocoons were cut open in order to ascertain their contents, and all contained pupæ, though some of these had assumed this state only shortly before, as was evident from their comparatively pale colour.

PUPA.

The following description was made on August 5th from four pupæ selected for the purpose, and including two representatives of each sex; their colour showed that they had been in this state some little while:—

Length of ♂, 7.5 mm.; of ♀, 8.75 mm. Greatest breadth of ♂, 2 mm.; of ♀, 2.5 mm. Rather stout, in proportion to its length, in both sexes, and tapering gradually from the end of the third to the end of the sixth abdominal segment, and then abruptly to the anal extremity. *Segmental divisions* very clearly defined. *Skin* smooth, with no noticeable hairs. *Head and thoracic segments* smooth, slightly polished, reddish-tawny, the former armed with a cocoon-opener, which consists of two short stout projecting spikes, placed side by side. *Eye-cases* prominent, the eyes showing through as large round black spots. *Antenna- and leg-cases* with well-defined margins, smooth, somewhat polished, concolorous with wing-cases; in the ♂♂ the antennal and hind-tarsal cases are of equal length with the wing-cases, but in the ♀♀ they are shorter than these, and only reach to the middle of the fourth abdominal segment. *Wing-cases* reaching in the ♂♂ to the end, and in the ♀♀ to the middle, of the fifth abdominal segment, smooth, somewhat polished, tawny-orange. *Abdominal segments* dull and unpolished, reddish-tawny above, tawny-orange beneath. Most of these segments have, dorsally, two rows of blackish, or black-tipped, raised spikelets, pointing somewhat backwards, one near the anterior margin, the other just behind the middle. Both, however, are wanting in the first abdominal, while the posterior row is absent from the last two segments of the ♂, and from the last three of the ♀. The intervening segments mostly show a brown band along their posterior margin. *Anal extremity* armed dorsally with several strong blackish spikelets, pointing obliquely backwards, and ventrally with two rather larger and stouter ones, somewhat widely separated, pointing downwards; it also bears a few orange-brown bristles.

Some of the larvæ, owing chiefly, no doubt, to the excess of moisture in the decaying mass of leaves in which they tried to spin up, failed to pupate satisfactorily, but almost every one that did so produced a perfect imago, a fine series of 105 specimens, of which 51 were ♂♂, and 54 were ♀♀, being reared. The moths emerged August 12th to October 19th last, and displayed remarkable regularity in leaving the cocoon between 7.45 a.m. and noon, the only exceptions being three that came out in the afternoon during a

veins, the halteres pale, the second of the thick veins forked and bare, the scutellum with only two bristles, and the palpi long and broad, with a single long terminal bristle. *Ruficornis* in the second division, has the costa reaching to the middle of the wing, the halteres pale, and the scutellum with four bristles. Full descriptions of these and of *umbrimargo* will be found in Becker's "Phoridae."

PHORA PAPILLATA, *sp. n.*

Head entirely black; frons not furrowed, very broad and short, apparently more than three times as broad as long; antennæ large and pressed in on the frons, hiding its lower part; palpi rather large, dilated, bristly, black; thorax with the dorsum black, and with black hairs but no bristles, except at the sides, and a pair of præscutellar ones; the humeri have a small pale patch; pleuræ quite bare, except a few prothoracic bristles; scutellum with four bristles; abdomen brownish-black, shining, almost bare, a single row of very small bristles on the hind-margins of segments, and a few at the sides; a largish patch on the fore-margins of the segment strongly papillose, and showing bright orange in certain lights; sides of the belly with strong longitudinal furrows; wings with the costal ciliation very short, the first thick vein much bent, the costal cell very broad at the centre and darker than the rest of the wing; the second thick vein forked and bare; the first thin vein much bent, bayonet-shaped at its base, then straight and ending at the tip of the wing; the first, second, and third thin veins with a clear line on each side of them and a brown shadow-line beyond. Halteres dark brown; fore-legs, coxæ and femora black, except at their tips; tibiæ and tarsi and the tip of the femora and coxæ orange; mid legs brown, except the base and tip of the femora and coxæ, and all the tarsi which are orange; hind legs, coxæ, and femora dark, tibiæ and tarsi orange; fore tibiæ with a single tiny bristle at the first third of its outer side; mid tibiæ with two small outer bristles, hind tibiæ bare. Size, 3 mm.

P. nigricornis, Egg., Bishop Auckland, 1 ♂, 8.3.02; *nudipalpis*, Beck., Brancepeth, 1 ♀, 15.6.02; Bishop Auckland, 1 ♂, 14.5.02; *ruficornis*, Mg., Bishop Auckland, 1 ♀, 25.5.1900; *umbrimargo*, Beck., Bedburn, 1 ♂, 12.6.05.

St. Peter's Vicarage,

Bishop Auckland:

March 23rd, 1906.

A NEW ETHIOPIAN SPECIES OF *HELOPELTIS*.

BY PROF. O. M. REUTER.

In the Entomologist's Monthly Magazine, xxviii, 1892, p. 159, I described the first African species of this peculiar genus, *H. bergrothi*, from the Gaboon, the previously known forms being from the Indian

and Malayan regions. Another African species, *H. waterhousii*, also from the Gaboon, was added by Kirkaldy (Trans. Ent. Soc. Lond., 1902, p. 265); a third, from Assinia, *H. alluaudi*, was subsequently described by me (Öfv. Finska Vet. Soc. Förh., xlvii, No. 1895, p. 1); and a fourth, from the Congo, has now been sent me for determination by the well-known Belgian Hemipterologist, Mr. H. Schouteden, after whom I have named this interesting addition to the Ethiopian Capsid Fauna.

HELOPELTIS SCHOUTEDENI, sp. n.

Pallide flavens, pedibus concoloribus, vertice, medio frontis, oculis antennisque nigris, his ima basi articuli primi pallida; hemielytris cum membrana nigricantibus, dimidio basali clavi, corio a basi ultra medium, externe longius quam interne, limbo toto laterali cuneoque pallide flaventibus, hoc sæpe nonnihil fusciscente; articulo ultimo tarsorum vel tarsis totis fuscis; cornu scutellari pronoto longitudine subæquali, leviter retrorsum nutante, subrecto vel levissime retrorsum curvato, apice capitulato.

♂ ♀, long., $7\frac{2}{3}$ — $8\frac{1}{3}$, lat., $1\frac{1}{2}$ — $1\frac{2}{3}$ mm.

Hab.: BELGIAN CONGO; Bikoro.

H. bergrothi, Reut., minor et gracilior, antennis brevioribus, gracilioribus aliterque constructis, colore multo pallidior et dilutior, clypeo lateribusque frontis pallidioribus optime distinctus. Caput basi pronoti circiter $\frac{1}{3}$ angustius, a latere visum altitudine distincte brevius. Rostrum coxas intermedias paullo superans, apice nigro. Antennæ, articulo primo excepto, pilosulæ, articulo primo margine basali pronoti circiter duplo longiore, apice incrassato, secundo primo circiter dimidio longiore, tertio secundo fere $\frac{2}{3}$, quarto tertio paullo magis quam duplo brevior (longitudo articuli primi fere 3, secundi fere 5, tertii fere 3, quarti $1\frac{2}{3}$ mm.). Pronotum unicolor, versus apicem leviter convexo-declive, strictura apicali oculo a supero viso fere æque crassa. Scutellum cornu apice subtruncato. Hemielytra abdomen $\frac{1}{3}$ vel $\frac{2}{3}$ apicalibus superantia. Femora levissima curvata, apice incrassata. Tibiæ omnes rectæ.

Helsingfors: March, 1906.

NOTE ON THE GENUS *NEOLOBOPHORA*, SCUDDER.

BY MALCOM BURR, B.A., F.L.S., F.E.S.

In the Paris collection of earwigs there is a small series of a new and distinct species of *Neolobophora*, which I inadvertently

period of about four days in which the cages were kept in a well heated room. The males, which appear to average a trifle the smaller, emerged, as a whole, rather before the females, 17 out of the first 27 that appeared being of the former, whereas 21 out of the last 27 were of the latter sex. The moths exhibit a limited amount of variation, the ground-colour in the males, which are, on the whole, appreciably lighter than the females, ranging from bright cinnamon-brown to sepia, while in the latter it ranges from dark cinnamon-brown to dark sepia. The few more important markings do not appear to vary in pattern, but in some individuals both these, and the dark strigulations, are much more strongly pronounced than in others. No ichneumons emerged from the cocoons, nor did any of the larvæ show signs of having been "stung" by parasites.

The imago seems extremely sluggish in general, but often, when much alarmed, jumps backwards off the side of the cage and lies on its back on the floor, feigning death most determinedly; on a fresh attempt being made to box it, however, it sometimes glides away on its back, to the serious detriment of its beauty, owing to the unusually loose attachment of the wing-scales. As to its natural flight-time, my only observation is that on October 25th, 1902, the weather being fine, mild, and calm, though with an overcast sky, the males, in lamentable condition, were flying freely, and rather commonly, along a line of alder bushes during the latter part of the afternoon.

Norden, Corfe Castle :

January 16th, 1906.

SUPPLEMENTARY NOTE.

On May 5th, 1905, the same alder bushes yielded many larvæ of *E. sordidana*, mostly about 4 mm. in length when at rest, very slender, and much less advanced than the youngest described above, with which, however, they agreed in colour. In this stage their habits are somewhat different, and their work far less noticeable than later on. The smallest were living concealed in separate pocket-like chambers formed, as a rule, between the midrib and the margin, in either the upper- or the under-side of a young leaf, by fastening together with white silk the edges of the selected area, though sometimes formed between two adjacent leaves, or between a leaf and a wing of the bud-sheath, which were spun together. One of them, however,

adopting, with exceptional precocity, the more advanced method, had completely transformed a minute unexpanded leaf into a "pea-pod." Other individuals had selected, on the upper-side of the leaf, two corresponding strips across the middle, one on either side of the midrib, and, after spinning their edges closely together, were living between them, the apical and basal ends of the leaf being left free. All were feeding on the substance of the leaf inside or just outside their chambers, either gnawing away its surface, or eating small holes right through it, and ejecting the pellets of black frass from the ends of their chambers. It should be added that in young larvæ the skin shows a decided gloss which is absent in the case of more mature individuals.—E. R. B. : *January 23rd, 1906.*

NOTES ON THE HYMENOPTEROUS GENUS *BRACON*, FAB.

BY CLAUDE MORLEY, F.E.S., &c.

Excepting a few local lists of localities, we have heard little of this very distinct genus since the publication by the Entomological Society of the first part of Rev. T. A. Marshall's "Monograph of British *Braconidæ*" in 1885; and his revision and extension of the genus in André's "Species des Hyménoptères d'Europe" in 1887 appears to have attracted still less attention. It may, therefore, be of interest to present some notes upon its species, with the hope that this sadly neglected, though economically most important, branch of British Entomology may yet receive its fair share of attention. To this end it may be of use to present a concise table (drawn from the latest source) of our indigenous species:—

- | | | | |
|------|----|--|------------------------------------|
| (52) | 1 | Abdomen at least basally rugose dorsally. | |
| (19) | 2 | Fourth segment not smoother than the preceding. | |
| (10) | 3 | Suture of the 2nd—3rd segments centrally sinuate. | |
| (7) | 4 | Stigma of the wing flavous. | |
| (6) | 5 | Abdomen punctate and not striolate | 1. <i>pectoralis</i> , Wesm. |
| (5) | 6 | Abdomen striolate and not punctate..... | 3. <i>erythrosticktus</i> , Marsh. |
| (4) | 7 | Stigma of the wing infusate. | |
| (9) | 8 | Abdomen entirely testaceous..... | 2. <i>lætus</i> , Wesm. |
| (8) | 9 | Abdomen centrally black | 4. <i>minutator</i> , Fab. |
| (3) | 10 | Suture of the 2nd—3rd segments straight. | |
| (18) | 11 | Second abscissa of radius not shorter than 1st transverse cubital nervure. | |
| (15) | 12 | Metanotum centrally carinate throughout. | |
| (14) | 13 | Head, thorax, and coxæ partly testaceous | 5. <i>fulvipes</i> , Nees. |
| (13) | 14 | Head, thorax, and coxæ black | 6. <i>longicollis</i> , Wesm. |

- (12) 15 Metanotum not centrally carinate throughout.
- (17) 16 Head and thorax partly flavous7. *variegator*, Nees.
- (16) 17 Head and thorax black8. *nigratus*, Nees.
- (11) 18 Second abscissa of radius shorter than 1st cubital ...9. *stabilis*, Wesm.
- (2) 19 Fourth segment evidently smoother than the preceding.
- (25) 20 Three basal segments rugose.
- (22) 21 Metanotum centrally carinate throughout21. *satanas*, ♂.
- (21) 22 Metanotum not carinate throughout.
- (24) 23 Abdomen centrally entirely black.....12. *exarator*, Marsh.
- (23) 24 Second and 3rd segments laterally broadly testaceous...
11. *erraticus*, Wesm.
- (20) 25 Two basal segments above rugose.
- (29) 26 Wings nigrescent or infumate.
- (28) 27 Second segment with lateral longitudinal impressions...
13. *triangularis*, Nees.
- (27) 28 Second segment with no lateral impressions14. *roberti*, Wesm.
- (26) 29 Wings hyaline or hardly clouded.
- (31) 30 Mesonotum mainly testaceous.....15. *lævigatus*, Ratz.
- (30) 31 Mesonotum entirely black.
- (33) 32 Tarsi broadly explanate, spatuliform.....36. *barypus*, Marsh.
- (32) 33 Tarsi normal.
- (39) 34 Abdominal segments centrally testaceous.
- (36) 35 Coxæ red16. *mediator*, Nees.
- (35) 36 Coxæ mainly black.
- (38) 37 Femora and tibiæ entirely testaceous.....18. *fuscicoxis*, Wesm.
- (37) 38 Femora and tibiæ infusate17. *vectensis*, Marsh.
- (34) 39 Abdominal segments centrally black.
- (41) 40 Abdomen with more than three basal segments laterally testaceous...
19. *tornator*, Marsh.
- (40) 41 Abdomen black, at most with three basal segments laterally pale.
- (43) 42 Second segment with only a lateral gutta.....20. *guttiger*, Wesm.
- (42) 43 Second segment with no lateral gutta.
- (45) 44 Metanotum carinate throughout.....21. *satanas*, Wesm.
- (44) 45 Metanotum not carinate throughout.
- (49) 46 Femora testaceous.
- (48) 47 Terebra shorter than half abdomen (♂ unknown)...
22. *fraudator*, Marsh.
- (47) 48 Terebra two-thirds of the length of abdomen ...23. *epitriptus*, Marsh.
- (46) 49 Femora black.
- (51) 50 Second segment basally rugose.....24. *larvicida*, Wesm.
- (50) 51 Second segment entirely rugose.....25. *prætermisus*, Marsh.
- (1) 52 Abdomen entirely smooth dorsally.
- (54) 53 Second abscissa of radius shorter than 1st transverse cubital nerve ...
10. *brevicornis*, Wesm.
- (53) 54 Second abscissa of radius longer than 1st transverse cubital.
- (56) 55 Vertex subcubical29. *caudatus*, Ratz.
- (55) 56 Vertex normal.

- B. stabilis*.—Suffolk, common (Tuck and C. M.); Herts, common (Piffard); Surrey (Saunders); 9 ♂♂ and 2 ♀♀ bred from *Hastula hyerana* at Taormina, in Sicily, May, 1905 (Chapman).
- B. erraticus*.—Herts (Piffard); Irvine, in Ayrshire, in mid-July (A. Adie Dalglish).
- B. triangularis*.—One female at South Leverton, in Lincoln, May, 1896 (Rev. A. Thornley).
- B. mediator*.—Surrey (Saunders); Herts (Piffard); Hunts (Thornley); Scotland (Dalglish); 3 ♀♀ and 1 ♂ bred from a single cocoon of *Sesia bembeciformis* at Skipwith, in Yorks, in June, 1899, one or two more failed to emerge (Rev. C. D. Ash); I have a ♂ from Beaumont's collection, bred from the same host by R. Adkin.
- B. fuscicoxis*.—A pair in the marshes at Brandon, Suffolk, June, 1903 (B. Tomlin).
- B. guttiger*.—I swept a single female from long grass at Nacton, Suffolk, late in May, 1900. W. Evans took it at Arniston, near Edinburgh, in May, 1898.
- B. satanas*.—Surrey, several (Capron); one swept at Monk Park Wood, Suffolk, May, 1901 (C. M.).
- B. fraudator*.—Herts (Piffard); Epsom in June, and Monks' Soham in Suffolk, in July (C. M.).
- B. epitriptus*.—Swept in Wicken Fen in June, and in my paddock at Monks' Soham in July (C. M.).
- B. prætermisus*.—Herts (Piffard); Oulton Broad, in Suffolk, in August, on reeds (C. M.).
- B. discoideus*.—Herts (Piffard); Brandon and Claydon, in Suffolk, on flowers of *Angelica sylvestris* (C. M.).
- B. regularis*.—Surrey, in July (Saunders); Herts (Piffard); Foxhall and Bramford, in May and August, on flowers of *Spiræa ulmaria* (C. M.).
- B. terebella*.—Bristol, in May (H. J. Charbonnier); Surrey (Saunders); Herts (Piffard).
- B. variator*.—New Forest (Miss Chawner); Bristol (Charbonnier); Herts (Piffard); Bury St. Edmunds (Tuck); Surrey (Saunders); Eastbourne abundant on flowers of *Senecio jacobæa* in August, Claydon and Henstead in Suffolk, on those of *Angelica* (C. M.); one ♀ bred from the seeding heads of *Cistus*, in which were larvæ of *Mesophleps corsicellus* (Chapman).
- B. osculator*.—Worthing, in Sussex (Beaumont); Herts (Piffard); Burwell Fen on flowers of *Corylus oxyacantha*, Lavenham in Suffolk on those of *Chærophyllum*, Bentley Woods on sallow and birch; in May and early June (C. M.); 2 ♂♂ and 2 ♀♀ bred from *Coleophora solitariella*, in June, 1901 (A. Sich).
- B. obscurator*.—One female swept from wood-herbage at Wherstead, in Suffolk, May 10th, 1900.
- B. anthracinus*.—Herts (Piffard); Bentley Woods, swept herbage, in May (C. M.).
- B. atrator*.—One female taken at Felden, in Herts (Piffard).
- B. abcessor*.—I swept a single female of this new British species at Horning Fen, in Norfolk, on June 15th, 1901. It may easily be distinguished from *B. colpophorus*, to which it is most closely related, by its broadly infusate palpi,

apically tricarinate metanotum and large size. Head transverse, as broad as thorax, black, with mouth red; metanotum subdeplanate; wings infusate, apically subhyaline; legs red, with the coxæ and trochanters mainly, hind tibiæ apically, black. Abdomen red, ovate, and apically rounded; anus, basal segment and disc of the intermediate, black; second segment with a triangular black mark; terebra (in my specimen) as long as abdomen. Length, 6 mm. ♂ unknown.

Monks' Soham House, Suffolk:

March, 1906.

A NEW SPECIES OF *PHORA*, AND FOUR OTHERS NEW TO THE
BRITISH LIST.

BY THE REV. W. J. WINGATE.

A few months ago while examining some eighteen specimens of *Phora* which I had put aside for identification, I was surprised to find one very marked species which I felt certain was new, and three others which I identified from Becker's monograph as *nigricornis*, Egg, *nudipalpis*, Beck., and *ruficornis*, Mg., none of which are in Verrall's List of the British species. There were also five others about which I was uncertain. As this was so unlikely a catch out of so few specimens, I distrusted my own identifications, and I therefore sent them to Mr. Becker, of Liegnitz, who had most kindly consented to examine them for me. He fully confirmed my identifications as regards the new species and the three above named. Of the five others, one was *pulicaria*, Fln., one a variety of the same, one *rufipes*, Mg., one *minor*, Ztt., and the fifth Mr. Becker at first considered to be another new species; but on my calling his attention to its perfect agreement with his *umbrimargo*, he agreed with me that it was that species.

P. nigricornis and *nudipalpis* belong to Becker's first division of the genus *Phora*, in which the tibiæ bear bristles, the frons is without a central furrow, and all the frontal bristles are directed backwards; *ruficornis* belongs to the second, while *umbrimargo* is a transition species, with the channelled frons and bare tibiæ of the second division, but the post-antennal frontal bristles are erect and not bent forward. *Nigricornis* is distinguished from any other species on the British List, with the second thick vein forked and with only three thin veins present, by its extraordinarily large third antennal joints which are nearly as large as the eyes. *Nudipalpis* has four thin

omitted to describe in earlier papers. I accordingly publish the description now, so that the name may be quoted in the final list of the *Dermaptera* of the Paris Museum.

In overhauling this and the allied genera, I have come to the conclusion that the Asiatic species may be conveniently and naturally separated from the typical form, so that the genus *Neolobophora* may be restricted to the forms which occur only in tropical America.

It is impossible to draw up a satisfactory table of the species until the males of *N. bicolor*, Borelli, and of *N. bogotensis*, Scudder, are known. In the meantime, I offer the following arrangement as provisional:—

1. *Elytra brevia*, subtriangularia1. *bicolor*, Borelli.
- 1.1. *Elytra subquadrata*.
 2. *Elytra et pronotum punctulata*2. *ruficeps* (Burm.).
 - 2.2. *Elytra et pronotum lævia*.
 3. *Statura mediocri* ♀ (13.5 mm.) (? occiput fuscum) ...
 3. *bogotensis*, Scudder.
 - 3.3. *Statura minore*, ♀ (10 mm.); (occiput læte flavum) ...
 4. *borellii*, sp. n.

I formerly confused this new species with *N. bogotensis*, as the females appear to differ but little, but I now consider it distinct upon the grounds that it is a native of Mexico, whence there are several specimens in the collection, whereas *N. bogotensis* occurs in Costa Rica, Panama and Colombia; and that it is also noticeably smaller.

N. bicolor appears to be quite distinct, but still it is desirable that the male be discovered, so as to put its true position beyond doubt.

Of the two species of which the males are known, there can be no confusion, as can be seen by the following comparison; it remains to be seen to which species the male of *N. bogotensis* will approach when it is discovered.

It should be remembered that these insects are incapable of flight, and it is therefore probable that different species are peculiar to separate mountain systems, as is the case in our European genus *Chelidura*, of which there is one species found only in the Alps, another in the Apennines, one in the Eastern Pyrenees, and one in

the west; another in the mountain of central Spain, and another in the Sierra Nevada. It is, therefore, significant that *N. bicolor* should be found in Ecuador, so far from Mexico, which has hitherto been regarded as the head-quarters of the genus.

Comparison between the males of *N. ruficeps* and *N. borellii*.:—

	<i>N. ruficeps.</i>	<i>N. borellii.</i>
Elytra	punctulate ...	smooth.
„	longer than broad	shorter than broad.
Pygidium with the 2 points	sharp	blunt.
Forceps	longer than body	shorter than body.
„	nearly straight	upcurved at tooth.
Tooth of forceps	subobsolete	sharp.
„	near middle.	near apex.

NEOLOBOPHORA BORELLII, *sp. n.*

Statura minore; colore fusco-castaneo; antennæ typicæ, brunneæ: occiput læte flavum; frons nigra; pronotum læve, castaneum, quadratum; elytra breviora quam longiora, trapezoidea, lævia, castanea, ad humeros fortiter plicata, sed haud carinata; alæ nullæ; pedes brunnei; abdomen læve, nigrum, vel fusco-castaneum; segmentum ultimum dorsale ♂ transversum, læve, medio impressum, supra crura forcipis incrassatum; pygidium ♂ breve, obtusum apice emarginatum, lobis 2 brevibus obtusis; pygidium ♀ obtusum, integrum; forcipis brachia ♂ basi remota, subrecta, sat fortia, margine interno crenulata, in tertiam partem apicalem margine interno-inferiori dente sat fortia armata, dehinc sursum incurva, apice acuta, incurva: ♀ subcontigua, recta, inermia. ♂ ♀.

Long corporis, ♂, 8-9 mm.; ♀, 9-10 m.m.

„ forcipis, ♂ 3-4.5 mm.; ♀, 2 mm.

Patria: Mexico, State of Jalisco, near Guadalajara. 3 ♂♂, 4 ♀♀ (in Mus. Paris et coll. mea.).

Characterised by the smooth body, smooth and short elytra, small size, short and toothed forceps.

I have pleasure in dedicating it to my friend Dr. Alfredo Borelli, who has done such valuable work upon the earwigs of America.

Royal Societies' Club,

St. James's Street, S.W.:

March 11th, 1906.

The late C. W. Dale's Collections.—In view of the practice, pursued for a long period, by the late Mr. C. W. Dale, of substituting modern specimens in good condition for old and damaged, it should be remembered that he kept a careful register of dates and localities corresponding with the labels of the specimens in his cabinets, by reference to which the old can often be distinguished from the new, and the specimens authentically named by old authors (correspondents of his father) may sometimes be identified. Regard should also be had to the make of the pins of specimens. He relied upon comparison with specimens and illustrations in forming his own conclusions about species, using hand-lenses that were hardly of sufficient power to guide him in all cases to correct decisions; and he professed himself to be by no means facile at identifying insects by means of only written description.—A. E. EATON, Pentlands, Mill Road, West Worthing: *March*, 1906.

Trigonogenius globulum at Tottenham.—I have had in my possession for some time a specimen of *Trigonogenius globulum* which I had not been able to name until the other day, when I saw an example in a collection of *Coleoptera* in the St. Albans' Museum. It was taken by a friend (who is not an Entomologist) in an old house at Tottenham in July, 1903.—C. T. GIRMINGHAM, Harpenden, Herts: *March 15th*, 1906.

Microglossa marginalis and other birds' nest beetles in Kent.—Coleopterists ought to be extremely grateful to Dr. Joy for his discovery of the habitat of *Philonthus fuscus*, Gr., *Choleva colonoides*, Kr., and *Microglossa marginalis*, Gyll. I had been intending to search for these insects for a long time in this district, but did not know how to begin or where to find the nests. The other day I got information that starlings built in the orchard adjoining my garden. A suitable hole in an apple tree which contained a nest was soon found by Mr. Donisthorpe and myself, and a careful sifting of the *débris* at once produced all three species. I expect that wherever there are apple trees with holes in them in which starlings build the insects will be found; but it is no easy job to find suitable spots, and a ladder to reach the holes, and a small boy to get out the old nests and *débris* (through a hole generally too small to admit a man's hand) would seem useful if not absolutely necessary adjuncts to this form of collecting. Coleopterists must be prepared for disappointments; but he is more likely to be disappointed in not finding suitable holes with nests in them than in not finding the beetles if a nest and *débris* are secured and properly sifted at home.—ARTHUR J. CHITTY, Huntingfield, Faversham, Kent: *April 10th*, 1906.

The host of Nomada solidaginis.—With reference to Mr. Frisby's useful note on the above I think it ought not to be assumed that *Nomada solidaginis* has only one host. In this district I do not see how *Andrena fuscipes* can be the host, though I cannot state what the host is. The *Nomada* was not uncommon in 1902, when it occurred with *N. jacobææ* and *N. fucata*. I had taken a specimen or so in previous years, but during all the years in which I have known the district I have never seen or heard of *Andrena fuscipes*, nor is there any *Erica* or *Calluna* near the

spot where my captures were made. I fancied that all three *Nomadas* were parasitic on *A. fulvicrus*, which was very common in 1901 and 1902. Strange to say, *A. fulvicrus* and all the *Nomadas* seem now to have almost disappeared. I am hoping they are holding over, and if so I will try and find out whether there is not another host of *N. solidaginis*.—ID.

Notes on some of the scarcer Tenthredinidæ.—It is but seldom that any records appear of the sawflies, so I send a notice of a few of the more conspicuous species which have passed through my hands during the past year or two. The opportunity of examining the Midland species was given me by Mr. A. H. Martineau, of Solihull, while the species from the neighbourhood of Maidstone were sent to me by Mr. H. Elgar, Curator of the Maidstone Museum. It will be observed that they have been taken in various years, but are, I think, none the less worthy of record on that account. I am indebted to the Rev. F. D. Morice for determining or confirming many of the species, and also giving me Konow's nomenclature, which I therefore use, adding Cameron's names as given in his Monograph, "British Phytophagous Hymenoptera," vols. i and iii.

Neuroctina flaviventris, Retz., ♂ and ♀, Solihull; *Pamphilus inanitus*, Vill., Strood and Maidstone, June 10th, 1903; *P. sylvaticus*, L., Maidstone, May 29th, 1903; *P. fulvipennis*, Zadd. (*sylvarum*), Bentley Wood, near Ipswich, two specimens, June 3rd, 1898, C. Morley; *Schizoceros furcatus*, Vill., Wyre Forest, May 26th, 1890 (Ent. Mo. Mag., p. 165, 1905); *S. geminatus*, Gmel., St. Albans, May, 1903, Mr. Gibbs; Harrietslam, near Maidstone, May, 1904; *Lophyrus pini*, L., Maidstone, 1898; *Dolerus madidus*, Klug (*lateritius*), Solihull, May 21st, 1901; *Tenthredopsis tristis*, Cam., Coleshill, June 17th, 1901; *Macrophya rufipes*, L., ♂ and ♀, near Maidstone, not scarce, May and June, 1904; *M. rufipes*, dark var. (*hæmatopus*, Cam.), near Maidstone, June 15th, 1904; *M. blanda*, F., ♂ and ♀, West Malvern, May 28th, 1901; *Allantus maculatus*, F., Wyre Forest, May 25th, 1890; *A. vespa*, Retz. (*tricinctus*), ♂ and ♀, Maidstone, May, 1903; *A. omissus*, Forst. (*marginellus*), ♂, Sallerton, July 10th, 1901; *A. zona*, Klug (*quadricinctus*), Wyre Forest, May 25th, 1896; *A. amœnus*, Grav. (*cingulum*), ♂ and ♀, Halling, near Maidstone, June, 1901 and 1905; *Tenthredo colon*, Klug, Matlock, July 4th, 1900; Cannock Chase, June 8th, 1904; these two specimens were sent me by Mr. Claude Morley, having been received by him from two correspondents.—E. N. BLOOMFIELD, Guestling: *March*, 1906.

Notes on Diptera in the New Forest, 1905.—Judging from my own experience the season last year was a poor one for *Diptera*; but two causes may have contributed to this in my case, viz., not happening to be there at the best periods, and advancing years preventing me from doing much work. I was at Lyndhurst during part of April, part of May, the whole of July and September, and found a great dearth of even the commonest flies during those periods; but a friend of mine told me he did fairly well during the latter part of June, and took some good ones, including a *Callicera ænea*, F., which I have not seen since 1902. My visits were timed for certain species, and several mornings during July were devoted to Matley Bog in search of *Eristalis cryptarum*, F., but I hardly saw a fly of any sort, and

had I wanted a dozen specimens of *E. texar*, L., would have found it difficult to collect them. Besides *Lophosia fuscata*, Mg., previously reported, my best captures were:—*Docosia valida*, Winn., *Anaclinia nemoralis*, Mg., *Leptomorphus walkeri*, Curt., *Platyna atrata*, Mg. ? (♀), *Ceroplatus tipuloides*, F., *Macrocera centralis*, Mg., *Plesiastina annulata*, Mg., *Atherix marginata*, Mg., *Dioctria reinhardi*, W., *Lasiopogon cinctus*, F., *Empis punctata*, Mg., *Hylemyia flavipennis*, Fln., *Pegomyia flavipes*, Fln., *Hydromyza livens*, F., *Tephritis corniculata*, Fln., *Phortica variegata*, Schmr., another ♀ of the still unnamed *Palloptera*, and also several specimens of a *Platyna* with "black body," which I have distributed amongst friends, who have not as yet suggested the specific name. I also obtained through Mr. Brameld *Pedicia rivosa*, L., *Ctenophora flaveolata*, F., and *Icterica westermanni*, Mg.—
FREDK. C. ADAMS, 50, Ashley Gardens, S.W. : April, 1906.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: Monday, February 19th, 1906.—
Mr. G. T. BETHUNE-BAKER President, in the Chair.

The various Annual Reports, Statement of Accounts, &c., were presented, and the Officers and Council elected for the ensuing year.

Mr. H. Willoughby Ellis exhibited various *Coleoptera*, including *Mycetochares bipustulata*, bred from larvæ taken in the New Forest; *Plinus sexpunctatus* from Solihull, an insect new to Warwickshire; an *Opilo*, very like our *O. mollis*, bred from galls of *Cynips kollari* found at Biskra, Algeria, by Mr. W. H. Wilkinson, and a drawer of *Anchomenina*, comprising all the species of the British list. Mr. W. E. Collinge showed a small moth from Fiji, where it has been doing serious damage to the coco-nut palms, together with the larvæ, pupæ, and cocoons of the same, and portions of the palm leaves showing the injury done. He said that so serious was the damage that in one large grove all the fronds hung down as if dead. Unfortunately, though it had been examined by various authorities, he had not yet been able to get it identified. Mr. G. H. Kenrick showed various butterflies, including some fine *Danaidæ*, *Acræina*, &c., from New Guinea, Thursday Island, the Loyalty Islands, &c.—COLBRAN J. WAINWRIGHT, *Hon. Secretary*.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: The usual Monthly Meeting of this Society was held in the Royal Institution, Liverpool, on Monday, the 19th March.—Mr. R. WILDING, Vice-President, occupied the Chair.

A paper was read by Mr. W. Mansbridge upon the *Micro-Lepidoptera* of the Liverpool District. About seventy species were dealt with, some of them new to the county list. Among the more interesting records was that of the moth *Myelois ceratonix*, and its aberration *pryerella*, with an intermediate form; these were bred from larvæ found in dates purchased in Liverpool. Another interesting insect was a specimen of *Dioryctria abietella*, a very dark form captured in Delamere Forest. A bred series of the local Tortrix *Peronea permutana* from

Wallasey, was also referred to by the author, who exhibited most of the species noted in illustration of his paper. Other exhibits were a series of *Semasia wæberiana*, bred by Mr. G. L. Cox from larvæ found in cherry bark at Oxton. Mr. E. J. B. Sopp, the exotic cockroaches, *Nyctibora holosericea* and *Panchlora virescens* from the Ship Canal docks at Manchester.

Monday, April 9th, 1906.—RICHARD WILDING, Esq., Vice-President, in the Chair.

Eight New Members were elected.

Mr. F. N. Pierce read a short paper on the "Genital Armature of the Hybrid-Moth *Notodonta ziczac* and *N. dromedarius*," illustrated by drawings and microscopical preparations of the parts described, as well as by the exhibition of the insects; the lecturer pointed out the difficulty of obtaining specimens of such rare forms for dissection. Dr. J. Cotton read a paper upon the "Lepidopterous Fauna of Knowsley Park," some thirteen species of butterflies and two hundred and ten species of moths were enumerated as having been found in the Park, and the lecturer, in the course of his remarks, gave a description of the topographical details of the locality. A discussion ensued, in which most of the Members present took part.

Mr. W. A. Tyerman exhibited a long bred series of *Acronycta rumicis*. Mr. W. Mansbridge a series of *Larentia multistrigaria*, including melanic forms from West Yorkshire, also a specimen of *D. falcataria*, set so as to show the resemblance of the moth to the head of a mouse.—H. R. SWEETING and WM. MANSBRIDGE, Hon. Secretaries.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY :
Thursday, February 8th, 1906—Mr. R. ADKIN, President, in the Chair.

Mr. Kaye exhibited preserved larvæ of *Cidaria sagittata*, and called attention to their close protective resemblance to the *Thalictrum* flowers and to their proneness to the attacks of Ichneumons. Mr. R. Adkin, cases of *Acanthopsyche opacella* and *Pachythelia villosella*, and pointed out the differences between them. The remainder of the evening was taken up by the exhibition of a large number of lantern slides by Mr. Lucas, of life-histories of insects, protective resemblance, &c.; and by Mr. Tonge, of micro-photographs of the ova of nearly every species of butterfly found in Great Britain.

Thursday, February 22nd, 1906.—The President in the Chair.

Mr. Handisyde, of Bayswater, was elected a Member.

Mr. Edwards exhibited a specimen of *Papilio mycale*, a species very closely related to *P. eurimedes*, from South America. Messrs. Harrison and Main, *Oporabia dilutata* from Epping Forest, Delamere Forest, and the New Forest, and pointed out the characters of the forms found in the three areas, and he also showed specimens of the var. *christyi* from Enniskillen. Mr. H. Moore, a large number of insects of all orders from the Island of Trinidad. Mr. McArthur, specimens of *Penthina postremana* and *Ephippiphora cirsiiana*, which had been

successfully cleaned by several applications of ordinary benzoline, although extremely greasy at first. Mr. Goulton, for Mr. Wilsdon, a beautiful black form of *Acronycta leporina*, a gynandrous specimen of *Agrotis puta* from Manor Park, bred, *Tephrosia crepuscularia*, 1st brood captured, and 2nd brood bred from the New Forest, and a *Drepana* bred from oak, which seemed to partake of the character of both *D. binaria* (*hamula*) and *D. cultraria* (*unguicula*). Mr. Smallman, a dwarf specimen of *Anthocharis genutia* from New Jersey, with varied forms of *Colias philodice* ♀ from different localities in the United States of America. Mr. Kaye read a paper "On Mimicry," with especial reference to a few groups of South American butterflies, and exhibited a large number of insects in illustration.

Thursday, March 8th, 1906.—The President in the Chair.

Mr. R. Adkin exhibited pupa cases *in situ* of several species of *Ægeriidæ* (*Sesiidæ*), including *Æ. culiciformis*, *Æ. scoliformis*, *Æ. asiliformis*, and *Æ. ichneumoniformis*. Mr. West (Greenwich), 30 species of *Hemiptera*, which he was presenting to the Society's collections. Several members remarked on the season. Sallows had been observed in flower at Christmas, and were probably fully out by the first week in March in the South. *Hybernia rupicaprararia* was out early in January, *Tæniocampa pulverulenta*, *Asphalia flavicornis*, *Phigalia pendaria*, *Nyssia hispidaria*, and *T. stabilis* were already out; the last named was worn.

Thursday, March 22nd, 1906.—The President in the Chair.

Mr. A. Harrison, for Mr. C. Oldham, fine examples of male *Cosmotriche potatoria*, with the pale female coloration. Mr. F. M. B. Carr, Scotch and South English *Asphalia flavicornis*, showing the former to be generally darker, with more strongly marked bands. Mr. Hy. J. Turner, *Erebia epipsodea*, *Phyciodes ismeria* and *Satyrus nephele* received from Mr. A. J. Croker, Redvers, Assiniboia. Mr. L. W. Newman, short series of *Leucania vitellina* and *Nyssia lapponaria*, with beautiful and extreme melanic forms of *Tephrosia consonaria* and *Boarmia gemmaria*. Mr. S. Edwards, a large number of exotic *Lycænidæ*. Mr. R. Adkin, a specimen of *Valeria oleagina*, and discussed the reputed occurrence of the species in Great Britain. Mr. T. W. Hall, dark forms of *Crymodes eaulis* from Rannoch, with a powdered light form from the Shetland Isles for comparison.—HY. J. TURNER, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: Wednesday, March 21st, 1906.—Mr. F. MERRIFIELD, President, in the Chair.

The Rev. George A. Crawshay, M.A., of "Lowlands," Leighton Buzzard; Mr. Hereward Dollman, of Hove House, Newton Grove, Bedford Park, W.; Mr. Edward Dukinfield Jones, of "Castro," Reigate; Mr. John Neville Keynes, M.A., Sc.D., of 6, Harvey Road, Cambridge; Mr. D. L. McCarrison, Indian Police Forces, Madras Club, Madras; and Mr. George E. Tryhane; were elected Fellows of this Society.

Dr. F. A. Dixey exhibited six ♂♂ examples of the Pierine genus *Eronia* with corresponding ♀♀s, and drew attention to the extreme diversity shown by the

♀ ♀s in these closely allied species. He considered that this characteristic was due to the fact that in every instance the ♀ had been diverted from the ordinary aspect of the group by the operation of mimicry, either Müllerian or Batesian. The species of entirely different affinities which had acted presumably as models were associated also with the exhibit. Mr. R. Adkin showed two specimens of *Emmelesia unifasciata* which had emerged in August last from pupæ which had lain over since the autumn of 1900, thus having passed five seasons in the pupal stage. Dr. T. A. Chapman, exhibited a number of specimens from the Riviera, Sicily, &c, and read a paper on the "Progressive Melanism in the Riviera of *Hastula hyerana*." A discussion followed on melanism and its causes, in which Mr. G. T. Porritt, Dr. F. A. Dixey, the President, and other Fellows joined.

Wednesday, April 4th, 1906.—Mr. C. O. WATERHOUSE, Vice-President, in the Chair.

Mr. Leonard Doneaster, M.A., King's College, Cambridge; Major F. Winn Sampson, H.M. Travelling Commissioner, Senior Officers' Mess, Old Calabars, Southern Nigeria; and Mr. Raleigh S. Smallman, Wressil Lodge, Wimbledon Common, S.W.; were elected Fellows of the Society.

Mr. H. St. J. Donisthorpe exhibited specimens of the very rare ant *Formicoxenus nitidulus*, ♀, found in a nest of *Formica rufa* at Weybridge during the present month. Mr. A. J. Chitty said he had taken a single ♀ of the species in the Blean Woods, Kent, and the Rev. F. D. Morice reported it common in Switzerland, where he had taken examples of all three sexes abundantly. Mr. G. C. Champion showed a specimen of *Platypsylla castoris*, Ritsema, a Coleopterous parasite of the beaver, from France, and suggested that perhaps it might be found on the beavers in the Gardens of the Zoological Society in London. Mr. W. G. Sheldon, several specimens of a Noctua, which he said corresponded to Dr. H. Guard Knaggs' original description of *Agrotis helvetina* (Entomologist's Annual, 1872, p. 115). He had purchased them at the sale of the late Dr. Mason's collection, in which they were labelled as light varieties of *Noctua augur*, to which species he thought in fact that they should be referred. Mr. A. H. Jones, examples of butterflies taken by him last year in Majorca, showing injury to the wings, caused, in his opinion, by the attacks of lizards. The Rev. F. D. Morice gave an account of the calcaria observed on the legs of some *Hymenoptera*. They were, he said, quite constant in each species, and useful, therefore, as distinguishing characters; the only Hymenopteron he had come across without them being the ordinary hive-bee. Kirby and Spence considered that they were used for clinging purposes, but this was unlikely, as the spurs occurred in species which did not cling at all. So far as he had noticed they were used by members of this Order for the purpose of cleaning their antennæ. Mr. C. O. Waterhouse said that similar spurs existed in the *Trichoptera*, though they did not assume beautiful forms as in the *Hymenoptera*; but as to their uses, he was not aware that any observations had been published or made on the subject. Mr. G. C. Champion remarked that they were also well developed on the hind-legs of some *Coleoptera* of the family *Melandryidæ*.

—H. ROWLAND BROWN, *Hon. Secretary.*

OBSERVATIONS ON INDIAN BUTTERFLIES.

BY T. R. BELL.

[The following interesting notes are extracted from two letters by Mr. T. R. Bell, the first written June 6th, 1903, from Camp Songhir, to Mr. H. E. Andrewes; the second written a year later (June 18th, 1904), to Professor Poulton, from Karachi. They give the impressions of a trained and experienced naturalist, and cannot fail to interest readers of the Entomologist's Monthly Magazine. Only the notes on Natural History are quoted, and thus the communication opens somewhat abruptly.]

In *Kallima* and *Junonia* among the *Nymphalinae*; and in *Melanitis*, and, to a lesser degree in the rest of the Satyrine group of butterflies, the seasonal forms are well marked:—in the dry season form by greatly developed hooks to the apex of the fore-wings, and productions or tails to the hind-wings; in the so-called "wet-season" forms, by the presence of ocellation on the under-sides of both wings, which also very often have "ink" markings. The under-side of the dry-season forms is generally plain (as in *Melanitis leda*) with, very commonly, a straight line down the middle in the manner of a leaf midrib; this midrib being present only in the dry-season forms.* The "windows" or hyaline spots in *Kallima*, and white chalky-looking markings are also common; the former chiefly in the dry-season form, the latter in the wet (in *Melanitis aswa* for example). The ink-markings and chalk-markings I am certain are supposed to represent mould and lichens on decaying leaves, amongst which the butterflies are generally found sitting; the hyaline markings are supposed to represent holes in the leaf which *Kallima* imitates.† As the browns of the leaves vary in shade, so do the browns of the under-sides of the butterflies also vary (approaching to grey in the dry-season forms: the leaves at that season being often grey when dead), hardly two in a morning's capture of say twenty specimens being exactly of the same shade. Tell Poulton that

* In *M. leda* and *M. aswa*.

† The words "are supposed to" in the above sentence were considered to require further explanation by Prof. Poulton. Mr. Bell, in reply to his communication, wrote as follows:—"As regards 'are supposed to,' I am afraid that that is what I should always write and say, as I am not at all certain that these characters (inky markings and mouldy-looking markings) would look the same to insects, reptiles and birds that they do to me. Perhaps 'would probably be taken to be would be better.'"

I have often bred *Charaxes inna* and *Doleschallia polibete* from the egg in the monsoon, and, although they have been kept quite dry during the egg, larval and pupal stages, they have all turned out monsoon forms: likewise with two *Kallimas* that I remember to have bred from the egg. *Melanitis leda* or *ismene* (wet form and dry form respectively are thus dubbed) bred from eggs laid in captivity in the monsoon (and therefore not rained on) have always given the wet-season form *leda*; not till the end of the monsoon have they turned out *ismene* or the dry-season forms. So also with *Mycalasis mandosa* and *mandata* and *mineus*: the ocellated forms have all been bred in captivity during the rains, from the egg laid in captivity. So that it is not the rain or direct action of wetting by rain that is the cause of the wet-season form. I think it must be the damp atmosphere generally that influences the form. This would be difficult to prove, for when the atmosphere is dry it is next to impossible to keep any space with a damp atmosphere without the larvæ getting diseased and dying. It would be possible in a large conservatory like some of those at Kew, &c., but for us to do it is impossible. In Kanara there are as many broods of butterflies as there are sproutings of leaves; that is, the broods go on in uninterrupted succession all the year round, except that in the hot weather and in the month of October, the two great leaf-sprouting times of the year, the insects are far more numerous than at other times, because there is such a large quantity of available food in the form of young leaves. Of course this is only to be expected in a country which never has any great drought or excessively dry season or any great cold, and where there are always leaves available. I have a theory based upon experience that it is the amount of moisture imbibed or eaten by the larva that produces the wet-season form so-called. This wet-season form in many of the *Pieridæ* (I speak about genera *Appias* and *Catopsilia*, as having come within my experience) is the form which has a great amount of black coloration and rather pointed wings (more pointed in this form in *Appias* any way). Well, I bred many specimens of both these genera (*A. taprobana* and *libythea*; *C. crocale* and *pyranthe*), and found that when fed upon the young succulent leaves of their food-plants which appear in the hot weather, the resultant specimens or imagines are always wet-season forms. Succulent young leaves mean much moisture. In the cold weather, leaves are at their driest and hardest stage, and that is the time all the cold-weather or dry-weather forms are about.

Another thing which is worth noting is that the time occupied from egg to imago is much shorter in the case of the young-leaf fed larva than in the one that is reared on hard, dry leaves. The quickest growth I have ever noticed was that of *Atella alcippe* and *phalanta*, which only took 13 days from egg to imago. Another thing that is usually the case also, is that the cold-weather forms, or those resulting from dry-leaf fed larvæ, are larger than those resulting from larvæ fed on young, wet leaves; it seems, therefore, that the slower the larval growth (always given plenty of food, and fresh), the larger the imago. Of course the wet-season or succulent leaf-fed larvæ always produce darker imagines; so that the larger specimens are nearly always, I might say always, lighter in colour than the smaller. Starving larvæ is sometimes productive of curious results, as, in one skipper I bred, and the larva of which I starved, the resultant imago, or imagines, for there were several (it was a *Parnara*) had only one of the semi-hyaline marks showing or present on the fore-wing, and was half the size it should have been; so that de Niceville, of Calcutta, made a separate species of it under the name of *philotas*, de Niceville. I have no opportunity now of breeding and trying experiments; neither, I am afraid, have I a chance of sending Poulton series of the butterflies he wants; if I get back to Kanara, then I shall be able to send them to him. One could write reams on seasonable dimorphism and the effect it shows in different species. For it is a curious fact that in species of the same genus, the line the differences take between the two forms are very different. For example, in *Melanitis* the "rains" form of *leda* and *aswa* show a finely vermiculated surface without a sign of the midrib marking, whereas, in *M. gokhala*, the wet form only differs from the dry in having more "ink" underneath. Whereas *Kallima* shows the midrib on the under-side in wet and dry forms, *Melanitis leda* and *aswa* show no signs of it in the wet forms; whereas the wet forms of *Kallima* and *Melanitis* are darkest on the under-side; and though darker on the upper-side in the wet form, *Junonia asterie* always is lightest in that form beneath. Ocellation of the under-side seems always, without exception, to be an effect of moisture; the wet form of *Junonia asterie*, for example, is abundantly ocellated, whereas the dry-season form is quite plain, with a well-defined midrib.

There is a curious thing in connection with *Doleschallia polibete* which may be interesting, and that is, whereas the male is very active, and continually found perching on leaves near the tops of trees, very often in the open, the female is hardly ever seen out of thick vegetation and dark places; in fact only one female is seen for a dozen or

more males, because, presumably, one frequents generally open places oftener than thick undergrowth in jungles. We found from breeding that, if anything, more females than males are produced from any one given batch of eggs, the eggs always being found in batches of from five or six to fifteen or so; now, in the male, which frequents open places (this insect always sits with its wings closed over its back), there are a number of white marks, very conspicuous at and near the base of both wings; in the female these are always entirely wanting, the under-side in that sex being plain, with the midrib distinct. Difference in size is always due to sufficiency, or otherwise, of food (that is apart from the seasonal-form difference in size); and those species whose larvæ feed upon a food which grows in great quantities covering miles of country, very rarely, if ever, show any difference in size, as *Kallima*, which feeds on *Strobilanthes*, an under-shrub which sometimes covers whole jungles, and *Melanitis*, which feeds on grasses and rice or bamboos. I remember one year when *Catopsilia crocale* and *Badamia exclamationis* (a skipper) were so abundant as to denude every tree in the forests of their leaves (their food-plants being *Terminalia bellerica*, one of the largest and commonest forest trees we have; and *Cassia fistula*, also a common tree, but smaller); the larvæ, when no more food was to be had on any tree, came down the stems in such numbers as actually to cover them to the extent that there was not room to touch the bark with a tip of a finger. Well, in that year, the differences in size of specimens of these two species was very marked.

The habit of lying torpid in the imago state in this part of India (Kanara) has never come to my notice. Certain species of larvæ lie over for months sometimes (*Tagiades atticus* for example—a skipper), and other butterflies lie over in the pupal state as some of the *Papilios* (most notably *P. nomius* and *panope* or *dissimilis*), but these butterflies have no definite seasonal forms. *Papilio nomius* as imago is only found in the months from February to June, and never (as far as I know) in the months from July to January. This is rather queer as the food-plant (*Saccopetalum tomentosum*) has leaves all the year round, but it is in young leaf in the hot weather only: hence probably the reason, the larva of the insect being probably so constituted that it cannot chew hard leaves, or its stomach so formed that it cannot digest them. Another curious thing is that, whereas in *P. nomius* the larval and egg stages are normal in length, the pupal stage is so long; in *Tagiades atticus*, on the other hand, the larval stage is long, while the egg and pupal stages are normal: at the same time it may

be as well to state that the feeding period of the larva in this latter insect is quite normal: the larva turns transparent green at the end of the feeding (as usual) and in that state lies over, sometimes a short time, sometimes a long time, depending on I know not what causes; is quite active, as it often changes its cell, and never omits to change it just before pupating.

[This concludes the notes in the first letter, which was sent by Mr. Andrewes to Professor Poulton who replied to it direct to Mr. Bell. The second set of notes constitute nearly the whole of Mr. Bell's answer.]

Thanks for the book containing the different papers; those African *Precis* are indeed wonderful in their variety or variation. We have nothing quite as variable as that, except some of the *Catophaga-Appias* lot, which even then only vary from black to white; nearly quite black all over, however, to nearly pure white; the black forms being the wet-season ones of course, or the "succulent shoot" forms, which I fancy is the same thing. These shoots come out in end of April and May—which is the hot weather; and dry, and last through the rains. Our *Precis*, the common one existing right through India into China (now called *Junonia iphita*), becomes very black (dark brown) in the rains, gets smaller peaks to the wings, that is, the peaks are less accentuated, and besides the tendency to ocellation, gets a steely suffusion on the under-side: the only butterfly I am acquainted with that acquires metallic marking. There is another thing, while on *Precis*, which occurs to me, and that is the rule that the dry forms are the larger does not always apply to *Precis*, and never to some other species. For example, the wet-season form of *Hypolimnas bolina* is more than double the size (wing-area) of the dry-season form; the same with *Hypolimnas misippus*, also *Cynthia saloma* and *Cethosia mahratta*. Now the reason for this is that the dry-season forms of these butterflies are all more or less starved specimens. The *Acanthaceæ*, on which *Precis* and *Hypolimnas* feed, and *Modecca* (*Passifloreæ*, the food-plant of *Cynthia* and *Cethosia*) are almost completely wet-season plants, that is they lose their leaves in the dry weather. Barring this starving, all cold-weather forms are larger than the wet-weather ones, and are so, I consider, for the reasons I have given before, viz., slower growth due to less "sappy" food.

In these very damp regions, like Kanara, where the rainfall varies from 100 to 300 inches, the leaves often get spots of white mould on

them: a sort of very soft, feathery white fungus which is a few millimetres in diameter, and circular as a rule; besides which, the circular burrowings beneath the epidermis of leaves of minute Lepidopterous, etc., larvæ become quite white in the withered leaf; so that the chalky markings, so distinct on *Melanitis asua* in the cold-weather forms, might be mistaken for this latter style of thing. The rains form of *M. varaha* is all vermiculated underneath like *leda*.

The two species of *Kallima* which I have bred from the egg are *K. wardi* (cold-weather form = *K. horsfieldii*) and *Doleschallia polibete*; the latter we always called the red *Kallima*. As I have been transferred from Kanara, and am at present in this desert place, I cannot do anything in the way of experiment as there is a great lack of material and I have few of my things with me, having left all my collections, &c., down in Kanara. Our ways of breeding in Kanara were to all intents and purposes quite natural as all the plants grew immediately outside the bungalow which are situated in the jungles; often, indeed, we just tied large nets over the trees on which the larvæ were feeding: this à propos of your remarks as to the time *Atella alcippe* takes from the egg to the imago.

With reference to the curled leaves: after the rains nearly all the leaves curl up in drying, and I have often been struck by the curious resemblance some of them bear (especially when hanging in a spider's web, &c.) against the trunk of a tree, surface of a rock, branch of a tree, &c., to a *Kallima* or similarly peaked- and hook-winged butterfly; the resemblance in colour and shape is sometimes so strong as to quite deceive one from a short distance. In the rains, curled leaves are scarce in wet places like Kanara, as you may imagine. Some favourite seats for *Kallima* butterflies are a tree-trunk, branch, or perpendicular rock surface, also small masses and strings of dead leaves hanging by remnants of old spider webs in the undergrowth in the jungles. I have never seen a *Kallima* rest on the ground though they often settle for a short time; whereas *Melanitis* always rests on the ground and, as your book says, generally in a half-lying position amongst the leaves, rarely upright. I have often looked in vain for Satyrines that I have watched carefully settle without being able to find them except after carefully scanning every inch of the ground.

As to the habits of butterflies at different seasons, I do not think there is any more activity during the dry season than during the wet; of course the number of insects about during the wet months is more than double that which one sees during the dry months: this is accounted for by the more prolific breeding owing to greater quantity

of food. There are always two great seasons in the damp parts of India, one in the month of April, just touching March and May, and one, by far the "heaviest," as the natives say here, in the months of September and October, which exactly correspond to the two great shooting times of the trees and plants of all kinds; nearly all the trees flower twice in those parts, also, as you might suppose, there being two sprouting seasons.

When we were breeding butterflies in Kanara we found that males and females came out in equal numbers; which fact surprised us much at the time, for certain species, of which one seldom or never sees the female, such as *Charaxes imna* and *schreiberi* (*wardi*), *Euripus consimilis* and many of the "blues." When one does come across them it is always in the underwood in the jungles, while the males bask openly in the sun on the tops of high trees, on leaves by the road-side, &c. In Karwar (North Kanara) we had rare opportunities for observing this as the top of a hill close by was 1500 feet above sea level where we lived (Karwar is on the sea-beach), and the trees on the summit of this hill are all stunted by the strong winds and are overtopped in places by huge boulders where we could stand and observe, having a view all round of land and sea, hill and plain for 40 miles on every side. Here, on muggy days in the monsoon, when the mists were driving over the top of the hill from the Indian Ocean, causing intervals of strong hot sun, light and cool shade, on the summit, butterflies used to come in the sunny breaks in the mist and settle in hundreds—I had nearly said thousands—on the surrounding leaves; the air at times used to be thick with them chasing each other and generally enjoying themselves. All these butterflies, without exception, were males; a stray female would come up through the underwood now and then, but never to stay. A female *Charaxes imna* or *schreiberi* or *Cynthia saloma* was an event not to be forgotten, in fact I only remember once seeing one of the last. We learnt a lot about the habits of butterflies in those days: what species were "baskers" and what were not for example. *Cynthia saloma*, and five species of *Charaxes* (*imna*, *wardi*, *schreiberi*, *fabi* and *athamas*) were the most persistent "baskers" of the lot: then there were "blues" of the genera *Virachola*, *Camena*, *Curetis* and *Tajuria*; *Euthalia lubentina* and *garuda* would come along later in the day; skippers of the genera *Bibasis* (*sena*), *Hasora* (chiefly *chromus*), *Halpe moorei*: *Athyma inarina* and *mahesa* and occasionally *A. selenophora*. None of the *Papilios* or *Pierines* ever used to bask; the only *Papilio* that ever came up to the top for the sun was *panope* (= *dissimilis*), and then

chiefly the *panope* form: and they would fly backwards and forwards over the trees, but rarely settle. *Papilio helenus*, *tamilana*, *pammon*, *liomedon*, would come past in the underwood but never settled: and all were males, without exception. The "baskers" would sit with their wings half open as a rule, except *Euthalia*, which always sat with its wings spread widely out on a leaf. It is noticeable that all the "baskers" are strong, powerful butterflies, so have little to fear from birds; the weak, brightly-coloured butterflies never seemed to come and bask; the strong ones are, of course, often conspicuously brightly-coloured too. By the way, when a *Papilio* settles in the underwood, which of course they constantly do in shady places, they invariably sit with the front wing brought down to cover the bright markings on the hind-wing: I am particularly thinking of *P. tamilana* (with a bright peacock-blue large spot on the hind-wing—belonging to the *P. paris* group); *P. helenus* (called *daksha* in South India, has a white spot where *tamilana* has it blue), *pammon* and *liomedon* (with white markings on the hind-wing), &c., &c. These *Papilios* always rest with their wings spread. Others, such as *P. telephus*, *sarpedon*, *nomius*, *agamemnon*, &c., always rest with the wings closed over their backs.

Has any explanation ever been offered as to the meaning or use of the anal black, often silver- or orange-centred spots on the hind-wings of some *Lycænidæ*? Or have you ever looked at them yourself? Put a "blue" having such spots (*Virachola*, *Camena*, *Ops*, *Creon*, *Arhopala*, &c.) on a leaf or surface in its natural position, with the wings closed over the back; the black spots then come into juxtaposition with a flimsy tail to each one, which moves in the tiniest breeze. Looking one day at a "blue" on a leaf in the jungle, I took the spots for the head of a *Mantis*! And, as if the resemblance were not strong enough when at rest, the movement so common among *Lycænidæ* of the hind-wings one on another (as if the butterfly were rubbing them together gently) gave the "*Mantis*-head" the appearance of moving from side to side. It was very quaint. And it struck me forcibly that it would do well to frighten small insects, ants, &c. Or perhaps birds and lizards would take it for a *Mantis* and thus get the ends of the wings instead of the *Lycænid's* body?

But there is no end to this sort of observation; one might go on for ever at it.

May, 1906.

FORMALIN AS A REAGENT IN THE PREPARATION OF SOME
SOFT-BODIED COCCIDÆ.

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

Those entomologists who may have had occasion to mount for microscopical study such soft-bodied species of *Lecanium* as *hesperidum* or *longulum*, must have noticed how difficult it is to bring out the dermal characters satisfactorily in a permanent mount. After treatment with the usual boiling potash solution, the skin becomes so thin, clear, and transparent, that the derm-cells and other cuticular characters disappear, and under these conditions the chitin refuses to take up any of the usual stains. I have hitherto found great difficulty in permanently demonstrating the derm-cells in *L. viride* and *Pulvinaria psidii*. Though, with careful adjustment of the light, these characters may be visible in temporary preparations (mounted in glycerine), they are again obscured in the final balsam mount.

I have recently—and by accident—discovered a means of overcoming this difficulty. Some tubes containing specimens of a *Lecanium*—preserved in three per cent. formalin—were received from the West Indies for determination. They proved to be *Lecanium viride*, and I was agreeably surprised, on mounting these specimens in the usual way, to notice a remarkable improvement in the finished mount. The derm was toughened and retained its form; it took and held the stain (fuchsin) firmly, the dermal cells being thrown into bold relief. The marginal hairs also were better defined than in preparations from dried specimens. The earlier stages of preparation are correspondingly facilitated. The maceration in potash results in a more thorough decomposition of the contents of the body, which are consequently more easily removed, leaving the external chitinous parts clear and unobscured.

The advantages of the formalin treatment are more marked in the case of the soft-bodied *Lecaniinæ*: but many *Dactylopiinæ* and *Monophlebinæ* are benefited by similar treatment. I have not yet experimented with *Diaspidinæ*, which—from their small and sheltered positions—would not lend themselves conveniently to this treatment unless first removed from their covering scales.

It is necessary that the specimens should be immersed in the medium while still fresh. Subsequent immersion of previously dried specimens does not produce the same result: nor does the addition of formalin to the potash, during the maceration process, have any special effect.

Preservation in formalin *vapour* appears to be equally useful, and is in many ways more convenient than the liquid medium. A small plug of wool, damped with 40 per cent. formalin, is placed at the bottom of a glass tube, and the insects, together with pieces of the leaf or bark to which they are attached, are dropped into the tube without further treatment. The cork must be a well-fitting one and should preferably be first boiled in paraffine. This method of preparation has the further advantage of preventing deterioration by mould or mites.

Peradeniya, Ceylon :

April 10th, 1906.

HELP-NOTES TOWARDS THE DETERMINATION OF BRITISH
TENTHREDINIDÆ, &c. (14).

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

NEMATIDES (continued) = *PTERONUS*, *AMAURONEMATUS*.

PTERONUS, Jur.

The species placed by Konow in this genus include some of our commonest saw-flies, such as *ribesii* and *myosotidis*. All have an incised clypeus and bifid claws; the puncturation is generally slight, so that the surface is shining, the ♀ saw-sheath simple and rather small in all its proportions, the antennæ long, slender, and tapering. Their bodies, I believe, are never entirely black, though many (especially the ♂♂) have a good deal of black above, its exact extent being somewhat variable. Often the ground colour is green in life, but fades afterwards to a brownish- or reddish-yellow. In other cases the abdomen is entirely or partly orange, retaining this colour unaltered after death. Some species are difficult to separate for certain in particular specimens, though in other cases they may be known at once by differences in the sculpture of the head, for these characters are liable to be obliterated when, as often happens, the insect shrivels more or less after death. Dirty specimens also, and such as have lost their antennæ, or have been so pinned as to destroy the scutellum-characters, are often impossible to name with certainty, and are really not worth keeping. This applies especially to the green species, most of which are pretty common, and resemble one another so much that the obliteration of a single character may often make them undistinguishable.

I can certify about twenty species as British, and have added in

9. Scutellum of ♀ black. Apex of ♂ abdomen above not produced into a distinct process 10.
- Scutellum of ♀ pale. Apex of ♂ abdomen above distinctly produced..... 12.
10. Antennæ not longer in either sex than the abdomen and half the thorax. Two basal segments of abdomen black above, the others fasciated more or less with black † *similator*, Först.
(*monticola*, C.).
- Antennæ as long as the whole body, or even longer..... 11.
11. Stigma rich deep yellow, large and almost semi-circular. Ground colour bright testaceous. Vertical area about twice as broad as long *myosotidis*, F.
- Stigma whitish and more pointed at apex. Ground colour ochreous. Vertical area quite thrice as broad as long.....*segmentarius*, Först.
(*pulchellus*, C.).
12. Hind tibiæ of ♀ entirely black. ♂ with black mesopleuræ, and antennæ as long as the body*hortensis*, Htg.
(*tibialis*, C.).
- Hind tibiæ of ♀ pale, except at apex. ♂ with antennæ shorter than the body, and usually with the mesopleuræ brownish-yellow (not black). The ground colour of the insect is green in life, but fades after death to ochreous-yellow...
virescens, Htg.
(*viridescens*, C.).
13. Whole body almost entirely black above (only extreme margins of abdomen pale in ♀). The ♂ has black mesopleuræ*melanaspis*, Htg.
(*lacteus*, C., *maculiger*, C.).
- Body in ♀ mostly pale above, variegated with mere streaks or spottings of black. The ♂ ♂ are often darker, but at least the mesopleuræ are pale 14.
14. A small pale species distinguishable at once by the extremely short vertical area—its length hardly exceeding the diameter of an ocellus!...
curtispinis, Thoms.
- Vertical area much longer 15.
15. The frontal area bears three little abbreviated carinulæ. One, often indistinct, runs from the middle of the transverse frontal ridge towards the anterior ocellus. The others, usually pretty well-marked, radiate diagonally from the anterior ocellus towards the insertions of the antennæ. (This character is apt to disappear when the insects shrivel up after death, but if it can be recognised it suffices to determine the species). The ♂ differs from all other *Pteroni* in having its produced ventral apex broadly truncate, and even somewhat emarginate. The ♀ coloration is variable, but it seems always to have an entirely pale scutellum, and this will distinguish it from some very similar species, while it may be known from others by the saw-sheath, which is rather long, and as seen from above nearly equally broad throughout (The cerci are small, hence Thomson named this species *microcercus*, but this character is not peculiar to it).*oligospilus*, Först.
(*miliaris*, ♀, C.).

- Frontal area without the three carinæ described above. Ventral apex of ♂ abdomen always pointed and never emarginate 16.
16. Ground colour in life green, though after death it fades to yellow. Breast always pale in both sexes. Occiput always with *some* black, if only a mere spot just behind the vertical area 17.
- Colour in life reddish-yellow, not green. Breast in some ♂ ♂ black. Occiput sometimes immaculate 21.
17. The frontal ridge is interrupted by a sulcus, so that, seen from above, it seems broken into a pair of more or less contiguous tubercles 19.
- The frontal ridge is unbroken 18.
18. Apical production of last ♂ dorsal segment not nearly as long as broad. The ♀ vertical area and the (central) part of the occiput which adjoins it is entirely black. Mesonotum nearly all black, but scutellum pale, except at its apex, which is black *hypoxanthus*, Först.
(*orbitalis*, C.).
- Production at apex of ♂ abdomen as long as broad. Vertical area of ♀ quite pale, and occiput merely dotted with black in its centre. Mesonotum with widely separated black streaks; scutellum pale, without black at apex, but with a characteristic small black spot in the centre of its disc...
polypilus, Först.
(*glutinosæ*, C.).
19. Apical dorsal process of ♂ abdomen longer than broad: scutellum partly pale. Saw-sheath of ♀ (viewed from above) triangular and subacuminate, its base being pretty wide (twice as wide as the short cerci), while its apex is narrow: all specimens I have seen have the mesonotum streaked with black, but according to Konow these streaks may be absent—there are always, however, black marks between the insertions of the wings and the (pale) scutellum...
brevivalvis, Thoms.
(*palliatu*s, C., *croceus*, ♀, C., *salicivorus*, C.).
- ♂ with the apical dorsal process of abdomen shorter than broad: its scutellum entirely black. Saw-sheath of ♀ narrow throughout 20.
20. Smaller (7 mill. long., or less). Interruption of the "frontal ridge" slight. The ♀ pale, with little black on the head or abdomen: its saw-sheath very narrow (hardly as broad even at the base as the cerci) † *capreæ*, L.
(*sylvestris*, C.).
- Larger (8—9 mill. long). Frontal ridge conspicuously broken. Ground colour darker than in "*capreæ*," fading to a ruddy brown; and the black markings larger, especially on the abdomen above *bergmanni*, Dhlb.
(*dorsatus*, C.).
21. Smaller species (4—6 mill. long.). Breast of ♂ pale. Saw-sheath of ♀ narrow. Occiput and thorax of ♀ immaculate. Dorsum of abdomen usually with a double row of little black spots running along its longitudinal diameter...
testaceus, Thoms.
(*flavescens*, C.).

- Larger (6—9 mill. long.). Breast of ♂ black. Saw-sheath of ♀ (viewed from above) broad (much broader than the cerci) 22.
22. Apical dorsal process of ♂ abd. much shorter than broad. Saw-sheath of ♀ about twice as broad as the cerci. Antennæ of ♀ hardly longer than the abdomen † *fagi*, Zadd. (? *glottianus*, C.).
- Apical dorsal process of ♂ abd. longer than broad. Saw-sheath of ♀ very broad (about four times as broad as the cerci). Antennæ of ♀ quite as long as the abdomen and half the thorax *miliaris*, Panz.
(*cadderensis*, C., *bergmanni*, C., *croceus*, ♂, C.).

AMAURONEMATUS, Knw.

The species of this genus can usually be easily separated from those of *Pteronus* by the duller and more strongly punctured mesonotum and pleuræ; the shorter and stouter antennæ (seldom much longer than the abdomen and usually entirely black); the more triangular look of the face with its long tongue; the long stigma with its rounded base and pointed apex; and, in the ♀ ♀, by the generally much longer and stouter saw-sheath. In colour they resemble the darker species of *Pteronus*, being generally in great part black above and more or less pale at the sides and beneath. Their usual ground-colours are dull reds, browns, yellows, &c.; and these, as in *Pteronus*, sometimes result from the fading of hues which were green in the living insects.

I have examined certainly British specimens (mostly from Scotland) of nine species, all of which have been verified as to their identity by Herr Konow.

Cameron's Monograph enumerates seven, but of these Konow considers *histrion* and *glenelgensis* to be identical, and *placidus* a *Lygæonematus*. *Arcticus*, C. (*nec* Thomson?), is also probably not a member of the present genus; at any rate it can hardly be Thomson's species, which is placed by the author in a section with "antennæ breves, dimidio corpore haud longiores," while in *arcticus*, C., the antennæ are said to be "nearly as long as the body." In vol. ii of the Monograph *arcticus* is grouped with *rumicis*, a *Pachynematus*; and Konow has always considered it to be identical with that species.

Amauronematus was revised by Konow in Term. Füz., 1895, and my tabulation following is chiefly founded on that paper, supplemented by later notes of the same author on particular species, and by my own examination of specimens named by him. One of our species (*moricei*, Knw.) does not appear in the Revision, having been first described in 1902. (See Ent. Mo. Mag., March, 1905, p. 63).

SYNOPTIC TABLE OF BRITISH *AMAURONEMATUS* spp.

1. ♂ with the last dorsal segment of abdomen more corneous and projecting considerably over the genitalia. ♀ with the abdomen (viewed from above) longly acuminate, being constricted gradually from about the 4th segment to the apex: the saw-sheath (viewed laterally) is longer than or at least about as long as the hind tibiæ 2.
- ♂ with last dorsal segment membranous, and scarcely projecting. Apical acuminations of ♀ abdomen shorter, commencing near the apex; saw-sheath never longer than the hind tibiæ, generally evidently shorter 4.
2. Mesopleuræ polished and shining, with fine remote punctures. Abdomen with at least the middle segments entirely red above *histrion*, Lep.
(*histrion*, *glenelgensis*, C.).
- Mesopleuræ closely punctured and subopaque. Abdomen black above, except at the sides and apex, its ground colour rather brownish-ochreous than red...3.
3. Larger species. Vertical area about as long as the scape of the antennæ. Head subquadrate, scarcely narrowed behind the eyes *fallax*, Lep.
(? *hæmorrhoidalis*, C.).
- Smaller. Vertical area shorter, about as long as the first joint of the flagellum. Head much narrowed behind the eyes *mundus*, Knw.
(? *longiserra*, C., nec Thoms.).
4. Cheeks very short, hardly as long as the first joint of the flagellum ..
viduatus, Zett.
- Cheeks decidedly longer 5.
5. Head thick, not narrowed behind the eyes 6.
- Head narrowed behind the eyes (its sides converging almost rectilinearly)... 7.
6. Smaller (5—6 mill. long.). Abdomen in both sexes black, with only the apex pale. Mesopleuræ sub-opaque *leucolenus*, Zadd.
- Larger (8—10 mill. long.). Abdomen entirely testaceous, or black only above (much resembling *Pteronus miliaris*) Mesopleuræ remotely punctured and shining.....*moricei*, Knw.
7. ♂ with face (clypeus, &c.) and venter white. ♀. Head and thorax mostly pale (with black marks on mesonotum, &c.). Abdomen black above, pale on the sides and beneath; the colour green in life, but fading to a whitish- (or sometimes reddish-) yellow *vittatus*, Lep.
- Darker, ♂ clypeus black, and venter more or less obscure. ♀ for the most part black, or nearly so, above and beneath, though the venter is more or less streaked with whitish-yellow (also the thorax has a denser and longer pubescence) 8.
8. Smaller (6—8 mill. long.). Third antennal joint evidently shorter than fourth. Ventral apex of abdomen largely pale (yellowish) in both sexes, as are also the prothorax, legs, sides of abdomen, tegulæ, and stigma (at least in my own specimens, though Thomson calls the stigma fuscous). Saw-sheath moderately long and thick (wider, viewed dorsally, than in most species, and hardly projecting beyond the cerci) *humeralis*, Zett.

— Larger (7—9 mill. long.). Third and fourth antennal joints subequal. Ventral apex quite black in ♂, and nearly so in ♀, though obscurely reddish about the base of the saw-sheath. The pale markings of the legs and body are altogether much less conspicuous than in *humeralis*: they are rather reddish-brown than yellow, and the tegulæ and stigma are distinctly fuscous. Saw-sheath long, narrow, and pointed.....*amplus*, Knw.

FURTHER NOTE ON SUPPOSED BRITISH *NEMATUS* SPP. (see p. 83).

Since my last paper was printed I have tried to clear up some questions which it left unsolved by visiting South Kensington and trying to find Mr. Cameron's types of *caledonicus*, *antennatus*, &c. The results are as follows:—

Aurantiacus.—I could find nothing so called. There is a label bearing the name, but the space above it is blank.

Caledonicus, *antennatus*, *v-flavum*.—Each of these is represented in the collection by a single ♀; but whether any of them is the real type of Mr. Cameron's description I do not know.

"*Caledonicus*" of the collection seems to me to be what I expected, viz., *acuminatus*.

"*Antennatus*" is, I believe, a rather dark-headed specimen of *bilineatus*. I carefully examined the clypeus and could not see that it was in any way abnormal: it was certainly quite deeply excised.

"*V-flavum*" surprised me greatly. The specimen so called is certainly not a *Nematus* in Konow's sense. It is, in fact, I have not the least doubt, neither more nor less than a *Dineura stilata*! But I have no evidence, as said above, that this is the real type of *v-flavum*; and find it hard to believe that such can be the case.

(To be continued).

Stenus kiesenwetteri, Rosenh., &c., at Chobham.—I was pleased to-day to take four specimens of *Stenus kiesenwetteri*, Rosenh., in a fresh locality near Chobham, not having seen it alive since 1877*. With it, in the *Sphagnum*, were *S. melanarius*, Steph., *S. lustrator*, Er., *Gymnusa brevicollis*, Payk., *Tachyporus transversalis*, Grav., *Philonthus lucens*, Er., *P. nigrita*, Nordm., *Anchomenus gracilis*, Gyll., &c. On the banks of a small stream near by, many common beetles were met with, a few of which are perhaps worth noting, as *Bembidium obliquum*, Sturm, *Homalota pavens*, Er., *Calodera riparia*, Er., *Tachyusa atra*, Grav., *T. constricta*, Er., *T. flavitarsis*, Sahlb., *Hyperaspis reppensis*, Herbst, &c. In the evening odd specimens of various species were captured on the wing, as *Bledius femoralis*,

* Cf. Ent. Mo. Mag., vol. xv, pp. 203, 204 (1878).

Gyll.,* *B. fracticornis*, Payk. (dark form), *Acupalpus brunnipes*, Sturm (formerly not rare in the *Sphagnum*), *A. dorsalis*, Fabr., and *Tomicus laricis*, Fabr.—GEO. C. CHAMPION, Horsell, Woking: May 12th, 1906.

Thyanis curta, All., as a British insect.—Mr. Newbery was unaware when writing (Ent. Mo. Mag., xlii, p. 87) of the Isle of Man specimens supposed to be this insect, that I had various others returned to me some months back by M. Bedel as undoubtedly *T. curta*, so that we can still claim it as British. The species occurred here in profusion in October, 1904, on a piece of uncultivated land, much overgrown with *Myosotis*, upon which I think there is a great probability that it was feeding. I only, however, netted a small series, not recognising anything very special in my capture at the time; stray examples have also been found near Tring.

T. curta may be distinguished from *T. atriceps* by its paler colour, and by the punctuation of the elytra not being quite so deep. My specimens have the suture of the elytra slightly rufescent, and the apex only of the femora pitchy or rufescent, whereas these parts in *T. atriceps* are usually wholly black, or at all events dark brown, and the tibiæ also. — E. G. ELLIMAN, Chesham, Bucks.: May 1st, 1906.

Melanic Coleoptera in South Devon.—In the valley of the Dart, at Buckfast, whilst sweeping in an orchard on September 9th, 1905, I took a specimen of *Lema cyanella*, L. (*lichenis*, Voet), entirely black and with comparatively dull surface. Search for more was unsuccessful, nor did a single ordinary example occur. Apparently a black form of this beetle is not uncommon in France, as M. Bedel in his "Coléoptères du Bassin de la Seine," vol. v, p. 384, gives the colours of the species thus: "bleu d'acier, verdâtre ou noir." In the valley of the Walkham, in October, 1905, from moss on trees, I obtained four dark specimens of *Paramecosoma melanocephalum*, Hbst. These would appear to be very unusual, as Canon Fowler, Col. Brit. Islands, vol. iii, p. 328, says, "This species may be easily known by its colour, which is very bright when it is alive." One of my examples has the elytra quite black, concolorous with the head and thorax; the three others are almost black. On reference to my collection soon after the capture, I was surprised to find that I already possessed two pitchy specimens from the same locality, taken so far back as May, 1891, as well as one from Mary Tavy, and another from the Meavy Valley, taken in 1901. The femora are proportionately darkened, and in the entirely black specimen the tibiæ are red at their bases and gradually darken to their apices. Mr. Champion tells me that there is a certain amount of variation in colour amongst the very large number of examples he has seen from Aberdeen and Scarborough, some of them being entirely testaceous, but none are so dark as mine.

I have also captured in the Plymouth district two rather small examples of *Pria du'camaræ*, Scop., extremely dark in colour. They occurred separately in July and August, 1905, at localities several miles apart. The August specimen is the darker, and is so nearly unicolorous that the usual sutural marking is scarcely to be detected.—JAMES H. KEYS, Morwell, Lipson Road, Plymouth: May 6th, 1906.

Mimetic resemblance between Labia minor and Lithocharis ochracea.—At Yelverton, near Plymouth, in July, 1905, I found the earwig, *Labia minor*, swarming

* My son also caught a specimen of this species on the wing on the same day at Blackheath, near Guildford.

in a heap of rubbish, consisting of old hedge trimmings, &c., and the remains (bones and wool) of a long deceased sheep; the flesh had quite disappeared, but the entire heap was highly impregnated with a highly cadaveric flavour. Associated with the earwigs I had the satisfaction of taking for the first time in any quantity a dozen or more of the Staphylinid, *Lithocharis ochracea*, Gr. Both these insects are considered to be common and are perhaps not worth recording as captures merely, but what seemed very remarkable to me at the time was the strikingly similar coloration of the two insects, and finding them thus in company it seemed desirable to note the fact.—ID.: *May*, 1906.

Eumicrus rufus, Müll., at Hendon.—Since the capture of the historic specimen of *Eumicrus rufus* which I took in 1882, as recorded in Fowler's British Coleoptera (see also Ent. Mo. Mag., xix, pp. 190, 198), I have never met with the species again until this Easter, when I had the good fortune to find a colony of them in a manure heap at Hendon. This is a new locality for the insect, and the habitat is somewhat unusual. According to Fowler it is usually found "under bark and in rotten stumps with ants." Mr. Donisthorpe and others have, however, taken some examples in wood-stack refuse (see Ent. Mo. Mag., xxx, pp. 136, 276), and now the manure heap must be added to the list. The only other thing of any importance from the same heap was the interesting blind beetle, *Aglenus brunneus*, Gyll., of which I obtained a fair number.—E. A. BUTLER, 53, Tollington Park, N.: *May 3rd*, 1906.

Procas armillatus, F., near Dartford.—While collecting near Dartford with my friend, Mr. R. A. R. Priske, on April 13th, I had the good fortune to pick up on a dusty road a specimen of this extremely scarce weevil; it had evidently been flying, as the extremities of the wings were protruding from the elytra. Although it has been known as British for a considerable period, *Procas armillatus* has always been a rare insect, and there appears to be only one modern record, namely, that of Mr. J. J. Walker, who took a specimen in a tuft of grass on Darland Hill, Chatham, on March 11th, 1896 (cf. Ent. Mo. Mag., Ser. 2, vol. vii, p. 112). It is interesting to note that the spot in which I took my specimen is only about 14 miles from the Chatham locality, and therefore in practically the same district.—F. B. JENNINGS, 152, Silver Street, Upper Edmonton, N.: *May 1st*, 1906.

Gerris canalium, Duf., = *najas* of authors.—Last year I recorded (Ent. Rec., p. 47) abundance of this species on the canal at Marple, Cheshire, in September, 1904. I think it worth further record that last September the species was again plentiful in the same locality, and I had the good fortune to capture two specimens of the rare macropterous form.—OSCAR WHITTAKER, 39, Clarendon Road, Whalley Range, Manchester: *April 17th*, 1906.

Perinephele lancealis, Schiff., in the Isle of Purbeck.—On July 15th last, at 6.50 p.m., I disturbed, and had the great satisfaction of securing, in a dry, sandy, Scotch fir wood in this neighbourhood, a fine male specimen of *Perinephele lancealis*. This remarkably local species has never before been met with in the Isle of Purbeck, and has only once previously been taken within the confines of Dorset, the late Mr. C. W. Dale having found it, in 1901, at Glanvilles Wootton, in the north-western portion of the county, and, as the crow flies, about twenty-three miles away, as

recorded by him in Ent. Mo. Mag., Ser. 2, xii, p. 276. My capture interested me all the more because it was my first acquaintance with *P. lancealis* "in the flesh," and because I had given up all hope of discovering it in the district, which has been closely worked during the last forty years, the wood in question, with its environs, having received special attention, and being the *very* last spot where one would have expected to see it. The food-plant of the larva, *Eupatorium cannabinum*, does not grow inside the wood, but occurs in a damp hollow just outside it, and about one hundred and fifty yards from where the insect was flushed. —EUSTACE R. BANKES, Norden, Corfe Castle : February 24th, 1906.

Polia flavicincta, Fab., var. *meridionalis*, Bdv., in South Devon.—It seems worthy of record that all the specimens of *Polia flavicincta* that I have taken on the South Devon coast, where the species has been met with not uncommonly on the Old Red Sandstone, are referable to var. *meridionalis*, which is so local in Britain that Mr. J. W. Tutt, in "The British *Noctux* and their Varieties," vol. iii, p. 48 (1892), wrote of it,—“This form only occurs in one British locality to my knowledge, viz., at Huddersfield, whence I have received it from Mr. Porritt.” I was much surprised on first meeting with this handsome dark variety in South Devon, where one naturally expects unusually light forms, and the more so because all the Dorset and Somerset examples that I have seen have been quite typical. One, however, of a few specimens before me, taken at Hitchin, Herts, is var. *meridionalis*, and this form has also been received from Bury St. Edmund's, Suffolk, where Mr. F. Norgate informs me that he has taken it in about equal numbers with the typical one.—ID.

[My own experience is that *meridionalis* is the only form of *Polia flavicincta* which occurs on the South Devon coast, as it is at Huddersfield.—G. T. P.]

Tortrix unifasciana, Dup.: a domestic tragedy!—On June 30th last, when entering my house at 9.45 p.m., I happened to notice, at rest on the outer part of one of the front doorposts, a specimen of *Tortrix unifasciana* that appeared, at a casual glance, to have an extraordinarily long abdomen. It was therefore duly boxed, and, on examination, proved to be a female, to which was attached, in copulation, the abdomen of a male individual, whose other portions were only conspicuous by their entire absence, nor could they be found anywhere near. The abdomen of the male had been severed at its junction with the thorax, the severance having been apparently caused, not by any bite, but by some strong pulling force—perhaps a powerful spider or some such foe—and it seems astonishing that any force sufficiently great to wrench the abdomen from the thorax should not have caused the male to part from the female at the natural point of separation instead. The female was killed and set, and has been kept (with the male abdomen projecting, exact as when found, in a straight line behind her) as a silent witness to a terrible domestic tragedy!—ID., April 7th, 1906.

Notes on *Epiblema sordidana*, Hb.: a correction.—I much regret to find that since the final "revise" of my notes on this species, published *antèa*, pp. 101—105, left in the hands, the date following the address on p. 105 has, by some mistake, been altered from "1905" to "1906." This has unfortunately affected some of the preceding

statements, e.g., "June 9th last" (p. 102) and "August 12th to October 19th last" (p. 104), making it appear that the larvæ under observation were collected, and the moths bred, in 1905, whereas this really took place in 1904, as was clearly shown so long as the date, as written by me and as printed in the "revise" before me, stood as "January 16th, 1905." The change has also made my "Supplementary Note" (pp. 105—106) an absurdity, for it is obvious that *if* my original notes had been only made on larvæ collected on June 9th, 1905, I could hardly have added a *supplementary* one regarding larvæ collected on May 5th, 1905"! Will readers please alter "1906," on p. 105, to "1905" ?—ID., *May 9th*, 1906.

The host of Nomada solidaginis.—With reference to Mr. Frisby's note on this subject in this month's Ent. Mo. Mag., I may mention that in West Perthshire during August and September, 1902, *Nomada solidaginis* was common in a number of localities; and I noticed that it always occurred where there was a colony of *Andrena fuscipes*. Other species—*A. cetti* (dark variety) for instance—might or might not also be present. On September 11th, near Strathyre, I saw one of these *Nomadas* enter a burrow, which I thereupon dug up, securing the intruder (a ♀), and a female *Andrena fuscipes*. Both specimens were shown shortly afterwards to Mr. E. Saunders, who informed me that he had previously heard of the association of these two species from Mr. Perkins.—WILLIAM EVANS, 38, Morningside Park, Edinburgh: *April 30th*, 1906.

Formicoxenus nitidulus, Nyl., in the Northumberland and Durham district.—At a recent Meeting of the Entomological Society of London, April 4th, 1906 (*vide* Ent. Mo. Mag., xlii, p. 120) I notice that "Mr. H. St. J. Donisthorpe exhibited specimens of the very rare ant, *Formicoxenus nitidulus*, ♀, found in a nest of *Formica rufa* at Weybridge during the present month. Mr. A. J. Chitty said he had taken a single ♀ of the species in the Blean Woods, Kent, and the Rev. F. D. Morice reported it common in Switzerland, where he had taken examples of all three sexes abundantly."

It is a pleasure to give this interesting little ant a place in the faunistic lists of Northumberland and Durham. Last month, whilst working the huge nests of *Formica rufa* which are so abundant in the extensive Tynedale pine woods near Hexham and Corbridge, *Formicoxenus nitidulus* was taken in some numbers; it occurred in every "hill" examined, and was found to be most plentiful where the wood-ants were "massing." It remains for me to thank Mr. E. Saunders for so kindly examining my captures.—RICHARD S. BAGNALL, Winlaton-on-Tyne: *May 12*, 1906.

A correction.—In the last No., page 117, lines 4 and 9, the word *Platyna* should read *Platyura*. Since writing my notes a friend has written to say he thinks the black-bodied one is *P. semirufa*, Mg., and I shall be glad if others who have received specimens can confirm this.—F. C. ADAMS, Ashley Gardens, S.W.: *May*, 1906.

Entomology at the forthcoming Meeting of the British Association—At the Meeting of the British Association to be held this year at York (August 1st to 8th) it is proposed that there shall be an Exhibition of British *Lepidoptera* illustrating

Melanism. The Organizing Committee of the Zoological Section invite those who are willing to take part to communicate with L. Doncaster, Zoological Laboratory, Cambridge, stating the species and number of specimens which they are prepared to send. It is hoped that a paper on Melanism will be read at the Meeting by Mr. G. T. Porritt, of Huddersfield, who has devoted much attention to the subject in his district, and that it will be followed by a discussion.—EDS.

Obituary.

The Rev. Edward Carteret Dobrée Fox, M.A.—It was with great regret that we heard of the death of the Rev. E. C. Dobrée Fox, which took place, during the past winter, at about the age of three score years. His undergraduate days were spent at Exeter College, Oxford, and, having taken his B.A. degree in 1872, he proceeded to that of M.A. three years later. Ordained as Deacon in 1873, and Priest in the following year, he was Curate, successively, of Ticknall, Derbyshire, Alsager's Bank, Staffordshire, and Castle Moreton, Worcestershire, and being appointed Vicar of the last-named parish in 1881, he held the living until the time of his death. Mr. Dobrée Fox was an energetic and successful collector of the British *Macro-Lepidoptera*, and such prizes as *Xylomiges conspicillaris*, *Dasycampa rubiginea*, *Xylina semibrunnea*, and *Eupithecia consignata*, rewarded his efforts in the Castle Moreton district at various times. His summer holiday was usually spent in some specially-favoured locality, and in the course of his visits to South Devon, *Leucania vitellina*, *L. albipuncta*, *Laphygma exigua*, and *Heliothis peltigera*, were among the rare species that he was fortunate enough to secure. Many notes from our friend's pen, relating to his collecting experiences in general, and some of his most interesting captures in particular, are scattered through the pages of "The Entomologist's Record." He amassed a fairly large collection, which has just been dispersed by auction.—EUSTACE R. BANKES.

Léon Fairmaire.—The death is announced of this veteran French Entomologist, on April 1st, aged 86. He was Honorary President of the Société Entomologique de France, having joined that Society in 1842; and Honorary Member of the Belgian and various other Societies. His first paper was published in the French "Annales" for 1843, on "Trois nouvelles espèces d'Insectes de l'Océanie" (Coleoptera), and the last in 1905, entitled "Description de Coléoptères Hétéromères de la République Argentine." The innumerable memoirs, mostly descriptive, written by him were mainly devoted to *Coleoptera*, though in the list of Members of the French Society he is quoted as a specialist in *Hymenoptera* and *Hemiptera*. His "Faune Entomologique Française," written in conjunction with Dr. A. Laboulbène, containing concise descriptions of the *Coleoptera* of France, is well known to British Entomologists; it was never finished, Tome I (1854), including the *Geodephaga*, water-beetles, *Clavicornia* and *Staphylinidæ* only.

Societies.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
Thursday, April 12th.—Mr. R. ADKIN, President, in the Chair.

Mr. L. W. Newman, of Bexley, was elected a Member.

Mr. Main exhibited a large piece of Gum Anime from West Africa, and called attention to the numerous insects, chiefly *Coleoptera*, enclosed in it. Mr. Edwards, a number of species of the Nymphaline genus, *Megalura*, from South America, together with *Brassolis astyra* from Brazil. Mr. H. Moore, immature examples of two species of *Mantis* from South Africa, and read notes on their habits. He also gave an account of a European *Mantis* he had kept alive for some time. Mr. Adkin, a bred series of *Melanippe fluctuata*, from Wantage, with the female parents. The latter were large and strongly marked, while the progeny were small and very ordinary. He also showed specimens of *Crambus tristellus* (1) almost albino, from Pembroke; (2) dark, from Perth; and (3) with two transverse lines, from Orkney; all from the Barrett Collection. Mr. Main, a nymph of *Periplaneta americana*, which was about to change to the perfect stage. Mr. Turner read a Paper by Mr. A. J. Croker and himself on a number of species taken by Mr. Croker in Assiniboia, Canada, and exhibited among other species *Pontia protodice*, *Argynnis lais*, *Brenthis bellona*, *Colias eurytheme* and vars., *C. philodice*, *Erebin epipsodea*, *Satyrus alope* var. *nephele*, *Lycæna antiacis*, *L. dædalus*, *Cænonympha pamphilus*, *Phyciodes ismeria*, &c.

Thursday, April 26th.—The President in the Chair.

Mr. W. Payne, of Clapham; Mr. P. Brown, of Balham; and Mr. D. Peyler, of Clapham; were elected Members.

Mr. Kaye, the living larvæ of *Orygia gonostigma*, and gave notes on their hibernation. Mr. Moore, a number of species of *Lepidoptera* from Natal, including *Daphnis nerii*, *Agrius convolvuli*, *Hippotion celerio*, &c. Mr. Edwards, a box of *Lepidoptera* from British North Borneo, and called attention to several species much resembling those of Great Britain. Mr. Adkin, a number of series of *Aglais urticæ*, to point out the lines of variation shown by the species. In doing so he referred to the broods and series brought by Messrs. Harrison, Main, Turner, and others. Messrs. Harrison, Adkin, Bellamy, Kaye, Sich, Edwards, West, and Ashby, then made remarks on the season to date.—HY. J. TURNER, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: Wednesday, May 2nd, 1906.—Mr. F. MERRIFIELD, President, in the Chair.

The decease was announced of M. Leon Fairmaire, the distinguished French Entomologist, who died on April 1st 1906, aged 86 years.

Commander J. J. Walker showed fourteen examples of both sexes of *Hystri-chopsylla talpæ*, Curtis, the largest British flea, taken in the nest of a field-mouse in a tuft of grass at Grange, near Gosport, Hants, on March 28th last. Mr. G. C. Champion, living specimens of *Apate capucina*, *Deitus fugax*, a *Cryptocephalus (rugicollis)*, two species of *Anthaxia*, &c., forwarded by Dr. T. A. Chapman from Ste. Maxime, South France. Mr. F. B. Jennings, an example of the weevil, *Procas armillatus*, F., taken near Dartford, Kent, on April 13th last, a species extremely scarce in Britain, and with the exception of a single specimen taken near Chatham by Commander Walker in 1896, not recorded from this country for a considerable period. Mr. M. Jacoby, a box of beetles from New Guinea, including *Aesernia meeki*, Jac., *A. costata*, Jac., *A. gestroi*, Jac., and *Cetoniadæ* and *Lucanidæ* from

South Africa and Borneo. Mr. H. St. J. Donisthorpe, a specimen of *Hydrochus nitidicollis*, Muls., a beetle not hitherto recorded from Britain, taken in the River Meavy in April. Rev. F. D. Morice, lantern slide photographs (from nature) of the ♀ 'calcaria postica' in *Hymenoptera* belonging to divers groups, mostly Aculeates, but including also representatives of the Chrysidids, Ichneumonids, and Sawflies. He submitted that, in all the examples shown, the structure of the calcaria themselves (and also of the parts adjacent to them) clearly indicated that their main function was that of an elaborately-constructed instrument for toilet purposes. Dr. Dixey, specimens of *Mylothris agathina*, Cram., and of *Belenois thysa*, Hopff., pointing out that the close resemblance between these species obtained chiefly in the dry-season form of the latter, and not in the wet. He considered this to be a fresh illustration of the special liability to the attacks of enemies experienced under dry-season conditions; leading in some cases to the adoption of a cryptic coloration, and in others, as here, to mimicry of a protected form such as *M. agathina*. Professor E. B. Poulton, F.R.S., communicated a critical paper of "The Late Professor Packard's Paper on the Markings of Organisms," by Mr. H. Eltringham, M.A., F.Z.S., and cordially supported the views of the author. Mr. Edward Meyrick, B.A., F.R.S., contributed a paper "On the Genus *Imma*, Walk. (= *Tortricomorpha*, Feld.)."—H. ROWLAND BROWN, *Hon. Secretary*.

DESCRIPTIONS OF THE LARVA AND PUPA OF *ARISTOTELIA*
PALUSTRELLA, DGL.

BY EUSTACE R. BANKES, M.A., F.E.S.

In Ent. Mo. Mag., Ser. 2, xv, 278 (1904), the late Mr. Charles G. Barrett contributed some interesting notes on the larva of *Aristotelia* ("*Doryphora*") *palustrella*, Dgl., but since these were neither so full nor so definite as could have been wished, and since he only described it from "a carefully executed drawing," instead of from nature, I venture, with the approval of Mr. William Purdey, who discovered the life-history, and of Mr. Sydney Webb, who supplied Mr. Barrett with the drawing, to offer the following description of the larva, and to add one of the undescribed pupa. The former was made, on June 2nd last, from two larvæ (♂, ♀), apparently in their final instar, received with a few others, on May 31st, from Mr. W. Purdey, who had collected them at Folkestone.

LARVA.

Length, when moderately stretched, 14 mm. *Greatest breadth*, 2 mm. *Head* rather flattened, polished, deep orange, much narrower than the prothorax; upper mouth-parts blackish; ocelli distinct, black. *Prothoracic plate* rather large, polished, bisected by a narrow whitish line, and variable in colour, being pale brownish-ochreous, narrowly margined with dark brown, in the ♂, and dark raw-umber, lightly marked with black, especially round the posterior margin, in the ♀ example, but it is highly improbable that the variation in the colour of this plate is in any way

really sexual. The *thorax* and *abdomen* together form a stout cylindrical mass, hardly narrower towards the head, but tapering rather abruptly near the anal extremity; in colour they are white, with the lines, which consist of a moderately broad dorsal one, flanked on either side by a very broad subdorsal, and a rather broad subspiracular one, dull crimson, and conspicuous; these lines are all continuous, but none of them are of even width throughout, for they display in their course many small projections and irregularities; they are rather paler, and less well pronounced, on the thorax than on the abdomen. Skin smooth, but not glossy; segmental divisions clearly defined. In the ♂ the embryo *testes* show through the back of the fifth abdominal segment as a dark internal blotch. *Tubercles* brown, polished, mostly of moderate size. *Spiracles* minute, circular, white, ringed with black. *Anal plate* polished, dingy pale ochreous, with the underlying frass in the *cloaca* showing through the anterior part of the plate as a dark brown blotch. Hairs and bristles brown, mostly short and inconspicuous. *Ventral surface*, and prolegs, white. *Legs* polished, raw-umber.

Other larvæ were examined whenever they were found out of their burrows; these were all more or less well-grown, and the only variation shown was in the colour of the prothoracic, and, to a less degree, of the anal plate. On a careful comparison of Mr. Barrett's description with the living larvæ, the most important differences proved to be that he gives the body as "flesh-colour," and the "subdorsal lines" (in which term he presumably includes the subspiracular lines as well), as "much broken," whereas, in all the larvæ seen, one of which was preserved for reference, the former was most decidedly white, without even a tinge of flesh-colour, and the latter were distinctly continuous, though with very irregular margins. I totally failed to find any trace of the "two orange dots at the edges of the dorsal line" on each segment, which Mr. Barrett mentions.

The larva, at any rate in its later stages, lives inside, and feeds on, the rootstock of *Rumex crispus*, L., throwing out from the end of a silken gallery, that projects for an appreciable distance beyond the mouth of the burrow, its ochreous-brown or reddish-brown frass, of which a heap is generally seen adhering to the exterior of the gallery. It is spoken of by Mr. Barrett, in a general way, as "mining in the stem, eating the pith and leaving its excrement in the hollowed space," but this can only be true of it in its earliest stages if Mr. Purdey's opinion, which Mr. Barrett himself quotes, is correct, that the larva, on hatching, mines down the stem, and after reaching "the crown of the root" before the winter, *continues to feed therein* until "becoming full-grown by June." It is, however, not always full-fed so early, for last year the larva was unusually late in feeding up, and Mr. Purdey and I both found that certain individuals did not become full-fed until the very end of July.

Some of the rootstocks, when received, certainly contained two, if not more, larvæ apiece, and these afterwards readily moved from one rootstock to another, as occasion required. On the contents of the tin, in which they were forwarded, being unpacked, two individuals were found out of their burrows, and one of these had evidently just been feeding on a leaf of *R. crispus*, and had eaten a good-sized hole right through it. The food-plant is given by Mr. Barrett as being "common dock (*Rumex*)," but, this term being equally applicable to any one of the various common species of dock, I succeeded, after considerable trouble, in getting it identified by the distinguished botanists, the Revs. E. S. Marshall and R. P. Murray. It seems surprising that the larva of this extremely local species, believed, for over half-a-century to be true to its specific name and quite confined to boggy places, should have at length been discovered in a dry spot, away from any marsh (though there is water near at hand), and feeding upon a plant that is common in dry situations, although it may be found in wet ones as well.

PUPA.

The following description was made, on July 20th last, from a pupa resulting from one of the Folkestone larvæ mentioned above:—

Length, 7 mm. *Greatest breadth*, 1.75 mm. Rather cylindrical, with the abdomen tapering slightly towards, and abruptly at, the anal extremity. Segmental divisions clearly defined. Skin smooth and polished, with only a few very short and inconspicuous hairs. *Head*, in which the eyes show through as large black spots, and *thorax*, dark orange-brown. *Antennal-, leg-, and wing-cases*, with clearly-defined margins (especially so in these last), smooth, polished, orange-brown, all reaching to the middle of the sixth abdominal segment. *Abdomen* brownish-orange, rather more strongly tinged with brown posteriorly. *Spiracles* conspicuous, having the appearance of small, pale, brown-ringed dots. *Anal extremity* terminating dorsally in a short horn-like blackish knob, near which are a few rather long, hooked, orange bristles, and bearing a strong crescent of similar bristles ventrally. The "free" abdominal segments are the fifth and sixth.

The pupa gradually becomes darker in colour as the time for emergence approaches.

In every instance the cocoon was made, not in the crown of the root where they are said to (*l. c.*) be found as a rule, but in a chamber formed among the young leaves and stems that had sprouted therefrom after the shoot had been cut off, and had then died away: this chamber was smoothly but sparingly lined with closely-spun tough white silk, which had much the appearance of tissue paper. One cocoon proper, *i. e.*, with the external coating of vegetable refuse left out of account, measured 13.5 mm. long, by about 3 mm. broad.

The moths, eleven in number, appeared July 13th to August 27th, accompanied by many minute parasitic flies awaiting identification. My only observations relating to the time of emergence were that one imago was found with its wings dry, and another with them hardly dry, at 7.5 a.m., neither having been out at 11 p.m. on the previous night. Both sexes show much variation in size, and a certain amount in colour, for although the pale ground-colour is remarkably constant throughout the fifty specimens, from various English localities, before me, some of them are much more heavily shaded and streaked with deep fuscous and black than others.

Norden, Corfe Castle :

January 30th, 1906.

NOTES ON CERTAIN PALÆARCTIC SPECIES OF THE GENUS
HEMEROBIUS :

THE MADEIRA-CANARIAN SPECIES ALLIED TO *H. HUMULI*,
AND OTHER SPECIES FROM THE SAME ISLANDS.

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

Shortly before his death, Mr. McLachlan had in view the publication of a paper on that species of *Hemerobius* which occurs in Madeira and the Canary Islands, sometimes called *H. humuli*, but which has long been known to possess at least four sectors instead of the normal number of three found in *H. humuli* proper. Thanks to the Rev. Mr. Eaton, further material, including the ♂, had been put into Mr. McLachlan's hands, and the latter had arrived at the conclusion that the insect was quite distinct as a species from *H. humuli*. At his request I prepared figures of the appendages, which quite supported Mr. McLachlan's views on the subject. These figures, unfortunately, are not now available, but Mr. Eaton, who again collected in Teneriffe and Madeira in the spring of 1904, has kindly presented to me a series of the insect in good condition, thus enabling me to describe the species. Before doing so, it may be desirable to allude briefly to the previous references to the insect.

The species was, I presume, first taken by Wollaston, and is noticed by Hagen in Ent. Mo. Mag., vol. ii, p. 60, 1865. Hagen at first was uncertain whether the specimen would not form a distinct species, but he failed to find any difference, beyond the greater number of sectors, separating it from *H. humuli*. "The colours, facies and markings," he says, "are absolutely identical."

Brauer (Sitzungsbericht der Kais. Academie der Wissenschaften in Wien, Mathem-naturw. Classe, Bd. cix, Abth. i, July, 1900) reporting on the *Neuroptera* found in the Canaries by Prof. O. Simony, practically accepts the species as *H. humuli*, remarking on the greater number of sectors.

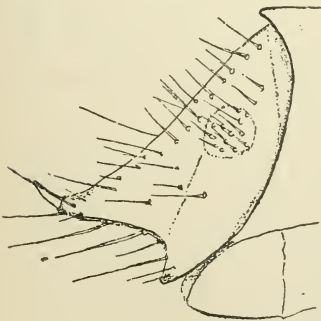
McLachlan (Journal of Lin. Soc., Zool., vol. xvi, p. 162, 1882) refers to three ♀ (Madeira, Wollaston, one ♀, probably that mentioned by Hagen; near Funchal, 19th November, Eaton, one ♀; Orotava, Teneriffe, 15th December, Eaton, one ♀). He points out the difference in the number of sectors, mentioning the presence of five in one anterior wing and a slightly different facies, but he adds that it would not be prudent to give a new name without seeing the ♂, at that time unknown.

I now describe the species as

HEMEROBIUS EATONI, n. sp.

Dusky yellow with the sides of the thorax broadly blackish-brown, traces of brown also on the sides of the head above; cheeks brown to black; palpi sometimes blackish; antennæ yellowish with annulations of very variable distinctness. Abdomen sometimes showing traces of the thoracic yellow on the proximal segments, otherwise blackish or brown above, paler beneath. Legs pale, the tarsi rarely annulated. Anterior wings broad-oval, apex obtuse, costal margin not abruptly broader at the base; sub-basal spot, as a rule, distinct, with one or two other conspicuous spots on the same nervure; origin of the sectors also distinctly spotted: sectors four or five; gradate nervules dark, clouded with greyish; dorsal and outer margins clouded with grey; neuriation regularly, and usually rather closely, interrupted with fine dark points whence arise faint, angulate grey markings. Appendages similar to those of *H. humuli* except that the upper limb of the fork terminates in a simple point. Expanse, 15—17.5 mm.

Teneriffe: La Laguna, 25.II, ♀; Güimar, 20.III, ♂; Las Mercedes, Forest de la Mina, 29.III, ♂; Cruz de Afur, Forest de la Mina, 5.IV, ♂ and ♀; Forest de la Mina, 9.IV, ♂.



The figure shows the apex of the abdomen seen from the side.

The species has the form of *H. humuli*, but in the character of the markings it much more resembles *H. orotypus*, Wall., but is not so grey-looking, the wings having a faint yellowish tinge.

Hemerobius subnebulosus, Steph.—This species is not mentioned in McLachlan's 1882 paper, but is recorded by him from Madeira, Ent. Mo. Mag., vol. xxxv, p. 79, 1899. Mr. Eaton has given it to me from Funchal and Caniçal in Madeira. It is perhaps worthy of remark that *H. nervosus* is not mentioned by McLachlan in 1899 as occurring in Madeira or the Canaries, while in 1882 he recorded it from both groups, with the caution, however, that he had seen only the ♀ from Madeira, and even with regard to the ♂♂ seen (Brullé's type of *H. hirtus* and one taken by Wollaston) from the Canaries, he leaves the matter in a little uncertainty, the appendages having been in a position unsuitable for their examination. One specimen of *H. nervosus* is recorded by Brauer without indication as to its sex. Fresh material of *H. nervosus* is desirable.

Hemerobius stigma, Steph.—One ♀ from Monte, Funchal, 13.IV. This species is not referred to by the above-named authors.

McLachlan records *Hemerobius elegans*, Stephens, from Grand Canary (Eaton), a strongly marked example. A small *Hemerobius* of the size of *H. elegans* was taken by Mr. Eaton at Funchal, 14.IV, 1904. It is probably a new species but I hesitate to describe it until I have seen more material of this and other allied forms

13, Blackford Road,
Edinburgh:
May, 1906.

PSEUDISOBRACHIUM CANTIANUM:

A SPECIES OF *BETHYLINÆ* (*PROCTOTRYPIDÆ*) NEW TO SCIENCE.

BY ARTHUR J. CHITTY, M.A., F.E.S.

Apterous. Mouth situate at anterior extremity of the head. Antennæ with 13 joints. Ocelli wanting. Eyes indistinct. No scutellum. Mesothorax with 3 lobes. Metathorax narrowed into a neck at base, distinct from the mesothorax. Metanotum without a channel and with the posterior angles rounded. Intermediate tibiæ spined externally. (The above characters are generic, and are only given by me to show they have not been overlooked).

Head oblong, wider in front than behind, and narrowed before posterior angles which are slightly rounded; distinctly and rather closely punctured, more closely at the sides than on the disc; smooth between the punctures (except quite in front where the surface appears rugulose), with scattered pale hairs which are more visible on the margins than on the disc. Mandibles long when closed, forming a semicircular protection to the trophi, slightly hairy. Eyes unicolorous with head and difficult to see. Antennæ inserted between the base of mandibles on depressions in front of the head, these depressions being separated by a very fine

high ridge. 1st joint (scape) as long as the next five or six, arcuate, the curve beneath ending at two-thirds of the length of the joint in a very small tooth, hairy. 2nd joint obconic, longer than wide at apex. 3rd joint widened at apex; this and the remaining joints are not, so far as I can make out, truly rounded (terete), and from one aspect the 8th joint appears to be the widest, distinctly wider than base of the 9th, while from another aspect the margins of the joints are continuous. The 3rd to the 12th joints are all transverse and hairy at apex. 13th joint about as long as two preceding, rather abruptly rounded at apex. *Prothorax* with pronotum slightly hairy, the hairs being fine and pale, contracted into a neck in front, square behind, with two slightly raised round spaces, hardly pimples, at posterior angles, smooth on disc, punctured at sides and anteriorly; alutaceous between the punctures and posteriorly. *Mesothorax* at greatest width slightly wider than prothorax, but shorter than it, with 3 lobes; the central lobe narrowed into a narrow neck behind, to which the metathorax is joined; smooth on disc, punctured and alutaceous at sides, with a few pale hairs; the outline of the mesothorax, as a whole, narrows behind, but the side lobes are wider behind where they project than in front; they are alutaceous with a few hairs and scattered punctures. The *metathorax* is about as long as the mesothorax. It widens rapidly at base to about the width of the middle lobe of the mesothorax, when its outline curves gently and then contracts to a narrow pedicel, its sculpture similar to the central lobe of the mesothorax.

Abdomen ovate, with outstanding pale hairs; widest at apex of 2nd segment. 1st segment rapidly widening, about as long as 2nd, and longer than the remaining segments. 3rd, 4th, and 5th segments each with an emarginate plate in the centre, so that at first sight the abdomen appears to have three segments more than is really the case. The structure of these plates is not easy to follow, and I am not prepared to say for certain that they are more than a thickening of the chiton at the base of the segments, leaving a depressed area at the apex. Legs hairy, intermediate tibiæ spined; 1st pair of legs with femora and 1st joint of tarsi curved; there are strong spines at the end of the 1st joint of the front tarsi which is long and thickened; the four posterior legs have the coxæ large and visible from above the femora, swollen, the intermediate femora with the outline curved beneath, the hind femora with the outline curved above; coloured like a pale specimen of *Ponera contracta*, brown, with legs, antennæ, head in front of antennæ, trophi, except mandibles and the apices of the segments of the abdomen, paler. Length about 3.5 mm.

Habitat: in nest and runs of *Ponera contracta*, one specimen taken by me at Charing, Kent, on August 3rd, 1903.

While collecting with Mr. Morley at Charing, Kent, on August 2nd, 1903, I captured a small insect under the impression that it was a specimen of *Ponera contracta*. On getting home it proved not to be an aculeate, but an extraordinary looking little insect belonging to some genus allied to *Scleroderma* of Westwood, a genus belonging to the family *Bethylinæ*, among the *Proctotrypidæ*. It appeared also to agree with the genus given by Ashmead in his Monograph of the

North American *Proctotrypidæ* of the ♀ of *Isobrachium* (Först.), *myrmecophilum*, Ashm. The recent appearance of the earlier portions of vol. ix of "André's Species des Hymenopteres d'Europe and d'Algerie enables me to place the insect in the genus *Pseudisobrachium*, Kieff. (*Isobrachium*, Ashm., *nec* Först., the true genus *Isobrachium*, Först., has a winged ♀, the type being, according to Ashmead, *Omalus fuscicornis*, Nees, but there seems to me to be some mistake about this type). The genus *Pseudisobrachium* contains, according to Kieffer, 15 species, of which 7 are North American, 5 are European, 2 are South American, and 1 Indian.

In the case of the 5 European species, it has not been possible to associate the sexes, but in the case of 4 American species, both ♂ and ♀ are known. It is in fact, only as the result of the American discoveries that the 2 European species, of which the ♂ ♂ are known, are placed in this genus, for they have no resemblance whatever to the ♀ ♀. All the species probably consort with ants. *P. mandibulare*, Ashm., with *Camponotus pennsylvanicus*, Pergande; *montanum*, Ashm., and *P. myrmecophilum*, Ashm., with *Formica rufibarbis* (Hubbard); *P. rufiventre*, Ashm., with *Formica obscuripes* (Ulke); and my *P. cantianum* apparently with *Ponera contracta*. Ashmead has raised a query whether the insects are parasitic upon the ants or upon the *Coleoptera* that live with them. I cannot answer this, but the present insect is too large to be parasitic on *Machærites glabratus*, the only Coleopteron that I know to live with *Ponera*. It may be parasitic on a beetle living with another ant, for at Charing almost all the British ground ants occur, and I have taken *Homæusa* close to the spot where I found it. In this case the resemblance to *Ponera* would be of use (I presume) in protecting it from the attacks of other ants. *Ponera* itself must be somehow protected; it is slow, and though armed with a sting, would seem likely to fall a prey to the hosts of other ants, in the midst of which it lives, and yet it evidently thrives.

It ought to be pointed out that there is just a possibility that the insect above described is really the ♀ of *Pseudisobrachium subcyanea*, Hal., of which only the ♂ is known, but for the present it must be described as distinct. The ♂ of *subcyanea* has been taken by me at Huntingfield and Doddington and in Sheppey, and I have one specimen labelled Charing; it occurs in September, it was originally described as *Epyris nigra*, West., by Walker from Haliday's MSS. (see Ent. Mag., iv, 432), corrected by Halliday, who then named the

insect *subcyaneus* (Ent. Mag., v, 519). It appears in Marshall's Catalogue as *Epyris subcyanea*, Hal. When I first captured *subcyanea* here, using Ashmead's tables, I placed it in his genus *Isobrachium*, and only moved it into *Epyris* on discovering Haliday's figure (Ent. Mag., iv, pl. xvi, f. 6), which is unmistakable. I now find that the Abbé Kieffer has moved *subcyanea* into his genus *Pseudisobrachium*, to which I think it undoubtedly belongs, but I think it is too large to be the ♂ of *P. cantianum*. *P. cantianum* differs from *P. pubescens*, Kieff., by having the disc of the thorax smooth, and the 4th joint of the antennæ transverse, and from *P. concolor*, Kieff., which is described as "glabre," by being more or less hairy. *P. intermedium*, Kieff., the only other European species of which the ♀ is known, is larger and has a black head.

I expect to find that *Pseudisobrachium subcyaneum* is parasitic upon, or associates with, *Myrmecina latreillei*, but this is a mere surmise.

Huntingfield, Faversham, Kent :

April 18th, 1906.

ADDITIONS AND CORRECTIONS TO THE LIST OF
BRITISH HYMENOPTERA SINCE 1896.

BY EDWARD SAUNDERS, F.R.S.

It is now just 10 years since the completion of "The Hymenoptera Aculeata of the British Islands," and numerous additional species have been found in these Islands during the interval; most of these have been introduced through the pages of this Magazine, but I thought it would probably be a convenience to British Hymenopterists to have these scattered records arranged consecutively and also to have incorporated with them, such changes in synonyms, additions and corrections as are required to bring the subject up to date. Many important papers have been published on the Continent during the last ten years, which have thrown much light on many of the formerly obscure species, and have also indicated changes in synonyms which it will be well to adopt so as to bring our nomenclature as much as possible into concord with that of Continental Entomologists. I am always averse to changing names which are in common use, but in cases where we differ from practically all the Continental authorities, I think we are bound to give up our names and adopt theirs, unless, of course, we can prove that we have priority to support our views.

HETEROGYNA.

In this section no new species has occurred, but a nest of *Formica fusca* race *gagates* has been found in the New Forest by Mr. G. Arnold (Ent. Mo. Mag., xli, p. 211). This is worthy of special mention as the title of this "race" to a place in our list rested on a single specimen taken by the late F. Smith without note of locality.

FOSSORES.

Pompilus (Wesmaelinus) sanguinolentus, F. (Ent. Mo. Mag., xxxvi, p. 206).

This species should stand first in the genus so far as the British species are concerned.

As a subgenus it may be known by the elongate pronotum, as in the subgenus (*Aporus*), from which it differs in having three submarginal cells in the anterior wings; the propodeum is truncate and concave posteriorly with its lateral angles produced and dentate. In the posterior wings the median and posterior veins are united by a transverse nervure at a point some distance above the branch of the former; this character will separate it from all the other sections of the genus.

The male is entirely black, the female black with the pronotum and propodeum red; it should not be mistaken for any other species.

1 ♀ taken in the New Forest by Dr. Sharp, 18.7.00.

Pompilus nigerrimus, Scop.

This name has been adopted generally as the appellation for our *P. niger*, and as Scopoli's description agrees well with it I think it should be used.

Pompilus approximatus, Smith (Ent. Mo. Mag., xxxvi, p. 51).

This close ally of *Pompilus nigerrimus* should stand next to it in our list. It may be known from that species in both sexes by the more or less hairy propodeum (especially at the sides), by the subquadrate 3rd submarginal cell, the short 4th joint of the posterior tarsi which in the ♂ is only half the length of the 5th, and in the ♀ is as broad at its apex as it is long, and by the bifid claws of the ♂. The abdomen of the ♀ is narrower than in *nigerrimus*.

Dumfries-shire (Sharp), Perthshire (Carter), Nairn, July (Yerbury), E. Cumberland, July (Bold), Criccieth, June and July (Nevinson and Bradley), Newquay, July (Nevinson), Tor Cross, August (Yerbury).

Salix propinquus, Lep. ? (Ent. Mo. Mag., xxxvii, p. 247).

Of this nearly black species two examples have been taken by Miss Chawner in the New Forest in August. It may be known at once from any of our other members of this genus which have an eye-like spot in the apical region of the fore-

wing, by the transverse costæ of the propodeum; in this respect it more or less resembles *S. affinis*. It should be placed next to *Salix notatulus*, the ♀ of which to my mind is not very satisfactorily identified. The male of *notatulus* is so very distinct from its allies, that it is difficult to imagine that the ♀ should not possess more distinctive characters than those which belong to the few specimens known from this country. It would not surprise me to find that Miss Chawner's females belong to *notatulus*, and that our other supposed representatives to varieties of the allied species; but at present there is no evidence to prove this.

Passalæcus monilicornis, Dhlb.

The ♂ of this species is incorrectly defined at page 98. Its chief peculiarity, by which it may be known from any other species of the genus, lies in the form of the antennæ. These are slightly incrassated towards the middle, and each joint is widened near the centre posteriorly, so as to give the moniliform character to these organs which the name implies. The white labrum is not a constant character. Most males, if not all, have it pitchy-brown, and there is a variety of the ♀ with the labrum black, which has been taken by Mr. Evans and Col. Yerbury in Scotland, and by Col. Yerbury in Ireland. The characters which can best be relied upon to determine the species are the form of the antennæ in the ♂, the wider 2nd submarginal cell, the wider and apparently shorter basal segment, and the less basally constricted 2nd segment of the abdomen in both sexes. These latter characters are specially evident in the ♀, and give the abdomen a wider and more oval form. It falls into the section with only one transverse crenature on the mesopleuræ, and can easily be distinguished from *gracilis*, the only other species in that section, by the characters given above and by the white tubercles of the ♀.

Psen, Latr. = *Mimesa*, Auct.

F. F. Kohl, Die Gattungen der Sphegiden (Anu. K. K. Naturh. Hofm., xi, p. 289), points out that Latreille's genus was clearly founded on what we call *Mimesa atra*, Fab., as he specially mentions the peculiar form of the antennæ in the ♂. This being so, priority requires us to follow him in changing the name of our genus *Mimesa* to that of *Psen*.

Psenulus, Kohl.

In consequence of the above change, Herr Kohl has given a new generic name to those species formerly placed under *Psen*.

Psenulus concolor, Dahlb. (Ent. Mo. Mag., xxxiii, p. 252).

This species is larger than *pallipes*, and may be easily known by the characters pointed out by Mr. Morice (*loc. cit.*). These lie chiefly in the head; the vertex in both sexes is shining and very finely punctured in *concolor*, almost dull and coarsely punctured in *pallipes*. In the ♀ the strongly marked carina between the antennæ divides into two branches below them, but in *concolor* the branches diverge at an angle of about 90°, so as to form a simple Y, and the stem of the Y terminates

between the antennæ; whereas in *pallipes* the branches of the carina diverge almost at right angles, not from each other but from the stem, so as almost to form a T, and the stem is not simple as in *concolor*, but divides into two short branches forming a V between the antennæ. These characters of the carinæ are not so strongly marked in the ♂, the angle of divergence being only slightly greater in *pallipes* than in *concolor*; the antennæ, however, of *concolor* are much longer than those of *pallipes*, the 2nd joint of the flagellum being about twice as long as wide.

This species appears to be very rare. I have only seen the ♀ taken by Mr. Morice at Byfleet in June, 1897, and a ♂ and ♀ taken by Colonel Yerbury at Tarrington, Herefordshire, the ♂ in June, the ♀ in August, 1902.

Cerceris, Fab.

In this genus two changes of name are necessary to bring our nomenclature up to date.

Ornata, Fab., &c., should now become a synonym of *ryhyensis*, Linn.; *sabulosa*, Smith, of *quadricincta*, Panz.

Crabro, Fab.

Several alterations and additions have to be made here. In the first place an unfortunate error occurs in the table on p. 126; in divisions 24 and 29, "*metasternum*" should read "*mesosternum*;" this mistake occurs twice in 24, and once in 29.

Crabro pubescens, Shuck.

♀. This was first discovered in this country by Mr. A. Piffard, who took it at Brickett Wood, St. Albans. It may be known from the ♀ of *leucostomus*, its nearest ally, by its smaller size and narrower form, by its less widely impressed forehead, and its more regularly and more finely punctured mesonotum; the spot at the base of the hind tibiæ is more developed than in *leucostomus*, and the red ring at the base of the hind tarsi is less developed. The size and the form of the impression of the head are the best characters, in *pubescens* the sides of the impression of the forehead are inclined to be more or less tumid; in *leucostomus* the excavation though not very deep has its sides practically straight, which gives the impression a much wider and deeper appearance.

Crabro styrius, Kohl. (Ent. Mo. Mag., xl, p. 11).

Like a small, shining and less deeply black *capitosus*, but distinguished from it as well as from *cetratus* by the form of the clypeus, which, viewed from in front, is trituberculate, by the longer and more slender scape of the antennæ, the slenderer petiole, and the absence of visible sculpture on the abdomen; both sexes are further distinguished from *capitosus* by the less massive head, and from *cetratus* by the less closely punctured mesonotum, and the ♂ by the simple anterior tibiæ and tarsi.

♂ ♀, Shiere (Capron); New Forest, June—July, 1894 (Cham-

pion); Ley Hill, Chesham, June 29th, 1899 (Piffard); Dollar, near Edinburgh, July 9th, 1901 (Evans); ♀ near Faversham (Chitty); Porthcawl, June 29th, 1904 (Yerbury)

Crabro carbonarius, Dahlb. (Ent. Mo. Mag., xxxvi, p. 227).

Another addition to our list, belonging to the subgenus *Celocrabro*, Thoms. This may easily be known from any other of the section by being entirely black, and by the well defined basal area of the propodeum, surrounded by very strong crenatures.

♂, Aviemore, June 28th, 1900, ♂ ♀, Brodie, June 9th and 10th, 1905, Nethy Bridge, 2 ♀, June 26th, 1905 (Yerbury); ♂ ♀, Aviemore, July and August, 1903 (King).

There are four British species in this section with well defined crenatures, enclosing the propodeal area, *gonager*, *podagricus*, *carbonarius*, and *aphidum*; *aphidum* can be known at once in both sexes by its pale yellow clypeus, *podagricus* by the dull but almost impunctate surface of the mesonotum, and *gonager* may be easily known from *carbonarius* by the wide scutate anterior metatarsi of its ♂, and the yellow rings at the base of the tibiæ of the ♀.

(To be continued).

CRYPTOHYPNUS PULCHELLUS, L.

BY JAMES E. BLACK, F.E.S.

During the summer of 1903, while working the banks of the river Truim, a tributary of the Spey, about three miles from Newtonmore, Inverness-shire, the writer took two examples of a *Cryptohypnus* which at first sight appeared somewhat different from the abundant *C. dermestoides* var. *quadriguttatus*, Lap. These were submitted to Prof. T. Hudson Beare, of Edinburgh, and to Herr Reitter, and confirmed by them as *C. pulchellus*, L.

A subsequent visit to the same locality the following year failed to produce any more specimens, but in June of this year I took several more examples of this rare species, and being joined by Prof. Beare, we thoroughly worked the locality and obtained a number of specimens. The species appears to be an extremely local one, only being obtained on one particular spot on the Truim, and only two examples were obtained on the banks of the Spey, although hundreds of the var. *quadriguttatus* were observed.

In this spot, a gravelly bank near the confluence of the rivers, the two species occurred together, creeping amongst the gravel on the grassy edges of the shingle beds. They could quite easily be distinguished from each other, after a little practice, even without

examination through a lens, the var. *quadriguttatus* being shiny, and *C. pulchellus* dull. In *C. pulchellus* the thorax is considerably longer than broad, and rugosely punctured, whilst the elytra are very strongly striate, carinate at the basal third, and pubescent. The yellow markings on the elytra are very variable.

I have examined a great number of the common species, but have only found three or four examples of the type form, *C. dermestoides*, Herbst, either this season or in previous visits, so that apparently it is not very common in the district.

Peebles: *June 14th*, 1906.

CARDIOPHORUS ERICHSONI, BUYS., IN LUNDY ISLAND.

BY NORMAN H. JOY, M.R.C.S., F.E.S., AND J. R. LE B. TOMLIN, M.A., F.E.S.

It was with the express purpose of adding at least one more species to the list of British *Coleoptera* that we visited Lundy Island last April, and on the third day of the trip, when we were examining grass tufts on the western cliffs, a black Elaterid was taken, which we immediately recognised as the object of our quest. Subsequently, we spent many hours on the edge and slopes of the cliffs, taking a nice series each, most of the specimens being found under small stones, or at the roots of grass, and we found the species was very active in the hot sunshine. The larva also was not uncommon at the roots of a small dandelion. As our examples did not correspond exactly with the insect standing under the name of *Cardiophorus rufipes*, Goeze, in the British Museum, we sent one of them to Mons. H. de Buysson, who kindly identified it for us as *C. erichsoni*, Buys. (= *rufipes*, Er.), a species he has separated from *C. rufipes*, Goeze, mainly on account of its brown (instead of grey or black) pubescence, the absence of a shining oblique fascia across the elytra, and the less metallic reflection. *C. erichsoni* has been taken in France, Germany, Austria, and Russia, and occurs on pines at the end of May and the beginning of June, the larva probably feeding on oak or pine bark. It is very interesting to find an insect of this kind on Lundy, but it may be observed that *Melanotus rufipes*, Herbst, is also included in Wollaston's local list, and some elytra we found among grass evidently belong to this latter species. In historical times Lundy has always been quite treeless, indeed, there are not many places on the island where there is sufficient depth of soil for

their roots, but probably a great deal of the peaty earth has been burnt away at one time or another, when the bracken and furze has been set alight.

The *Cardiophorus* recorded by Mr. Champion under the name *C. rufipes*, Fourc., from Renfrewshire [Ent. Mo. Mag., xiii, p. 227, (1877)], belongs to the same species; but as there was probably some mistake about the actual origin of this specimen, *C. erichsoni* is practically an addition to the British list.

The following is a short translation of Buysson's description of *C. erichsoni*, taken from his recently finished work on the "Elatérides" (pp. 318, *et seq.*):—

Oblong, rather depressed; black, rather shining, without any leaden or bronze reflection; pubescence very fine and scanty, brown on the upper side; head finely and thickly punctured; antennæ black, longer in male than in female; thorax slightly longer than broad, rather finely and thickly punctured; elytra a little broader than thorax, much attenuated behind, with well marked and strongly punctured striæ; interstices flat, thickly and finely punctured; legs reddish-testaceous; tarsi black or brown. Length, 7-9 mm.

Bradfield: June, 1906.

FURTHER NOTES ON THE COLEOPTERA OF THE OXFORD DISTRICT.

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

The following species of *Coleoptera*, taken by me (except when otherwise stated) within five or six miles of Oxford since the date of my previous paper on the same subject (Ent. Mo. Mag., Ser. 2, vol. xvi, p. 180) appear to be worthy of record.

Cychrus rostratus, occasionally under old timber and in sandpits; *Panagæus quadripustulatus*, taken not rarely at Tubney by Mr. W. Holland, and sparingly by Mr. G. C. Champion and myself; *Licinus silphoides*, taken under stones at Elsfield by Mr. W. Collins, of the Hope Department, University Museum; *Oödes helopioides*, rarely, and *Bradycellus placidus*, plentifully, in wet tufts of grass, in winter, at Yarnton; *Harpalus azureus* var. *similis*, Dej., in sandpit at Cumnor; *Pterostichus anthracinus* and *P. inæqualis*, sparingly in damp spots; *Lebia chlorocephala*, rather common in tufts of grass in winter; *Dromius agilis*, not rare under loose bark, Bagley Wood.

Aleochara tristis, sparingly in sheep-dung, Wytham Park; *Phlæopora corticalis*, in dry fungus at Water Eaton, one example taken by Mr. G. C. Champion; *Caloderma riparia*, in tufts at Yarnton, very rare; *Homalota cæsula*, two or three examples of this coast species at roots of herbage at Tubney, October; *H. splendens*, one example in a sand-pit at Cumnor, taken by Mr. G. C. Champion, May 28th, 1906; *H. dilaticornis*, by evening sweeping at Elsfield, one specimen, June 25th, 1905.

Deinopsis erosa, rare, in damp tufts of grass; *Lamprinus saginatus*, again at Tubney, this time under a stone in company with *Myrmica flava*; *Conosoma pedicularium*, common in moss and tufts at Yarnton; *Tachyporus formosus*, rare, and *Megacronus cingulatus* (1) by sweeping at Wytham Park. *Mycetoporus punctus*, one example by sweeping at Cumnor; *Heterothops quadripunctula*, rare, in flood-refuse; *Xantholinus tricolor*, rarely, at Tubney; *Achenium depressum*, in flood-refuse, and *A. humile* in tufts, both rare. *Lathrobium angustatum*, one example taken by Mr. Collins near Wytham Park; *L. punctatum*, rarely, in tufts and flood-refuse, with abundance of *L. filiforme* as before. *Stenus guttula*, rarely, in wet places; *Platystethus nitens*, sparingly, by sweeping and on the wing, near Marston; *Philorhinum sordidum*, plentiful on flowers of broom in May at Cumnor; *Hapalaræa pygmæa*, on a window in my house at Summertown (where I have also taken *Carcinops 14-striata*); *Eusphalerum primulæ*, abundant in primroses, and *Proteinus atomarius*, in fungus at Wytham Park.

Anisotoma dubia, *A. nigrita* (one specimen), *A. triepkei*, rarely (also taken by Mr. Donisthorpe in my company), and *Hydnobius punctatissimus* (pale form) by evening sweeping at Tubney; *Choleva intermedia*, rarely, on walls in late autumn, and *C. nigricans* and *morio*, occasionally in tufts; *Colon serripes*, one example by evening sweeping at Ogle Bog. *Neuraphes longicollis* and *Eutheia plicata* singly, by evening sweeping at Marston; *Euconnus hirticollis*, one in a tuft at Yarnton, and *E. fimetarius* in tufts of grass growing on a very old manure-heap at Summertown, in company with *Euplectes signatus*, *Acrilus minutus*, *Oxyomus porcatus* (plentiful), &c. *Bibloporus bicolor*, under bark at Wytham Park; *Euplectes minutissimus*, Aubé, one example by evening sweeping in a damp lane at Summertown, June 5th, 1906; this is a very interesting capture, being the first specimen recorded since Canon Fowler took the species in numbers at Burton-on-Trent in June, 1879. *Claviger foveolatus*, a few in nests of *Formica nigra* at Kirtlington; *Olibrus pygmæus*, a few at roots of herbage at Tubney; *Platynaspis luteorubra*, one specimen at Wytham Park by sweeping; *Gnathonus nannetensis*, not rare in a sand-pit at Cumnor, among the droppings of sand-martins; *Omosiphora limbata*, rarely in dry fungus and by sweeping, and *Nitidula rufipes*, not uncommon at Tubney in rabbit-skins put down as traps for *Trox sabulosus*. *Thalycra sericea*, one specimen by evening sweeping at Wytham Park, July 27th, 1905, and one taken by Mr. Donisthorpe, at Tubney, September 14th. *Ips 4-punctata*, found commonly by Mr. Collins, and afterwards by myself, in a large sappy oak-stump at Wytham Park. *Pediacus dermestoides*, a few specimens under bark of beech logs at Wytham Park, in company with plenty of *Agathidium nigripenne*; *Atomaria fimetarii*, one specimen by evening sweeping at the same locality; *A. mesomelas*, common in wet places, and a very puzzling entirely black form turned up at Yarnton; *A. basalis*, in dead leaves near Islip. *Byrrhus dorsalis* in sandpits, and *Syncalypta hirsuta*, locally not rare under small stones, at Tubney.

Trachys troglodytes, one specimen taken by my nephew, H. G. Champion, by sweeping at Cothill, April 21st, 1906; *T. pumila*, on foliage of *Hyoscyamus* at Wytham Park as before; *Elater elongatulus*, a few specimens taken by Mr. Collins and myself in very rotten pine logs at Tubney, May, 1906; *Corymbites tessellatus*, commonly by sweeping in a wet place at Cothill, and very variable; *C. metallicus*, one example by sweeping at Marston. *Eubria palustris*, again at Ogle Bog by

evening sweeping at the beginning of July, but very sparingly; *Haplocnemus impressus* (1), *Phloiophilus edwardsi*, and *Dryophilus pusillus*, by evening sweeping at Wytham Park. *Longitarsus piciceps*, in plenty on ragwort at Tubney, and *L. agilis*, again singly at Cothill; *Tetratoma fungorum*, a considerable number in decayed toadstools on a dead beech tree near Islip, in February.

Apion astragali, recorded from Oxford last year by Mr. W. Holland (Ent. Mo. Mag., Ser. 2, vol. xvi, p. 257) has turned up again in tolerable plenty in its original locality, as well as in two or three other spots in the district where its food-plant grows, and *A. stolidum* occurred not rarely at the end of May in one field at Marston by sweeping *Chrysanthemum leucanthemum*. *Thryogenes festucae*, *T. nereis* and *Erirrhinus bimaculatus*, in wet places on the banks of the Thames above Oxford, rarely; *Hypera suspiciosa*, in tufts at Yarnton; *Gronops lunatus*, in sandpit at Tubney; *Ceuthorrhynchus viduatus*, on the wing at Marston; *C. euphorbiæ*, in sandpits at Tubney, rarely, *C. terminatus* and *setosus*, by sweeping at Cothill in April, *C. campestris*, abundantly at Marston with *Apion stolidum*, and *Phytobius comari*, by sweeping in wet places in the same locality. *Baris lepidii*, by sifting flood-refuse in January, not common. *Hylastinus opacus* and *Phlæophthorus rhodactylus*, in broom stumps at Cumnor.

Oxford: June, 1906.

Calosoma sycophanta, L., in the New Forest.—Yesterday afternoon (June 16th) I was very agreeably surprised to pick up a fine ♂ example of *Calosoma sycophanta*, L., running actively in the short grass at the foot of a small *Cossus*-oak which I was investigating at the time, in Denny Wood, New Forest. The freshness and beautiful condition of the beetle, joined to the extreme prevalence of north and east winds during the present season, seem to me to be against its being an immigrant from the Continent, and suggest that this one at least is a true New Forest bred specimen. Certainly it appeared perfectly "at home" in its beautiful surroundings.—JAMES J. WALKER, Brockenhurst: June 17th, 1906.

Anisotoma lunicollis, Rye, in the Isle of Sheppey.—Among a few *Anisotomidæ* taken by me on August 12th, 1905, by sweeping the fringe of grass on the edge of the cliffs in the Isle of Sheppey, Mr. G. C. Champion has detected an example of *Anisotoma lunicollis*, Rye. This capture adds another to the very few localities in which this rare and well-marked species has been hitherto found.—ID., Oxford: 4th June, 1906.

Epuræa angustula, Er., in the Northumberland and Durham District.—Whilst stripping the bark off a recently felled birch tree in a wood near Winlaton this evening I found a single example of the very rare *Epuræa angustula*, Er. Coupled with the fact that this species is recorded very rarely from Scotland in the burrows of *Xyloterus (Trypodendron) lineatus*, Ol. (Brit. Coleoptera, iii, p. 233), it is worth noting that mine was taken with the closely allied *Trypodendron domesticum*, L., which had its borings in the solid wood of the birch in question. A pair (♂ & ♀) of another very rare beetle, *Acrulia inflata*, was taken from the same tree. In March of this year I took a single specimen of *Acrulia* in Gibside beneath the bark

of a fallen beech tree, which strangely enough was also infested by *Trypodendron domesticum*. The following species of the genus *Epuræa* have now occurred in the Derwent Valley: *E. æstiva*, L., *E. melina*, Er., *E. oblonga*, Hbst. (one example beneath fir bark, Winlaton Mill), *E. longula*, Er. (one male in *Spiræa* flowers, Gibside), *E. florea*, Er. (in *Spiræa* flowers, Winlaton Mill), *E. deleta*, Er., *E. parvula*, Stm. (beneath oak bark and by beating oak), *E. obsoleta*, F., *E. pusilla*, L., and lastly, *E. angustula*, Er., here recorded.—RICHARD S. BAGNALL, Winlaton: June 13th, 1906.

Mutilated Lepidoptera.—Mr. Banks' interesting note of his capture of *Tortrix unifasciana* ♀ united to the abdomen only of a male of the same species, reminds me of a similar occurrence in my own experience which took place some forty years ago. It is recorded in the "Weekly Intelligencer" for 1862, vol. i, p. 180, under the title "*Mutilated Lepidoptera*," from which I extract * * * "But the most wondrous sight of the kind in my experience was that of a female *N. (?) bondü* in copulá with the living abdomen and hind-wings only of a male. A mouse had probably snapped off the other half, but sufficient vitality remained for the abdomen to writhe and the hind-wings to flap. If any one doubts the fact let them ask my friends McLachlan and (J. W.) Downing, who also saw it." * * * Truly history repeats itself.—H. GUARD KNAGGS, Folkestone: June, 1906.

[Only two years ago I found a female *Iarentia multistrigaria* thoroughly paired with a quite dead and dry male, but whether the male had died naturally or been killed I do not know. He was in a very battered condition, but that may have been caused by the female dragging the dead body through the grass and other herbage.—G. T. P.]

Sesia andreniformis bred.—It may interest your readers to know that a fine *Sesia andreniformis* emerged to-day from a larva I found mining in the stem of *Viburnum lantana*. My friend Mr. Sydney Webb, of Dover, suggested this plant to me as likely to yield larvæ of this rare insect as long ago as 1898, but only this year was I successful in finding it.—N. CHARLES ROTHSCHILD, 148, Piccadilly, W.: June 10th, 1906.

On Proctotrypidæ.—In the earlier half of the 19th century this country held a lead over the rest of the world in the study of this interesting group of *Hymenoptera*. A. H. Haliday (prince of describers for his day) and F. Walker named and described an immense number of species and must have formed valuable collections. Subsequently work in the group was continued by the Rev. T. A. Marshall, and his collection must have contained most of the known British species. That collection, or at any rate part of it, together with Walker's types and collection went to the bottom of the sea (see André's "Species des Hyménoptères d'Europe et d'Algérie," vol. ix, p. 136). Whether Marshall formed a second collection I do not know, but it would seem from André that he must have done so and that it has found its way to the National Museum at Buda-Pest and so become lost to British Entomologists. At present there appears to be no one working at the group in Britain except possibly Mr. P. Cameron, whose collection is constantly referred to in André, nor do I know of any other real collection, though there must be some scattered throughout

the country, and there are a few unarranged specimens in the British Museum. It seems a pity that the study of this extremely interesting group of parasitic insects should be altogether dropped here. The insects are easy to collect, and in late autumn are swept in some numbers by every Coleopterist who uses sweeping as a method of collecting beetles, and bottling them is an easy matter as they are sluggish. Though small, or even microscopic in size, they are easily preserved as they are extremely hard, and the wings, even if mounted badly in the first instance, can usually afterwards be disentangled. Unlike *Diptera* there is no objection to carding them as most of the characters are on the upper side and the insects can easily be floated off. They can also be pinned through the side, but the wings must then be kept expanded to show the metanotum and petiole. Until recently the work of identification up to a certain point was easy, as Ashmead's book on the American *Proctotrypidæ* gives all the generic characters, and Marshall's catalogue gives reference to the specific descriptions.

The appearance, however, of the first parts of vol. ix of André's work on the European *Proctotrypidæ* has temporarily greatly complicated matters, though, ultimately, it will no doubt enable a satisfactory British list to be made out. The Abbé J. J. Kieffer, to whom the last of the work was entrusted on the death of Mr. Marshall, differs on many important points from Ashmead and Marshall, and, as the result, a large number of the old British species have been re-named, and in many cases the earlier descriptions have been thrown aside as insufficient. Too much praise cannot be given to the thoroughness with which the work has been done. Its completion will be a formidable task. 368 pages have been reached in dealing with two out of the ten groups of the family, comprising 32 only out of the 373 insects in Marshall's catalogue. Unfortunately the author never states whether his description is from a single specimen or many. To me this seems a most important detail, especially in parasitic insects, when (judging at least from the *Ichneumonidæ*) even structural characters are not always constant. I am left after using the work, under the impression that the number of species in some of the genera must, if the characters really hold, be almost infinite. To take a concrete instance; in the genus *Antæon*, 54 ♀ ♀ and 29 unattached ♂ ♂ are described, 64 of them being described as new species, while 17 names, 16 of which are in Marshall's catalogue as British, are declared unrecognisable. 36 of the new species are described as from Scotland (P. Cameron). Most of these have not been taken elsewhere. Nevertheless, my own British specimens appear in most cases not to agree structurally with the species described, though I could, somewhat doubtfully perhaps, assign them names from the old British list (now discarded), and I have some species to which names are so assigned by Mr. Marshall. The almost complete absence of satisfactory English records in a conspicuous genus like *Antæon* with 36 species described from Scotland shows what a lot of work there is to be done in the group. This can best be done, in the first instance, by making collections.

During the past few years I have got together a small collection of these insects, and that of the late Mr. Beaumont has recently come into my hands (unfortunately the naming of this, even according to the old system, is anything but satisfactory), while Mr. Morley has been good enough to lend me those which he had captured or received from correspondents as *Ichneumons* (many already named by Mr. Marshall).

I should be very glad to hear of others working in the group and to see British specimens of these insects, and most happy to attempt to identify any British insects sent, so far as present matters permit, while collectors in other groups who come across them under circumstances in which they are able to secure them in any numbers would confer a great favour by sending specimens in laurel.

The group may be distinguished from the other parasitic *Hymenoptera* by their hard external tegument, by their having the terebra protruding from the middle of the abdomen instead of from the lower side as in the *Ichneumonidæ*, *Braconidæ*, *Chalcididæ* and *Cynipidæ*, and by the pronotum reaching back to the base of the fore-wings. The colour is almost always shining black, and though in a few cases reds and testaceous coloration, or even yellow may be found, I believe the British species are never metallic. The number of joints of the antennæ in the British species never exceeds 15, though it may be very much less. With the exception of *Proctotrypes gravidator*, L., which might be thought to be an *Ichneumon* or *Bracon*, they could only be confused with the *Chalcididæ* or *Cynipidæ*. The former are, however, in most cases metallic and they generally have a distinct round stigma at some distance from the margin of the wings, while the peculiar venation of most of the *Cynipidæ* (often reproducing a very irregular W or M) and the deep abdomen of part of the group as well as its long slender terebra, generally prevents confusion in this direction.—ARTHUR J. CHITTY, Huntingfield, Faversham, Kent: May, 1906.

Neuroptera from North Uist.—So little is known about the "*Neuroptera*" of the Outer Hebrides that it may be desirable to record the species that were taken by my friend Mr. James Waterston in North Uist last June. The *Neuroptera Planipennia* are represented by *Sialis lutaria*, L., in some numbers, mostly specimens of small size, but this insect varies much in that respect independently of locality. Of *Perlida*, *Isopteryx torrentium*, P., and *Nemoura variegata*, Oliv., were found. *Odonata*: *Libellula quadrimaculata*, L., *Pyrrhosoma nymphula*, Sulz., and *Ischnura elegans*, V. der L. The first named has the fore part of the wings considerably suffused with yellow, but the nodal spots are quite small, and the specimens are much the smallest of any that have passed through my hands. *Trichoptera*: *Limnophilus marmoratus*, Curt., *L. sparsus*, Curt.; *Leptocerus nigro-nervosus*, Retz., a very interesting species from this out-of-the-way locality; and *Polycentropus flavomaculatus*, P.

Mr. Waterston also visited St. Kilda, where he secured five species of *Trichoptera*, one of which is of extreme interest, if my conjectures as to its identity are correct. Further material is necessary and as there exists the probability that this will be obtained by Mr. Waterston this summer, I reserve any remarks on his St. Kilda captures until later.—K. J. MORTON, 13, Blackford Road, Edinburgh: 25th May, 1906.

Hemiptera, &c., at Deal.—Having spent a few hours on Whit Monday and Tuesday on the sandhills at Deal, I was fortunate enough to meet with two species of *Hemiptera* which have not previously, I think, been recorded from that well worked

locality. *Beosus luscus*, F., was fairly common at one spot on the seaward side of the golf course, while on the landward side amongst some dwarf plants of *Trifolium repens* I found a single specimen of *Brachysteles parvicornis*, Costa. Of other *Hemiptera* the best were *Aphanus lynceus*, F., and *Pseudophlaeus falleni*, Schill. Amongst the clover plants, where the *Brachysteles* occurred, there were a few specimens of *Apion lævicolle*, Kirb.; they were lying about on the sand under the plants with legs tucked up, apparently benumbed by the bitter east wind that was blowing.—E. A. BUTLER, 53, Tollington Park, N. : June 12th, 1906.

Review.

A. J. SILFVENIUS: Beiträge zur Metamorphose der Trichopteren (Acta Societatis pro Fauna et Flora Fennica, 27, No. 6; Helsingfors, 1905). Zur Kenntnis der Trichopteren-fauna von Tvärminne (Zeitschrift für Palmen, No. 14; Helsingfors, 1905). Trichopterologische Untersuchungen: I. Über den Laich der Trichopteren (Acta Soc. pro Fauna et Flora Fennica, 28, No. 4; Helsingfors, 1906).

Those who are acquainted with the recent writings of such authors as Klapálek, Silfvenius, Thienemann, Ulmer, Needham, Betten and others, on the life histories of aquatic *Neuroptera* (in the broad sense) must be aware that progressive work of this kind is not at present confined to students of *Lepidoptera*. The work accomplished in the *Trichoptera*, for example, has been enormous, and the keenness with which it has been pursued can alone account for such excellent results in dealing with animals whose study obviously presents much greater difficulties than those presented by terrestrial forms.

In the first-mentioned of the above papers, Silfvenius in a memoir extending to 168 pp., concludes his seventh contribution to the knowledge of the Metamorphoses of the *Trichoptera* of Finland.

In these papers the metamorphoses of 101 species are more or less thoroughly described, in many species an account of the larva, the pupa and the case being given. The number of Finnish species, and the number of these species of which the metamorphoses are known are stated thus:—

	SPECIES.	METAMORPHOSES.
<i>Phryganeidæ</i>	14	14
<i>Limnophilidæ</i>	78	42
<i>Sericostomatidæ</i>	10	7
<i>Leptoceridæ</i>	32	20
<i>Hydropsychidæ</i>	31	22
<i>Rhyacophilidæ</i>	6	4
<i>Hydroptilidæ</i>	19	12
	190	121
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It will be seen that the earlier stages of a very large proportion of the species in which these stages are known, have come under the observation of the author. Of

57 genera found in Finland, he states that there are only four (*Arctæcia*, *Asynarchus**, *Chilostigma*, and *Arctopsyche*) that are quite unknown with respect to their earlier life. Of the 48 species dealt with in the present memoir, 14 are mentioned as having been previously unknown, or imperfectly known, as far as their metamorphoses are concerned.

The second paper is perhaps the most interesting to the general entomological reader. The *Trichoptera* found in the neighbourhood of the Zoological station at Tvärminne, in the Western part of the Gulf of Finland are here discussed, especially in connection with the conditions of the waters in which they spend their earlier life, and much that is of interest connected with their economy is brought to light. For his purpose, the author divides the waters into five different groups: the sea, the smaller waters near the sea, the swamps, the inland lakes, and the running waters. Although the fact that *Trichoptera* are found in the Gulf of Finland is not new, the subject having already been dealt with by Levander, it may come as a surprise to some that water sufficiently saline to maintain a luxuriant growth of *Fucus* also maintains a large number of *Trichoptera*. Silfvenius found in the sea no fewer than 24 species as larvæ or pupæ, namely: *Phryganea grandis*, L., *P. striata*, L., *P. varia*, Fab., *P. obsoleta*, McL., *Agrypnia pagetana*, Curt., *Agrypnetes crassicornis*, McL., *Limnophilus rhombicus*, L., *L. flavicornis*, Fab., *L. decipiens*, Kol., *L. marmoratus*, Curt., *L. lunatus*, Curt., *L. politus*, McL., *L. vittatus*, Fab., *L. affinis*, Curt., *Leptocerus senilis*, Burm., *L. cinereus*, Curt., *Mystacides longicornis*, L., *Æcetis ochracea*, Curt., *Æ. furva*, Ramb., *Holocentropus dubius*, Ramb., *H. picicornis*, Steph., *H. auratus*, Kol., *Cyrnus flavidus*, McL., and *Agraylea multipunctata*, Curt., besides which imagines of the following species were found in such circumstances that they must as larvæ have lived in the sea: *Agrypnia picta*, Kol., *Limnophilus griseus*, L., *Molanna augustata*, Curt., *M. palpata*, McL., *Leptocerus fulvus*, Ramb., *Æcetis lacustris*, Pict., *Cyrnus insolutus*, McL., *C. trimaculatus*, Curt., and *Ecnomus tenellus*, Ramb. Near Tvärminne none of the following was ever found in fresh water: *Phryganea grandis*, *A. crassicornis*, *L. cinereus*, *Æ. furva*, *H. auratus*, *C. flavidus*, *E. tenellus* and *A. multipunctata*. It is worthy of mention, however, that the larva of the remarkable *Agrypnetes*, which hitherto has only been found on the shores of the Gulf of Finland, lives quite well when placed in fresh water.

The smaller waters near the sea, all lying on rocky ground, are classified as the intra-littoral sea basins, the subsaline rock-pools, the permanent rain-water pools, the moss-pools (Moostümpeln) and the sphagnum-bogs (Felsensphagnete). Each of these classes has its more or less characteristic species of *Trichoptera*. Without going into all of these in detail, it is interesting to notice how the larva of *Limnophilus griseus*, the species of the "Moostümpeln" which sometimes dry up completely in summer, is able to protect itself against drought by closing up the front opening of its case and retiring to the back of it; lying there in the position it assumes before pupation, it quietly waits for better times, in this condition apparently able, with little more moisture than is afforded by the dew, to withstand (according to Silfvenius' experiments) a longer period of drought than is likely to occur in nature. The "Felsensphagnete" which often lie high up amongst the rocks, have no open water surface or a very restricted one and are amongst

* With regard to *Asynarchus*, see Notes on *A. canosus*, Ent. Mo. Mag., vol. xxi, p. 125. Compare also Mon. Rev. Tr. Eur. Fauna, Sup., pt. ii, p. xxviii.

the driest localities in which Trichopterous larvæ and pupæ are to be found. The characteristic vegetation of one of these includes *Betula odorata*, *Pinus sylvestris*, *Ledum palustre*, *Calluna vulgaris*, *Vaccinium uliginosum*, *V. oxycoccos*, *Empetrum nigrum*, *Eriophorum raginatum* and different species of grass and *Sphagnum*. The Trichoptera of these bogs are *Agrypnia picta*, *Limnophilus griseus*, *L. luridus*, *L. sparsus* and *Stenophylax alpestris*. In the deeper recent layers of sphagnum-turf were found numerous pupæ of *L. luridus* and *L. sparsus*. Such species are not dependent on water to the same degree as most other Trichoptera and the bridge between their conditions of life and those of the truly terrestrial *Enoicyla* does not seem to be very wide!

Silfvenius, as a thorough investigator, begins at the beginning, although his paper on the eggs and egg-masses of the Trichoptera is the last published. In the historical part of this paper reference is made to previous descriptions (mostly imperfect ones) relating to 33 species of which 27 are European; by his observations the numbers are raised to 71. In the special part, the species are dealt with under the seven generally accepted families, on the bases of the literature and the author's own observations, the following points being noticed: the mode of deposit of the spawn, its definitive situation, form and colour, the arrangement, number, form and colour of the eggs, and lastly, the egg-masses more closely examined by the author are described with respect to their form and size and the size of the eggs. In the general part are notices over repeated pairings; the time between pairing and egg-laying; how the eggs are extruded from the genital opening; how the spawn is formed and how transported before it is deposited, how and where it is laid and how long the egg-laying lasts. Then are noticed the changes which take place in the gelatinous envelope during and after embryonic development. After a reference to the dangers which threaten the eggs and the means of averting these, the signification of the gelatinous mass is discussed and some interesting analogies drawn between the egg-masses of Trichoptera and those of other animals, and especially of other insects. The author then states the results of the study of the egg-laying and of the spawn-masses from the point of view of the relationships of the different families. Finally, a short account is given of what has been done in connection with the study of the embryonic development of these insects. It is impossible here to go more fully into the subject, but to all who are interested in the attempt to trace the origin and relationships of insects, the observations of Silfvenius will be of value. He is to be congratulated on his excellent work, further instalments of which will be looked for with interest and confidence.—K. J. M.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *Monday, March 19th, 1906.*—
Mr. G. T. BETHUNE-BAKER, President, in the Chair.

The Meeting was held in the Society's new Rooms at Avebury House, 55, Newhall Street.

Mr. J. T. Fountain showed a very fine variety of *Phigalia pedaria*, F., taken near Highbury, Birmingham; it was practically a black-veined moth, the whole of

the ground being almost uniformly suffused with a leaden-grey colour, with the veins and costa standing out conspicuously darker. Mr. R. S. Searle, three specimens of *Borkhausenia* (*Ecophora*) *pseudopretella*, Stt., found about three inches under ground when pupa digging. Mr. J. T. Fountain, a piece of cork into which a larva of *Aeronycta psi* had bored its way to pupate. Mr. T. Gilbert Smith, a log of larch containing *Tetropium crawshayi*, and gave details of its life-history, &c. He said that it feeds only on larch trees which have just begun to fail. So few trees were in just the right condition at one time, as a rule, that he thought the beetles must possess some very powerful sense to enable them to find them. Mr. C. J. Wainwright suggested that it was perhaps after all by chance that they found the right trees; that they laid eggs in many trees and that the larvæ perished in the unsuitable ones, and started fresh colonies in the suitable ones. Mr. E. C. Rossiter thought, however, the beetles were guided by the sense of smell. He reminded Members that turpentine was very attractive, and suggested that perhaps when the trees failed, some chemical change gave rise to a different smell from them which led the beetles to them. He said that to show how powerful these attractions are, some years ago he tried some experiments in the open air in London upon turpentine, orange and lemon oils, &c., and found great numbers of moths drowned in water tanks adjacent, evidently having been attracted by the oils. There were great numbers of *Zenzero pyrina*, L., which he knew must have come from some distance.

April 30th, 1906.—The President in the Chair.

Mr. R. C. Bradley exhibited a species of *Cheilisia* taken by himself and Mr. Colbran J. Wainwright at West Runton, Norfolk, in 1900. It had remained unrecognised until now, but Mr. G. H. Verrall having sent a couple to Herr Becher, it was pronounced by him to be *C. relutina*, Loew, a species new to Britain. Mr. J. T. Fountain, a varied series of local forms of *Hybernia marginaria*, Bleh., including a remarkably pale specimen, very pale, and quite bleached looking, and somewhat undersized; it was taken at King's Heath on April 1st, 1906. The majority were dark, tending towards var. *fuscata*, Mosley, which is a common local form. Mr. J. Simkins, *H. marginaria*, both light and dark forms, from Solihull; also specimens of *Macrothylacia rubi*, L., which he had succeeded in rearing by forcing. He fed them on oak, hibernated them in moss out of doors, kept them out of doors until January, and after waiting until they had been frozen hard brought them in to a temperature of 90°; in two days they spun up, and in a fortnight emerged. He considered the secret of his success to be owing to the fact that he had allowed them to be frozen first before forcing them. Mr. H. W. Ellis, *Amara nitida*, a beetle which was not uncommon at Knowle, though very rare elsewhere. Mr. T. Gilbert Smith, a number of working drawings of the larvæ and pupæ of *Coleoptera*; one showed a very remarkable larva apparently of a Lamiid beetle allied to *Mesosa nubila*, but whilst the hitherto unbroken rule in the *Lamiidæ* was that the larva was legless, this showed remarkable rudimentary legs. Unfortunately the larva was unique and died, so that it remains unknown. Mr. G. T. Bethune-Baker, a collection of *Lepidoptera* made by himself in the Lake District last year. Also two moths which had already been shown by Mr. W. E. Collinge and described as

doing serious damage to the coco-nut palm in Fiji. It proved to be new and to belong to a new genus of the *Syntomiidae*.—COLBRAN J. WAINWRIGHT, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
Thursday, May 10th, 1906.—MR. R. ADKIN, President, in the Chair.

Mr. Rayward exhibited series of *Hybernia marginaria* (*progenmaria*) from Liverpool and Surrey. The former were all dark, the latter had some of the ♀s equally dark, but the ♂s were only moderately dark. Mr. Sich, living imagines of *Lithocolletis sylvella* from maple leaves collected at Cookham, in October, 1905, and kept in a flower pot in the open. A large number of lantern slides were exhibited including (1) Mr. Main, larvæ of *Agrotis ashworthii*, *Nisoniades tages*, *Apatura iris*, *Lucanus cervus*, and the pupa of a saw-fly; (2) Mr. Lucas, for Mr. Hamn, illustrative of protective resemblance in *Tephrosia biundularia*, *T. luridata*, *Rumia cratægata*, *Cidaria niata*, *Pararge egeria*, &c., (3) Mr. Tonge; (4) Mr. West (Ashstead); (5) Mr. Dennis; and (6) Mr. F. Noad Clarke.

Thursday, May 24th, 1906.—The President in the Chair.

Mr. Main exhibited a nymph of the European *Mantis religiosa*, sent by Dr. Chapman from South Maxime. Mr. Sich, an aberration of *Lithocolletis pomifoliella*, in which the median streak was connected with the first dorsal spot. Mr. Carr, living larvæ of *Geometra vernaria*, some of which were still in their hibernating skins. Mr. Kaye, living larvæ of *Thecla pruni*. Mr. Tonge, a living specimen of *Eupithecia consignata*, just taken on Hayling Island. Mr. Newman, a long bred series of *Brephos notka* from Worcester, *Polygonmatus corydon* var. *fowleri*, an intermediate form of *Colias edusa*, an extremely dark uniform form of *Ematurga atomaria*, a somewhat streaked *Chrysophanus phlæas*, results of interbreeding *Spilosoma lubricipeda*, and a fine series of bred *Notodonta trepida*. Dr. Chapman, larvæ of *Thecla rubi*.—HY. J. TURNER, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: *Wednesday, June 6th, 1906.*—MR. F. MERRIFIELD, President, in the Chair.

Mr. H. St. J. Donisthorpe exhibited specimens of *Lomechusa strumosa*, F., taken with *Formica sanguinea* at Woking on May 26th and 29th, 1906. Only two other British examples are known, one taken by Sir Hans Sloane on Hampstead Heath in 1710, the other found by Dr. Leach while travelling in the mail coach between Gloucester and Cheltenham, and these are included in the British Museum collection. Since 1866 it has been omitted from our lists where it was included last by Crotch among the doubtful species. Dr. K. Jordan said that the species was not uncommon in Central Germany, and that he had met with it in some numbers at Hildesheim. Mr. H. J. Turner showed a case illustrating a large number of the life-histories of Coleophorids, notes on which have appeared in the

Society's Proceedings, or in the "Entomologist's Record." Mr. A. H. Jones, on behalf of Mr. Henry Lupton, a few butterflies from Majorca, captured between April 8th and April 20th last. Comparing the specimens with those of similar species from Corsica, also exhibited, they appeared to be smaller; the *Pararge megæra* approached the form *tigelius*, the *Cænonympha pamphilus* differed somewhat in the under-side, being darker. Only one moth was seen, *M. stellatarum*. Mr. Selwyn Image (a), a specimen of *Crambus ericellus*, Hb., taken at Loughton, Essex, August 8th, 1899. Not previously recorded from further south than Cumberland; (b) two specimens of *Nola confusalis*, H.-S. ab. *columbina*, Image, taken in Epping Forest, May 5th, 1906; and (c) a specimen of *Peronea cristana*, F., the ground colour of the upper-wings abnormally black, even more intensely black than in the ab. *nigrana*, Clark. Taken in Epping Forest August 19th, 1905. Mr. J. H. Keys sent for exhibition the type of *Spathorrhampus corsicus*, Marshall, from Vizzavona, Corsica. This fine Anthribid beetle was supposed by some Coleopterists to have been an accidental importation into the mountainous regions of the island, but was no doubt endemic. Mr. G. C. Champion remarked that he had taken *Platyrrhinus latirostris*, in numbers, at the same locality, in the beech and pine forests (*Pinus laricio*) along the line of railway, above the tunnel. Dr. F. A. Dixey, specimens of African *Pierinæ* found by Mr. C. A. Wiggins on February 2nd, 1906, settled on damp soil near the Ripon Falls, Victoria Nyanza, and caught, to the number of 153, at a single sweep of the net. Eight species were represented; the examples were all males, and, with one exception, belonged to the dry-season form of their respective species. Prof. E. B. Poulton, F.R.S., communicated some notes on Natal butterflies, which he had received from Mr. G. H. Burn, of Weenen, and exhibited four individuals of *Euralia wahlberghi*, Wallgr., and *E. mima*, Trim., captured by Mr. G. A. K. Marshall, near Malvern, Natal. He then explained Mr. Marshall's latest demonstration of seasonal phases in South African species of the genus *Precis*, the proof by actual breeding that *P. tukuoæ*, Wallgr., is the dry-season phase of *P. ceryne*, Boisd. He further showed 325 butterflies captured in one day by Mr. C. B. Roberts, between the 8th and 10th mile from the Potaro River, British Guiana, and drew attention to the preponderance of males; also specimens of the Halticid beetle, *Apteropeda orbiculata*, Mar., taken in Stowe Wood, Oxford, with its mimic Hemipteron, *Halticus apterus*, L.; and of the Staphylinid, *Myrmedonia canaliculata*, F., with *Myrmica rubra*, race *ruginodis*, taken near South Hinksey by Mr. W. Holland, the beetle looking extremely like the ant. The following papers were read: "Some Bionomic Notes on Butterflies from the Victoria Nyanza Region, with exhibits from the Oxford University Museum," by S. A. Neave, B.A., F.E.S. "On the Habits of a species of *Ptyelus* in British East Africa," by S. L. Hinde, illustrated by drawings by Mrs. Hinde, communicated by Professor E. B. Poulton. "Mimetic forms of *Papilio dardanus* (*merope*) and *Acræa johnstoni*" and "Predaceous Insects and their Prey," by Professor E. B. Poulton, D.Sc., F.R.S. "Studies on the *Orthoptera* in the Hope Department, Oxford University Museum: I. *Blattidæ*," and "A Note on a Feeding Experiment on the Spider *Nephila maculata*," by R. Shelford, M.A., F.L.S., F.E.S.—H. ROWLAND BROWN, M.A., *Hon. Secretary*.

BLASTOTERE GLABRATELLA, ZELLER;

A SPECIES TAKEN FOR THE FIRST TIME IN ENGLAND.

BY THE RT. HON. LORD WALSHINGHAM, M.A., LL.D., F.R.S., &c.

Being almost continually occupied in working out exotic collections I seldom take out a net during rather spasmodic visits to Norfolk; it was, therefore, by a very remarkable stroke of luck that on June 19th I took two dozen good specimens of *Blastotere glabratelya*, Zeller, from an old spruce-fir hedge in my kitchen garden here.

Had I not fortunately seen one sitting on the end of a branch and immediately recognised it as an *Argyresthia*, it might excusably have been passed over when on the wing for *Ocnerostoma piniariella*, which abounds among Scotch fir not very far from the same spot. I took it at first for *B. illuminatella*, lately added to our lists on the strength of a specimen shown to me last year by Mr. Meyrick, and consequently worked steadily for more than an hour to make up a series.

On further examination and careful comparison it was found to agree with Zeller's *glabratelya*. The type itself is small and broken, but one other also labelled by himself is very certainly the same as my series, and a set in Hofmann's cabinet is precisely similar and rightly named. The original description is in the Linnæa Entomologica, vol. II, pp. 293, 4 (1847), and was made from 1 ♂ and 2 ♀ ♀, of which I am able to find one only in Zeller's cabinet, the others having been added at a later date. The steely whitish grey, not brassy yellowish or chalky yellowish, fore-wings distinguish it from *B. illuminatella* and other near allies; the yellowish head and annulated antennæ with pale yellowish basal joint are also noticeable.

The three latest additions to the British list in this genus succeeding each other somewhat rapidly are closely allied, and all associated with conifers. I have bred *B. atmoriella* from *Pinus larix*; *B. glabratelya* is recorded as feeding in twigs of *Pinus abies* [Hrtm. MT. Münch. Ent. Ver., IV, 7, No. 1611 (1880)]; and *B. illuminatella* is said to feed on several species, which suggests the possibility of some confusion.

The genus BLASTOTERE, proposed by Ratzeburg in 1840, would include Meyrick's Section A of *Argyresthia*, "Fore-wings with 7 and 8 stalked" [HB. Br. Lp., 763 (1895)], for which reason the use of this generic name is advocated.

In Staudinger and Rebel's Catalog, 1901, 136, No. 2430, I am quoted as having confused *Argyresthia illuminatella*, Z., with *A. atmo-*

riella, Bankes. This is an error. I always regarded the latter as a good and distinct species. My mistake was in supposing that certain varieties of *A. præcocella*, Z., taken by Salvage in Scotland were *illuminatella*, Z., and the reference under No. 2430 should be under No. 2427 if anywhere. My apology appeared in Ent. Mo. Mag., XXXII, 98, 99 (1896).

Merton Hall, Thetford, Norfolk :

July 9th, 1906.

NOTES ON THE LEPIDOPTERA OF THE BALEARIC ISLANDS.

BY A. H. JONES, F.E.S.

Islands are usually restricted in their insect fauna. Corsica, for instance, with its area of 3376 square miles, its lofty mountains (Monte Cristo reaching 8889 ft.) and rivers afford suitable conditions for the support of Lepidopterous life, but it would compare very unfavourably with any corresponding area of similar elevation in Central and Southern Europe, where no doubt 140 species of butterflies would be found; whereas in Corsica there are probably not more than 70; but why Majorca, with an area of 1430 square miles, and a chain of mountains running parallel with the coast attaining an elevation in several instances of over 4500 ft., should be so destitute of Lepidopterous life is somewhat mysterious.

The Balearic Islands geologically belong to the mountain system of Andalusia, which is prolonged by a submarine ridge extending from Cape Nao, and one might almost expect to find some of the *Lepidoptera* peculiar to Andalusia, but so far such does not appear to be the case; the Lepidopterous fauna, poor as it is, being apparently derived from the north coast of the Mediterranean. Two reasons may be assigned for this dearth of insect life. First, the arid condition of the island, the mountains not attaining a sufficient elevation to afford a supply of water during the summer months, when the rivers are practically dry; and secondly, the character of the plants being not suitable for the support of Lepidopterous larvæ. During a visit to the island of Majorca from June 1st to 10th last year I noticed but 13 species of butterflies and 8 of moths; they presented with but one exception the usual South European form. The size of nearly all the specimens was below the average with the exception of *Pieris rapæ* which flourished and was a fine race. In my opinion the most likely places in the island where additions to the list might be made are

Soller, Miramar, and Lluch, situated in the range of Mountains before referred to. The country there is well wooded, and not so much under cultivation.

So far, no endemic species has been found in the islands.

The following is a list of the species observed by myself, and I have added a few species which Mr. Henry Lupton found between April 8th and 20th this year :—

Papilio podalirius, 2 or 3 observed by Mr. Lupton. *Pieris rapæ*, abundant, fine form; *P. brassicæ*, observed by Mr. Lupton; *P. daplidice*, 1 ♂ captured by Mr. Lupton. *Leptidia sinapis*, 1 ♂ captured by Mr. Lupton. *Colias edusa*, several specimens. *Gonepteryx rhamni* and *cleopatra*, occasional specimens. *Pyrameis cardui*, one specimen; several captured by Mr. Lupton. *Pararge ægeria*, generally distributed and fairly common, South European form; *P. megæra*, common. Some of the specimens approached v. *tigelius* slightly. *Epinephele jurtina* var. *hispulla*, 1 ♀ only; *E. ida*, one specimen at Soller, commoner at Pollensa. *Cœnonympha pamphilus*, several captured by Mr. Lupton. *Chrysophanus phlæas*, scarce. *Lycæna icarus*, abundant, usual South European form; *L. astrarche*, Berg., 3, ordinary from Miramar. *Cyaniris argiolus*, fairly common, one specimen taken as small as *L. alsus*. *Deilephila lineata*, Soller, a dead specimen given me. *Macroglossa stellatarum*, fairly common, observed also by Mr. Lupton. *Acidalia ochrata*, 3 ♂, Miramar; *A. degeneraria*, 1 ♂ at rest, Lluch; *A. marginepunctata*, Göze, 1 ♂, Lluch. *Agrotis saucia*, 1 flying in the sunshine, Pollensa. *Stenia punctalis*, a few, Lluch. *Nomophila noctuella* (*hybridalis*), common at Lluch.

Eltham : June 30th, 1906.

[Minorca would appear to be considerably richer in *Lepidoptera* than its larger neighbour. In my old Mediterranean diary, under the date of August 19th, 1874, I find no fewer than 17 species of butterflies noted as observed in a day's collecting within two or three miles of the town of Mahon. These include *Papilio machaon*, *Gonepteryx cleopatra*, *Colias edusa*, *Pieris brassicæ*, *rapæ*, and *daplidice*; *Pararge ægeria* (very dark), *P. megæra*, *Epinephele jurtina* var. *hispulla*, and *E. ida*; *Pyrameis cardui* and *atalanta*; *Chrysophanus phlæas* var. *eleus*, *Lycæna argiolus*, *telicanus*, *icarus*, and *astrarche*. The moths noted on the same occasion were *Macroglossa stellatarum*, not rare; *Deiopeia pulchella*, "quite a drug"; *Porthetria dispar*, numerous egg-patches and empty pupa-cases on willows; *Acontia luctuosa*, *Sterrha sacraria*, *Margarodes unionalis*, *Botys* sp.? *Cataclysta lemnalis* and *Nomophila noctuella*.—J. J. W.]

LEPIDOPTERA-HETEROCCERA FROM MAJORCA, COLLECTED BY
A. H. JONES, ESQ., 1905.

BY LOUIS B. PROUT, F.E.S.

Mr. Jones has kindly given me the opportunity of studying the *Heterocera* which he collected and has asked me to contribute a note on them. I find that they fully support the conclusion to which the *Rhopalocera* led him, that the island, unlike that of Corsica, does not produce any endemic forms. All the species obtained are widely distributed, two (*Agrotis* [*Peridroma*] *saucia*, Hb., and *Nomophila noctuella*, Hb.) being, indeed, cosmopolitan. The rest (*Acidalia ochrata*, Scop., *A. degeneraria*, Hb., *A. marginepunctata*, Goeze, and *Stenia punctalis*, Schiff.) occur over a wide area in the Palæarctic region, and are well known in Britain.

I may add regarding the Geometrids, which Mr. Jones has been kind enough to add to my collection, that the *Acidalia ochrata* (two ♂) and *marginepunctata* (one ♂) are fine large specimens, but not differing appreciably from some others from the South of Europe (Italy, &c.). The *A. degeneraria* (also a single specimen) is very interesting, being uniformly of the fine rufous colour which one finds in the *central area only* of our brightest normal specimens (*e.g.*, the form figured by Millière, *Icon.*, 100, 15, as var. *meridiaria*) with the black "central shade" rather thick and heavy. There is no similar specimen in my collection, or in that of the British Museum; nor am I acquainted with any reference to it in literature, and it is very possible that further material would show it to form a local race, but the species is known to be decidedly aberrant. The specimen is perhaps slightly below the average size.

October 10th, 1905.

ADDITIONS AND CORRECTIONS TO THE LIST OF
BRITISH HYMENOPTERA SINCE 1896.

BY EDWARD SAUNDERS, F.R.S.

(Continued from page 155).

Crabro cavifrons, Thoms. = *cephalotes* auct. (*pars.*).

As *cephalotes*, Fab., Panz., &c., appears to be an admixture of probably several species, and there seems to be no probability of settling the question by reference to the types, I think we shall do well to follow the continental Entomologists and to call our common

species *cavifrons*, Thoms. Of this determination, at any rate, there appears to be no doubt. Thomson in his Hymenoptera Scandinaviæ makes two species of our *cephalotes*, *cavifrons*, Th., and *planifrons*, Th. Of these *cavifrons* is our common species, but I have little doubt that *planifrons* occurs also in Britain; in fact, I possess a single ♂ *ex* Shuckard's collection without date or locality. I have no doubt it is a British specimen, but until more evidence is to hand I do not propose to introduce it into our list. Still it may be well here to point out the distinctive features of the two species so as to enable any one who may come across *planifrons* to recognise it.

It is rather smaller than *cavifrons*. In the ♂ the excavation between the two teeth of the 3rd antennal joint is not nearly so deep, so that the joint has an altogether thicker and clumsier appearance, and the clypeus is clothed with silvery, not golden, hairs. This character, however, is probably variable.

The ♀ may be recognised easily by the shape of the clypeus, which is produced and narrowly truncate in the centre, the distance between the teeth or angles of the truncature being much less than that which lies between each of them and the black prominent tooth which limits the lateral emargination—in this respect it more resembles the following species, but the central teeth are nearer each other and further from the lateral ones than in *saundersi*.

Crabro saundersi, Perk. (Ent. Mo. Mag., xxxv, p. 261).

This very distinct species is, as Mr. Perkins points out, almost certainly that which is described as *sexcinctus* by Wesmæl, and it is also I think undoubtedly the species which is known by the name of *sexcinctus*, Fab., among continental Entomologists; at the same time no one has pointed out the peculiar character of the ♂, viz., the fine tuft of curled hairs on the first tooth of the antennæ, and without reference to Fabricius' type it is impossible to be sure what his species is; therefore Mr. Perkins has renamed it.

It may be known from *cavifrons*, Thoms., by its usually rather larger size, and darker coloration, the black being more extensive. In the ♂ the first three teeth of the antennæ are equidistant, whereas in *cavifrons* the distance between the 1st and 2nd is greater than that between the 2nd and 3rd. There is also the distinctive character of the curled hairs at the apex of the first tooth.

The ♀ may be known by the form of the clypeus—in *saundersi* the outer teeth of the quadridentate margin are much more distant from the inner ones than the inner ones are from each other, and the face is much wider across the eyes in proportion to its height. The clypeus in both sexes is silvery, whereas as a rule in *cavifrons* it is golden. As, however, *cavifrons* occasionally varies in this respect, no reliance can be put on this as a character.

Coast of Devonshire and North Wilts. (R. C. L. Perkins);
Lyme Regis (Nevinson).

DIPLOPTERA.

Vespa austriaca, Pz. ♂ (Ent. Mo. Mag., xxxii, p. 212).

This sex of *austriaca* was first recorded from Britain in 1896, Mr. O. Pickard Cambridge having secured both sexes in Dorsetshire. Since then it has occurred in various localities. Mr. Chas. Robson of Newcastle-on-Tyne in 1898 (*cf.* Sc. Gossip, vol. v, pp. 69 and 70) succeeded in finding both sexes in an old nest of *V. germanica*, which he had had in his possession since 1887, thereby proving, what had been suspected by Schmiedeknecht and others, its parasitic or inquiline relations with *rufa*. A further and most interesting article on this species, by Messrs. Carpenter and Pack-Beresford may be found in the "Irish Naturalist" for September, 1903, and in this Magazine, vol. xxxix, p. 230 *et seq.*

The male may be known at once by its short cheeks and hairy tibiæ. It is the only British species in which these two characters are combined. It has also the long first segment of the abdomen as in the ♀, which is distinctly longer than in *rufa*.

Odynerus (Hoplopus) simillimus, Mor. (Ent. Mo. Mag., xxxix, p. 6).

This fine addition to our list was made by Mr. W. H. Harwood, who took a single ♂ in 1901, near Colchester, and his son the year after captured a few of both sexes on flowers near a ditch on the marshes.

It should be placed next to *reniformis*, Gm. in our list, as it possesses in the ♂ the curious genal and coxal spines which characterise that species, but in *simillimus* the former are black and not yellow, and the latter are finer, shorter, black at the base, and yellow only towards the apex, whereas in *reniformis* they are entirely yellow anteriorly; the colour of the pale markings is throughout whiter than in *reniformis*, and the abdominal bands are narrower. This coloration gives it more the appearance of a large *melanocephalus*, especially in the ♀. There is, however, an important character which will distinguish it at once from any other species, and that is the form of the metapleuræ, each of which bears a somewhat ill-defined, but distinct, tubercle. The post-scutellum in the ♀ has a pale band which will further serve to distinguish it from *melanocephalus*.

Odynerus (Leionotus) tomentosus, Thoms. (Ent. Mo. Mag., xxxvi, p. 172).

This species is the only one of the *Leionotus* section that has any claim to a place in the British list, and unfortunately no locality is recorded for it. Mr. R. C. L. Perkins introduced it on a series of specimens in the Walcott Collection at Cambridge. I think there is no reason for doubting the British origin of these, so one can only hope for further records of its capture.

In colour and general appearance it is like several of our species, but I think it more closely resembles *pictus* than any other; from this, however, and from all its apparent allies it may be separated at once by the following sectional characters:— Basal segment of abdomen without any basal transverse carina, antennæ of the ♂ terminating in a hook as in the *Ancistrocerus* section; the ♀ may be known from any of the *Hoplopus* section by the less cupuliform basal segment of the abdomen and the absence of any central impression near the apical margin.

Odynerus (Symmorphus) bifasciatus, Linn. (Ent. Mo. Mag., xxxviii, p. 106).

We are indebted to Mr. W. H. Tuck of Bury St. Edmunds for this addition, of which he found numerous specimens in his own neighbourhood; it is very closely allied to *sinuatus*, but may be known from it by the following characters:—

The post petiole of the first abdominal segment in *bifasciatus*, *i.e.*, the portion beyond the basal transverse ridge, is more quadrate and less cone shaped than in *sinuatus*, the sides diverging from the basal ridge much less rapidly, the general effect being that the post petiole of *bifasciatus* looks and really is distinctly broader than long, whereas that of *sinuatus* looks longer than wide, although actually the apical margin is longer than the length of the post petiole, the longitudinal fovea of the disc in *bifasciatus* is less defined than in *sinuatus*, the pronotum is entirely black, the legs are less variegated with yellow, and the abdominal bands are slightly narrower.

ANTHOPHILA.

Colletes montanus, Mor. (Ent. Mo. Mag., xxxv, p. 262).

This species was first sent to me by Mr. A. A. Dalglish, who took both sexes on Irvine Moor, near Glasgow, in July, 1889. It has since been taken by Col. Yerbury at Waterville, in Ireland, in July and August, 1901.

It resembles *C. daviesanus* in the shining, finely and comparatively remotely, punctured basal segment of the abdomen, and is very distinct from any of our other species. The ♂ may be known from *daviesanus* by its brighter coloration when fresh, the absence of the hairy tooth at the side of the 6th ventral segment, and the form of the 7th, which is produced into two long parallel-sided processes slightly spatuliform at their apices, and the absence of the long knife like blades of the sagittæ so characteristic of the armature of *daviesanus*. In the ♀ the face is not so wide as in *daviesanus*, and the cheeks between the eyes and mandibles distinctly longer, the hairs of the face white; abdomen coal-black, basal segment rather strongly, but not very closely, punctured, the bands of the segments white.

✓ *Prosopis spilota*, Först. = *masoni*, E. Saund.

The very perplexing group with dilated scapes in the ♂ has been carefully studied by Mr. J. D. Alfken of Bremen, who has had the

types of Förster's monograph of this genus in his hands, and he has made the above identification. The ♀ only was described by Förster, but it seems clear that it is identical with our British species.

Prosopis krieckbaumeri, Först. (Ent. Mo. Mag., xxxvi, p. 49)
= *palustris*, Perk.

This distinct species, introduced by Mr. R. C. L. Perkins, was taken by him in Wicken Fen and in similar localities in Suffolk, frequenting flowers of brambles, thistles, &c. and burrowing in the dry stems of reeds.

Its nearest ally is *P. communis*, but *krieckbaumeri* is larger and stouter. The face in the ♂ is entirely yellow below the antennæ, the colour continued backwards broadly along the borders of the eyes for some distance above the insertion of the antennæ, and of a paler tint than that of *communis*. The 7th and 8th ventral segments are unlike those of any of our species, and are well figured in Mr. Perkins' paper (*loc. cit.*). The ♀ may be known by the impunctate basal segment of the abdomen and the structure of the propodeum, which in *krieckbaumeri* is less abrupt posteriorly, and the central area is reduced posteriorly to a narrow median line.

✓ *Halictus freygessneri*, Alfk. = *subfasciatus*, Smith, E. Saund. (partim)
(Ent. Mo. Mag., xl, p. 250).

♂ flagellum of antennæ paler beneath (very pale testaceous after the 1st joint), the contrast between the 1st and 2nd very strong, face decidedly narrower than in *fulvicornis*, only slight indications of the basal spots on the 2nd and 3rd abdominal segments, posterior tarsi wide, 2nd joint as wide as long, genital armature dark brown.

♀ face narrower, propodeal area smoother, *i.e.*, with the rugosities less defined, abdominal segments impunctate or nearly so at the base, basal pubescent spots of the 2nd scarcely indicated, apical margins of the segments only very narrowly dark testaceous.

Scotland, Ilfracombe, Tunbridge Wells.

Halictus fulvicornis, Kirb. = *subfasciatus*, Smith, E. Saund. (partim)
(Ent. Mo. Mag., xl, p. 250).

♂ antennæ darker beneath (dark testaceous), face distinctly wider, conspicuous spots of white pubescence at the base of the 2nd and 3rd abdominal segments, posterior tarsi narrower, the 2nd joint decidedly longer than wide, genital armature testaceous red.

♀ face shorter, propodeum with the rugosities more pronounced and more clearly defined (crisper), abdominal segments finely but distinctly punctured at the base, lateral pubescent spots of the 2nd and 3rd well defined, posterior margins widely testaceous.

A fairly common species in the South, but it is difficult to get at

the distribution of the two species as they are probably mixed in many collections. The tarsal characters of the ♂ distinguish the two species readily, but in the ♀ the characters are much more difficult to seize.

Halictus semipunctulatus, Schenck. (Ent. Mo. Mag., xl, p. 11).

This little species has only been taken, so far as I know, by Mr. E. B. Nevinson, who discovered it at Lyme Regis in July, 1903. It should follow *pauillus* in our list, to which, and to *fulvicornis*, it is pretty closely allied, but may be distinguished by the following characters.

It may be known from both by the wider face and the paler margins of the abdominal segments. From *fulvicornis* the ♂ may be known by the short antennæ, the hairs on the ventral segments, and by the less rugose propodeum with less sharp brow; the ♀ by the propodeum, which lacks the prominent lateral angles, by the less convex abdomen, and the more punctured basal segment.

From *pauillus* the ♂ may be known by the form of the abdominal segments, which are not impressed at the base as in *pauillus*, and by the sharp brow of the propodeum. The ♀ by the entire raised apical margin of the propodeum, and the less strongly marked apical depressions of the abdominal segments.

Halictus subauratus, Rossi = *gramineus*, Smith.

I am following Mr. Alfken in this identification. There is, I think, no doubt that he is right.

(To be continued).

PHORA OPACA, Mg., AND PHORA PERENNIS, Mg.

BY J. E. COLLIN, F.E.S.

In the genus *Phora* a small group of species with the bristles on the frons all reclinate, have usually been separated from the rest by having only three distinct thin veins to the wing, the axillary vein being either abbreviated, indistinct, or absent; to this group belong *P. opaca*, Mg., and *P. perennis*, Mg., the latter considered by Becker, in his recent excellent Monograph of the European Species, to be a synonym of the former; none of the species are by any means common, and as the sexes differ considerably in the characters made use of for separating the species, it has always been difficult to name female specimens. Becker himself experienced this difficulty, and in his table of species gave no characters by which one might separate

the females of *opaca*, *nigricornis*, and *lugubris*.* The great value of Becker's work can be realised by only those who previously studied the family, but he was weak in his knowledge of the females of this group, and was led to include females with dark halteres under his *opaca*, and to the conclusion that the colour of the halteres was variable in that species. If his knowledge of the sex had been greater he would have recognised that the type specimen of *opaca* in the Paris Museum was not the same as the species he described under that name.

I have recently critically examined the type specimens of *opaca* and *perennis*, and find that the species standing in our List as *opaca*, and described by Becker under that name, is identical with *perennis*, Mg., while Meigen's *opaca* is a different species described by him in his Syst. Besch., vi, p. 216, as follows:—

“ 12. PH. OPACA.

“ Schwarz; Schwinger und Beine braun; Knie gelb; Flügel rauchfarbig.
“ Nigra; halteribus pedibusque fuscis; genubus luteis: alis infumatis.

“ Matt grauschwarz, mit braunen Schwingern. Untergesicht glänzend
“ schwarz, mit einer vertieften Längslinie. Taster und Fühler schwarz. Beine
“ schlank, dunkelbraun, mit gelben Knien. Flügel ruszfarbig, am Vorderrande
“ zart gewimpert; Randadern dunkelbraun; die vierte Längsader fehlt.—Nur das
“ Weibchen.—1½ Linie.”

The type specimen has a broad, shining proboscis which Meigen probably mistook for the face, his description of the face as shining black can hardly be explained in any other way, as the face of a *Phora* is short and almost entirely hidden by the antennæ. The specimen agrees with the description in other respects, and I unhesitatingly consider it a female of *nigricornis*, Egger, which, together with *trinervis*, Beck., possesses a long broad proboscis.

To turn to other descriptions of *opaca* we find that Macquart's appears to be only an abbreviation of Meigen's. Zetterstedt made no mention of the shining face, but retained “halteres nigricantes,” thereby shutting out *perennis*, his description of the wings as having a streak along the costa from the thick veins to near the wing tip applies best to *lugubris* ♀, but the description might cover several species.

Schiner's *opaca* cannot possibly be that of Becker, for he called the palpi narrow, yet fairly long, the proboscis more projecting than

* I leave the publication of characters whereby these species may be known to Dr. J. H. Wood, who is at work upon a revision of the genus.

in the generality of other species, mid and hind tibiæ each with one bristle on the outer-side, halteres blackish, and knew only females; this would seem to indicate females of *trinervis*, Beck., more than as Schiner thought probable females of *nigricornis*, Egg., (= *opaca*, Mg.).

The species described by Becker as *opaca* is evidently the same as that standing in our List under that name (= *perennis*, Meig.) as is proved by his figures of the genitalia and wing; our List must therefore be corrected by adding *P. perennis*, Mg., and placing *nigricornis*, Egg., as a synonym of *opaca*, Mg. With regard to *nigricornis* I would call attention to the fact that the majority of specimens I have seen, including all those in Kowarz's Collection, have no bristle on the hind tibia near the middle which the species was described as bearing, this may indicate another species, or be only a variation, in either case it does not affect the synonymy, as in the type specimen of *opaca* the bristle is present as described by Egger.

Newmarket: July, 1906.

Carpophilus sexpustulatus, F., restored to the British List.—Amongst a lot of hitherto undetermined beetles I found recently a fine specimen of this species. The card to which it is affixed bears the date "23.3.94." Referring to my diary I find that on this day, being Good Friday, our local Naturalists' Society made an excursion to Edlington and Wadworth Woods, near Doncaster. The season was a very backward one, the trees and hedgerows quite bare, and the grasses and other vegetation showing little sign of spring. The day, however, was beautifully fine. My energies were directed to bark under which I have no doubt the specimen in question was found. On submitting it to my friend Dr. Corbett, he confirmed my determination, and surprised me by producing another specimen labelled "Sandall Beat, 18.3.04." Dr. Corbett tells me it was found under the bark of an elm. This capture is interesting for two reasons: first, as showing that the species is not confined to one locality, the two woods being fully four miles apart in a straight line; secondly, the almost identical time of the year at which both specimens were taken. Respecting its inclusion in the British List there has been a considerable fluctuation of opinion. Murray (Trans. Linn. Soc., xxiv, 386, plate 32, fig. 12) 1864, says: "not uncommon in Britain." Crotch does not mention it in the first edition of his list, but includes it amongst the "doubtfully indigenous" in the second edition, in which opinion he was followed by Rye (1866). In Dr. Sharp's second edition (1883) it is included without question, but Sharp and Fowler (1893), and Beare and Donisthorpe (1904) relegate it to the list of introduced species. The present records should restore it to its old place in the British List, the conditions under which both specimens were found leaving no room for doubt as to their being truly indigenous.—E. G. BAYFORD, 2, Rockingham Street, Barnsley: July, 1906.

Uncommon beetles at Edlington and Wadworth Woods, Yorkshire.—These woods have furnished several interesting species of *Coleoptera*. *Nacerdes melanura*, Sch., usually looked upon as a coast species, has been taken there by Mr Young of Rotherham, who has also met with *Melasis hyprestoides*, L., *Stenostola ferrea*, Sch., *Liodes humeralis*, Kug., *Corymbites pectinicornis*, L., all species by no means common in Yorkshire.—ID.

Microptilium pulchellum, All., from Berkshire.—When examining tufts of grass last March at the edge of a pond near here, I took four specimens of a minute Trichopterygid. These have proved to be *Microptilium pulchellum*, All. Canon Fowler mentions two specimens as having been taken by Mr. G. R. Waterhouse, "but I do not know in what locality." I believe it has not been recorded since.—NORMAN H. JOY, Bradfield, Berks: July 3rd, 1906.

Sibinia sodalis, Germ., and *Apion filirostre*, Kirby, in Devonshire.—Mr. J. H. Keys and I each took three specimens of *Sibinia sodalis*, Germ., on *Armeria vulgaris* at the edge of the red sandstone cliffs near Dawlish on May 19th. On June 18th I obtained three more. One example of *Apion filirostre*, Kirby, was taken by me while sweeping at Christow, Devon, on May 8th.—PHILIP DE LA GARDE, Manor House, Shaldon, Teignmouth: July, 1906.

Lytta vesicatoria, L., in the Isle of Wight.—On July 11th I was fortunate enough to take a ♂ example of *Lytta vesicatoria*, L., crawling in a lane near Whitwell, Isle of Wight.—G. E. BRYANT, Fir Grove, Esher: July 16th, 1906.

Cateremna terebrella, Zk., in Surrey.—On March 22nd last whilst standing beneath a large spruce fir to avoid a heavy snow storm, I thought I would examine a few of the fallen cones, as I wished to breed some *Cydia* (*Coccyx*) *strobilella* for a correspondent; the very first one (a very small, rough looking one) examined, contained two larvæ, which I felt sure were those of the knothorn above named. I need hardly remark that the snowstorm was forgotten, and I set to work to find more of these small rough cones, but with very little success, the vast majority being full-sized. I paid another visit to the spot and found only two or three more suspicious looking ones. The Tortrix appeared in due time, and I had almost given up hope when to-day a nice specimen of *Cateremna terebrella* appeared, the first I have seen alive, and somewhat larger than the single Norfolk specimen in my cabinet. I think this is an addition to the Surrey list of *Lepidoptera*.—A. THURNALL, Thornton Heath: July 3rd, 1906.

Andrena lapponica, Zett., near Leith Hill.—On May 13th, as I was walking from Dorking to Leith Hill, I saw an *Andrena* visiting the flowers of the whortleberry, which on capture proved to be *A. lapponica*, Zett., ♀. I had very little time to spare, and it was rather late in the day, about 2 o'clock, or probably more could have been taken.—G. E. FRISBY, 9, Fengates Road, Redhill: July, 1906.

Note on Agrion armatum, Heyer.—The references to this species as a British insect, as far as I have seen them, have been so meagre and guarded that about all that I can say concerning it is, that its occurrence in a certain area has been authenticated. It has also been referred to in these records as a species everywhere rare—on what grounds I do not know, as already in the "Revue" it is said to be common in Southern Sweden. Like other species of *Agrion* it is no doubt local, and added to this, it is a species which has apparently a restricted geographical range. I owe to the courtesy of Herr Esben Petersen a fine series of both sexes (males preponderating) taken this season in Denmark. The number and condition of these seem to prove that it is neither uncommon where it occurs, nor is the taking of it a time-robbing occupation. I think the true explanation of the view of its supposed rarity that has got about, is to be found in the time of its appearance. All the specimens referred to were taken on the same day, May 12th, a date that would be considered, as a rule, too early for profitable dragon-fly hunting. A specimen (♂) in my collection, bearing the date June 15th, already shows signs of wear. This note may serve as a hint to those who have opportunities of collecting in the Eastern counties at the right time.—K. J. MORTON, 13, Blackford Road, Edinburgh: July 2nd, 1906.

Diptera in Scotland in 1905.—During the past year I found *Diptera* plentiful, and many new species were added to my collection. My captures are not all worked out, and I only mention here those about the identification of which I feel certain.

In this district *Porphyrops riparia*, Mg., occurred in some numbers in May and June, and I also took, among others, *Ptychoptera albimana*, F., 31.viii.05; *Chalarus spurius*, Fln., 24.viii.05, and *Rhamphomyia nigripes*, F., 28.v.05. A ♂ of *Spilogaster uliginosa*, Fln., was taken on the window 2.vii.05. Several specimens, ♂ and ♀, of *Beris chalybeata*, Först., were taken in May, and I should like to mention *B. geniculata*, Curt., taken in August and September, 1903 and 1904, and kindly named for me recently by Mr. Verrall. From fungi, I bred, in May, *Homalomyia monilis*, Hal., and I reared several examples of *Corethra plumicornis*, F., from larvæ found in abundance near the Pentland Hills early in May; the flies emerged from May 15th to June 7th.

A visit to Polton on June 24th produced a good many flies, including: *Macrocera angulata*, Mg., 2 ♂♂, *Molophilus appendiculatus*, Stæg., *Rhamphomyia flava*, Fln., ♂, *R. hybotina*, Ztt., 1 ♂, 2 ♀♀, *Gloma fuscipennis*, Mg., ♂, *Dolichopus popularis*, W., *Sphegina clunipes*, Fln., *Hyetodesia semicinerea*, W., and *Hydrotaea militaris*, Mg., the last in numbers.

On June 29th I went to Aberlady and found *Diptera* in swarms, consisting chiefly of *Anthomyidæ* and *Dolichopodidæ*. Of the latter family my best capture was *Dolichopus clavipes*, Hal., of which I got a long series. I took two ♂♂ and one ♀ of the very pretty *Oxycera trilineata*, F., and might have taken hundreds of a *Nemotelus*, which seems to represent the two species *uliginosus*, L., and *notatus*,

Ztt., but they are difficult to make out from Schiner. I also took 2 ♂♂ of *Nemotelus nigrinus*, Fln. Among others that turned up were *Hydrotæa palæstrica*, Mg., ♂, *Norellia liturata*, Mg., ♂, *Cordylura pudica*, Mg., ♀, *Sciomyza cinerella*, Fln., ♂, and *Ochthiphila polystigma*, Mg., common. A second visit on August 7th produced many of those taken in June, but *Nemotelus* did not turn up, and *Dolichopodidæ* were fewer in numbers, but the following species were new: *D. griseipennis*, Stan., *D. trivialis*, Hal., *Syntormon pallipes*, F., *Campsicnemus scambus*, Fln. ♂, *C. curvipes*, Fln., and *Teuchophorus spinigerellus*, Ztt. ♂, ♀. On nettles close to the shore I found *Beris vallata*, Först., in some numbers, in company with a saw-fly coloured exactly like itself. I turned many out of my net before I noticed the difference. I was pleased to get, on the leaves of Iris, specimens of *Loxocera aristata*, Pz., and its melanic variety *yerburyi*, Aust.

Tetanocera lœvifrons, Lw., *Graphomyia picta*, Ztt., and *Themira putris*, L., were also among my captures.

During the first three weeks of September I was in my old quarters at Aberfoyle, Perthshire; not having been there before so late in the season, I added many species to my list for the locality. By sweeping about over fungi I got a good many *Mycetophilidæ*, including *Sciara thomæ*, L., *Tetragoneura sylvatica*, Curt., *Sceptonia nigra*, Mg., *Bolitophila cinerea*, Mg., *Mycetophila punctata*, Mg., *M. signata*, Mg., and species of *Sciophila*, *Rhymosia*, *Exechia*, *Boletina*, and *Cordyla*, which I am unable to satisfactorily determine. Sweeping grass, heather, etc., on the hills, produced *Dolichopus atripes*, Mg., *Syntormon zelleri*, Lw. (a ♂ of this rare species) *Platyzeza picta*, Mg., ♂, *Sepsis violacea*, Mg., *Drymia hamata*, Fln., and *Tetanocera elata*, F. In wooded places I found *Limnophila lineola*, Mg., *Hemerodromia precatória*, Fln., *H. melanocephala*, Hal., *Hybos grossipes*, L., *H. femoratus*, Müll., *Pyrellia cyanicolor*, Ztt., *Morellia simplex*, Lw., *Tipula lutescens*, F., and many others. *Rhamphomyia variabilis*, Fln., was fairly common, and I got a great many *R. spinipes*, Fln., on bracken. *Liancalus virens*, Scop., was widely distributed over the hills, occurring on damp rocks. *Pipiza noctiluca*, L., and *Leptis lineola*, F., were taken at Loch Ard, as also a good series (♂♀) of a fine *Limnophora*, which as yet I have been unable to make out. It was common resting on the rocks along the side of the Loch.—A. E. J. CARTER, 4, West Holmes Gardens, Musselburgh: June 5th, 1906.

"Types of Siphonaptera in the Daleian Collection."—Under the above title the Hon. N. Charles Rothschild, in this Magazine (ser. II, vol. xiv, p. 144 *et seq.*) criticises the species of *Pulicidæ* described as new by the late Mr. C. W. Dale in "The History of Glanvilles Wootton." Four of these species (*Pulex cuniculi*, *Ceratophyllus mustelæ*, *C. gallinulæ*, and *Typhlopsylla sorecis*) are admitted as valid by Mr. Rothschild, and the types of these, mounted as microscopic slides, are now in the Hope Department of the Oxford University Museum, having been quite recently received with the extensive and valuable collections bequeathed by Mr. Dale to the University.—JAMES J. WALKER, Oxford: July 17th, 1906.

Reviews.

THE BUTTERFLIES OF THE BRITISH ISLES. By RICHARD SOUTH, F.E.S. (Wayside and Woodland Series). London: F. Warne and Co., 1906.

This latest addition to the long series of works on our British Butterflies is in some respects a distinct advance on all its predecessors. It is not easy to realize on looking at the outside of this tastefully got up little volume, that between its covers are no fewer than 127 plates containing 450 life-size coloured figures of our native butterflies, and nearly 300 figures in black-and-white illustrating the details of the life-history of nearly every species. The coloured figures, while maintaining on the whole a high standard of merit, vary in excellence, as is perhaps inevitable with the "three-colour" process by which they are executed. Many of them, however, are really admirable, and we would call special attention to Plate I, from a beautiful drawing by Mr. Horace Knight of the life-history of *Papilio machaon*, showing the under-sides of both sexes of the perfect insect, as one of the very best we have ever seen. Equally good, if not even superior to this, are some of the black-and-white plates, those of the under-sides of *Pararge megæra* and *Cænonympha pamphilus*, especially the latter, reproducing the character and texture of the insects with marvellous fidelity. In the case of some species, as *Lycæna scarus*, more than a dozen figures are given, and many interesting varieties and aberrations of this and other species find a place in the coloured plates. The illustrations of the life-histories of the species form a most valuable feature of the book, of which it is quite safe to say that our butterflies have never before been so well and amply illustrated as in this little pocket volume. Turning to the letter-press, the name of the author is a sufficient guarantee of its soundness and accuracy, though of necessity the notices of each species are brief and condensed. Mr. South makes no effort at technical or so-called "scientific" writing, but discourses of his subject in a pleasant and easy style, while his introductory remarks convey in a very small space a large amount of useful general and practical information. We should have liked to have seen a more extended synonymic list (with the authors' names attached to the species and principal varieties) placed in a more prominent position in the book, instead of being relegated to the end; and the popular or so-called "English" names appear to us to have an undue precedence over those by which Entomologists recognise the species. These are, however, only minor drawbacks to an excellent little work, which will, we feel sure, receive a hearty welcome from the advanced student, no less than from the beginner. It is by no means an easy task to write a satisfactory book on our British Butterflies, and we may congratulate the author very heartily on the successful manner in which he has carried out his undertaking.

REPORT OF THE HOPE PROFESSOR OF ZOOLOGY, 1905. Edited by EDWARD B. POULTON, D.Sc., M.A., F.R.S., Hope Professor of Zoology in the University of Oxford (Printed for private circulation).

The "Hope Department" of the Oxford University Museum has for some years past been recognised as one of the chief modern centres of Entomological activity and research, and the annual reports issued by the learned and energetic Professor at its head, are important landmarks in the progress of the science. The

present report shows no falling off, either in quality or quantity of work, from any of its predecessors, and will be read with much satisfaction and interest by all Entomologists. The immense general collection of insects of all Orders in the Hope Department, second only in extent and importance to the National Collection, and including, according to a census completed during the current year and published in the Report, nearly half-a-million specimens, and a vast number of types, is being steadily put into thorough systematic order. Perhaps the most important single piece of work of this nature is the revision and arrangement of the extensive series of *Orthoptera* by Mr. R. Shelford, the *Blattidæ* being already completed. The re-arrangement of the fine collection of Diurnal *Lepidoptera*, which is constantly receiving large accessions from generous donors at home and abroad, is also well advanced. The most valuable addition in this Order is the marvellous series of seasonal forms (until quite recently regarded as distinct species) of the genus *Precis* from Tropical South Africa, worked out by Mr. Guy A. K. Marshall and presented by him to the Museum. Thanks to Mr. Marshall and other energetic collectors, the Hope Department may now justly claim to possess the finest representative series of butterflies in existence from this most interesting and prolific region. As in previous years, a great amount of work has been effected in the bionomics of Insects of all Orders, and several important memoirs on this subject have already appeared, while others are in active preparation. Lastly, the insects collected early in the last century in South Africa and Brazil by the famous traveller W. J. Burchell, which are even now unrivalled in the perfection of their data, are restored as far as their condition will allow, fully named, and arranged. Professor Poulton and his staff may well be congratulated on the work of the year 1905.

Obituary.

Dr. Peter Kempny died at Gutenstein, Lower Austria, on May 20th, at the early age of 44 years, after a painful illness of four months. He suffered from a heart malady, brought on by over exertion in his profession of a medical doctor in the mountainous district in which he lived. Some of his early papers relate to the *Lepidoptera* of Lower Austria, but latterly his attention was more exclusively given to *Neuroptera*, and he did some original work of importance on the *Plecoptera* (*Perlidæ*). His papers on *Leuctra* are of great value, and they deal with a difficult genus in a remarkably able way. His last paper, a contribution to the knowledge of the *Neuroptera* of Roumania (*Beitrag zur Neuropteroiden fauna Rumäniens*, Bull. de la Soc. des Sciences de Bucarest, 1906) was received by the writer very shortly before the author's death, and he had also in view a similar work on the *Neuroptera* of Syria.—K. J. M.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *Monday, May 21st, 1906*.—Mr. G. T. BETHUNE-BAKER, President, in the Chair.

Mr. C. J. Wainwright referred to Mr. R. C. Bradley's exhibit of *Cheilosia*

velutina, Loew, at the last meeting, and said that he found he had 4 males and 3 females taken at West Rounton where Mr. Bradley took his. He said that on comparing the insects with the description in Becker's Monograph he found some rather important disagreements. Mr. W. S. Collinge showed *Coleoptera* from an old beech at Erdington. Mr. Wainwright, various *Lepidoptera*. Mr. J. Simkins, selected specimens from a large number of *Teniocampæ* he had bred from pupæ dug at Solihull, there were some fine forms especially of *incerta*, Hufn., amongst them. Mr. G. T. Bethune-Baker, a number of *Lycænidæ*, chiefly new species from Africa, New Guinea, &c., and he communicated a paper in which he described the new species.—COLBRAN J. WAINWRIGHT, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY :
 Thursday, June 14th, 1906.—Mr. R. ADKIN, President, in the Chair.

Mr. Penn-Gaskill exhibited a dark suffused specimen of *Tephrosia biundularia* from the Midlands. Mr. West, examples of *Euclidia ni* and *E. glyphica*, taken in his own garden at Ashted. Mr. Sich, an assemblage of 39 pupæ of *Pieris brassicæ* which had been found in a tumbler placed with the larvæ in the breeding cage. Light and dark specimens were intermixed at random. Mr. Lucas, a ♀ of the snake fly, *Raphidia notata*, from the Black Pond, Esher, and also a very sparsely marked example of the scarcer Scorpion Fly, *Panorpa germanica*, from Haslemere. Mr. Carr, pupæ of *Porritia galactodactylus* from Horsley. Mr. F. Noad Clarke, on behalf of Mr. Griffiths, ova of *Hadena pisi*. Mr. Tonge, clusters of ova of *Pachetra leucophæa*, which had been found at night on grass stems, with the ♀ sitting just above them. Mr. Bellamy read a paper entitled "The Spring in the New Forest, and Whitsuntide Experiences." Several members reported that *Phryxus livornica* had been met with in a few places, and that *Pyrameis cardui* and *Plusia gamma* were common in some parts of the South and were moving on.

Thursday, June 28th, 1906.—The President in the Chair.

Mr. McArthur exhibited specimens of *Dicranura furcula* and *Axylia putris* taken around the electric lights at Hammersmith. He noted at the same time numbers of *Triphæna pronuba*, *Agrotis exclamationis* and *Noctua plecta*. He also showed the pupa of *Thecla pruni*. Mr. Bellamy, two specimens of *Phryxus livornica*, taken in June at Ringwood; an example of *Hesperia malvæ* var. *taras*, from Holmsley, and a partially radiated form of *Abraxas grossulariata*. Mr. Tonge, the ova of *Aporia cratægi*, in situ on a leaf of hawthorn, sent from Hyères by Mr. Powell. Mr. Penn-Gaskill, living specimens of *Harpipteryx xylostella* and *H. nemorella*, with the elongated cocoons of the species. The larvæ were found on honeysuckle at Wimbledon. Mr. West (Greenwich), a series of the rare Hemipteron, *Pæciloscytus vulneratus*, from Yarmouth. Mr. Main, the egg case and young of *Phyllodromia germanica*. He said that the young emerged almost as soon as the egg case was deposited. Mr. R. Adkin, examples of *Notodonta chaonia* and *Lophopteryx carmelita*, which emerged in April, 1906, from 1904 pupæ.—HY. J. TURNER, *Hon. Secretary*.

ON THE BRITISH SPECIES OF *PHORA*. (PART I).

BY DR. JOHN H. WOOD.

From time to time I had dabbled in the *Phoridae*, that is to say, whenever I came across a large or interesting looking species I had taken the trouble to preserve it, and in this way had enabled Mr. Verrall to include several good things, as *Phora trinervis*, *urbana*, *dorsata*, &c., in the second edition of his List. But until I obtained a copy of Becker's monograph on the family "Die Phoriden," I had done no systematic work among them. Here, however, was a text book up to date, and since then I have devoted a good deal of time to the subject and have amassed a large amount of material. It has, however, become evident in the course of the investigation that whilst our author's treatment of his Group I in the genus *Phora* is in every way admirable, the treatment of his Group II, which contains the smaller and more obscure forms, is not so satisfactory. In the first place too great a tendency has been shown, I think, to sink good species as varieties, and in the second place many perfectly distinct forms have been omitted altogether—a circumstance to be ascribed in all probability to the deficiencies of the collections he consulted, for it is, perhaps, no wonder that insects so numerous in species and in many cases so small in size should not appeal to every one.

Nevertheless, there is much to commend them to our notice. One point greatly in their favour is that they may be found all the season through, being among the earliest insects to appear in the spring and the last to disappear in the autumn. Then we may look for them almost anywhere—in our houses, where they form the bulk of the small fry that run up and down the windows; in our gardens, especially if there be some damp corner with a good rubbish heap in it; in the woods, fields, and marshes. Many of the species are fond of running like the *Platyepizidæ* over the leaves of shrubs, others again frequent flowers, especially the umbels of *Heracleum sphondylium* and *Angelica sylvestris*, but the great majority usually stay down below at the ground level and require the sweeping net to bring them to light. Then the trunks of trees are often worth examining. Carrion, too, should never be neglected, especially in the spring of the year. But to be productive the carrion must be lying on the ground, for the gamekeeper's larder with its victim's nailed to a tree or rail fails to attract them. Let me give a striking illustration. On one occasion I had carefully looked over a string of moles suspended across some palings without being able to detect a single *Phora* on them, but no

sooner had I removed two or three of the bodies and placed them on the ground below, than out from the dead leaves near at hand came running a number of *Phora curvinervis*, and made straight for the bait. There is also another peculiarity in their relation to carrion. They do not sit exposed upon it like the *Blepharoptera* and *Sepsidæ*, but hide away underneath, and it is quite startling on turning over a small object like a mole to see sometimes a crowd of *curvinervis* of both sexes scuttling away in all directions, and amongst them perhaps a rare *urbana* or two.

In habits they are restless insects, very active, and able to run with great rapidity. A few species, like the aforesaid *curvinervis*, almost confine themselves to this mode of progression, seldom using their wings except to escape danger, and then only in short skipping flights. But the majority show no disinclination to fly, and to my knowledge one species at least, the female of *fasciata*, dances in the air in small swarms, as do so many *Diptera* of widely different families; whilst the small atoms, which occasionally when lamps are lit in the room come floating to and fro in the glare of the light, are mostly *Phoræ*. They are not, perhaps, great lovers of sunshine, and the last place in which one should be tempted to look for them would be on a dry, hot bank, whereas some damp and shady wood-path, where the under-wood has become hollow from age and agarics and boleti have taken the place of flowering plants, is sure to yield a rich harvest.

I have had myself no personal acquaintance with the larvæ. Wherever they have been bred, decaying vegetable or animal matter has in most cases been the pabulum. No one seeing the connection of *curvinervis* and *urbana* with carrion can for a moment doubt that they are there for the purpose of ovipositing. For the same reason I believe that most, if not all, of the species in that section of Group I characterised by having only three thin veins are carrion feeders too. *Maculata* has been bred by Dufour in France and by the Rev. H. S. Gorham in England from dead snails. *Formicarum* is parasitic upon the ant, *Lasius niger*, a most interesting discovery which we owe to Lubbock; and Mr. Collin tells me he has seen specimens of *vitripennis* which were reared from humble-bees' nests and from wasps' nests, but whether the insect in this case is a true parasite like *formicarum*, or merely carnivorous or a scavenger is not clear.

The combination of characters by which the genus *Phora* may be known from the other constituents of the family are (1) the presence of ocelli, (2) of claws and pulvelli, (3) the dorsal position of the arista, (4) the fringe of bristles on the costa,¹ (5) the complete

mediastinal vein, and lastly, the presence of three rows of strong bristles across the frons, each consisting of four bristles, the first row at the level of the ocelli, the second in the middle, and the third just above the antennæ. On the present occasion I purpose to deal only with the species that fall under Becker's Group I. But I must first acknowledge the important help I have received from Mr. Collin, whose readiness to come to my assistance in every difficulty and to check my conclusions has been invaluable. Without it I might not have ventured upon the undertaking. My thanks are also due to Dr. Sharp for the loan of some interesting species from the Cambridge Museum.

At the time of writing (1901) Becker was acquainted with 37 species belonging to this group. Of these we have at present in Britain 26, all but four of which (*autumnalis*, *abbreviata*, *femorata* and *carinifrons*) have fallen to my own net in Herefordshire, whilst we have besides four new and undescribed species, all taken and two of them exclusively in my own district, which brings up the total to 30 British species. Few of them are common. The abundance, under certain conditions, of *curvinervis* has already been alluded to, equally abundant too is the ubiquitous *concinna*; some eight or ten more are to a greater or less degree fairly common, but the rest are decidedly scarce and will probably remain so till our ignorance of their economy is removed.

To some extent I have adopted Becker's table, making use of the venation for the primary lines of division, but where he turns to the colour of the halteres for the further grouping of the species, I have selected instead the position of the spines on the middle tibiæ—a character quite as easy of recognition, less liable to variation, and at the same time leading, I think, to a more natural arrangement of the species. Not that I would in any way underrate the value of colour in the halteres. Indeed, it was the belief in its reliability that has in more than one instance been the first step in leading to the discrimination of two closely allied species. For example, *unispinosa* occurs in two places in Becker's table—among the species with yellow halteres and among those with black. The insect is constantly turning up here throughout the season, and I must have taken first and last a large number. On sorting my material I found that the variation was limited to the females; in the males the colour was invariably black. This led to a closer examination, and then it was seen that the insects with dark halteres had quite a different venation to the others and were the true *unispinosa*, whilst those with yellow or whitish halteres

were without doubt the unknown female of *nudipalpis*, an insect as common with me as *unispinosa*. Again, Becker ascribes both yellow and black halteres to *opaca*, or rather *perennis* as Mr. Collin has pointed out to me our insect should be called. In my own series were representatives of both forms, but the yellow halteres were always associated with one set of characters and the black with another set, leaving little doubt that the two forms were two distinct species. There is, however, one insect, the abundant *concinna*, in which there is great irregularity in this respect. Our author was of opinion that the variation depended upon sex, black halteres going with the male and yellow halteres with the female. But in my experience it is a matter of perfect indifference, each sex having them sometimes one colour and sometimes the other.

It is perhaps worth noting that there seems to be no definite relation between the colour of the halteres and the general colour of the insect. Frequently the relation is just the reverse of what would have been expected, that is to say, in two closely related species, such as *unispinosa* and *nudipalpis*, the lighter coloured insect will have the darker halteres and vice versa. There is, however, a still more curious instance of cross colouring in the *Phoridae*, which cannot fail to strike the observer. The wings are commonly tinged with some shade of yellow, brown or grey, but sometimes they are perfectly clear and diaphanous. Now these diaphanous wings always occur in black species, and usually in the very blackest, whilst I cannot call to mind a single instance of such wings among the light coloured, yellow or red species; on the contrary, in them these organs are often especially deeply tinted. The rule too holds good equally between the varieties of a species as between species themselves. Thus, the type form of *pygmæa* in Group II is a dark insect with clear wings, but its light coloured variety, *brachyneura*, has them deeply tinged with yellowish-brown.

A word as to some of the terms and characters employed. The short veins which run into the costa are called the "thick" veins and the long ones coursing over the wings the "thin" veins, names which Mr. Verrall has already familiarised us with. In enumerating the costal divisions or segments the basal division formed by the cross vein is left out of account, since it has no differential significance; hence the recognised divisions are only two or three in number, according as the second thick vein is simple or forked. The anal "protuberance" is exclusively a character of the male sex. It is the outlet of the intestinal canal and lies just underneath the dorsal

edge of the last abdominal segment. Its size and form varies greatly, from a small and insignificant papilla to a long finger-like and conspicuous process. In some species the frons of the female is relatively narrower (longer) than in the male, the costa too may be longer than in the male, but the converse, I think, never happens. Sex, again, occasionally influences the relative proportion of the costal divisions, the tendency being for the second and third divisions in the female insect to be lengthened without a corresponding lengthening of the first division. Then the proboscis of the female is occasionally excessively large and prominent, but that of the male is always small and inconspicuous. On the other hand, the third joint of the antennæ and the palpi may be greatly exaggerated in the male, both in size and form, without any corresponding change in those of the female. A peculiar form of the first abdominal segment, in which it is much scooped out in the middle and unusually deep at the sides, overlapping the second segment at the latter site, is present in a few species, as *concinna*, *crassicornis*, *abdominalis*, and to a less extent in one or two others. This peculiarity is most pronounced in the female, the result being that some of them have the second abdominal segment much lengthened, a character usually confined to the males.

GROUP I.

Frons without a median furrow. All the frontal bristles pointing upwards (backwards), including the two in the middle just above the base of the antennæ. Long distinct spines on the tibiæ in addition to the apical spurs.

1 (47) *Second thick vein forked.*

2 (16) *Only three distinct thin veins, the fourth vein either absent, or very indistinct, or abbreviated. In lugubris ♀ it is fairly distinct and complete.*

Tibial spines always small and weak, the front tibiæ carry one spine, the middle tibiæ a pair in the upper third, and the hind tibiæ one at the junction of the upper and middle thirds.

3 (4) (5) *Palpi extraordinarily large, at least in the male, curving round in front of the head.*

♂. Thorax, abdomen, and halteres black; scutellum with two bristles only; costa reaching beyond the middle, fringe very short; male hypopygium large and complex, anal protuberance minute and hairy; legs blackish-brown, long and slender. Very scarce; taken in the autumn.

1½ mm.—*palposa*, Zett.

4 (3) (5) *Palpi narrow, straight, and cylindrical.*

♂ ♀. Thorax, abdomen, and halteres black; scutellum with

two rather fine hairs in addition to the two strong bristles; front row of frontal bristles nearly straight, middle row concave in front; proboscis extremely large and prominent, especially in female; palpi bare but for two or three strong bristles at the tip; (σ) some strong bristles on hind margin of 6th abdominal segment, hypopygium chestnut coloured, large and complex, anal protuberance moderately long, (♀) end of the abdomen shaggy with numerous longish hairs; legs blackish-brown, tibiae and tarsi yellow. Frequents carrion and rotting fungi; autumn.

$2\frac{1}{2}$ —3 mm.—*trinervis*, Beck.

5 (4) (3) *Palpi broad and leaf-like* (normal).

6 (11) *Scutellum with two bristles only*.

7 (10) *Legs very long and slender; palpi dusky*.

8 (9) *Halteres white or yellow*.

σ ♀ . Thorax and abdomen black; middle row of frontal bristles straight, arista bare or nearly so; wings lightly (usually) tinged with yellowish-brown, costa very long, reaching well beyond the middle, thickened on its outer third, fringe short, 1st thin vein comes off beyond the fork; male hypopygium small, and protuberance yellow and papilla-like, lamellæ very long and slender; last abdominal segment of female produced beneath in a triangular curved process; legs yellowish-brown, tibial spines weak. Frequents carrion; taken in autumn, midwinter (December), and spring.

$2\frac{1}{2}$ mm.—*perennis*, Mg.

9 (8) *Halteres black*.

σ ♀ . Middle row of frontal bristles convex in front, arista pubescent; costa reaching to the middle of wing or only a little beyond, 1st thin vein comes off at the fork; anal protuberance black or blackish, lamellæ much shorter and broader than in *perennis*, last abdominal segment of female normal; tibial spines stronger than in *perennis*; in all else resembles *perennis*, but is a smaller insect. Frequents carrion; taken in the autumn.

$1\frac{1}{2}$ —2 mm.—*vitrea*, n. sp.

10 (7) *Legs of the ordinary form; palpi bright yellow*.

♀ . Thorax and abdomen black, the former occasionally with a reddish hue; halteres yellow and frons rather glossy; middle row of frontal bristles convex in front, arista finely pubescent; wings as in *vitrea*, but rather more deeply tinged with yellowish-brown; last abdominal segment of female produced into a triangular process as in *perennis*; legs yellow, tibial spines stronger than in *perennis*. Taken in the autumn.

$1\frac{1}{2}$ —2 mm.—*luteifemorata*, n. sp.

11 (6) *Scutellum with four strong bristles of equal size, or with the anterior pair reduced to the dimensions of coarse hairs*.

12 (15) *Scutellum with equal bristles. Fore tarsi short and thick*.

13 (14) *First abdominal segment σ much longer than 2nd segment, at least at sides, its hind margin emarginate (V-shaped) in both sexes. Female proboscis normal*.

♂ ♀. Thorax, abdomen, and halteres black; thorax moderately shining; frons shining and very short (1 to 3), frontal bristles strong, both lower rows straight ♂, slightly convex in front ♀; 3rd antennal joint full large ♂, small ♀, arista finely pubescent; palpi large and broad with short and weak marginal bristles ♂, normal ♀; wings tinged with yellowish-brown, costa to middle of wing or a trifle beyond, its outer half thickened, fringe extremely short, 1st thin vein strongly curved at its origin, 4th vein ending in the margin, fairly distinct ♀, but scarcely traceable ♂; 2nd abdominal segment ♂ half the length of the 1st at the sides, 6th segment lengthened, hypopygium rather large and glossy, anal protuberance short and black, lamellæ shorter and broader than in *nigricornis* (= *opaca*); legs black, tibiæ yellowish, fore tarsi longer than the tibiæ by their two terminal joints, spine on hind tibiæ always present.

2½—2¾ mm.—*lugubris*, Mg.

- 14 (13) *First abdominal segment ♂ shorter than 2nd (normal), its hind margin emarginate only in female. Female proboscis large, projecting beyond palpi.*

♂ ♀. Very like preceding species. Chief differences are as follows:—Frons more highly glossy and shorter (1 to 2), frontal bristles rather weak and the rows straight in both sexes; 3rd antennal joint very large ♂, arista^a bare; palpi narrower; wings not quite of so deep a colour, 1st thin vein makes not so bold a curve, and the 4th is more indistinct and ends abruptly half way to the margin; 2nd and 6th segments ♂ lengthened, hypopygium very large, and furnished with a pair of narrow shining black and forceps-like processes besides the ordinary lamellæ; legs blackish-brown, forelegs and all the knees yellowish, spine on hind tibiæ rarely present, fore tarsi longer than the tibiæ by the terminal joint only.

2¾ mm.—*opaca*, Mg., = *nigricornis*, Egg.

- 15 (12) *Scutellum with two bristles and two coarse hairs. Fore tarsi of the usual slender form.*

♂ ♀. Thorax dull; frons dull and moderately short (1 to 2); the rows of bristles straight in both sexes; 3rd joint of antennæ small, arista bare; palpi of the usual size and shape, but marginal bristles ♂ stubby; wings almost clear, costa very long, reaching well beyond the middle, slender and not thickened on the outer half, fringe longer than in *lugubris*, and 4th thin vein very fine, ending abruptly three-quarters of the way to the hind margin; 1st abdominal segment of the usual shape, 2nd and 6th segments ♂ moderately lengthened, hypopygium dull, anal protuberance yellow, longer and more slender than in *lugubris*, and the lamellæ narrower. In all other respects like *lugubris*. Taken in the autumn.

2—2½ mm.—*sublugubris*, n. sp.

- 16 (2) *Four thin veins, the axillary one always distinct.*

- 17 (38) *Middle tibiæ with three spines, without reckoning the apical spur or spurs, namely, a pair at or near the end of the upper third, and one, some-*

times very small and weak, close to the tip on the outer side. Of the other legs, the armature of the fore tibiæ is limited in all the British species to a single spine, that of the hind tibiæ is very variable.

18 (23) *Scutellum with only two bristles.* Hind tibiæ with one spine only, the apical spine on middle tibiæ very small or even absent.

19 (20) *Halteres black or blackish; third joint of antennæ and palpi reddish or yellow.*

♂ ♀. Frons broad, nearly twice as wide as high in male, but less so in female; wings tinged with yellowish-grey, costa to well beyond the middle of the wing, its first division nearly twice as long as the second in the male, but only equal to it in the female, fringe very short and dense, second thick vein robust, especially in female; legs yellow, tinged sometimes with grey and moderately stout, apical spine on middle tibiæ usually absent, the spine on hind tibiæ below the junction of the upper and middle thirds. Taken from spring to autumn.

1—2 mm.—*unispinosa*, Ztt.

20 (19) *Halteres whitish (nudipalpis) or yellow (autumnalis); third joint of antennæ and palpi black.*

21 (22) *Small species (1—2 mm.); male palpi very large, blunt ended, and with a single long terminal bristle, female smaller, and with three or four terminal bristles; legs moderately stout.*

♂ ♀. Frons narrow, nearly as high as broad, glossy; wings clear, costa and all the veins fine and delicate, fringe rather long and open, costa short (about to middle of wing), its first division $1\frac{1}{2}$ times the second in both sexes; legs from rust colour to nearly black, the apical spine on middle tibiæ always present. Taken from spring to autumn.

1—2 mm.—*nudipalpis*, Beck.

22 (21) *Large species (3 mm. or more); palpi not abnormally large, pointed, and with a few short marginal bristles; legs very long and slender.*

♂. Frons broad, nearly twice as wide as high, dull; wings greyish, the veins strongly marked, costa long, reaching well beyond the middle, thickened on its outer third, first division $1\frac{1}{3}$ times the second, fringe short and dense; legs brown, the spine on hind tibiæ above the junction of the middle and upper thirds. In the broad frons and wing characters it much resembles *unispinosa*, with which Becker compares it, while the general slender build and the slim legs recall some of the 3-veined species. 3 mm.—*autumnalis*, Beck.

23 (18) *Scutellum with four bristles.*

24 (31) *Second thick vein furnished with a row of fine bristles or hairs along its whole length to the fork; the apical spine on the middle tibiæ strong, that is, as well developed as the pair in the upper third.*

In all four species under this head the costa is long, reaching well beyond the middle; joined by the thick veins at wide intervals, so that the first costal division is never longer than the other two together (*curvinervis* and *fennica*), and sometimes considerably shorter

(*thoracica* and *urbana*); first thin vein comes off with a strong curve at or beyond the fork, and runs straight to the margin. Anal protuberance small and papilla-like.

25 (26) *Halteres black.*

♂ ♀. Wings tinged with yellowish-brown, first thin vein deeply curved at its origin; legs blackish-brown, knees, fore tibiae and tarsi yellowish, hind tibiae with three spines, namely, two on the outer side, one above the middle, the other close to the tip, and the third in the middle of the hind or upper-side. Taken only in the spring, abundant under carrion. 2—3½ mm.—*curvinervis*, Beck.

26 (25) *Halteres yellow.*

27 (28) *Thorax from red to blackish, postalar celli always red or reddish; costa thickened, especially in the female.*

♂ ♀. Wings yellowish-brown, with a darker cloud at the apex, or without the cloud (v. *claripennis*); legs yellow, hind tibiae with four spines—a pair in the upper third, one in the middle of the hind or upper margin, and the other close to the lower end on the outer side. 2½—5 mm.—*thoracica*, Mg.

28 (27) *Thorax entirely black; costa not thickened.*

29 (30) *Hind tibiae with five or six spines. A long and slender species.*

♂ ♀. Wings deeply tinged with yellowish-brown, first costal division about as long as the second in the male, and shorter than it in the female; femora blackish-brown, tibiae from yellow to rust colour; spines of the hind tibiae—three or four on the hind or upper-side, and two on the outer side, one at or near the middle and the other close to the lower end. Taken in the spring under carrion, but always scarce. 3—4½ mm.—*urbana*, Mg.

30 (29) *Hind tibiae with only two spines. A short and stout species.*

♂ ♀. Wings clear, first costal division longer than the second in both sexes; legs yellowish-brown, fore legs entirely yellow, hind tibiae with a spine at the upper third and another close to the lower end, both on the outer side. Taken in the spring and early summer.

2½ mm.—*fennica*, Beck.

31 (24) *Second thick vein bare; the apical spine on middle tibiae very small and weak.*

In the species under this head the costa is moderately long, reaching barely beyond the middle, and joined by the thick veins at very narrow intervals, so that the first costal division is from two to four times as long as the other two together; the first thin vein comes off nearly straight some way behind the fork, and runs in a double curve to the margin. Anal protuberance very long and finger-like. Hind tibiae with a row of very fine bristles or hairs on the hind or upper margin as is so common in the species under Group II.

32 (35) *Hind tibiae with short, weak bristles instead of the characteristic long spines.*

- 33 (34) *Upper row of frontal bristles concave in front; third joint of antennæ small, round, and of a brown colour in both sexes.*

♂ ♀. Thorax and abdomen black; halteres black or yellow (independent of sex); wings lightly tinged with yellowish-grey; legs black, fore legs and knees yellow or rusty, one of the spines is sometimes absent from the pair on the middle tibiæ, hind tibiæ with four bristles on the front or under-side. One of the commonest species occurring all the year through. 2—2½ mm.—*concinna*, Mg.

- 34 (33) *Upper row of frontal bristles convex in front; third joint of antennæ black, large, and lemon-shaped in the male, small and round in the female.*

♂ ♀. Halteres always black; wings deeply tinged with yellowish-grey; legs deep black, fore legs paler, hind tibiæ with three or four bristles on the outer side besides the four underneath; both spines on the middle tibiæ always present. A larger and darker insect than *concinna*. 2½—3¼ mm.—*crassicornis*, Mg.

- 35 (32) *Hind tibiæ with spines as usual.*

The two species have much in common:—In each the thorax is black, the frons high and glossy, third joint of antennæ rufous and lemon-shaped, the broad palpi and large female proboscis bright orange, and the tip of the middle tibiæ furnished with two or three short spines in addition to the usual one on the outer side and the long inner spur.

- 36 (37) *Thin veins end in the margin (normal); halteres black.*

♂ ♀. Middle row of frontal bristles moderately concave in front; abdomen of male entirely black with the anal protuberance bright orange, of the female yellow, except for a broad black patch on the dorsum extending from the 1st to the 4th segment inclusive; hind tibiæ with two spines, one at the end of the upper third, the other a little beyond the middle. 4—4½ mm.—*abdominalis*, Fln.

- 37 (36) *Thin veins stop short of the margin; halteres whitish or yellow.*

♂ ♀. Frons very narrow (narrower than in *abdominalis*), middle row of frontal bristles deeply concave in front; first abdominal segment whitish, the other segments black, but the end of the anal protuberance in the male and the female ovipositor are yellow; hind tibiæ with three spines, one below the other at equal intervals, the lowest being just beyond the middle. 3 mm.—*abbreviata*, v. Ros.

- 38 (17) *Middle tibiæ with three spines, a pair at or near the end of the upper third, and one (always large and well developed) about the junction of the middle and lower thirds.*

A single spine is present on the fore tibiæ, the number on the hind tibiæ very variable.

- 39 (42) *Thorax with two pairs of dorso-central bristles.*

In the two species the antennæ, palpi, halteres and legs are yellow; scutellum with four bristles.

- 40 (41) *Costa reaching to about the middle; first costal division half as long again as the other two together; fringe very short.*

♀. Thorax red; frons moderately broad ($1\frac{1}{2}$ to 1); abdomen black, with the extreme end and the hind margins of the segments yellow; hind tibiae with four spines, one in the middle of the upper margin, two on the outer side, and one underneath above the middle.

$2\frac{1}{2}$ mm.—*bergenstammi*, Mik.

- 41 (40) *Costa reaching well beyond the middle; first costal division not longer than the other two together; fringe moderately short.*

♂ ♀. Thorax yellow; frons broad in the male (2 to 1), moderately broad in the female; abdomen of the male black, but the hind margin, a triangular patch on the dorsum, formed by the 5th and parts of the 3rd and 4th segments, and the genitalia, are yellow, abdomen of the female yellow, suffused with black on the dorsum of the basal segments; a row of strong bristles on the lateral margins of the 2nd segment in both sexes; hind tibiae of male with three spines, two on the outer side and one in front above the middle, the female has in addition to these four or five spines on the upper side.

3— $4\frac{1}{2}$ mm.—*dorsalis*, Beck.

(To be continued).

REVISION OF THE NOMENCLATURE OF MICRO-LEPIDOPTERA.

BY THE RIGHT HON. LORD WALSINGHAM, M.A., LL.D., F.R.S., &c.,

AND

JOHN HARTLEY DURRANT, F.E.S.

(Continued from Vol. XXXVIII, page 170).

STAGMATOPHORA, H.-S.

= PYRODERCES (Z., MS.), H.-S.; = LABDIA, Wkr.; = PROTEROCOSMA, Meyr.

Type 1.—*Oecophora heydeniella*, F.-R. (H.-S., 1853).

STAGMATOPHORA, H.-S., SB. Schm. Eur., V, 13, 49, No. 87 (1853): VI, Pl. XIII, 27-8, expl. p. vii (1853).

1 (Type), *heydeniella*, F.-R.

H.-S., SB., Schm. Eur., V, 217, No. 87 (1854): VI (Syst. Lp. Eur.) 59, No. 401 (= 87), (1855); Stgr.-Rbl., Cat. Lp. Eur., 124, No. 198 (1861): 321, No. 274 (1871); Hein.-Wk., Schm. Deutsch. Tin., 425, No. 485 (1876), Tab. Gatt., 9, No. 135 (1876); Meyr., Pr. Lin. Soc. N.S.W., XXII, 341 (1897); Stgr.-Rbl., Cat. Lp. Pal., II, 188, No. 405 (1901).

Should future study justify the generic separation of species

differing in the origin of vein 5 of the forewings, *Stagmatophora*, H.-S., will be employed for *heydeniella*, F.-R., and any species that may agree in having vein 5 separate from the stalk of 6+7+8, while *Pyroderces*, H.-S., will be revived for species agreeing with *argyrogrammos*, Z., in having vein 5 arising from the stalk of 6+7+8.

Type 2.—**Cosmopteryx argyrogrammos**, Z. (H.-S., 1854).

PYRODERCES, H.-S., SB. Schm. Eur., V, 12, 47, No. 80 (1853): VI, Pl. XIII, 29-30, expl. p. vii (1853), *MN*.

Type *goldeggiella*, H.-S., *LN*. (*i. e.*, **argyrogrammos**, Z.).

H.-S., SB. Schm. Eur., V, 212, No. 80 (1854).

1 (Type) **argyrogrammos**, Z. [= *goldeggiella* (F.-R., *MS.*) H.-S., *LN*].

H.-S., SB. Schm. Eur., VI (Syst. Lp. Eur.), 59, No. 394 (= 80), (1855).

This morphonym, illustrated by the mere logonym *goldeggiella* (F.-R., *MS.*), only became recognisable, and therefore a valid geneonym, in 1854, when Herrich-Schäffer indicated that the type was **argyrogrammos**, Z. (= *goldeggiella*, F.-R., *MS.*), the logotype of the original morphonym.

Stgr.-Wk., Cat. Lp. Eur., 123, No. 187 (1861): 321, No. 275 (1871); Hein.-Wk., Schm. Deutsch. Tin., 425, No. 486, Tab. Gatt., 9, No. 134 (1876); Meyr., Pr. Lin. Soc., N.S.W., XXII, 299, 341, No. 15 (1897); Stgr.-Rbl., Cat. Lp. Pal., II, 185, No. 391 (1901).

Type 3.—**Labdia deliciosella**, Wkr. (Wkr., 1864).

LABDIA, Wkr., Cat. Lp. BM., XXIX, 823 (1864).

1 (Type), **deliciosella**, Wkr.

Meyr., Pr. Lin. Soc., N.S.W., XXII, 341 (1897).

Type 4.—**Proterocosma triplanetis**, Meyr. (Wlsm. & Drnt.).

PROTEROCOSMA, Meyr., Tr. Ent. Soc. Lond., 1886, 293 (1886).

A. 1. (Type) **tripplanetis**, Meyr.

B. 2. *epizona*, Meyr.

3. *ochronota*, Meyr.

4. *chionopsamma*, Meyr.

[*Meyr., Tr. N.Z. Inst., XXI, 174 (1889)]: Meyr., Pr. Lin. Soc., N.S.W., XXII, 341 (1897).

Proterocosma triplanetis, Meyr., may be cited as the type.

COLEOPTERA OCCURRING IN THE NESTS OF MAMMALS
AND BIRDS.

BY NORMAN H. JOY, M.R.C.S., F.E.S.

When I took *Choleva colonoides*, Kr., and several other supposed rare *Coleoptera* in some numbers in a few birds' nests last year (cf. Ent. Mo. Mag., No. 501, p. 39), I was convinced that these were no exceptional nests, but that a little systematic work would prove that these insects are really quite common, considering how many of our common species of birds build in holes in trees. I have therefore the whole of this summer devoted most of my spare time to the examination of birds' nests, and have also extended my researches to the nests of mammals. In finding the former I of course have found no difficulty, but the latter are far harder to discover, although they eventually proved to be even more interesting, and I will describe their Coleopterous inhabitants first.

It is only a few of the British mammals that make a nest at all, and several of these are so comparatively uncommon and conceal their nests so well that I have failed to find one this summer; these are, for instance, the weasel, stoat, hedgehog, shrew, &c. The water vole's nest would be rather difficult to locate and to get out, but I hope to find time soon to examine some. The fox does not make a nest, but of course beetles may be found in its "earth" as they are in rabbits' "burrows," but I do not intend to give them more than a passing notice here. Rabbits' nests or "stops" require some special experience to discover, but no doubt would contain beetles of interest, as one did which I record later. Voles, rats, and mice I have done very little at this year, and in former years have only taken *Leptinus testaceus*, Müll., on several occasions from their nests. Squirrels' nests, which are generally more difficult to reach when found than to find, and badgers' nests I refer to later. But fortunately there is one mammal which makes a nest underground, which with very little experience can be found in almost any number. This is the mole. When I dug up and examined my first mole's nest last March it was obvious to me that I had discovered a quite new method of collecting, as I at once turned up several specimens of two species not before recorded from Britain and some others, sometimes in large numbers, which have always been regarded as very rare. Since then I have examined about sixty nests from this district and five from Devonshire. It would have been more correct to have done a full year's work at this

collecting before publishing this note, but on the whole I think it best to do so now, although I am sure there are a great many more species to be discovered in the nests than I record here.

Moles' nests are made either of grass, leaves, or sedge, the structure depending on the situation in which the nest is placed. I have found those made of leaves as a rule most profitable and the grass ones least so. The nest is situated a few inches below the ground level, and generally nearly a foot from the actual surface of the 'mole-heap.' There is no direct entrance to the nest from the surface, but the earth over it is generally loose, and in dry weather so cracked as to often almost expose it, and I expect this is one of the routes by which the beetles enter. There are in the nests always a certain number of the flea, *Hystrihopsylla talpæ*, Curt., and other species, and their larvæ, the latter I have little doubt forming the chief food of the *Staphylinidæ* and their larvæ. In dry birds' nests, such as those built in holes in walls or buildings, fleas and their larvæ are always present in very large numbers, because the nests are too dry for beetles. In moles' nests and nests in holes in trees, where there is sufficient moisture for beetles, fleas are never found in such quantities, although they are always present.

The following is a list of the *Coleoptera* I have taken in the nest of the mole. I have divided the species into three classes, viz. : A, those that are evidently peculiar to the nests, and which are only accidentally found elsewhere ; B, those that are commonly found in the nests and breed there, but also are found and breed elsewhere ; C, purely accidental species

HETEROTHOPS NIGRA, Kr.—This is the most characteristic of the mole's nest *Coleoptera*, and is nearly always present, often in numbers. It is the species that has been recorded from Britain under the name *H. quadripunctula*, Gr. Mons. Fauvel pointed out to me this error of determination, and has very kindly given me a specimen of the true *H. quadripunctula*. He and other continental Entomologists have regarded *H. nigra* as a mere colour variety of *H. prævia*, Er., as they very rightly point out there is no apparent structural difference between them. There can be no doubt that this is a mistake, and the often worthless colour distinction is in this case of great importance, and is in fact specific. *H. prævia* is not an uncommon species, inhabiting old straw in cowhouses, cellars, &c., and occurs in the former situation in this neighbourhood ; but among

the many hundred *H. nigra* taken from the moles' nests I have not seen one specimen of *H. prævia*. I think that this proves beyond doubt that the two forms never develop from the one brood, and so are perfectly distinct. The life history of the two must also be very different, a point which the Coleopterist generally seems to regard of far less importance than a slight difference in punctuation or pubescence. *H. quadripunctula* (which of course may have occurred in Britain, although I have not seen a specimen of it) differs from *H. nigra* in having a narrower and more ovate head, more slender antennæ, and more diffusely punctured elytra.

H. nigra is undoubtedly peculiar to moles' nests and the nests of other mammals building underground; it is only found accidentally elsewhere. The larvæ are often quite common in the nests, and the pupæ may be looked for in the earth around. I have taken the insect in moles' nests from Berkshire, Devonshire and Kent, and in a rabbit's nest and a badger's nest in Berkshire.

QUEDIUS VEXANS, Epp.—This insect is not so common as the last, but like it is a characteristic mole's nest species, and I have taken some thirty specimens of it altogether. The larva often occurs in some numbers in the nest, and the pupa in the surrounding earth. It belongs to the group of species with red elytra and unicolorous antennæ, and is most nearly related to *Q. brevicornis*, Th. This little group has apparently always been rather a stumbling-block to the student, yet the species are easily distinguished, and are of great interest, as each one seems attached to its special habitat. The four British species are, *Q. fulgidus*, F., which inhabits cowsheds, rotten straw in cellars, &c.; *Q. puncticollis*, Th., which breeds in wasps' and bees' nests (but is sometimes found as an accidental visitor to cossus trees, &c.); *Q. brevicornis*, attached to birds' nests; and *Q. vexans*, only accidentally found in flood-rubbish, under bark, &c. On the Continent, *Q. variabilis*, Rey (with dark elytra), is regarded as a variety of *Q. puncticollis*, and *Q. nigrocæruleus*, Rey (also with dark elytra), as a variety of *Q. fulgidus*, but I believe there is no biological evidence, which I show above is so important, to support this opinion.

I append a table which I think will help any one to identify the four species named, and it will be noticed that I have purposely left out any mention of the punctures at the sides of the disc of the thorax and near the eyes, most unreliable points which have been the cause of the chief confusion in the group.

- A. Penultimate joints of antennæ hardly transverse; last dorsal segment of abdomen entirely reddish-yellow *Q. fulgidus*, F.
- B. Penultimate joints of antennæ strongly transverse; last dorsal segment of abdomen with never more than the apical margin yellowish.
- a. Hind body diffusely punctured; elytra bright red; legs black; average size smaller *Q. puncticollis*, Th.
- b. Hind body closely punctured; elytra dull red; legs reddish; average size larger.
1. Head transverse, even in ♀; eyes larger; shape fusiform; average size larger *Q. brevicornis*, Th.
2. Head, even in well developed ♂ ♂, as long as broad; eyes smaller; shape more parallel-sided; average size smaller...
Q. vexans, Epp.

The apical border of the last dorsal segments of the abdomen in *Q. vexans* is often yellowish, and the hind body is slightly duller and more closely punctured than in *Q. brevicornis*. The small size of the eyes in the former species is of much importance, and indeed in this respect it comes very close to *Q. longicornis*, a species which most probably inhabits a similar situation. A difference in the habits of *Q. vexans* and *Q. brevicornis* is of much interest. When an old birds' nest is being examined for beetles, *Q. brevicornis* will lie quiet for a very long time, and will not attempt to run until it knows it is discovered; *Q. vexans* runs off at a great pace at the first alarm. The latter would profit nothing by lying still, the mole using its nose and not its eyes for discovering its prey, whereas birds would see a moving insect at once. *Q. puncticollis* I believe has the habits of *Q. brevicornis*, feigning death when discovered by a wasp in its nest.

HOMALOTA PARADOXA, Rey.—Although this species has never been recorded as British before, Mr. Champion has two somewhat mutilated examples in his collection, captured by himself in the London district many years ago, and identified by Mons. Fauvel at the time. The insect has occurred on several occasions here, and I have also found three specimens at Kingswear, S. Devon. There is little doubt that it occurs all over the country. *H. paradoxa* is a small, obscure species, with narrowed hind body, most closely related to *H. cribrata*, Kr., but differs from all its allies in the thickness of its antennæ. Mons. Fauvel, who kindly identified my specimens for me, tells me it has been taken in the runs of rodents in France, and although I have not recognised the larvæ in the moles' nests, I have taken examples only just emerged from the pupa. The following is a short translation of Rey's original description:—

Rather shining, black, with elytra and apex of abdomen sometimes pitehy, finely pubescent; head transverse, densely and finely punctured; antennæ robust, a little longer than head and thorax, black or obscurely testaceous, 4th joint a little longer than 3rd, transverse, the 5th to the 10th gradually broader, strongly transverse, the last acuminate at apex, as long as the two preceding together; thorax transverse, a little narrower at base than elytra, finely, densely, and rugosely punctured; elytra a little longer than thorax, quadrate, finely, closely, and rugosely punctured; hind body broad, strongly bordered at sides, gradually narrowed from middle to apex, finely, densely, and rugosely punctured on the 2nd, 3rd, 4th, and base of 5th segments, sparingly and obsoletely punctured on the rest of the surface; legs pitehy-testaceous, femora a little darker, knees and tarsi lighter, the latter rather slender. Long., 2 mm.

ALEOCHARA SPADICEA, Er., has always been regarded as one of the most scarce of the British *Staphylinidæ*, only a few odd specimens having occurred in flood-rubbish, &c. There is little doubt that it is really not uncommon, but attached entirely to the mole. I have taken it on several occasions in Berkshire and once in Devonshire, but have never taken more than two in one nest.

(To be continued).

Bradfield, Reading:

August 11th, 1906.

ADDITIONS AND CORRECTIONS TO THE LIST OF
BRITISH HYMENOPTERA SINCE 1896.

BY EDWARD SAUNDERS, F.R.S.

(Concluded from page 33).

Andrena ruficrus, Nyl. (Ent. Mo. Mag., xxxv, p. 154).

We are indebted to Mr. W. Evans for the first recorded capture of this species. He took three males in April, 1896, at Aberfoyle in dandelion flowers; subsequently, in 1903, Mr. Malloch took a ♂ and ♀ on the hill side near Murroch Glen in the Clyde district. Beyond these captures we have no records.

The species is allied to *gwynana* and *angustior*, but resembles in the ♂ sex a small *clarkella* or a *præcox*; it lacks the mandibular tooth of *præcox* and has a much shorter 3rd joint of the antennæ than *clarkella*. The pale posterior tibiæ with a darker stain across the middle (much as in *albicans*) of the ♂ and the clear testaceous tibiæ of the ♀ will distinguish it at once from either *gwynana* or *angustior*.

It should follow *angustior* in the list.

Andrena lapponica, Zett. (Ent. Mo. Mag., xxxv, p. 262).

Mr. H. Elgar was the first recorded captor of this species; he took it on whortleberry flowers early in May, 1895, at Ightham in Kent. Since then it has occurred in many localities; in fact it seems probable that it is to be found wherever its food plant grows. It has been recorded also from Scotland (Evans and Yerbury), Cumberland (Day), Derbyshire (Harwood), New Forest (Nevinson), Leith Hill, near Dorking (Frisby), and N. Wales (Gardner, see p. 213).

It is closely allied to the other species of the *varians* group. The ♂ having a well developed mandibular tooth can only be confounded with that sex of *fucata*, from which its small, entire, labrum (viewed from above), the larger mandibular tooth, and the narrow 2nd submarginal cell will serve to distinguish it, as well as the very differently formed 7th ventral segment, which is not dilated at the base of the apical process as in *fucata*.

The ♀ more closely resembles *varians*, having the same black-haired face as in that species, from which it differs in being slightly stouter, in having the labrum less transverse and more convex, and the abdomen much less strongly and less densely punctured, especially on the 1st segment, its puncturation agreeing almost with that of *fucata*.

Andrena niveata, Friese (Ent. Mo. Mag., xxxv, p. 154).

This little species was first identified in 1899, and has occurred at Worthing and Bognor and plentifully at Margate. Miss E. Thoys took it at Sulhampstead near Reading, Mr. A. J. Chitty has taken it in the Faversham district, and Mr. E. B. Nevinson has taken it this year in the Fens.

It is closely allied to *A. nana* and *A. minutula*, but may be distinguished from either of these by the closely punctured apical impressions of the abdominal segments—in *nana* and *minutula* these impressions are more or less shining and finely alutaceous, but in *niveata* they are distinctly, though very finely and closely, punctured. The ♀ may be further known by the dense white fimbriæ of the sides of the abdominal segments. These, however, are often nearly worn off in specimens which have been long exposed to the weather.

Cilissa melanura, Nyl. (Ent. Mo. Mag., xxxiii, p. 229).

First recorded by Mr. Sladen from St. Margaret's Bay, where he found it on *Bartsia odontites* in August, 1897. It has since been found by Mr. Elgar at Halling, Kent, by Mr. Malloch at Rochester, and by Col. Yerbury at Torcross, Devon.

It is closely allied to *Ieporina* of Panzer, but may be easily known in the ♂ sex by the longer, entirely black antennæ, the joints of which are much more arcuate,

the dark piceous nervures of the wings, the narrower apical pubescent bands of the abdominal segments, and the black apical joints of the tarsi.

The ♀ like the ♂ differs from *leporina* in the dark wing-nervures, in the narrow abdominal bands and the black apical joints of the tarsi, and also in having the abdomen more triangularly shaped. The front wings in both sexes are slightly broader than those of *leporina* with their apices less acute.

Nomada guttulata, ♂ (Ent. Mo. Mag., xxxix, p. 282).

At the time the "*Hymenoptera Aculeata* of the British Islands" was written there was no locality known in this country for this species. I recorded it with many misgivings from a single ♀ in my collection, which I believe came from F. Smith's duplicates, and it was with great satisfaction that I heard that Mr. Morley had caught a ♀ in yellow composite flowers near Ipswich on May 17th, 1897 (cf. Ent. Mo. Mag., xxxiii, p. 280).

The male was first recorded by Mr. Chitty from Huntingfield, Kent, in 1903, where he also took the ♀.

The ♂ has since occurred at Gosfield, Essex (late A. Beaumont), and Newton Abbot (Holloway), recorded by A. H. Hamm.

Friese says its host is probably *Andrena cingulata*.

The ♂ may be known from *flavoguttata* by its testaceous labrum and the shorter 3rd joint of the antennæ; it has also a few dark spines at the apex of the posterior tibiæ. The specimens I have seen are about the size of rather large *flavoguttata*, but the specimen recorded by Mr. Hamm was nearly twice the ordinary size.

✓ *Nomada argentata*, H.-Sch. = *atrata*, Sm. = *brevicornis*, Schmied.
(Ent. Mo. Mag., xxxvi, p. 204).

This species was first taken in this country by the late Mr. S. Stevens at Arundel, and described by F. Smith as *atrata*. Smith subsequently sunk *atrata* as a synonym of *ferruginata*, and it was overlooked until I took a ♂ near Clandon, Surrey, on *Scabiosa succisa*, in August, 1900. Mr. Morice has also taken both sexes on Woking Heath, near the high road to Chobham. I am not aware of any other localities for it. It associates with *Andrena cetti*.

It is closely allied to *ferruginata*, but rather smaller and much darker; the ♂ may be known at once by its shorter antennæ, of which the 3rd joint is much shorter on its under-side than the 4th; the basal joints are simple, not swollen as in *ferruginata*, and the tubercles of the following joints are less acute.

The ♀ may be known by the short 3rd joint of the antennæ as in the ♂, its less hairy mesonotum, and the silvery haired sides of the propodeum.

✓ *Cælixys conoidea*, Ill. = *vectis*, Curt.

This synonymy is generally adopted on the Continent.

Cælixys mandibularis, Nyl. (Ent. Mo. Mag., xxxvii, p. 167).

Mr. Willoughby Gardner first sent me a ♀ of this species for identification in 1901; it was taken by Mr. Frank Birch at Wallasey, Cheshire, in July, 1900, and subsequently Mr. Gardner found a ♀ in his own collection, which he had taken in July, 1891. Col. Yerbury took a ♀ at Porthcawl, Wales, in August, 1903.

Closely allied to *elongata*, Lep., and *acuminata*, Nyl., but rather smaller than either. Calcaria black in both sexes; in the ♂ the 2nd abdominal segment is densely clothed with velvety pubescence above the lateral transverse fovea, 5th ventral segment without any central emargination.

The ♀ may be known by the form of the mandibles. These are produced on their anterior side near the centre into a distinct angle, just above the base of the apical groove. The mandibles are densely clothed with hairs and consequently the angle is easily overlooked. The best way to see it is to turn the insect on its back, and to examine the mandibles from behind. Beyond the form of the mandibles, the black calcaria, the widely interrupted abdominal bands forming triangular lateral spots, the rather less remote puncturation, the narrower apical ventral valve which has less distinct lateral teeth, and the narrowly interrupted ventral bands are probably reliable characters.

✓ *Osmia leaiana*, Kirb. = *fulviventris*, Smith, Saund., &c., *nec.* Panz. ?

The continental authors all refer *fulviventris*, Pz., to the species found in Middle and South Europe, and which has the clypeus in the ♀ regularly emarginate, at the apex, and our species is known generally to them as *solskyi*, Mor. Mr. Morice some years ago discovered that our species was not the *fulviventris* of the Continent, and on his authority Ducke in his monograph of *Osmia* has correctly referred *solskyi* to *leaiana*. The males of the two species are hardly separable, and I still feel some little doubt if both are not forms of one species, and also as to which is the true *fulviventris*, Panz.

Osmia parietina, Curt., *nec.* Smith, Saund., &c. (Ent. Mo. Mag., xxxvi, p. 51).

This distinct species, although originally described and figured in Curtis' "British Entomology," remained misunderstood in this country until a few years ago. Curtis' type went out to Australia in his collection. F. Smith probably never saw it, and referred quite a different species to Curtis' name. The present writer omitted to look up the original figure and fell into the same error as Smith. The continental authors, however, have always rightly interpreted Curtis, which makes the omission the less excusable. The true *parietina* of Curtis had not been recorded since Curtis' time until

1900, when Mr. Nevinson sent me some specimens to name from Crickieth, N. Wales; he has taken it also at Barmouth and Towyn, where it evidently occurs regularly, as this year again specimens have been taken at Crickieth by Mr. Nevinson and Mr. W. Gardner. Col. Yerbury took the ♂ at Llambedr in July, 1901. Curtis' specimen came from Ambleside, Westmoreland, and there is a ♀ in the National Collection mixed with *inermis* from Perthshire.

It is a very distinct species; the ♀ could only be confused with either *pili-cornis* or *inermis*, from either of which it may be known by its narrower form, the much shorter and less conspicuous clothing of the head and thorax, and the steel-blue not black abdomen.

The ♂ resembles the ♂ of *cærulescens* or *leaiana*, but it has the posterior metatarsus very slightly dilated from about the middle, which bears on its under-side a distinct tooth that projects and is distinctly visible beyond the hairs of the under surface; this character and the dull propodeal area at once distinguish it from *cærulescens*, and the dull area and the much more developed metatarsal tooth from *leaiana*.

Osmia inermis, Zett. = *parietina*, Smith, Saund., &c., *nec.* Curtis.

This change in synonymy is necessitated by the alteration of the name of the last species.

An error occurred in "Hym. Acul. Brit. Isles," p. 73, in the table of *Agenia*. "Metanotum" should read "Propodeum."

St. Ann's, Woking:

August 6th, 1906.

HELP-NOTES TOWARDS THE DETERMINATION OF BRITISH *TENTHREDINIDÆ*, &c. (15).

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

NEMATIDES (continued) = *PACHYNEMATUS*, Knw.

Pachynematus, Knw., differs from all our normal *Nematides*, except the very dissimilar *Micronematus*, in combining the characters of an excised *clypeus* and *claws with subapical tooth*.

As far as I know, we have thirteen British species of the genus; one of which, however—viz., *zaddachi*, Knw.—I can only record as British on the authority of Konow's statement in his *Revision of Pachynematus* (1903—1904), "mir aus England bekannt," although I have a strong impression that it was once sent to me for determination by a correspondent, but by whom and when I cannot remember.

For the nationality of the other twelve I can personally vouch. Of these species about half can as a rule be distinguished pretty easily, provided that the specimens examined are in tolerable condition; but the remainder belong to a group which I must confess I find extremely puzzling—viz., that which includes the species commonly known as *capreæ* and its allies, and which is characterized by the very long 8th dorsal segment in the ♂♂, and the dilated tempora in the ♀♀. In tabulating this group I have thought it best to reproduce, as exactly as possible, the dichotomies employed by Konow in distinguishing and arranging its species. In dealing with the remainder of the genus, however, I have allowed myself more freedom; and have preferred to found my divisions on such characters chiefly, as I personally find it easiest to recognise in actual specimens.

In several species of *Pachynematus* (just as in *Pteronus*, &c.) the ground-colour (especially of the ♀♀) changes after death from green to various more or less impure and blended tints of red, brown, yellow, and even white. In others it is *permanently* (*i. e.*, before and after death) and *definitely* fulvous. Sometimes it is easy to say at a glance to which of these sections a specimen should be referred. And with long practice the eye gains a sort of experience, which makes such discrimination easy; but there are cases which to a novice would present insoluble problems. Another difficulty, which is perhaps a still more frequent source of errors, is the often very great similarity—as far as colour goes—between certain pale or discoloured *Pachynemati* and various species belonging to other genera. Errors from this cause may, however, be absolutely avoided by making it a rule never to attempt the naming of such insects without, first of all, examining (1) the clypeus (holding the insect for this purpose upside down!), and (2) the claws. If the state of a specimen makes such examination impossible, it is useless to waste time over it; and the sooner it is thrown away the better!

SYNOPTIC TABLE OF BRITISH *PACHYNEMATUS*, spp.

1. Last dorsal segment of ♂ abdomen much produced at apex (making its entire length at least twice that of the preceding segment!). Head of ♀ widened, or at least not narrowed, behind the eyes 2.
- Last dorsal segment of ♂ abdomen hardly longer than the preceding segment: its apical process short. Head of ♀ narrowed behind the eyes..... 8.
2. Wings slightly clouded with brown, clearer at apex. ♂ with head thorax and propodeum black, the rest of the abdomen, the tegulæ, and the legs reddish-yellow: the ♀ coloured very like several other species of the group, brownish-orange, with the ocellar region, the meso- and metanotum, the basal part at

- least of the abdomen above, the breast and the coxæ more or less spotted or striped with black.....*zaddachi*, Konw.*
- Wings not clouded (they may, however, have a tinge of yellow) 3.
3. Abdomen with a noticeable, though short, grey pubescence, its surface somewhat opaque. Colour in dry specimens much like *zaddachi*, but rather darker (♂ with black tegulæ, ♀ with the mesopleuræ *edged* with black, &c.). (In life, however, the ground-colour of the ♀ abdomen is green, that of the head and thorax rufescent)*turgidus*, Zadd.†
- Abdomen shining; not noticeably pubescent 4.
4. ♂ with red tegulæ, ♀ with mesonotum striped or spotted with black on a pale ground 5.
- ♂ with black tegulæ, ♀ with mesonotum and scutellum practically all black... 7.
5. ♂ abdomen orange-red (without black; except on the propodeum and the extreme base of the following segment); ♀ ground-colour bright orange with less black than in any other species (in my specimens the abdomen is practically immaculate, but Konow says it may be banded above with brown)...
flaviventris, Htg.
(? *turgidus*, C.).
- ♂ abdomen above mostly black, ♀ brownish-yellow or whitish (not bright orange), with extensive black markings above 6.
6. Vertical area broader, with a deep central longitudinal sulcus. Stigma yellow. ♂ with head less narrowed, and antennæ more compressed. ♀ with abdomen quite pale beneath*tresignatus*, Foerst.‡
(*capræ*, C.).
- Vertical area narrower, hardly sulcate centrally. Stigma white (at least in ♀). ♂ very like the last species, but the head is more narrowed behind the eyes, the antennæ less compressed, &c., ♀ with a paler (more whitish) ground-colour than *tresignatus*, but a greater extension of black, and the abdomen beneath is not wholly pale. (Generally speaking this is a smaller and blacker looking insect than *tresignatus*).....*clitellatus*, Lep.§
(*imperfectus*, C.).
7. ♂ antennæ as long as the body, ♀ head widened behind with pale tempora. (A large and easily recognisable species, 7—9 mill. long)...
xanthocarpus, Htg.
(*thomsoni*, C., *clibrichellus*, C.).

* This species = *umbripennis*, Zadd. (*nee* Eversm.), Konow records it as known to him from England. I have only foreign specimens of it myself, and it is not known seemingly as British to Mr. Cameron.

† Konow has abandoned his former identification of this species with *brachyotus*, Först. *Turgidus*, C., according to Konow, is not this species, but the next.

‡ This is generally known as *capræ*; but according to Konow the original *capræ* of L. was a *Pteronus*. The whole synonymy of this group is so perplexed, that I do not pretend to have any views of my own about it, and merely reproduce those which are expressed in Konow's latest works.

§ *Clitellatus*, till lately, was called by Konow *einersbergensis*, Htg. The name *imperfectus*, Zadd., is assigned by him to a different species, not of this group, and (as far as I know) not British.

- Smaller (6—8 mill. long). ♂ antennæ little longer than the abdomen, ♀ head subquadrate, with nearly or quite black tempora *apicalis*, Htg.
8. Mesopleuræ distinctly, though sparsely, punctured. Body black in both sexes, pale only at the apex *pleuralis*, Thoms.*
- Mesopleuræ impunctate; or with very fine and close punctures, and with the whole ventral surface in the ♀ ♀ pale 9.
9. Scutellum swollen and punctured. Mouth, pronotum, tegulæ, abdomen, and legs bright orange. Head and thorax shining black. Wings rather dusky, with yellow costa and stigma. (A very distinct species)... *albipennis*, Htg.
- Scutellum flat and impunctate. Abdomen dark above; or, if mostly pale, the head and thorax above are largely pale also 10.
10. Head pale brownish-yellow, but with a large black mark occupying the ocellar region. Antennæ more or less pale, or rufescent at least beneath 12.
- Head for the most part, and antennæ, black. Thorax and abdomen mostly black above; in the ♀ ♀ the ventral surface is entirely pale, in the ♂ ♂ it is so at the apex only 11.
11. Stigma pale yellow; femora pale testaceous *ragus*, F.
(*leucogaster*, C.).
- Stigma dusky brown; femora more or less black *obductus*, Htg.†
(*obductus*, *conductus*, C.).
12. Very small species (4—5 mill. long), with remarkably yellow wings. In the ♀ the thorax and abdomen are for the most part black, the head (except about the ocelli) and the legs yellow, the antennæ slightly rufescent. The ♂ is peculiar in being more brightly coloured than the ♀; its thorax above is largely yellow, as is the abdomen beneath, and the antennæ (except the two basal joints which are usually black) *rumicis*, Fall.
- Large species (6—9 mill. long), with perfectly glassy and iridescent wings (not at all yellow!). The body-colour in both sexes is green in life, fading more or less after death to ochraceous-yellow; head, thorax, and abdomen rather sparingly marked with black, in the style of *flaviventris*, *tresignatus*, &c. (The insect superficially resembles a green *Pteronus* of the *miliaris* group). The antennæ are more or less pale *scutellatus*, Htg.

NOTES.

(a) In Cam. Mon., vol. iv, p. 200, *subbifidus*, Thoms., is given as a *Pachynematus*. The *subbifidus* of Thomson, however, is certainly a *Pristiphora*: and Mr. Cameron's species appears to be the same—at any rate it cannot be a *Pachynematus*, if he is correct in saying (vol. ii, p. 139) "apex of clypeus truncated." *Prist. subbifida*, Thoms.,

* I suppose this = *canaliculatus*, C., though Konow does not say so (cf. the synonymy of *canaliculatus* in the Monograph). I have seen a specimen taken by Mr. A. J. Chitty, and identified by Konow as *pleuralis*.

† *Conductus*, Ruthe, according to Thomson and Konow, is a ♀ variety of this, in which the hind femora are quite black. Most of the British ♀ ♀ I have seen belong to this form.

occurs in England, and has several times been taken by myself, and sent to me for determination by correspondents.

(b) The application of the name *capreæ* by different authors to different species has caused terrible confusion. Konow formerly applied it to what he now calls *trisignatus*, but has now come to the conclusion that the original *capreæ*, L., was the *Pteronus* described under that name in my last paper.

(To be continued).

FORMICOXENUS NITIDULUS, NYL., ♂, AS BRITISH.

BY RICHARD S. BAGNALL, F.E.S.

Until recently, when the writer had the good fortune of finding this interesting species in some numbers in the hills of *Formica rufa*, L., at Corbridge-on-Tyne, Northumberland (p. 140), *Formicoxenus nitidulus*, Nyl., was regarded as a very rare British ant, and only ♀ and ♂ had been taken in Britain. In early June Mr. Donisthorpe and the writer spent a whole day with the Corbridge wood-ants, and, again finding *Formicoxenus* in some profusion, we each took a large series in the hopes of finding the male; but, excepting a few apterous queens, they all proved to be workers.

Yesterday, despite the stormy weather, several hours were spent in once more investigating the *rufa* hills at Corbridge, this time (without success, we may add) in search of the winged ♀. In fact, our little friend was decidedly rare, and three hours' hard work only produced fifteen examples, namely, an apterous queen, four workers, of which three were badly mutilated, and no less than *ten* males. It is therefore with real pleasure we are thus able at last to record the male sex as having occurred in Britain. The ♂ of this ant is apterous, and very strongly resembles the ♀, but comparatively speaking is of slighter build, and, apart from other minute sexual differences, is easily distinguished by its twelve-jointed antennæ, those of the ♀ being eleven-jointed; and also by the fact that in the ♂ the ocelli are developed, whereas in the ♀ they are rarely so, and then only partially.

Mr. Saunders informs me that *Formicoxenus nitidulus* is the same species as Farren White and the older British authors knew as *Stenamma westwoodi*; the latter, however, was described from a ♂ which proves to be the ♂ of what used to be called *Myrmica lippula*, so that the old *Myrmica lippula* is now *Stenamma westwoodi*, and the *Stenamma westwoodi* of olden times we now know as *Formicoxenus nitidulus*.

The Groves, Winlaton-on-Tyne :

August 13th, 1906.

The Collection Fairmaire.—It may interest some of the readers of this Magazine to know that the collection of the late Monsieur Léon Fairmaire has been purchased in its entirety for the Museum of Paris. I believe in late years Mons. Fairmaire received important collections from Tongking and Madagascar, and the "types" in this collection must be very numerous.—G. LEWIS, 87, Frant Road, Tunbridge Wells: August, 1906.

Quedius longicornis, Kr., in Suffolk.—I have lately discovered a new mode of collecting beetles: moles were so great a pest in my garden here in the spring of 1905, that I laid a simple trap for them by sinking a bucket in the ground beneath their runs. Upon examination, these traps were found to contain not only moles but beetles. One of the above very rare species was taken thus on March 22nd; and on April 2nd several *Homalotæ*, *Quedius picipes* and *Choleva agilis*, in abundance.

I am hoping by this means to discover *Quedius vexans*, which I believe has been recently taken in England. It was first described by Eppelsheim in the *Deutsch. Ent. Zeit.*, 1881, p. 297; and is said by Ganglbauer (*Die Käfer von Mitteleuropa*, ii, 394) to occur very rarely in Schlesia, Bohemia, and Eastern Prussia. Like *Q. longicornis*, it has the elytra and legs red; in other respects it agrees with *Q. mesomelinus*, from which it is distinguished by its much smaller eyes. The depth of the dorso-lateral thoracic puncturation at once renders it distinct from *Q. ochripennis*, Mén. (= *puncticollis*, Thoms.).—CLAUDE MORLEY, Monks' Soham House, Suffolk: August 3rd, 1906.

Deilephila livornica, Esp., at Woking.—On the afternoon of August 8th I captured, on a small shrub in our garden, a specimen of the above moth in excellent condition, and I thought perhaps its capture would be worth noticing in your Magazine.—PERCY C. SMITH, Tamerton, Woking: August 16th, 1906.

Leucania favicolor, Barrett, in the Isle of Sheppey.—Whilst sugaring for *Mamestra subjecta* on the Medway Marshes, near Queenborough, at the beginning of last month, I was fortunate in taking several specimens of *Leucania favicolor*, Barrett, both the red and yellow forms being represented. This is, I believe, the first record of the species in the Isle of Sheppey.—J. J. JACOBS, 63, Marine Parade, Sheerness-on-Sea: August 15th, 1906.

Aristotelia lucidella, Steph.—I had long suspected that the larva of this *Gelechia* fed in the stems of *Eleocharis palustris* (as well as in those of *Scirpus lacustris*); I am now able to prove it. On July 4th I noticed a small bed of *Eleocharis* growing in a damp place at the bottom of an old stone pit, and finding a fine large form of *Bactra furfurana* (more or less worn at this date) I cut a handful of the stems, thinking that I might breed one or two late specimens of this Tortrix; however, none appeared, but on the 7th a fine *lucidella* came out. Of course the two genera *Eleocharis* and *Scirpus* are very closely allied, treated as one by some authors, so perhaps the discovery is not a very startling one; however, I thought it might be worth recording.—A. THURNALL, Whitehall Road, Thornton Heath: August 8th, 1906.

Notes on the habits of Ponera contracta, Latr. — During the past year I have spent a good many mornings of my holidays and week ends searching for *Bythinus (Machærites) glabratus*, Rye, at Charing, Kent. The chief result has been to enable me to add to my knowledge of the habits of *Ponera contracta*, Latr., and perhaps a few notes on the subject may be useful.

I believe that *Ponera contracta*, Latr., is not nearly so rare as is generally believed, and that it occurs sparingly on warm banks in dry chalky situations throughout Kent and Surrey; it is, as Mr. Waterhouse has pointed out to me, more likely to be found by Coleopterists than by Hymenopterists, and so gets overlooked. But for the insect to occur in any numbers growing moss seems essential, and as a rule moss does not flourish in quite such dry places.

At Charing there is (I almost ought to say there was) abundance of moss below the steep, almost barren, bank of the hill where most of my searching is done, and close by vegetation grows abundantly in a mossy dell or fold in the ground. Across the latter spot (except during the hottest months of the summer) a small wood throws its shade early in the afternoon, and good evening sweeping may occasionally be done here, while on a fine September evening the air is full of small flying *Bracons*, ants, Chalcids, and beetles, which seem to enjoy flying over the ground upon which the shade has just fallen. Ant's nests abound everywhere on the hill side, but *Ponera* and *Myrmecina* are almost confined to the moss below the bank, and to that in the fold in the ground; at these spots I have generally found the former in any place where the moss is thick and long enough to rise above the ground in a patch, in which case it is easy to pull in a lump. These patches when once pulled do not, however, readily grow again, and certainly represent more than a year's growth of moss, so that too vigorous collecting or even study is sure to have a bad effect on the insects, and this is the chief difficulty with which I have had to contend. In April the ants are to be found on a fine day in the moss as above described, both at the foot of the bank and in the dell. Mixed with the workers of *P. contracta* a few ♀ ♀ occur, and it would seem that the insects at the time are spending all their energies in getting food for themselves. I have never come across a trace of anything like a nest at the time, and the ♀ ♀ are evidently not engaged in laying eggs at one spot, as they occur mixed up with the workers wandering through the moss; with them may occasionally be found a single *Pselaphus heisei* or *Bythinus glabratus*. The moss may also be full of other beetles, but this is a rare occurrence; still *Lamprinus saginatus*, *Mycetoporus punctus*, *splendidus*, *angularis*, and *clavicornis*, *Orthochetes setiger*, *Trachys pumila*, *Apion filirostre*, and other good things have occurred in this way amongst commoner species, especially *Philonthi* and small *Staphylinidæ*.

As the year progresses the ♀ ♀ become rarer, and this would seem to show that they have gone down into the porous chalky ground to form their nests. This year however, on June 3rd I found in or at the roots of one raised patch of moss what was apparently a nest; there were as many as six ♀ ♀, the largest number I have ever taken, besides eggs or grubs and some twenty or thirty ♂ ♂; there were also three *Pselaphus* and two *Machærites* in the heart of the nest. I may here mention that the beginning of June is apparently the best time for the last named insect, especially after rain; but since June 11th, 1904, when Mr. Donisthorpe and myself got fourteen specimens in a very short time, I have never been able to find more than

four or five in a long morning's work. The above observation of June this year seems to show that this beetle is attached to the nest of the ants (possibly feeding on eggs or larvæ); anyhow, I have never sifted a *M. glabratus* without having *Ponera* on the paper at the same time.

The ants do not appear to live or have their nest in the moss. Mr. Nevinson has suggested to me that they may feed on the very small *Acari* which are to be found in the moss, and they are probably there collecting food. If put into a bottle with moss they soon expire; whereas a ♀ placed in a small glass bowl with earth in April, 1904, was alive in the following August. If a nest or number of ants be taken and put into a glass receptacle the insects will completely disappear, and only show themselves when the contents are turned out. This seems to indicate that they live and have their nests deep down in the earth, and that the moss is chiefly valuable to them as supplying them with food.

In July or the early part of August batches of pupæ are brought up to the surface and stored under small stones, and a few workers left to guard them. On July 22nd last Mr. Donisthorpe and I found two such batches under different stones on the edge of a single patch of moss, from which I conclude that the rest of the nest, including the larvæ, was below. The pupæ, which are enclosed in a case of a rather dark colour, were apparently all workers; there was a Coccid with one of the batches but no larvæ [see also my record of two similar batches of pupæ found in August, 1903 (*Ent. Mo. Mag.*, Ser. II, xiv, 283)]. The ♂♂ hatch out at the end of August; my dates are 29.8.04 and 3.9.05. The winged ♀ is apparently very rare; I have one dated 3.9.05.

A thorough study of the insect could only be made by some one living on the spot, who could secure a nest early in the year and keep it supplied with fresh moss. Even then it would be necessary to turn out the nest to find what was happening so that the chance of rearing insects would be small, and it might be better to try and follow the fortunes of the nest in its natural spot, but as the ants leave the moss directly it is pulled this would be very difficult. My visits to Huntingfield (which itself is 4½ miles from the spot) are only for occasional week ends during the time that the observations have to be made, so that it is impossible for me to work as methodically as I should like, but the above notes represent three years' experience. I could not properly attend to the nest taken in June this year, and it got too damp; this was most unfortunate, as the loss of six ♀♀ must have sorely diminished the supply of eggs. The ant is, however, still abundant if only searched for. Mr. Donisthorpe and myself failed on July 22nd to find any trace of a second specimen of my *Pseudisobrachium cantianum*.—A. J. CHITTY, 27, Hereford Square, S.W. : August, 1906.

Andrena lapponica, Zett., in *N. Wales*.—My friend Mr. Morice told me to keep an eye on *Andrena* feeding on whinberry on our Welsh mountains, with the result that on two different occasions I have taken the ♀ of this species upon the flower in question near Pennmaenmawr; it appears to be local, however, as I have searched for it in many places where whinberry is abundant without success.—WILLOUGHBY GARDNER, Deganwy, N. Wales : August, 1906.

Halictus freygessneri, *Alfk.*, in *N. Wales*.—Mr. Edward Saunders' article in *Ent. Mo. Mag.*, Nov., 1904, caused me recently to examine the specimens in my collection under the label *H. subfasciatus*, *Nyl.*, with the result that my northern examples prove to be *freygessneri*. They were taken as follows, viz.:—two ♂♂ on marigolds in a garden at Eyarth, Denbighshire, early in September, 1891; one ♀ on wild carrot on a railway bank near Eyarth on June 4th, 1892; one ♀ on marigold on August 27th, 1892, in the garden where the ♂♂ were taken the previous year: the short and broad 2nd joint of the posterior tarsus is very noticeable in the ♂♂; the ♀♀ are rather larger and broader than those of *fulvicornis*, *Kirb.*, and have the testaceous lines across the posterior margins of the apical segments very narrow.—*Id.*

Heriades truncorum, *Linn.*, near *Chobham*.—In September, 1900, I had the pleasure of recording in the *Ent. Mo. Mag.* that I had taken a ♂ of *Heriades truncorum*, *Linn.*, visiting thistles near Weybridge Station on July 10th of that year. Though I have been on the look-out for the species ever since, and have frequently visited the locality where I found it, it has never occurred again to me there or elsewhere (nor, as far as I know, to any other collector in this country since the days of W. Kirby and Ingall), until July 6th of this year, when I was so fortunate as to take a second specimen—this time a ♀—burrowing in a decayed wooden post, by the side of a nearly disused cross-country road, or rather lane, near Valley End, Chobham Common. I had always an uncomfortable feeling that my Weybridge specimen might possibly have been imported in foreign timber; but the Chobham ♀ was so evidently at home in its surroundings, and those surroundings were so remote from railways and in all respects so primitive and natural (as well as being suited to its known habits), that there seems no reason to suspect it as a foreigner. Yet it is certainly rather strange that a species, which abroad is common wherever it occurs at all, should be so extraordinarily successful in eluding observation in this country. Possibly it is sometimes passed over as a *Chelostoma florissomne*, which (to the naked eye) it much resembles, though it is smaller and, especially, shorter in proportion to its breadth. The transverse sharp carination of the 1st abdominal segment distinguishes it unmistakably from any British *Chelostoma*- or *Osmia*-species, but this character can hardly be recognised till the insect is captured and examined with a lens.

M. Ferton in Corsica has observed *H. truncorum* collecting resin, and remarks that probably all *Hymenoptera* which have this habit are "liés dans une région à l'existence des arbres résineux." Both at Weybridge and on Chobham Common there were pine trees near the spots where my specimens occurred; and though the splendid pine woods, through which the L. & S.W.R. main line still runs in places, are fast disappearing to make room for villas and golf grounds, it will be some time yet, I hope, before modern "improvements" have made it impossible for *Heriades* to maintain existence in this district.—F. D. MORICE, Woking: August, 1906.

Sphecodes subquadratus burrowing.—Early this month, while looking for Aculeates on Red Hill Common, I noticed a ♀ *Sphecodes* apparently making a burrow in a sandy bank. Knowing that it is disputed that *Sphecodes* really excavates its own burrows, I watched it for some few minutes. The insect was scratching

away the loose earth with the front legs only, but the soil had run down from the mouth of the burrow in fair quantity. After a while it appeared to me that something else was at work further in the burrow, as the earth seemed to be pushed up from the inside. On securing the *Sphecodes* it proved to be *S. subquadratus*. Waiting till the earth was again pushed up, I dug well down with my knife and found a ♀ *Halictus leucozonius*. This will, I think, explain why *Sphecodes*, although parasitic, has occasionally been seen burrowing.—G. E. FRISBY, 9, Fen-gates Road, Red Hill : July 23rd, 1906.

Oxycarenus lavateræ, F., an Hemipteron infesting lime trees on Lago Maggiore.
—A correspondent who has property on an island in Lago Maggiore sent me some specimens of *Oxycarenus lavateræ*, F., asking what they were as they were infesting some lime trees (*Tilia*) in the garden in extraordinary numbers, covering the stems and boughs in places to the depth of an inch. They do not appear to infest other trees growing near and even between the limes. I am told by my brother, Mr. E. Saunders, who kindly named this insect for me, that it is a common South European species, but that he never heard of it occurring in such profusion before. I asked my correspondent various questions about the habits of this insect, to which I received the following replies, which I give verbatim:—"They remain on the trees all the year round, not heeding cold, heat, or rain. They keep in masses, turned towards the sunny side, and these masses are from 12 to 18 inches in length, and 4 to 5 inches wide, and 1 inch thick. These masses, divided in colonies, begin from the base of the tree and stop on the main branches, and have up to the present reached the height of about 20 feet. When shaken off they, not having wings, climb up again to their respective places.

"They live only on the lime; the height of the trees is 60 or 70 feet. They attack neither the shoots or the leaves, and the bark under them is as green as the parts which are free from them.

"Neither could any eggs or smaller sized insects be discovered under the bark, their size being absolutely uniform."

I thought an account of this insect occurring in such numbers and in such a remarkable manner should be recorded and might be of interest to some readers of the Entomologist's Monthly Magazine. — G. S. SAUNDERS, 20, Dent's Road, Wandsworth Common : August, 1906.

Phora papillata, Wingate: a correction.—In the May Ent. Mo. Mag. I described a supposed new species of *Phora*, under the name of *P. papillata*. Since then the insect has been examined by Dr. Wood and Mr. Collin, who both agree that it is the female of *P. lugubris*, Mg., which is in the British list. *P. lugubris* is in the three-thin-veins group, while my insect has four very distinct veins, but no doubt Dr. Wood will clear up the matter in Monograph, which I am glad to hear is to appear shortly. Not having any special knowledge of the genus, I only ventured to introduce the insect as new on the authority of the most recent monographer of the family.—W. J. WINGATE, St. Peter's Vicarage, Bishop Auckland, Co. Durham : July 18th, 1906.

NIDIFICATION OF *ODYNERUS RENIFORMIS*, GMEL.,
NEAR CHOBHAM.

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

The first recorded British specimen of *Odynerus reniformis*, Gmel., was taken by Mr. E. Saunders on Chobham Common as long ago as 1876. Occasional captures by the late Mr. Beaumont, myself, and others, in the same district indicate that the species has maintained itself there continuously, if in no great numbers, ever since. But I believe there is still only one record of the discovery of its burrows in England. These were seen for the first and last time by Mr. Saunders "on a level sandy spot on Chobham Common" in July, 1887, and described soon after in a note sent by him to the Ent. Mo. Mag. of that year. They were excavated in the sand, and surmounted by "curved tubular entrances" of the same material, like those of *O. spinipes*, L.

The exact spot has often been visited since by Mr. Saunders and myself, and the wasps have now and again been observed there, but not their burrows. On July 8th of last year, however, I was invited to enter a neighbouring enclosure, where the occupant (not a naturalist) had been struck by the appearance of some wasp-like insect in great numbers. I went there accordingly, and was agreeably surprised to find quite a strong colony of *O. reniformis* established, not, as before, in the level sand, but in two of the walls—those facing respectively S. and W.—of an old and now partly dismantled and ruinous cottage.

It was a one-storied building with a thatched roof. The east wall had been broken through, but not entirely removed, and the gap in it was partly choked with broken bricks and other rubbish. On the north side was a more modern red-brick addition to the original building—a very low "lean-to," with a separate tiled roof. The west and south walls—those utilized by the *reniformis*—were very thick, formed of some hard sandy substance, in which I could not distinguish any definite bricks or blocks, but which changed its appearance slightly (becoming distinctly lighter in colour) from about a foot above the ground upwards all round. Both walls had evidently once been coated externally with a layer of smoother plaster of a whitish colour; but of this only small patches here and there remained, so that the actual walls were left with a coarsely corrugated brownish or yellowish surface as of a natural cliff of sandstone. About these walls the *Odyneri* kept coming and going, and by degrees I became aware of

numerous little tubes (such as Mr. Saunders had described) projecting from the sandstone, and evidently formed of substance extracted from it. Some, apparently complete, measured about 20 mm. long by 4 mm. broad. These started from the surface horizontally (at right angles to it), and gradually curved over downwards till they became perpendicular. Others were in various stages of construction—some nearly complete, some only just beginning to appear, and on some of them I saw the wasps actually at work, bringing out sandy particles from the holes, kneading them up with their mouths, and apparently glueing them with saliva to the extremity of the unfinished tubes. I was disappointed to find only ♀ ♀, and concluded that the ♂ ♂ were over, but of this I am now doubtful—however, I could not find them. I was also disappointed that I could see no *Chrysid*s visiting the burrows, but neither then, nor on any later occasion while I had the colony under observation, did any such visits occur. A few specimens of *C. ignita*, and a good many of *C. cyanea*, lighted on the walls from time to time, but never entered nor seemed to notice the tubes; and as the latter species is known to infest *Trypoxylon*, and *T. figulus*, L. was quite as abundant as the wasp, inhabiting simple (*i. e.*, tubeless) burrows in the same walls, I was soon convinced that the holes of this insect and not those of the *Odynerus* were the attraction that had brought *cyanea* thither. *Ignita* infests many species of industrious *Hymenoptera*, and may have been attached to *Osmia solskyi*, Mor. (= *fulviventris*, E. S.), which also occurred in the walls, together (as I was pleased to see) with its "cuckoo" *Stelis phæoptera*, Kirb., which I had not before taken in this district.

Though no *Chrysid* or other recognised parasite was seen to enter or emerge from any of the *reniformis* burrows, I was surprised to see that the *Trypoxylons* did so repeatedly. These visits were much too frequent and protracted to have been merely accidental; and as *Trypoxylon* is certainly no parasite, but a diligent hunter after spiders, I can only conjecture that it may have expected to find spiders lurking in the holes, as they certainly did (for I saw plenty of their webs there) in other holes all over the walls, which holes had quite the appearance of having once been occupied by burrowing *Hymenoptera*.

This year I resolved to visit the colony earlier, and if possible secure specimens of the ♂ ♂, which I had not yet taken in England. I went over accordingly in June, but met with unexpected difficulties. My last year's friend had left Chobham, and I found the whole enclosure elaborately protected from trespass, and in fact made quite impenetrable on all sides, with padlocks and barbed wire. At last,

after a long period of enquiries and negotiations, I obtained permission to enter and the loan of the necessary key. This was on July 2nd, when I was pleased to find the work of the colony re-commenced, but less advanced than last year, and the ♂ ♂ not only abundant (so that I secured a nice little series of them) but decidedly outnumbering the ♀ ♀. After taking several pairs *in copulá* I left off collecting, and simply watched for developments. Nothing happened, however, beyond what I have already recorded. Again the only *Chrysids* visible (and as before never visiting the tubes) were *ignita* (rarely) and *cyanea* (abundantly). Again *Trypoxylon* went in and out of the tubes just as it had done last year. On July 7th I came again, and found *reniformis* ♂ still present, but in reduced numbers, and mostly visiting flowers and hovering over grass at some distance from the burrows. The tubes were evidently becoming more numerous, and the ♀ ♀ were working at them steadily. There were still no *Chrysids* about them, and their only visitor was the *Trypoxylon*.

Soon after this I had an engagement to spend a fortnight in Yorkshire, and, just before leaving, I went over once more with a camera, and secured a couple of photographs showing portions of the wall with the tubes *in situ*. The results are perhaps as good as I could expect; but the actual contrast in appearance between the tubes and their surroundings is too slight even in nature to show up well in a photograph. Their details, however, and the texture of the walls themselves, are sufficiently well brought out to make the photographs interesting records to myself, though by no means "brilliant pictures." At this last visit I saw no more ♂ ♂. I am not sure of the exact date, but it was about July 12th or 13th.

After returning from Yorkshire I could not get again to Chobham till August 2nd, when I spent an hour or two there in the morning. The tubes were now apparently all finished, and, with a few exceptions, quite perfect, and of uniform size and shape. None of the wasps, however, were to be seen, and only an occasional *Trypoxylon* flitting about the tubes but not entering them. It was a cloudy and windy morning; and all I could do was to try to count the tubes (50 or thereabouts), and wish for better weather. That night (as may be remembered) there was a great storm; but next morning (August 3rd) was bright, though cool and windy, so I rode over again and watched for a couple of hours or more. I found that a good many of the tubes had come to grief since yesterday—damaged perhaps by the rain and wind—but many were still quite perfect. Still, however, no specimens of *reniformis* appeared. There were a few *Odyneri* on the wing round

the cottage, but these all proved to be ♂♂ or ♀♀ of *callosus*. I presume, therefore, that the active life of this year's colony is now ended, having lasted perhaps from the last week of June to the end of July. From Switzerland (Geneva) I have males of the species taken as early as May 30th, but in this country it would probably seldom be worth while to look for it till at least a fortnight later.

M. Ferton in his interesting *Observations sur l'instinct de quelques Hyménoptères* (Bordeaux, 1896), points out that the real use of the tubes or "chimneys" constructed by *reniformis* and certain other *Odyneri* is still unknown. A somewhat similar but much larger and stronger vertical chimney is formed by a bee (*Eucera obesa*) which builds in the midst of a thick vegetation, and he suggests that without some such land-mark, especially in windy weather, the bee might have difficulty in finding the way back to its hole. But this cannot explain the practice in the case of *Odynerus*, which builds in open spaces whether horizontal or vertical. Another wasp-genus (*Ceramius*) I have seen in Spain, building tubes like those of *Odynerus*, but straight (not curved) on bare patches of level soil. It has been suggested that they are meant to hide the holes from parasites running on the wall; but in the case of *O. spinipes* they certainly do not succeed in baffling its chief enemies, the Chrysidids *viridula* and *neglecta*. Another idea is that, when the nest has to be closed, the tubes supply convenient material close at hand for the purpose; but for this purpose they seem very needlessly large and elaborate, and, in fact, the tubes often remain practically perfect after the nest is closed. It has also been suggested that they may be protections against rain, wind, &c., but they are themselves so frail and delicate (crumbling at the slightest touch) that any weather likely to damage the nest would, I believe, no less destroy the tube also. And one would also expect, in that case, that the form of the tube would differ according as the burrow was formed in a perpendicular oblique or horizontal surface, which does not seem to be the fact. Personally, though doubtfully, I lean to the idea that, at least in some times and places, they may have helped the *Odyneri* or their ancestors by baffling unwelcome visitors. Though they may fail against *Chrysidids*, it does not follow that they are useless against all intruders who might do mischief in the burrows—omnivorous beetles, earwigs, ants, mites, *Mutillidæ* perhaps in some districts, etc. Besides, even against *Chrysidids* they may at least oppose delays, though not an insuperable obstacle. Lastly—inasmuch as hereditary instincts may depend as much, if not more, on past as on present circumstances—there is the possibility that *Odynerus* has simply in-

herited, unaltered, from its ancestors a method of defence, which was sufficient against the ancestors of *Chrysis*, but which is useless against *Chrysis* itself. The attack may have beaten the defence, while yet the defence has not been abandoned. But one would be rather sorry to believe that these beautiful structures were no better than a senseless anachronism, the result of an instinct that had outlived its only purpose.

Woking : August, 1905.

CARIDA AFFINIS, PAYK., A BEETLE NEW TO BRITAIN.

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

We are indebted to Colonel Yerbury and Mr. C. G. Lamb for the discovery of this species in Britain. *Carida affinis* is very similar in form to *C. flexuosa*, but is rather smaller, and is darker in colour, being piceous, with the shoulders reddish; the margins of the thorax are also vaguely red; the antennæ and legs are entirely pale red. The sculpture and pubescence are excessively fine.

There is some doubt as to whether this species has been found in Britain before, as according to Seidlitz (Ins. Deutschlands V, a, p. 524), *Abdera picea*, Walker, is a synonym of the *Hallomenus affinis* of Paykull. In this I think Seidlitz is wrong, for Walker's brief description and the locality are neither of them suitable to *C. affinis*. He says—

"*Abdera picea*. Picea, *A. bifasciata* et *quadrifasciata* angustior, antennis basi, pedibus thoracisque margina fulvis. Picea, nitens, subtilissime punctata, fere glabra: oculi nigro-piceï; discus piceus: antennæ fuscæ, basi fulvæ; pedes fulvi. Corp. long. lin. 1 $\frac{3}{4}$. Found near London.

The species occurs in Scandinavia, Germany and France.

Seidlitz treats *Carida* as a subgenus of *Abdera*. He divides the genus into four named subgenera, though he has only six species, and it appears to me to be better and more natural to treat *C. flexuosa* and *affinis* as a distinct genus.

Mr. C. G. Lamb gave me a specimen of this species, found by him in Strathspey in July last. On calling the attention of Colonel Yerbury to its interest, he looked for it with such success that, owing to his kindness, it is now in several collections. It occurred in fungus on old trees. On visiting the spot with Mr. Lamb this year we found the tree had been cut down, and with its fungus cleared away, and we could find no trace of the insect.

Brockenhurst : Sept. 13th, 1906.

SOME NEW EXOTIC FLEAS.

BY THE HON. N. CHARLES ROTHSCHILD, M.A., F.L.S.

PYGIOPSYLLA, *gen. nov.*

♀. Frons without tubercle; a row of bristles from the palpus running obliquely upwards. Two oblique rows of bristles on the occiput, besides a subapical row. Pronotum with at least two rows of bristles and a comb. Episternum of metathorax large. Seventh abdominal tergite with at least one apical bristle situated below those which are placed on a cone. Sensory plate (so-called pygidium) strongly convex, projecting backwards. First midtarsal segment longer than second. Fifth tarsal segment with five bristles on each side.

Type: *P. hilli*, Rothsch. (*Ceratophyllus*).

To this genus belongs the species described as *Ceratophyllus hilli*, *ahalæ*, *robinsoni*, *novæguineæ*, *woodwardi*, *rothschildi*, and *echidnæ*, as well as the new one here described.

PYGIOPSYLLA COLOSSUS, *spec. nov.* (Fig. 1).

♀. A very large species, resembling in size *P. echidnæ*, Denny.

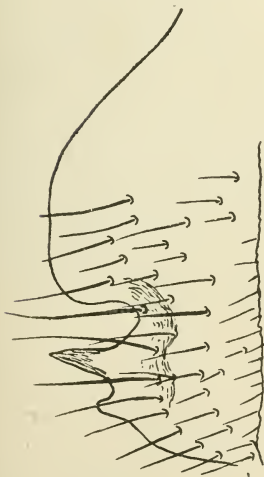


Fig. 1.

Head:—The maxillary palpus is very long, nearly reaching to the apex of the fore coxa. The second segment is twice the length of the first and about one-third longer than the fourth. The labial palpus extends to the apex of the trochanter; it consists of five segments, of which the fourth is the longest, as is the case in *P. hilli*, Rothschild (1904). The bristles of the frontal row are thin; between this row and the eye there are numerous hairs and three long bristles, one standing in front of the eye. The occiput bears numerous small hairs at the antennal groove, arranged irregularly.

Thorax:—The thorax and abdomen are densely covered with small hairs on the back. The pronotum bears three rows of bristles and some additional hairs. The comb consists of 20 teeth, these being a little over half the length of the pronotum. The mesonotum is dorsally a little longer than the pronotum inclusive of the comb, and one-fourth longer than the metanotum. The sternum and epimerum of the mesothorax bear altogether about twelve small bristles. There are three hairs at the upper hinder angle of the sternum of the metathorax, the episternum bearing two hairs, while there are about 24 small bristles on the epimerum.

Abdomen:—The first tergite is strongly narrowed anteriorly, being longer than the mesonotum. The second and third tergites bear a tooth on one or both sides. The hairy dorsal area does not extend below the stigma, except the postmedian row of bristles. There are on the seventh tergite two apical bristles situated on cones, the upper one being less than half the length of the lower. Below them there is a third bristle which is shorter and is not placed on a cone. The first sternite bears only a

few bristles, which are ventral in position. The following four sternites have each a subapical row of from six to eight bristles, and very numerous hairs proximally of that row. The seventh sternite is bisinuate (fig. 1; as the segment is broken, the ventral outline of the figure may not be correct).

Legs:—The mid and hind coxæ have two bristles and a short hair posteriorly near the apex. The mid and hind femora bear on the inner side a subventral row of small hairs, and posteriorly four or five subventral bristles. The tibiæ are densely covered with hairs on the outer side. The tarsi are long and slender. The first fore-tarsal segment equals the second in length, while the first mid-tarsal one is longer than the second, its longest apical bristle reaching the middle of the second segment. The first hind-tarsal segment bears eight pairs of bristles on the posterior side, and about twelve pairs on the anterior side. The longest apical bristle of the second hind-tarsal segment reaches to the apex of the third. The fourth hind-tarsal segment is about three times as long as broad, while the fifth segment is a little shorter and narrower than the third, its bristles being short and slender. The proportions of the tarsal segments are:—

	1st segt.	2nd segt.	3rd segt.	4th segt.	5th segt.
Mid-tarsus	31	24	16	9	19
Hind-tarsus	59	46	25	14	23

Modified segments:—The eighth tergite has a few bristles above the stigma, but none below it. The bristles at and near the apical and ventral edges of this tergite are slender, but not long. The eighth sternite is small and bears at the tip three bristles on each side. The sensory plate is very strongly convex behind; it is not encircled by a smooth and strongly chitinised ring. The stylet is cylindrical, widening a little basally being about three times as long as it is broad proximally. The anal sternite is strongly convex beneath in the centre, and bears very numerous hairs.

Length. 4.8 mm.

We have one ♀ of this interesting species, collected by Mr. Alexander Morton off a Tasmanian rat at Hobart, Tasmania.

CHÆTOPSYLLA HOMÆUS, *spec. nov.*

♀. Near *Ch. mikado*, Rothsch. (1904), and *Ch. trichosa*, Koh. (1903), differing specially in the bristles of the abdominal tergites.

Head:—The rostrum is shorter than in the above-mentioned species. The occiput bears three bristles behind the base of the antennæ, and a lateral row of four in the middle, besides the subapical row.

Thorax:—The epimerum of the metathorax bears two rows of bristles, the first row consisting of seven or eight, the second of six.

Abdomen:—The first three tergites bear three rows of bristles, the anterior row being irregular and incomplete, while the other two rows are continued below the stigma on the second and third segments, there being eight or nine bristles below the stigma. On the fourth tergite there are two bristles beneath the stigma, and one on the other tergites, while there are three or four hairs above the stigma on these segments, apart from the postmedian row. The tergites are similar in shape to those of *trichosa* and *mikado*, but do not extend quite so far down. The sternites are also similar to those of the above-mentioned species, that of the seventh segment bearing in the type specimen two rows of bristles.

Legs:—The fifth tarsal segment is shorter than in *trichosa*, being less than three times as long as broad. The proportions of the segments are:—

	1st segt.	2nd segt.	3rd segt.	4th segt.	5th segt.
Mid-tarsus	19	17	12	8	19
Hind-tarsus.....	35	22	13	9	19

Modified segments:—The eighth tergite bears from four to six short bristles above the stigma, and a row of from eight to twelve from the stigma downwards. There are also six moderately long bristles and many short ones at and near the apical edge. The eighth sternite is rounded at the apex, bearing at the apical edge about six bristles, of which the proximal one is the longest. Length, 3.3 mm.

We have two ♀♀ from *Canis sp.*, taken by Lord Osborne Beauclerk at Ancouza, in Central Asia.

CHLETOPSYLLA LASIUS, spec. nov. (Figs. 2, 3).

♀. A very distinct black species bearing long black bristles.

Head:—There is a row of four bristles before the eye. The occiput has laterally two hairs behind the base of the antenna, three bristles in the centre, and a sub-apical row of about ten bristles. The labial palpus consists of five segments. The frons is rounded, being feebly tuberculate.

Thorax:—The pronotum bears one row of bristles, the mesonotum and metanotum two rows, the metanotum having additional bristles in front of the two rows. There are in all about 14 bristles on the mesosternite. The sternum of the metathorax bears two bristles, the episternum 7 to 10, while there are on the epimerum a regular posterior row of 5, and two irregular rows of 9 to 10 together. The hinder edge of the epimerum is rounded from the stigma to about the centre, and then nearly straight, being slightly incurved, the apical lobe not projecting so far backwards as in *Ch. trichosa*, Koh. (1903).

Abdomen:—The tergites 1 to 7 bear each two rows of bristles, the first two

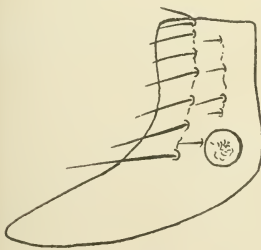


Fig. 2.



Fig. 3.

tergites having some additional bristles. The tergites 2 to 7 are very narrow, and, being produced backwards behind the stigma, have the appearance of a stocking (fig. 2). The anterior row of bristles is incomplete on segments 5 to 7,

some dorsal bristles being missing. The sternites are widely separated from the tergites and from one another, the first two being the largest. There are a few lateral and ventral bristles on the first sternite, the second sternite bearing a row of three long bristles and several small ones, there being in addition some small hairs which stand further forwards. The sternite of segments 4 to 6 has a row of at least three long bristles and some small ones. These sternites appear, like that of the seventh segment, to be almost completely divided in the mesial line into two separate sclerites. The seventh sternite is emarginate posteriorly (fig. 3).

Legs :—The mid and hind femora are almost straight on the upper side. The tarsi are a little stouter than in *Ch. trichosa*, but slenderer than in *Ch. ursi*. The first segment of the fore tarsus is somewhat shorter and broader than the second, its longest apical bristle reaching to the apex of the second segment. The apical bristles of the second, third and fourth segments of the hind tarsus are long and slender, several of these of the fourth segment extending beyond the claw. The first hind tarsal segment is deeply notched, appearing constricted behind the sub-apical pairs of bristles. The bristles on the ventral surface of the tarsi are more numerous than in *Ch. trichosa*. The fifth segment is nearly the same as in *Ch. trichosa*, but the fourth lateral bristle is less widely separated from the third than in that species. The proportional length of the tarsal segments is as follows :—

	1st segt.	2nd segt.	3rd segt.	4th segt.	5th segt.
Mid-tarsus	23	18	13	10	24
Hind-tarsus.....	38	23	15	11	24

Modified segments :—The eighth tergite bears a few small hairs above the stigma, and from 7 to 10 bristles from the stigma downwards, arranged in two irregular rows, these rows extending about one-third down the side, being widely separated from the bristles which are situated at and near the apical and ventral edges. The eighth sternite bears a few very short but rather stout hairs at the ventral edge from two-thirds of the segment to the apex. Length, 3.1 mm.

We have two ♀ ♀ from *Canis sp.*, taken by Lord Osborne Beauclerk at Ancouza, in Central Asia.

Tring Park, Tring :

September, 1906.

REARING OF *APATURA IRIS* FROM A FORCED OVIPOSITION.

BY E. C. AND F. W. ANDREWS.

Early in July last year we paid a short visit to the New Forest. We found that Lepidopterous insects were not too plentiful, the most conspicuous, such as *A. paphia* and *L. sybilla*, being less common than usual. Treacling proved a dismal failure, nothing but stray *T. batis* and very common species coming to the trees. We were much pleased, however, to capture a ♀ albino variety of *E. tithonus* in good condition. Another interesting event was the discovery that a ♀ *A. selene*, which we had put into a small glass-topped box, had laid 41 ova. Of these, eighteen reached by September the imago state, the rest insisting on hibernating.

Beyond this we should have nothing worth recording, had it not been for *Apatura iris*, which in one part of the Forest was almost plentiful.

Having, between July 14th and 18th, shadowed several *A. iris* with praiseworthy patience, we finally ran our quarry down. One of us

the rather unusual luck of netting two at a stroke, a male and a female, both damaged; whilst the other caught a fine and fresh female by jumping up into the air and sweeping it off an oak. We bottled this last and kept the damaged female for eggs.

Lodgings are not favourable places for the progress of entomology, but we did what we could for our *A. iris* by putting it in a net cage, giving it sallow, and feeding it on offal, which it sipped at intervals. By this time our visit was drawing to an end, and when we left Brockenhurst the butterfly had not laid one egg. The journey home was the last straw, for on opening the box on our arrival at Forest Hill, we found, to our deep regret, that the insect was dead.

This was quite a calamity, as we were not familiar with *A. iris*, and were looking forward to a full acquaintance with the beautiful larva and still more beautiful pupa. About a day and a half later it suddenly occurred to us—as it has before with other species—to attempt a sort of Cæsarean operation on the dead butterfly. We slit the abdomen from underneath, laid bare the ovipositor, took out the eggs and fixed them on paper. While doing this we noticed one egg close to the ovipositor: this we succeeded in pressing through; the egg was thus laid mechanically by the dead insect, and adhered at once on contact with paper.

After this we looked at odd intervals into the box containing the eggs until July 30th, when we were surprised to find that the egg pressed through the ovipositor had hatched. The larva was bright green in hue, with the markings of succeeding stages down the body, and with a large, rounded, nut-brown head. It was removed to a glass-topped metal box, and supplied with sallow until August 6th, when it moulted, appearing for the first time with the characteristic horns.

Entomologists accustomed to rear *A. iris* may think we took unnecessary care in keeping our solitary one; but as it was the first larva of the species we had ever had, and as its strange birth might have weakened its constitution, we thought we could not do better than treat it well. Our idea was to give it natural conditions, with the dangers of those natural conditions minimised to the utmost extent.

Towards the end of August we filled a garden pot with earth, drove a bottle of water into it and placed sallow in the bottle, covering the whole with black silk chiffon, such as ladies use for veils. This material acted as an excellent filter for the London air, and at the same time did not obstruct light. Having introduced the larva to this new home, we placed the pot on a northerly window sill, removing

it to other window sills when the rain became heavy or the wind too violent from the northerly quarter.

On September 8th it moulted for the second time, appearing with horns of a light nut-brown tint, as in the previous stage. From that date it grew very slowly indeed, eating by night, and resting by day on the upper-side of a leaf upon which it spun a web mat. During this period, as far as we could ascertain, it did not eat by day, nor did it devour the leaf on which it rested. It was in the habit of crawling off its perch at twilight and mounting the willow to somewhere near the top, where it took a short, vigorous meal off a young leaf, descending afterwards to its webbed resting place. Things went on like this through September and October without any change, except perhaps that it ate less and less after October 15th. By this date willow began to be very seared and dry; but we continued replenishing the pot at intervals of a week, so long as we could find a single bit of willow with a leaf or two yet clinging to the stem.

It may be remembered that towards the end of October last year we had several rather sharp spells of cold, with hail showers and frost at night. On one occasion we left the pot on the northern window sill exposed to the full force of a heavy shower. The larva was drenched, but it made no attempt to seek shelter. It was about now that we began preparing the pot for hibernation. All the earth was removed, and withered saxifrage, the nearest suitable material to hand put in its place. This was arranged round the sides of the pot like a nest, leaving the centre hollow. In this centre the bottle with willow in it was placed, and about a dozen leafless twigs immediately round it, all ready for the tiny creature to inspect.

On October 31st it deserted its web mat, and for nearly twenty-four hours crawled restlessly over the dry twigs, settling down at last upon a clean spot where the bark had been torn off. This was at the top of the pot, and completely exposed. Here, with its horns bent forward so that they touched the twig, it commenced its long winter sleep.

It had now undergone a rather interesting change, having lost its bright green colour, and turned to a muddy, yellowish-brown tint. This change, while not being very decided, was sufficient to make us fear that the larva was going to damp off. However, it remained motionless from November 1st up to March 17th of this year without showing any signs of deterioration, except, perhaps, in January, when it looked rather shrivelled—the weather then being unusually mild and trying to its constitution.

During the dead winter months we examined the pot fortnightly, occasionally sprinkling it with water, not allowing the larva, however, to get a drop. Our idea here was to maintain a moderately moist atmosphere just now and again, such as is so necessary for some pupæ. We were careful to avoid the twig on which the larva sat, and, through minute inspection, twice arrested the progress of mildew up the stem. The water perhaps did good, for it was after drenching the saxifrage in January that the larva lost its shrivelled appearance and looked healthier and more robust.

So anxious were we now to bring the creature through, that we began, as early as the middle of February, to put willow twigs with embryo catkins on them round the dormant creature, thinking that it might start eating, or, at all events, crawling and sipping at any moment when mild weather reigned. We kept this up regularly, and as March came in raised the net covering from the brim of the pot so as to let in more light and air. The first spell of spring, about March 4th, produced no effect. But on March 17th, a brilliant day and very mild, it made the first movement since hibernation. Raising its head, it waved its horns about with some rapidity, and after a short period of quiescence suddenly crawled from its winter perch and made a tour of the fresh willow twigs. At about three o'clock in the afternoon we found it busily burrowing into a young female catkin. Close examination persuaded us that it was pushing away the silvery hairs of the catkin to get at the green core. Having done this, it took some dozen bites. Whether it actually devoured some of the catkin—which it broke open on one side—or merely sucked juice out of it, we were unable to discover. At four o'clock it became quiescent on the catkin, and at dusk settled down on the stem immediately under it. A period of wintry weather set in after this, and it did not move again until April 3rd, when, encouraged by a brilliant spring day, it made another tour of the fresh willow twigs.

The water question now forced itself upon us, and we sprinkled the stems plentifully. As a reward for this forethought it took a couple of drinks and settled down in a fresh place, spinning a very meagre web mat, the first since last autumn. On April 10th the same thing took place as on April 3rd—another apparently useless tour, eating nothing, although leaves were fast showing themselves, but drinking readily.

The first meal took place on April 13th, when it ate vigorously at dusk, after spending the day aimlessly wandering about and drinking occasionally. From this date the situation seemed saved. We

gave it the best sallow we could find, and daily sprinkled water on the leaves, and it drank and ate regularly at twilight. In the meantime the muddy tint accompanying hibernation departed, and the old fresh green tint came back. Towards the end of April, considering that there was no object in subjecting it to cold nights and wet weather any longer, we took the pot indoors and placed it before an airy window. As the spring advanced meals grew more frequent, and when May came in it fed sometimes in the morning, sometimes in the afternoon, *always* at twilight, and sometimes about midnight.

On May 13th it moulted, after having sat for nearly four days. The horns in this stage were glaucous, tinged with blue. The fourth and last moult did not take place until June 3rd, a prolonged cool, grey period in May having considerably delayed its progress. It was very susceptible to warmth. On cold days it took but one meal in the twenty-four hours—at twilight; on ordinary days some two or three; on hot days it ate in the morning, afternoon, evening, midnight, and before dawn. Throughout this period it seemed ever ready for a drink, and we allowed it to imbibe moisture once a day.

On June 22nd it was full grown, and had changed from a bright grass-green to a milky-whitish tint. Fixing itself on the under-side of a leaf it clung there—without suspending itself—until June 24th, when it changed to a pupa. We were not fortunate enough to witness the act of transformation.

The forming of the perfect insect in the beautiful shell of the pupa was not observable until up to the very last moment, when it seemed to develop in the space of a day and a half. On July 9th we suddenly saw the colour markings through the wing-cases, and on July 10th it emerged, a moderate sized ♀ without any striking characteristics.

Thus ended a very pleasant experience with a fine and not too common species. The peculiar circumstances attending oviposition evidently had no effect on the constitution of the larva, for with the exception of the time in January, when it looked rather shrivelled, we could find no evidence of any suggestion of weakness. Each moult was vigorous and quick, and pupation equally so. We may possibly have taken too much trouble; but we did not know for certain that this species is particularly robust, and we considered a forced birth a doubtful way of coming into the world. Whatever the real state of affairs, it is quite certain that we succeeded.

Calosoma sycophanta in the New Forest.—It may interest some of your readers to hear that I was shown a living specimen of *Calosoma sycophanta* on June 23rd last. It had been captured that morning while running over a lawn in a garden at Lyndhurst. It was kept alive about a week, and was supplied with larvæ of the "asparagus beetle" (*Crioceris asparagi*), which I am told it appeared to relish. Last autumn the owner of the garden had some shrubs from the neighbourhood of Orleans; can the beetle have been imported with them? This specimen was very fresh and brilliantly coloured, and looked as though it had not long been hatched. I do not know its sex. Seeing the note in this Magazine for July (*ante* p. 159) recording a specimen taken in the New Forest, I thought it might be worth while to note the fact that it was not the only one observed in this neighbourhood.—ETHEL F. CHAWNER, Forest Bank, Lyndhurst, Hants. : *September 2nd*, 1906.

Apion limonii, Kirby, in its original locality.—I am not aware if this species has ever been sought in the locality where the Rev. William Kirby first found it "in the sea marshes at Holme-juxta-mare, in Norfolk, upon the leaves of *Statice limonium*, when the plant was first beginning to blossom. . . . It is perfectly distinct from every other, and by far the most beautiful and splendid species of the genus I have yet seen" (Kirby, *Mon. Apion*, Linn. Trans., vol. ix, p. 79). This was written over a hundred years ago, and the insect discovered most opportunely, while the Monograph was being published.

On August 19th last I visited Holme to find if the species had "braved a hundred years the battle of the breeze," and found an extensive salt marsh, about half a mile long by 200 yards broad, covered with the flowers of the sea lavender. Sweeping proved of no use whatever over the bulk of this, and the cause was presently manifest when the tide rolled in and completely covered the roots of the plants. Only at the landward end, where the plants were much more scattered and mixed with other salt marsh herbage and *Juncus*, were any of the *Apion* found. Here, however, I swept a few in the morning; and in the evening they were not uncommonly found sitting and walking upon the mud at the roots of *Statice* and the adjacent herbage. Sandhoppers' holes in the mud were utilized to sit in, with the snouts protruding. Upon being alarmed it feigns death for about three seconds only, then walks with great activity; it also has the annoying habit of suddenly falling, or casting itself, from the plant when frightened. It is curiously inconspicuous, and greatly resembles a flower of *Statice* when rolled up in the net. *Statice limonium* first blossoms early in July; but many of the *Apions* I took were still immature, and of a paler colour than the typical form. It is a glorious little creature, and Kirby well said of it "Finis coronat opus."—CLAUDE MORLEY, Monks' Soham House, Suffolk : *September*, 1906.

Epuræa parvula, Er., and its pabulum.—Not long ago I found a series of *Epuræa parvula* in a very small fungus growing on a fallen oak trunk; the fungus unfortunately being in such a state as to be beyond recognition. For three evenings I searched for more of the *Epuræa* (thinking it to be something other than *parvula*) and just upon dusk of the third evening discovered a heap of dead branches lying in the undergrowth not far from the original oak trunk. A small, hard and knob-like fungus of a most unpromising nature grew here in some abundance, and

examining the same I found three Nitidulid larvæ, a pupa from which *E. parvula* eventually emerged, and several of the perfect beetle. I sent the fungus to the Director of Kew Gardens, who very kindly identified it as *Daldinia concentrica*, Cesati, and informed me that it was the only British species of the genus, which is at once distinguished from all other fungi having a somewhat similar appearance by the concentric zoning of the flesh when cut open. It is found on dead trunks and branches of various trees, and is common in Britain as well as throughout Europe, Siberia, North America, India, Ceylon, Borneo, Java, Tasmania and New Zealand. This note, then, explains why *E. parvula* is so often beaten from dead branches and faggots; and a good way of disposing of the fungus after examination is to heap it in a niche formed by loosening the bark of a log lying in the neighbourhood, thus forming a good trap.—RICHARD S. BAGNALL, Winlaton: *September 13th*, 1906.

Holoparamesus caularum, Aubé, in the Isle of Sheppey.—On August 28th I found a specimen of this rare and curious little beetle in *débris* of the "sack-heap" on the premises of the Sheppey Glue and Chemical Works at Queenborough; and have since found it very sparingly in siftings obtained from the heap at the same time.—JAMES J. WALKER, Oxford: *September 13th*, 1906.

Aëtrophorus imperialis, Germ., in Kent.—I have taken about twenty specimens of *Aëtrophorus imperialis*, Germ., in a patch of reeds in Cliffe Marshes, Kent, in 1905, and in this year. As I know of no record of this rare beetle from Kent, its occurrence in that county may be worth publishing.—G. W. NICHOLSON, Guy's Hospital, London, S.E.: *August 14th*, 1906.

[In Ent. Mo. Mag., Ser. II, vol. ix, p. 114, I have recorded the occurrence of *Aëtrophorus* in March, 1898, at Funton, on the Medway Marshes between Chatham and Sheerness.—J. J. W.]

Coleoptera in Devon.—The following list, showing localities, of some of the less common species which I have taken during the past twelve months, may be of interest, as Devon records seem scanty:—

BUCKFASTLEIGH.—*Hydroporus septentrionalis*, Gyll. (common), *Hydræna gracilis*, Germ. (two), *Homalota pavens*, Er., *hygrotopora*, Kr., *aquatica*, Th., and *cinnamoptera*, Th., *Ischnopoda cærulea*, Sahl. (a good number in flood rubbish), *Staphylinus fulvipes*, Scop. (one), *Stenus guynemeri*, Duv., *Trogophlæus arcuatus*, Steph., *Choleva spadicea*, Stm. (two in flood rubbish), *Antherophagus nigricornis*, F., *Elmis volkmari*, Pz., *Cyphon pallidulus*, Boh., *Dryophilus pusillus*, Gyll., *Anaspis garneysi*, Fowl.

CHRISTOW.—*Bembidium monticola*, Stm. (one, flood rubbish), *Hydroporus septentrionalis*, Gyll., *Habrocerus capillaricornis*, Gr., *Trogophlæus arcuatus*, Steph., *Cis micans*, Hbst.

DAWLISH.—*Phyllobius pomonæ*, v. *cinereipennis*, Gyll., *Tychius 5-lineatus*, L., *T. tibialis*, Boh., *T. pygmaeus*, Bris.

SOUTH BRENT.—*Hydroporus septentrionalis*, Gyll., *Ilyobates nigricollis*, Pk., *Homalota currax*, Kr., *Ocypus compressus*, Marsh., *Philonthus carbonarius*, Gyll., *P. umbratilis*, Gr., *Trogophlæus arcuatus*, Steph., *Leptinus testaceus*, Müll. (one,

dead leaves), *Bythinus curtisi*, Den., *Soronia punctatissima*, Ill., *S. grisea*, L., *Rhizophagus perforatus*, Er., *Serica brunnea*, L., *Agriotes sobrinus*, Kies., *Eubria palustris*, Germ. (one), *Chrysomela gœttingensis*, L. (one), *Phædon armoraciæ*, L., *Apoderus coryli*, L., *Polydrusus confluens*, Steph., *Ceuthorrhynchus marginatus*, Pk.

TEIGNMOUTH AND SHALDON.—*Linnaëum nigropiceum*, Marsh. (one), *Oxygopa recondita*, Kr. (in an old fence post on top of Haldon), *Homalota longula*, Heer, *Habrocerus capillaricornis*, Gr., *Heterothops prævia*, Er., *Hydnobius perrisi*, Fairm. (one, sweeping), *H. punctatissimus*, Steph. (one, sweeping), *Catops sericatus*, Chaud., *Phyllotreta cruciferæ*, Gœz., *P. vittula*, Redt., *Oncomera femorata*, F., *Gymnetron rostellum*, Hbst.

One *Cicindela germanica*, L., at Seaton in June, 1895, and two *Pterostichus æthiops*, Pz., at Dulverton in 1892.

I owe the identification of many of the above to the kindness of Mr. E. A. Newbery and Mr. J. H. Keys.—PHILIP DE LA GARDE, Northumberland Place, Teignmouth: August 28th, 1906.

Rhizophagus perforatus, Er., attracted by putrid meat.—On p. 94 of the Ent. Mo. Mag., Vol. xxxv, Dr. Mason gives an account of this beetle being taken in the carcase of a dog, cavities in the flesh of which were filled with fungus. In July last I found one of the same species under somewhat similar circumstances. I had "planted" an old mutton bone (cooked) to which a good deal of flesh was adhering, and on taking it up after eight days found it nearly covered with mould; actually on it not a single beetle was to be seen, but among the soil which lifted with it were a few common *Staphylinidæ* (*Homalota circellaris*, &c.) and one *Rhizophagus perforatus*; there was no wood, and no trace of fungus, in the ground for certainly, at least, six feet around the bone.—ID.

Melanism in Fidonia atomaria.—Whilst looking over the collection of Mr. B. Morley in the spring of this year, I noticed in the series of *Fidonia atomaria* several specimens of a black form of the female which Mr. Morley had taken I think during the previous summer on a high moor at the head of Drop Clough, Marsden, near Huddersfield. Feeling sure that the form should occur on very similar ground, but more readily accessible to myself, the moor adjoining Harden Clough, near this town, I visited the spot on the afternoon of June 9th last. Both sexes of the moth were flying freely in the hot sun, although the date was somewhat late, and I soon found several of what I took to be the corresponding form of the male, although they were not nearly so black as the females I had seen in Mr. Morley's cabinet, being, with the exception of a small white spot on each fore-wing, of an unicolorous dark purple-brown, very similar indeed, and probably identical, with the specimen from the late Dr. Mason's Collection, figured on Plate 283, fig. 1 e, of Barrett's "Lepidoptera of the British Islands." For a long time I saw no trace of the female, and was on the point of coming away, when I caught sight of a small black moth flying in the sun. Needless to say it was soon in the net, and proved to be as anticipated a female of *atomaria* of glossy black, but having a small white spot on each fore-wing, and the fringes also faintly spotted with white. When in the net it looked and acted wonderfully like a black *Syrichthus malvæ*, flying about in the same lively manner, and settling with its wings half erect in the same position. I

kept her alive for a couple of days, but only obtained a very few eggs, from which I hope I have about a score of pupæ; and so am looking forward to knowing more about the form next spring. It will be interesting too, to observe how many years will elapse before the form becomes comparatively common.—GEO. T. PORRITT, Huddersfield: *September 5th*, 1906.

Aristotelia lucidella, *Stph.*: a correction.—With reference to Mr. Thurnall's observation, *Ent. Mo. Mag.*, XLII, 211 (1906), I wish to confirm his record by stating that the plant from which I bred the insect was most certainly *Eleocharis palustris* and not *Scirpus lacustris* as recorded by me *Ent. Mo. Mag.*, XXXIV, 205 (1898).

I am quite at a loss to account for the error, which is one of name and not of observation, for the two plants were growing together in the same place. I named them both correctly at the time, but by some mistake the names must have been transposed.—WALSINGHAM, Merton Hall, Thetford: *August 27th*, 1906.

Crabro carbonarius, &c., in the South of Scotland.—As Mr. Saunders in his "Additions and Corrections to the List of British *Hymenoptera* since 1896," just published in this Magazine, gives no locality for *Crabro carbonarius*, Dahlb., south of Inverness-shire, I may mention that I took a female of this species at Saltoun, Haddingtonshire, on July 11th, 1904. In August, 1902, the same locality yielded me *Crabro aphidum*, Lep., ♀, and *C. capitatus*, ♂. *C. aphidum* has been recorded from Loch Ard, Perthshire, by Mr. Carter (*Ent. Mo. Mag.*, 1901, p. 277). Besides the males of *Andrena ruficrus*, Nyl., taken by me at Aberfoyle in April, 1896, I have a female obtained at the same place on May 7th, 1902, as recorded in *Annals Scot. Nat. Hist.*, 1902, p. 186. Mr. Saunders has seen all the above-mentioned specimens.—WILLIAM EVANS, 38, Morningside Park, Edinburgh: *September 6th*, 1906.

Rare Hymenoptera Aculeata near Holmwood, Surrey.—Quite a number of some of the scarcer *Hymenoptera* have occurred here during August and the latter part of July of this year, as follows:—*Salix affinis*, one ♀ on *Achillea*; *Passalocus monilicornis*; *Crabro pubescens*, both sexes abundantly on raspberry and currant leaves; *C. anxius*, one ♀; *Prosopis cornuta*, *dilatata* and *confusa*; *Sphecodes ferruginatus* and *variegatus* ♂ ♂ and *puncticeps*, on *Umbelliferæ* commonly; *Halictus lævigatus* and *freygessneri*; *Andrena rosæ*, one ♀; *cetti*, ♀ ♀ only; *lucens*; *Ceratina cyanea*, one ♂ one ♀; *Stelis phæoptera*.

Of the above the most noteworthy are, perhaps, *Cr. pubescens*, *Ceratina*, and *Pr. dilatata*. The latter I took on at least four different plants, *i. e.*, bramble, *Achillea*, wild carrot, and on one of the smaller white *Umbelliferæ*. The ♂ of *Ceratina* hovered more like one of the *Syrphidæ* over a blossom of *Pulicaria*, while the ♀ was flying slowly through heather, but a careful watch kept subsequently on both plants proved fruitless. *Echium*, its reputed favourite, does not grow here (to my knowledge), nor could I find it visiting any of the Labiates as Friese states it will do. Mr. Saunders informed me that, according to Prof. Perez, it patronises daisies on the Continent, but these were also drawn blank. The possibility of finding it on *Lamium*, heather, *Echium*, *Pulicaria*, and daisies, would seem to show that *Ceratina* is as capricious in its bill of fare as it undoubtedly has been in its appearances to its would-be captor.—C. H. MORTIMER, Holmwood: *Aug. 30th*, 1906.

Athalia scutellarix in Cheshire.—On August 18th and 25th, 1906, I found a number of larvæ of an *Athalia* feeding on *Scutellaria galericulata* at Great Budworth, near Northwich. I compared them with the description and plate of *Athalia scutellarix*, Cameron, in Cameron's "Monograph of the British Phytophagous Hymenoptera" (Vol. i, p. 313, pl. III, fig. 9, Ray Soc., 1882), and concluded that they were referable to this species; Mr. Edward Saunders and the Rev. F. D. Morice, to whom I sent some examples, are also of this opinion. Mr. Cameron remarks (*op. cit.*, p. 314), "The only locality I know of is Gloucester, where the larvæ were found by Mr. Allan Harker, who obligingly sent them to me," and when he first described the species (*Ent. Mo. Mag.*, xvii, p. 66, 1880), said that he succeeded in rearing the perfect insects during the last weeks in June; these Gloucester larvæ were obtained in the autumn of 1879.

The larva of the closely allied *A. rosæ*, Linn., is not described or figured by Cameron, but he states in an Appendix to vol iv that Brischke describes the larva of *A. scutellarix* under the name of *rosæ*. Most of the larvæ which I found on August 25th were apparently full fed, but there were also some much smaller examples; on September 1st the plant on which I found most of the larvæ was withered and dead, and I could not find any on another group of plants where on the 25th I found a few.—T. A. COWARD, Bowdon, Cheshire: *September, 1906.*

Gastrophilus nasalis, L., in the New Forest.—A specimen of this rare Cæstrid was bred by Mr. J. Piffard about the end of last June from a pupa found in cowdung near Brockenhurst. It has been identified by Mr. E. E. Austen, and, with the empty pupa case, is in my collection.—F. C. ADAMS, 50, Ashley Gardens, S.W.: *September 1st, 1906.*

Phora cubitalis, Beck., a species new to the British List.—During the last week of July this year a rather conspicuous species of *Phora* occurred rather commonly on aspen trees at Bonhill, in Dumbartonshire. Upon examination it proved to be *Phora cubitalis*, Beck., a species not hitherto recorded from Britain. It was confined to one small patch of aspens upon which the larvæ of a species of Chrysomelid beetle were abundant. Altogether I netted over thirty specimens. The species is easily recognised in the ♂ by the much dilated second thick vein, and also in both sexes by the yellow legs, antennæ, palpi, and yellowish humeri. Some of the specimens were sent to Dr. J. H. Wood, who agreed in the identification.—J. R. MALLOCH, Bonhill, Dumbartonshire, N.B.: *August, 1906.*

Mytilaspis pomorum, Bouché, on *Helianthemum vulgare*.—Mr. Newstead suggests it might be well to send you a note as to this scale insect occurring on our common rock rose. I sent him specimens, and he says I am correct in my determination of the insect, and in the belief that the food-plant is a new one for that somewhat polyphagous species. I find the scales abundant on a plant brought in from the chalk downs here and potted for another entomological purpose.—T. A. CHAPMAN, Betula, Reigate: *September 5th, 1906.*

Obituary.

Baron Charles Robert v. d. Osten Sacken died on May 20th last at Heidelberg. In him one of the greatest Dipterologists of the second half of the nineteenth century has passed away. Born on August 21st, 1828, he became interested in entomology at the early age of eleven. *Entomologicus nascitur non fit*—but it was not until 1854 that the first of his writings appeared in print, and even at the commencement he sketched the classification of the *Tipulidæ*, with which family his name will always be most closely associated. Even as his first paper indicated his future favourite study, so his appointment in 1856 to be Secretary of Legation for Russia in Washington was seized by him as an opportunity of making personal acquaintanceship of noted entomologists during his journey, a habit which he continued for the next forty years. Probably every prominent student of Dipterology in Europe or North America was visited by him, and many of them frequently. Twenty-one years of his life were spent in the United States, and it is due to him that the Americans are now enabled to have their collections of *Diptera* better arranged and better named than is the case in any other country. Another twenty-seven years were spent in Heidelberg, and produced valuable contributions to science, winding up with a "Record of my Life Work in Entomology," in which he reviewed his work of fifty years, and also gave a series of most interesting records of his contemporaries in work.

Though fully conscious of his own powers he was never a man who sought to put himself forward, and he was always ready to give all the information he could possibly obtain to any other worker. Thus, for instance, he sent all the new species of *Diptera* which he could collect in America to Herrmann Loew for description, whereby Loew described 1350 new species. On the other hand he hated careless work, and sooner or later he criticized it most severely, and above all he disliked anybody to superficially criticize his own work. Probably no entomologist was ever more "thorough" in his work, and his bibliographical collection in Dipterology was unrivalled, and his was not merely a Library but notes were made by him from every work, so that he practically never missed a record of what had been previously written. When he left America he presented all his American Collection of *Diptera* to the Museum of Comparative Zoology in Cambridge, Mass., and during the remainder of his life he never attempted to form any definite collection, but studied the specimens in various Museums, and his memory was marvellous as to what he had seen. He had, however, formed a very different and very exhaustive collection of quite a different nature during his residence at Heidelberg, as he had obtained large photographs of nearly all the works of the great Painters, and in many cases was enabled by this means to detect originals from copies; this collection must be of very considerable value, and it is to be hoped that he fulfilled his wish to bequeath it to one of our British Colleges.

It is impossible to enumerate his works on *Diptera* in a short retrospect, nor is it necessary, because his own "Record" gives them thoroughly, but it is possible to remark that very few men have been so thoroughly adapted to be a "Master" in his studies as was the case with Osten Sacken. Absolute master of almost every European language; possessor of adequate means to associate in any company; of noble birth, which would give him admission to any rank of society; of diplomatic

training, which produced the most polished manners; all these qualities combined with an exceedingly retentive memory, which he helped by detailed notes and exact observations, produced such a Master of Dipterology as we shall probably never see again.

The writer of this obituary counts it as one of the most valued treasures of his life that he had the personal acquaintance and friendship of the Baron for about thirty years, and it is with the greatest regret that he has received the sad news of his death. Only as recently as 1904 his "Record" ended with the words, "I now conclude, at the age of 76, in good health and with unimpaired eyesight."

G. H. VERRALL.

Society.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:

Thursday, July 12th, 1906.—Mr. R. ADKIN, President, in the Chair.

Mr. Bellans, of Bedford Park, was elected a Member.

Mr. Goulton exhibited the living larvæ of *Phytometra viridaria* (*ænea*) feeding on *Polygala vulgaris* and also larvæ of *Cidaria suffumata*. Mr. Step, ova and larvæ at different instars of *Dicranura vinula* and a series of photographs of *Lepidoptera* at rest. Mr. Turner, ova in situ of *Coleophora viminetella* on willow, *C. solitariella* on *Stellaria holostea*, and one imago of *Goniodoma limoniella* bred from *Statice limonium* stems from Southend. Mr. West (Greenwich), short series of *Cryptocephalus parvulus* and *C. punctiger*, and *Balaninus cerasorum* from Darenth Wood, taken on July 1st. Mr. Garrett, living larvæ and pupæ of *Euchloë cardamines*. Mr. F. B. Carr, a cocoon and pupa of *Sarothrips undulatus* (*revayana*).

Thursday, July 26th, 1906.—The President in the Chair.

Mr. West (Ashted) exhibited a short series of *Plusia moneta* obtained in his garden. Mr. Moore, a varied series of *Epinephle janira* from Boulogne. Mr. Rayward, pupæ of *Polyommatus corydon* and *Thecla rubi*, the former from larvæ reared on horse-shoe vetch, and the latter from ova laid on flower heads of dogwood; also ova of *Lycæna arion* and *Plebius ægon*, and referred to the relatively small size of the former. He further reported that of some 30 larvæ of *P. corydon* taken at Reigate on June 18th, nearly all were attended by ants, *Formica flava*, and gave most interesting details of their interrelations. Mr. F. Noad Clark, a photograph of the ova of *Trochilium crabroniformis*, laid by a ♀ taken by Mr. Edwards at Horsley. Mr. West and Mr. Ashby, 13 species of Longicorns taken in the New Forest from May 26th to June 9th, including *Aseumum*, *Callidium violaceum* (in numbers), *Anoplodera serguttata*, *Leiopus nebulosus*, *Clytus mysticus*, *Toxotus meridianus*, &c. Mr. R. Adkin, the beautiful red form var. *furuncula*, Hub., of *Miana bicoloria*. Mr. Noad Clark, beautiful micro photographs of the ova of four species of *Coleophora* recently obtained by Mr. Turner, together with an enlargement of the micropyle of each. Mr. Tonge, a photograph showing the protective resemblance of the larva of *Catocala nupta*. Mr. Sich, (1) living specimens showing a case of Müllerian mimicry between the Gelechiid, *Recurvaria (Aphanaula) nanella*, and a Hemipteron, *Phytocoris tiliæ*, frequenting

elm bark; (2) a very aberrant form of a *Pygæra* bred from Chislehurst; and (3) the ova of *Lycæna aleon* on a gentian, with a photograph of the same by Mr. Clark.

Thursday, August 9th, 1906.—The President in the Chair.

Mr. Sieh exhibited living examples of the Tineid, *Oehsenheimeria vacculella*, with a short summary of the little that is known of the species. Mr. West and Mr. Ashby, a further portion of the *Coleoptera* collected by them in the New Forest, including *Trachys troglodytes*, *Elater sanguinolentus*, *E. lythropterus*, &c. Mr. Adkin, imagines of *Pygæra pigra* and *P. curtula* with hybrids for comparison with Mr. Sieh's *Pygæra*; finally, this last was considered to be a beautiful aberration of *P. pigra*. Mr. Adkin also showed full-fed larvæ of *Acidalia marginepunctata* (*promutata*) from Eastbourne ova. Mr. Main, a European Mantis in the pre-imaginal stage, a larva of *Papilio podalirius*, and a ♀ of *Parnassius apollo*, with ova of the same, all from the Rhone Valley. Mr. Rayward, living larvæ of *Agrophila trabealis* (*sulphuralis*) from Cambridge, and of *Cupido minima* from Horsley. Mr. Tonge, (1) a living larva of *Phryxus livornica* from Lewes; (2) and a preserved larva from Alberto, Spain; (3) a larva of *Sesia stellatarum* from Dunwich; and (4) a series of photographs of *Lepidoptera* at rest taken during the Society's Field Meeting at Leith Hill on June 30th, including *Bomolocha fontis* (*crassalis*), *Cucullia umbratica*, *Larentia viridaria*, &c. Mr. Edwards, var. *cæca* of *Enodia hyperanthus*, and a ♀ *Trochilium crabroniformis* from Horsley on July 14th.

Thursday, August 23rd.—The President in the Chair.

Mr. Harrison and Mr. Main exhibited (1) a long bred series of *Moma orion* from ova from a New Forest ♀; and (2) a bred series of *Phorodesma smaragdaria* from Essex. Mr. Barnett, (1) a short series of *Anthrocera trifolii* from Wanbury, mostly with confluent spots, and one with ill-developed scales; and (2) several remarkably pale examples of *Epinephele janira*. Mr. Crow, living larvæ of *Melanthia albicillata* on bramble. Mr. Carr, living larvæ of *Acidalia imitaria* from ova on dandelion. Mr. Turner, (1) examples of the Hemipteron, *Carpocoris* (*Pentatoma*) *fuscispina*, from Morgenbachthal and Lucerne; (2) *Heliothis peltigera* taken at Brockenhurst on June 4th; (3) a series of *Bomolocha fontis* (*crassalis*) from Leith Hill in early July; (4) *Ægeria culiciformis* from Beaconsfield; (5) *Coleophora limoniella* bred from larvæ taken at Fobbing in 1905, together with a spray of *Statice limonium* showing the larval cases; (6) specimens of *Polyommatus escheri*, the small form from Gavarnie in the Pyrenees, with Alpine forms of the same species and of *P. icarus* for comparison; (7) on behalf of Mr. Harrison, specimens of *Melitæa dictynna* from Meiringen with *M. athalia*? taken at the same place and time; and (8) and on behalf of Mr. J. W. Tutt, several species of *Ascalaphus* and *Myrmeleon* from the Alps. Mr. West and Mr. Ashby, some 50 further species of *Coleoptera* taken in the New Forest this year, including *Calosoma inquisitor*, *Notiophilus rufipes*, *Pæderus caligatus*, *Ips 4-guttata*, &c. Mr. Adkin, a series of *Polyommatus bellargus*, females, from Eastbourne in June, and read notes on the geographical distribution of the blue race of this sex. Mr. Sieh, a bunch of poplar twigs, in the leaves of which were the larvæ of three leaf miners, *Gypsonoma aceriana*, *Phyllocnistis suffusella*, and *Nepticula*

trimaculella, and pointed out the characters of the mines with reference to the various details of the different life-histories of the species. Mr. Main (1) a batch of the very beautiful ova of *Satyrus briseis* from Switzerland; and (2) on behalf of Mr. Oldham, a fine bred ♂ example of *Cosmotriche potatoria* with ♀ coloration. Mr. Rayward, pupæ of *Polyommatus bellargus* from Folkestone larvæ, and gave a most interesting account of the interrelations of ants and the larvæ of this species. In the discussion Dr. Chapman said that he was on one occasion easily able to find larvæ of *Rusticus argus* by the groups of ants attendant upon each larva. Dr. Chapman, (1) *Ophiodes lunaris*; (2) *P. corydon* only 28 mm. in expanse; (3) *Colias edusa* only 37 mm. in expanse; (4) *Pseudophia (Ophiodes) tirrhæa*, properly of a N. African group; (5) *Marasmarcha fauna*, a rare Plume close to *M. phæodactylus*, all from St. Maxime on the Mediterranean Coast of France.—H. J. TURNER, *Hon. Secretary.*

COLEOPTERA OCCURRING IN THE NESTS OF MAMMALS
AND BIRDS.

BY NORMAN H. JOY, M.R.C.S., F.E.S.

(Continued from page 202).

BYTHINUS SECURIGER, Reich.—This is the first species of my Class B. It occurs rarely by sweeping and in moss, dead leaves, &c., but I have taken it on several occasions here (about 60 specimens altogether) in moles' nests made of sedge, and there were several specimens in some nests kindly sent to me by a friend from Wells, Norfolk. The ♂, which is always looked upon as a great rarity, has turned up twice. The enlarged last joint of the maxillary palpi varies much in shape and length, and I thought at one time that the extreme forms were two allied species, but I have now all the intermediate forms.

CHOLEVA MORIO, F., is not uncommon in sedgy and marshy places generally, but I have found it in moles' nests on dry hill-sides, and it is by far the commonest species of the genus that occurs in the nests.

PTENIDIUM EVANESCENS, Marsh., is often found in large numbers in the nests, many specimens being quite immature, but of course it is a common species generally.

EPUREA ÆSTIVA, L., and *E. MELINA*, Er, I have taken in three or four nests, and in two the larvæ of the latter was present in numbers. These species also often occur in humble-bees' nests.

EUPLECTUS SIGNATUS, Reich., and *EPHISTEMUS GLOBOSUS*, Waltl, are I think more than accidental visitors, as I have found them not

uncommonly; and *NEURAPHES RUBICUNDUS*, Schm., a birds' nest species, I have as yet only taken twice in a moles' nest, one here and one in the nests from Norfolk.

I do not think it necessary to more than enumerate the species which are only accidental visitors to the nests. *Homalota circellaris*, Gr., *Falagria sulcatula*, Gr., *F. obscura*, Gr., are so often found that they perhaps ought to be included in Class B. The following species have only occurred on a few occasions:—*Aleochara succicola*, Th., *Ilyobates nigricollis*, Pk., *Homalota ravilla*, Er., *H. oblita*, Er., *H. exilis*, Er., *Encephalus complicans*, Westw., *Mycetoporus lepidus*, Gr., *Choleva tristis*, Pz. (immature), *C. watsoni*, Spence, *Neuraphes angulatus*, Müll., *Tychus niger*, Pk., *Euthia scydmonoides*, Steph., *Bryaxis jun-corum*, Leach, and many other common species.

Other mammals' nests I have been able to find during the year have been comparatively few, the most interesting being that of the squirrel's. This animal makes a large round nest of sticks, moss and dead leaves, lined with shredded bark or hay, and places it high up in a fir or other tree or in a tall hawthorn bush. I have taken three "dreys" this year, none occupied by young; in two I found large numbers of *Homalota coriaria*, Kr., in the other, which I think was deserted as soon as built, two specimens of the same species. Mr. P. Harwood tells me he once took a number of this *Homalota* in the same situation. Canon Fowler records *H. coriaria* as having been taken "at the sap of felled trees, also in cut grass, moss, &c.;" and so probably it is not entirely confined to squirrels' nests, although it is possible that its natural habitat is the nest of the squirrel and other mammals, as the stoat, weasel, &c., but I think it would be a more uncommon species in our collections were this the case. It certainly breeds in the squirrels' "dreys," as I have it breeding out now from one in a box.

I had one opportunity of examining the nest of a badger, but unfortunately I had reason to believe it had only recently been constructed. It consisted of a great mass of sticks and dead leaves, and was many feet from the mouth of the "earth." It contained 2 *Heterothops nigra*, 1 *Quedius mesomelinus*, Marsh., 1 *Sipalia ruficollis*, Er., and 1 *Choleva wilkini*, Spence. In the one rabbits' nest I have been able to find I took 2 *Heterothops nigra*, 1 *Aleochara succicola*, Th., and 3 *Tachinus subterraneus*, L. The only other mammal's nest I have taken this year is a shrew's. It was with this species I had hoped to find *Quedius longicornis*, Kr., but the nest only produced many *Ptenidium evanescens*.

COLEOPTERA FROM THE NESTS OF BIRDS.

I might have worded this "*Coleoptera* from the nests of birds that build in holes in trees," as every collector knows how few beetles are to be found in nests in hedges, and on the ground, &c., and that these are generally common species. By far the commonest birds nesting in holes in trees are the starling and four species of tit (*Parus*). The former builds its nest of hay, straw and a few feathers, and every hole of a convenient size will generally be found occupied. It very often turns out the woodpecker from its hole, and is itself expelled or succeeded by the great bat (*Vesperugo noctula*). These nests are generally much the most attractive to beetles, as bats allow their droppings to fall into them. Young starlings too occasionally foul their nests badly, as some fortunately did which were brought up in a nesting box I put up in my garden. Not uncommonly starlings and often sparrows build in holes in old dead trees, or behind bark, etc.; these nests are generally too dry for beetles, but contain great numbers of fleas.

Tits' nests, consisting mostly of moss, hair and wool, are far cleaner, as the tit, besides being more particular that its nesting hole is dry, takes care that it is thoroughly cleared of rubbish before starting to build; whereas, several years' accumulation of rotting straw may be found in a starling's nesting hole. *Microglossa pulla* and *Choleva fumata* are the only two "birds' nest" beetles I have taken in them. Jackdaws build in large hollow branches or trees, but the nest, containing a certain amount of dry mud, is nearly always too dry and dusty for beetles, and sometimes even for fleas, which are no doubt inconvenienced or killed by the very fine dust getting into their spiracles. This is a confirmation of the general belief that birds "dust" themselves to get rid of lice and fleas. Owls sometimes occupy an old jackdaw's nest, but more often select a hollow tree, where, although no nest is made, large numbers of their "pellets" accumulate year after year. The stock-dove makes its nest of a few sticks in any hole it can find unoccupied by a jackdaw or owl, often in one of their deserted nests, and it is difficult when looking for beetles in the autumn to say which bird has last occupied a given site.

This year I have examined many starlings' and tits' nests from Berkshire, sixteen of the former containing beetles of interest; also several jackdaws' and stock doves' and five owls' nests. Mr. Chitty has kindly given me some notes on seven starlings' nests which contained beetles from Kent, three of which he has examined on more

than one occasion. His results are almost exactly the same as mine except that he has failed to take *Quedius brevicornis*, Th., but has added *Xantholinus glaber*, Nordm., to the list of birds' nest species.

I shall now enumerate the species of *Coleoptera* I have taken in these nests, dividing them as in the case of the mammals' nest beetles into three Classes, although it will not be necessary to mention the accidental visitors, and Classes A and B are far more difficult to differentiate.

MICROGLOSSA PULLA, Gyll.—This species I discovered last year is specially attached to the nests of tits, flycatchers, &c., and this year I have been able to trace its life-history, at any rate in part. I have taken it also on several occasions in the fresh nest of the starling. The beetle enters the nest as soon as the bird begins to build, about the middle of April, and when the full clutch of eggs is laid, about three weeks later, as many as thirty or more specimens may often be found in a single nest. It is in fact quite a common species, and I have only once failed to find it in the nest of a tit, a bird familiar enough in any wooded district. I have not succeeded in finding the beetles pairing, but no doubt the eggs are laid soon after the nest is entered, for when it is examined immediately after the young have flown a large number of fully grown larvæ may be shaken out of it; this would be about a month after the last bird's egg is laid. Shortly after this the larvæ congregate into a suitable spot (under the lid of a nesting box in one case, and at the very bottom of a nest in another), and there spin small whitish cocoons packed together in the same plane. The insect remains in the pupal stage for about sixteen days and then, when properly mature, eats its way out of its cocoon and immediately leaves the nest. It is hard to guess what is the history of the imago after this. Certainly it is found not very rarely on carrion, &c., and there may be a second brood produced in such situations; but I am inclined to think that this is not the case, but that the beetles hibernate till the following spring.

MICROGLOSSA MARGINALIS, Gyll., has evidently a different life-history from the last, only haunting the nest of the starling, and never entering a perfectly fresh one; as will be seen in the history of the starling's nest given below it did not enter the nest until some time after the young had flown. In old starlings' nests it is not rare; I have taken it on at least nine occasions here and once in a nest from near Rugby. Mr. Chitty records it from five of his nests, as many as 69 occurring at one time.

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MELANISM IN *HASTULA HYERANA*.

MICROGLOSSA NIDICOLA, Fairm., has long been known as an inhabitant of sand martins' nests. Its life history is probably intermediate between the last two, as it may be found in quite fresh nests, and in nests out of which the young have flown for some time. They are now (Sept.) still in the nests, and may remain there the whole winter. It is much less commonly found out of its natural habitat than *M. pulla*, but it is undoubtedly a more local species.

MICROGLOSSA GENTILIS, Märk.—This is the characteristic beetle of the owls' nest, where it may be found at any time of the year, and I have twice taken single specimens in starlings' nests. Although it has before been taken in owls' nests it is better known as the occasional inhabitant of the nest of *Lasius fuliginosus*. *Hister merdarius* and *Microglossa pulla* have also the double habitat; in the case of the last two there can be little doubt that the chief host is a bird, and I think it is also with *M. gentilis*. However, it is a curious fact that *M. gentilis* has the habit, like a *Myrmedonia*, of curling itself into the shape of an S and lying "possum" for a long time, and it is fairly commonly found in the ants' nest. *M. pulla* has also this habit, but it is not so pronounced, and it is a more irregular visitor to the ants' nests. *M. marginalis* will often lie quiet for some time with a slightly upturned apex of the hind body; it has not been recorded from the nests of *L. fuliginosus* in this country, but Kraatz says it is associated in France with *Formica cunicularia*. *M. nidicola* seems always to run away when disturbed, and I do not think it has ever been recorded from an ant's nest. The different effect boiling water has on these species is most striking. It is almost impossible to set *M. gentilis* after killing it by this means, its hind body is so stiffly curled up. *M. pulla* also sets badly, but not so badly; *M. marginalis* sometimes has a slight turn up of the end of the body which is easily corrected; *M. nidicola* seems to have no such tendency.

QUEDIUS BREVICORNIS, Th., which I referred to when describing *Q. vexans*, is very rarely found outside a bird's nest, yet I have taken it on twelve occasions this year in old nests. As is the case with *Q. vexans* one never finds many in one nest; there is only room for a limited number of such a large pugnacious and predaceous species.

PHILONTHUS FUSCUS, Gr.—Although this species does occur rarely at *Cossus* infested trees, and under damp bark, where I have also found its larva, its chief habitat is old nests (starlings and owls);

indeed, it is one of the commonest of the birds' nest species, sometimes being seen in numbers, accompanied by its larva.

CHOLEVA COLONOIDES, Kr., is another very characteristic old bird's nest species. It used to be regarded as one of the rarest British clavicorns, yet it is in fact probably quite a common species. I have taken it myself on about eleven occasions this year, over 46 specimens from a small damp sparrow's nest, and once, in any quantity, among the *débris* in an owl's roosting place in a hollow oak; and Mr. Chitty has taken it in five of his nests.

NEURAPHES RUBICUNDUS, Schaum., I have twice before recorded from old birds' nests, but have only once taken it this year in such a situation. I think though that it is a late autumn species.

EUPLECTUS TOMLINI, Joy, is probably peculiar to birds' nests, but it has at present only occurred on one occasion.

HISTER MERDARIUS, Hoffm., is often taken in very damp and foul nests, but may be found in any old nest. Mr. F. B. Jennings records in the Ent. Mo. Mag., vol. xxxviii, p. 268, the capture of nearly 60 specimens of this species (in company with *Trox scaber*, L., another common bird's nest species) in a heap of decaying vegetable matter and gas lime. The lime in this case probably made the rubbish heap somewhat resemble an old nest soiled by the droppings of young birds. This species was also taken in the old sack-heap in Sheppey, although it is not mentioned by Commander Walker in Ent. Mo. Mag., vol. xli, p. 234. These are of course quite artificial habitats, and probably the beetle only accidentally visits carrion, &c.

The *GNATHONCUS* which I have taken on several occasions in birds' nests differs from specimens of *G. rotundatus* taken in carrion, and is undoubtedly a species peculiar to the nests; I have not, however, had time yet to hunt up the lengthy synonymy of *G. rotundatus* to see if it has already been described.

The following species I regard as belonging to class B:—*Dendrophilus punctatus*, Hbst., is found in almost any old nest, even if it is quite dry. *Trox scaber*, L., is also very commonly met with. *Homalota nigricornis*, Th., is always present if the nest is at all damp, and often in great numbers. The following species have also been taken on several occasions:—*Aleochara succicola*, Th.; *Microglossa suturalis*, Sahlb. (only single specimens); *Homalota fungivora*, Th.; *H. soror*, Kn. (Bradfield and ? Huntingfield); *Quedius ventralis*,

Abr. (generally in very damp nests); *Q. mesomelinus*, Marsh.; *Xantholinus glaber*, Nordm. (four specimens in two nests, Huntingfield); *Hapalaræa pygmæa*, Pk.

I have mentioned above a nesting box I put up in my garden to attract starlings. In spite of some repetition I think it will be of interest to give my notes on the contents of this nest, as it is probably very much the history of any starling's nest in this neighbourhood. Before nailing up the box I put in it a small amount of wood *débris* to make the conditions more resemble nature, and to help to keep the nest damp. I did not look at the box until the young birds had flown, and the first examination was on June 13th. My notes read:—

13/6/06.—Young birds just flown. Nest very dirty and damp. 1 *Philonthus fuscus*, several *Microglossa pulla*, *Gnathoncus rotundatus*, *Hister merdarius* *Homalota nigricornis*.

21/6/06.—Took another *Philonthus fuscus*.

29/6/06.—No *Microglossa pulla* now present.

7/7/06.—1 *P. fuscus*, 1 *Quedius brevicornis*, 1 *Choleva colonoides*, 3 *Microglossa pulla* (two immature); many cocoons of the last species at the bottom of the nest all containing imagines. Damped nest and put in wood dust and swallows' droppings (the damping of the nest was quite necessary; a nest in a hollow tree does not dry up so easily. The swallows' droppings would correspond to bats' if bats had succeeded the starlings).

11/7/06.—Very many *M. pulla*.

15/7/06.—Very few *M. pulla*. Contents now strongly ammoniacal, probably from the addition of the swallows' droppings. Also present *Homalota nigricornis*, and several small larvæ of *P. fuscus*.

26/7/06.—2 *Microglossa marginalis*, many larvæ of *P. fuscus*, no *M. pulla*. Damped nest again.

24/8/06.—Several *P. fuscus* and very few *H. nigricornis*.

7/9/06.—A few *P. fuscus* and many *H. nigricornis*.

I unfortunately took *Quedius brevicornis* and one or two other species when found; it would have been better to have left everything.

Bradfield, near Reading:

Sept. 9th, 1906.

PROGRESSIVE MELANISM:

FURTHER NOTES ON *HASTULA HYERANA*, MILL.

BY T. A. CHAPMAN, M.D.

PLATE III.

In the Entomologist's Monthly Magazine for 1905 I gave some details of the habits and life history of *Hastula hyerana*, and reported the appearance of a melanic form at Hyères that had not previously

been observed there, the results of a visit to Hyères in 1904. In 1905 I obtained the species also from several Italian localities, and bred it from the egg from Hyères specimens. The notes for that season appear in the Ent. Trans. for 1906, part II. In presenting here my experiences of the species for 1906, I propose first to give a *precis* of the notes in the Ent. Trans., so as to make the record in the Ent. Mo. Mag. more continuous, and this I am more glad to do as I have obtained the permission of the Entomological Society to reproduce here the plate of the imagines from their Transactions, the plate in Ent. Mo. Mag. for 1905 being by no means satisfactory.

The chief point in the 1905 observations was to show that *H. hyerana* had a special facies in each of the localities in which I had found it, and that the melanic phase so prominent amongst my first series of specimens from Hyères was no accidental result of my treatment of the larva or pupa, but characterised the race as now existent at that locality. A result of great interest, as there is no doubt that fifty years ago no melanic specimens occurred there. Since I first called attention (Ent. Mo. Mag., 1888, p. 40) to the fact that melanism in *Lepidoptera* is in a large proportion of instances a case of protective coloration, a view now, I think, accepted almost as a truism, and suggested that the dark objects to which melanic races assimilated were often dark, because frequently wet, and constantly more or less damp, and in certain districts owing to deposited carbon, a great deal of interest has arisen in regard to "progressive melanism." The case of *H. hyerana* is of importance as an instance of progressive melanism, where the explanation applicable to so many other instances, viz., the increasing extent of "black country," is clearly inapplicable, and is the more interesting and deserves more research, because, so far, no at all plausible explanation is supported by any definite evidence. It seems, therefore, to be desirable that all available facts should be recorded in hope of some of them being found to point to a satisfactory solution.

In 1905 I found *H. hyeranæ* larv at Taormina, Sicily. At this station the plants are much less vigorous and succulent than at Hyères, though abundant enough in several localities. Probably owing to this circumstance the larvæ there are almost always only one to a plant, and succeed very well in hiding themselves amongst the central leaves, quite unlike the conspicuous result of their more or less gregarious life at Hyères. They were also found to affect other food plants, especially *Phlomis fruticosus*, which was almost an alternative food plant. They were also found in *Teucrium fruticans*,

Cytisus (spinosus?), a *Gnaphalium*-like plant, and a common thistle, as well as on a *Scilla*, and two larvæ even on *Euphorbia*. Though the predaceous fly larva *Xanthandrus comtus* existed, it did not attack the larva of *H. hyerana*, but, on the other hand, they were attacked by a Tachinid and by at least three Hymenopterous parasites. I found also a few larvæ at Capri with habits very similar to those at Taormina.

The Capri larvæ all produced very pale moths with nearly white hind-wings (var. *pallens*, plate 3, figs. 1 and 2).

The Taormina imagines were large, very nearly the same as the type from Hyères, but, in the mass, rather lighter in tint and with a few specimens approaching var. *pallens* (plate 3, figs. 3 and 4). They afforded a good many varieties, not only in extension of the discal spot, var. *alpha*, Mill. (plate 3, fig. 9), but also in dark shading scattered in small patches over the wings (ab. *nigropunctata*, pl. 3, figs. 7, 8, 10). None of these in any way suggested the var. *marginata*, Wlsm., of which no trace occurred in any specimen. As all these emerged at Reigate, they afforded a certain presumption that rearing in England could not be the cause of Hyères specimens showing the *marginata* form. However, to make more certain on this point Mr. Powell sent me ten cocoons from Hyères, keeping ten himself. Unfortunately the escape of his larvæ prevented the number being larger. The result, however, was that there happened to be four specimens of var. *marginata* amongst the ten kept at Hyères, whilst the ten sent to Reigate only afforded two examples of the dark form.

The Sicilian specimens were, therefore, very near to *H. hyerana*, as it was found by Milliere fifty years ago at Hyères. The effect of climate would seem to be eliminated by the circumstance that the Capri race is so much lighter than the Sicilian, though so much further north, and therefore nearer Hyères conditions.

The specimens raised from eggs obtained from a pairing of a dark and light Hyères moth were more intermediate between *marginata* and *hyerana* than the first generation, and led me to note that *marginata* is especially characterised by a dark line down the fringe of the anterior wing, and that this line occurs in specimens I had accepted as being *hyerana* simply. These are then in reality intermediates. They formed thirty per cent. of pale Hyères specimens (1904), twelve per cent. of those of 1905, and twenty-eight per cent. of those bred from eggs. Four of the best streaked of these are figured (pl. 3, figs. 11, 12, 13, 14).

The period of emergence was very prolonged, sixty per cent. came out in September and October, a few in August, but the rest in gradually decreasing numbers stretched out over November, December, January and February, one emerging in March and two in April this year, these were the Taormina specimens, this year (1906), one actually emerged on June 4th after spinning up in April, the only instance of anything like so short a period I have met with, so that it is probably the case that the moth *may* appear at any time of the year.

A third generation raised from the egg at Reigate had as parentage two dark *marginata* moths, these were nearly all dark, but a pale (*hyerana* type) one occurred amongst them. This brood were all fine large moths, although the brood their parents belonged to (from a pale and dark moth) were small and starveling. In both cases the result no doubt of feeding (ill or well) and not of any degeneracy or otherwise of the stock.

EXPLANATION OF PLATE III.

All Figures enlarged 1½ times.

Figs.	1, 2.	<i>Hastula hyerana</i> , var. <i>pallens</i> (Capri race).
"	3, 4.	" " type (Taormina race, similar to the Hyères race of 50 years ago).
"	5, 6.	" " var. <i>marginata</i> , Wlsm. (forms with type the present Hyères race).
"	7, 8.	" " ab. <i>nigropunctata</i> (Taormina).
"	9.	" " ab. <i>alpha</i> , Mill. (Taormina).
"	10.	" " approaching <i>nigropunctata</i> (Taormina).
"	11.	" " ab. <i>marginata</i> (Hyères).
"	12, 13, 14.	" " ab. <i>marginata</i> (Hyères, bred from ova at Reigate).

(To be continued).

HELP-NOTES TOWARDS THE DETERMINATION OF BRITISH *TENTHREDINIDÆ*, &c. (16).

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

NEMATIDES(continued)=*PRISTIPHORA*, Latr., *LYGÆONEMATUS*, Knw.

PRISTIPHORA, Latr.

This genus may generally be recognised at a glance by its lacking the usual strong sculpture (*area pentagona*, &c.) of a Nematid's "frons": the ocelli are set in the middle of a nearly flat-looking area. Of course it is really a little convex; but *simply* so, without definite

sulci or carinæ. The ♀ saw-sheath also (viewed from above) is very characteristic. This is wide, and consists—or at least gives that impression—of two somewhat “dehiscent” lobes, each armed apically with a brush of longish bristles—easily distinguishable from anything to be seen in the other normal Nematids. The complete or partial obliteration of the first cubital nervure (though often supposed to be the chief distinguishing mark of a *Pristiphora*) is not really a character of great importance. It appears also regularly in some species of *Lygæonematus*, and is not universal in *Pristiphora*. This particular nervure is quite commonly pale or altogether obsolete in particular species of several genera (*i.e.*, *Pæcilosoma*) as well as exceptionally in individual specimens of saw-flies belonging to almost any species of any genus.

All the eleven species of *Pristiphora* which I am able to tabulate, except *conjugata*, are known to me from British specimens in my own collection. Of that I have only one specimen, a foreigner; but it is recorded by Mr. Cameron from Glasgow, and his description satisfies me that he has identified the insect correctly. Eight of the above species appear in the Monograph under the names by which, following Konow, I have called them. Another (*pallipes*) is Mr. Cameron's *appendiculatus*. Two (*melanocarpa* and *viridana*) I cannot identify for certain with any species in the Monograph, though the former (= *puncticeps*, Zadd., *nee* Thomson) is perhaps Mr. Cameron's *puncticeps*. *Subbifida* for some reason is treated in vol. iv of the Monograph as not a *Pristiphora* but a *Pachynematus*: the description, however, in vol. ii clearly indicates the present genus. In vol. iv we get a list of fifteen British *Pristiphora* spp. But of these Konow considers *fletcheri* and *nigricollis* to be synonyms of *crassicornis*, and refers *oblongus*, C., to *Lygæonematus* (probably also *funerulus* and *laricivorus*). As to *abbreviatus*, C., I can offer no suggestion, and naturally cannot “place” it in my Tables.

SYNOPTIC TABLE OF BRITISH *PRISTIPHORA*, spp.

- | | |
|---|----------------------------|
| 1. Ventral surface of abdomen black | 2. |
| — Ventral surface of abdomen largely pale or testaceous..... | 6. |
| 2. Antennæ entirely black | 3. |
| — Antennæ more or less pale or rufescent, at least beneath..... | 4. |
| 3. Hind femora black..... | <i>melanocarpa</i> , Htg. |
| — Hind femora (as are the legs altogether) yellow | <i>fulvipes</i> , Fall. |
| 4. Wings slightly (often hardly appreciably) clouded below the stigma. ♂ antennæ red, thick, much compressed, ♀ with hind femora and tarsi generally quite black, or nearly so. Body black, legs black and white. Extremely like the two following species, but as a rule rather larger and darker... | |
| | <i>crassicornis</i> , Htg. |

- Wings clear. ♂ antennæ not very thick nor much compressed, or else only red beneath. ♀ hind femora and tarsi generally with a good deal of white, but in this respect they vary 5.
5. ♂ antennæ red, not very thick nor much compressed. ♀ hind femora generally with the apical half black, hind tibiæ blackish at apex *ruficornis*, Ol.
- ♂ antennæ only red beneath, thick and compressed. ♀ hind femora generally with at least the apical half white, sometimes without black markings at all, hind tibiæ generally scarcely black at all at apex *pallipes*, Lep. (*appendiculatus*, C.).
6. Abdomen above black except the apical segment, which, together with most of the ventral surface is ochreous (green in life). Mouth, clypeus, pronotum, tegulæ and legs (including the whole of the hind femora) pale *viridana*, Knw.
- Abdomen, above and below, largely or entirely bright red or orange; if marked above with black, the black is more or less interrupted and may be reduced to spots or streaks. Hind femora sometimes black at apex 7.
7. Hind femora black at apex 8.
- Hind femora entirely pale at apex 9.
8. Abdomen above red in centre with the base and apex black *quercus*, Htg.
- Abdomen above very variable in colour, the middle segments may be red, or more or less streaked basally with black, but the apex is always red... *pallidiventrîs*, Fall.
9. Mesopleuræ black, abdomen testaceous (rather large bright-looking species. Length may reach $7\frac{1}{2}$ mm.) *betulæ*, Retz.
- Mesopleuræ pale 10.
10. Smaller (6 mm. long or less). Abdomen testaceous above, black only at base, short. Claws with subapical tooth unusually large, looking almost bifid (whence the name of the species). ♀ saw-sheath comparatively narrow. Costa and stigma dark brown *subbifida*, Thoms.
- Larger (may reach 8 mm. long). Abdomen more or less distinctly streaked or at least spotted with black after the base, elongate. ♀ saw-sheath thick. Costa and stigma yellowish, the latter with an infuscated base... *conjugata*, Dhb.

NOTES ON SOME OF THE ABOVE SPECIES.

Crassicornis, *ruficornis*, *pallipes*.—These three species are exceedingly close allies; and though I have done my best to distinguish them by definite characters, I can find none which are absolutely reliable, except those of the antennæ in the ♂ ♂, and even these are often hard to be sure about in particular specimens. The coloration of the ♀ hind femora varies in all the species, but on the whole there is certainly most black in normal *crassicornis*, less in *ruficornis*, and least in *pallipes*. An example with perfectly black hind femora may be referred pretty certainly to *crassicornis*, and one in which they show no black at all to *pallipes*.

Viridana is, I believe, distinct from any recorded British species. I took a ♀ at Lyndhurst, Hants, on May 28th, 1902, which was determined for me by Herr Konow.

Quercús differs from all other species in the distinctly red-banded abdomen, which is a very unusual type of coloration among the Nematids. I have only once taken it; near Sunningdale on June 6th, 1903.

Subbifida.—I have followed Konow in distinguishing this species from *betulæ* by the yellow mesopleuræ and Thomson in the original description gives this character. I have, however, certain British specimens with *black* mesopleuræ, which seem too small for *betulæ*, and in general appearance and form of claws quite agree with typical *subbifida*. It is possible that these are a distinct species, but I think it best at present to treat them as an aberration of *subbifida*.

Betulæ.—Konow gives *brevicornis*, C., as a synonym of this species. This refers, I presume, to the insect described in Mon., vol. ii, p. 80, as *parvicornis* = *brevicornis*, Thoms. Mr. Cameron, however, gives his species in vol. iv as a *Lygæonematus*.

Oblongus, C.—According to Konow the ♀ of this is *Lygæonematus laricis*, but the ♂ (probably) *biscalis*.

LYGÆONEMATUS, KNW.

The genus *Lygæonematus*, Knw., brings us to the end of the *Nematides*. It consists almost entirely of small or medium-sized, sombre-looking insects, often entirely without bright colouring, and with hardly an exception black above or practically so. Mr. Cameron in vol. iv enumerates thirteen British species, whereas I can only muster nine, of which six only appear to be described in the Monograph. But of Mr. Cameron's species a good many are sunk by Konow as synonyms, and one, at least, referred to a different genus. Thus, according to Konow,

erichsoni (Htg.), C., is a *Holcoeneme*.

leucopodius and *placidus* (C.) = *leucopodius*, Htg.

ambiguus, *fraternus*, and *furvescens* (C.) = *ambiguus*, Fall.

lativentris? and *scoticus* (C.) = *biscalis*, Först.

mollis, *breadalbanensis*, *whitei*, and *astutus* (C.) = *mollis*, Htg.

The three species in my list which do not seem to occur in the Monograph are *pini*, of which I have a ♂ taken by Dr. Capron; *saxeseni*, of which a pair now lie before me taken by Mr. Atmore at King's Lynn, and communicated to me by Mr. T. R. Malloch, of

Bonhill, Dumbartonshire (these have just been determined by Konow as *saxeseni*, Htg.); and lastly *pædidus*, Knw. (taken by myself while visiting Mr. Chitty at Huntingfield, near Faversham, and recorded in a previous number of the Ent. Mo. Mag.) Another species (*laricis*), of which I have a good many British specimens, does not seem to appear as a *Lygæonematus* in the Monograph. But Konow refers to it the *oblongus* (♀) and *funerulus* of that work, which, however, are both classed in vol. iv under *Pristiphora*.

Even with the help of Konow's very recent and complete *Revision* of his genus, I have found it very difficult to get satisfactory characters on which to base the Table which follows. And I ought to say that in the case of two species (*pini* and *ambiguus*) I am acquainted only with the ♂♂, and have only been able to tabulate the ♀♀ by picking out from Konow's descriptions such characters as it seemed to me likely that my readers would be able to make practical use of in determinations.

Certain species of *Lygæonematus* (among them the most brightly coloured) are distinguished from the rest by a peculiar *truncation* of the ♀ saw-sheath (in the lateral view) and also by a difference in the sculpture of the last ♂ ventral segment. These seem to be generally (or always?) attached to conifers. The characters are striking, but difficult to describe briefly; and I have therefore made less use of them in my Tables than would have been desirable if I had aimed at scientific completeness. In Konow's work the main division of the genus is based upon them.

SYNOPTIC TABLE OF BRITISH *LYGÆONEMATUS*, spp.

1. Abdomen beneath (and usually also the breast) light yellow, practically throughout..... 2.
- Abdomen beneath (and breast) quite black, or the former black with the apical segments (entirely or partly) fulvous..... 4.
2. Larger (6-8 mm. long), vertical area only twice as broad as long. Abdomen above *testaceous at the sides* with only a black central vitta. ♀ abdomen evidently (but not abruptly) compressed towards its apex*saxeseni*, Htg.
- Smaller. Vertical area thrice as broad as long. Abdomen above black entirely (from side to side)..... 3.
3. Antennæ longer than abdomen. Frontal area distinct. ♂ with large sub-semicircular central impression occupying the whole length of the eighth dorsal segment (long. $5\frac{1}{2}$ - $6\frac{1}{2}$ mm.)*pini*, Retz.
- Antennæ as long as abdomen. Frontal area scarcely defined. ♂ with two very short sub-parallel impressions at apex of eighth dorsal segment. Saw-sheath of ♀ (as seen from above) very long, thick, and parallel-sided, with a rounded apex (5-6 mm. long)*ambiguus*, Fall.

4. Abdomen beneath more or less fulvescent 5.
 — Abdomen beneath entirely black 6.
5. The ♂ is unknown. The ♀ with apical ventral segments entirely fulvous...
pædidus, Knw.
 — ♂ with apical ventral segments fulvous (dark orange). ♀ with the bases of the
 apical ventral segments black, their apices narrowly orange-fulvous...
biscalis, Först.
6. Mesopleuræ somewhat dull, closely punctured (one of the larger species.
 6-8 mm. long).....*mollis*, Htg.
 — Mesopleuræ without distinct puncturation, more or less shining 7.
7. Stigma blackish-brown. (Very distinct by its remarkably long and much com-
 pressed antennæ, with joints sharply produced at their apices, and in the ♂
 emarginate beneath)*compressicornis*, F.
 — Stigma pale (yellow or white) 8.
8. Legs, tegulæ, stigma (at least at its apex, the base being dusky) and last ♀
 dorsal segment white; hind femora splashed with black above before their
 apices, apices of tibiæ narrowly and tarsi blackish. Central impression on
 eighth ♂ dorsal segment with a *rounded* base (so that it is more or less
 semi-circular, *not triangular!*). Saw-sheath of ♀ (seen from above) pro-
 jecting, dilated and emarginate at apex*leucopodius*, Htg.
 — Legs, tegulæ and (unicolorous) stigma distinctly flavescent. Last ♀ dorsal seg-
 ment only partly and obscurely pale. Central impression on eighth ♂ dorsal
 segment *triangular*. The saw-sheath of ♀ is scarcely visible from above,
 being short and concealed under the apical segment, but it seems to me
 neither dilated nor emarginate*laricis*, Htg.

(To be continued).

SOME REMARKS ON OTTO FREDERIK MÜLLER'S DESCRIPTIONS
 OF THE DANISH *ODONATA*,
 WITH CERTAIN CORRECTIONS AS TO SYNONYMY.

BY ESSEN PETERSÉN.

In the year 1764 O. F. Müller published his work "Fauna Insectorum Fridrichsdalina," in which he named and described all the insects (858 species) he had found in the neighbourhood of Frederiksdal in North Sealand. This was the first list of insects from any definite region published in Denmark. In 1767 (although dated 1763) was published his "Enumeratio ac Descriptio Libellularum agri Fridrichsdalensis" in "Nova Acta Physico-Medica Academiae Cæsareæ Leopoldino-Carolinæ Naturæ Curiosorum," in which he described the *Odonata* found in the Frederiksdal district. In the year 1776 he published his "Zoologiæ Danicæ Prodromus," in

which he gave a short diagnosis of all the then known animals and insects in the Kingdom of Denmark.

It would be supposed that notice would be taken of such excellent Zoological and Entomological works; but that has not, unfortunately, been the case, especially with reference to the *Odonata*, which have only been from time to time casually mentioned. This may be accounted for, perhaps, on account of the period in which he lived being contemporary with Linné, and thereby being set in the shade by the greater Naturalist.

The first, in any case with regard to the *Odonata*, to draw attention to his work was Dr. H. Hagen in "Synonymia Libellularum Europæarum, Regiom., 1840," and later in "Om V. F. Müller's Arbejder over Danmarks *Odonater*" (Nat. Tidschrift, III R. IB, 1861). Unfortunately Dr. Hagen wanted that help that a complete collection of the Danish *Odonata* could yield. There was in his time no collection or catalogue of the Danish *Odonata* that could assist in any way, and Dr. Hagen therefore was unable to settle the identity of all Müller's species. I will not occupy unnecessary space with remarks on those species that have been accepted, namely: *Libellula fulva*, *Sympetrum sanguineum*, *Æschna pratensis*, *Æ. cyanea*, and *Æ. isosceles*, but I will endeavour to continue, on the same lines as Dr. Hagen, to bring forward some of Müller's names into the place that they should occupy.

As Dr. Hagen supposed, and of which there is not the slightest doubt, Müller had *Sympetrum striolatum*, Charp., before him when he described his *Libellula variegata* (Enum., No. 16; Fn. Fridr., No. 548; Prodr., No. 1633).

His description is as follows: *L. variegata* alis hyalinis puncto marginali ferrugineo; abdomine flavo rubeoque variegato.

Descr. Præcedenti similis (*L. sanguinea*), sed major, differt puncto marginali flavorubenti, pedibusque superne luteis. Nec varietas. Abdomen in fœmina crassus flaviusque est.

There can be no doubt that it is a species of the genus *Sympetrum*, and as Müller knew all the other members of this genus that are found in Denmark, and as the species is still found in the Frederiksdal district, there can be no longer a question as to its identity. I propose therefore that Müller's name takes priority, as an Indian species of another genus has the same specific name (*Rhyothemis variegata*, Joh.).

Leucorrhinia dubia, Lind., is described by Müller under the name

Lib. parvula (Prodr., No. 1637). *Libellula parvula* nigra, maculis luteis; abdomen subcylindrico. Inter minores; variat alis basi nigricantibus et immaculatis.

His description is by no means full, but it must be taken into consideration that he knew all the species of *Sympetrum* and also *Leuc. rubicunda*, L., and *Leuc. pectoralis*, Charp. This last named species is referred by him as a variety of *Leuc. rubicunda*, but has received no name from him. *Leuc. dubia* is far from rare in the Frederiksdal district, so that there can be no doubt that Müller knew and had the species when he described his *L. parvula*. I therefore propose that Müller's name shall take the place of Lindemann's. Dr. Hagen also remarks (Nat. Tidschrift, III R. 1B.) that *Leuc. dubia* is the only species known to him that could fit Müller's description.

Leucorrhinia caudalis, Charp., was without doubt known to Müller, and described by him under the name *Lib. triedra* (Enum., No. 19, Fn. Fr., No. 545, Prodr., No. 1630). Müller's description is as follows: *Lib. triedra* alis omnibus basi flavis puncto marginali nigro, abdomine triangulari.

β *Libellula* alis posticis basi flavis; abdomine triangulari.

γ *Libellula* alis nullis basi flavis abdomine triangulari.

In Müller's private copy of "Fauna Fridrichsdalina" is added the following in his own handwriting:—

Alis nullis basi luteis, puncto marginali ferruginea, and: Alis omnibus basi luteis, puncto marginali albido.

Leuc. caudalis, Charp., is the only European species that possesses all these characters, and as the species is still found in the district, I propose that Müller's name takes priority.

There has, however, been some doubt as to *Æschna squamata*, Müll. (Enum., No. 22, Fn. Fr., No. 546, Prodr., No. 1361). Dr. Hagen remarks (Nat. Tidschrift, III R. 1B) that Müller's species is either *Æ. mixta*, Latr., or else *Æ. cærulea*, Strom., and in this he is undoubtedly right. Kirby (Syn. Cat. of Neur. Odon., p. 87) gives it in place of *Æ. cærulea*, and it must be remarked that the description fits *Æ. cærulea* better than *Æ. mixta*, but *Æ. cærulea* has not been found, and probably never will be found, in Denmark; and again, *Æ. cærulea* is on the wing in July and August,* whilst Müller states in his description of *Æ. squamata* "Medio Septembris." Taken into consideration that Müller knew all the Danish species of *Æschna*,

* In Scotland *Æ. cærulea* is well on the wing in early June. *Æ. mixta* is essentially a September insect.—G. T. P.

with the exception of *Æ. viridis*, Eversm., and *Æ mixta*, Latr., and this last named is not rare in the district and is on the wing during September, it is not probable that Müller has overlooked it, but on the contrary has had the species before him when he described *Æ. squamata*, which name I propose instead of Latreille's.

There are a few other species in Müller's work, but of these I can at present say nothing definite, but as evidence of the extent of Müller's knowledge of the Danish *Odonata* I append a list of the species of *Libellulidernes* and *Æschnidernes* groups that he has mentioned in his papers and which we have been able to recognise.

Libellula quadrimaculata, L. Fauna Fr., No. 531.

„ *fulva*, Müll. Fa. Fr., Nos. 544, 549.

„ *depressa*, L. Fa. Fr., No. 535.

Orthetrum cancellatum, L = *Lib. frumenti*. Fa. Fr., No. 551.

Leucorrhinia parvula, Müll. Prodr., No. 1637 = *L. dubia*, Lind.

„ *pectoralis*, Charp. = *L. rubicunda* var. b. Fa. Fr., No. 534.

„ *rubicunda*, L. Fa. Fr., No. 534.

„ *triedra*, Müll. Fa. Fr., No. 545 = *L. caudalis*, Charp.

Sympetrum flaveolum, L. = *Lib. frumenti*. Fa. Fr., No. 551.

„ *variegatum*, Müll. Fa. Fr., No. 548 = *L. striolatum*, Charp.

„ *vulgatum*, L. Fa. Fr., No. 533.

„ *sanguineum*, Müll. Fa. Fr., No. 547.

„ *scoticum*, Donov. = *L. cancellatum*. Fa. Fr., No. 537.

Cordulia ænea, L. Fa. Fr., No. 538.

Gomphus vulgatissimus, L. Fa. Fr., No. 536.

Æschna pratensis, Müll. Fa. Fr., Nos. 542 and 543.

„ *cyanea*, Müll. Fa. Fr., No. 549.

„ *juncea*, L. = *L. quadrifasciata*, var. d. Fa. Fr., No. 540 ε.

„ *squamata*, Müll. Fa. Fr., No. 546 = *Æ. mixta*, Latr.

„ *grandis*, L. = *L. quadrifasciata*. Fa. Fr., No. 540.

„ *isosceles*, Müll. Fa. Fr., No. 540 β = *Æ. rufescens*, Lind.

To the 21 species named above there have since been added the following 7:—

Orthetrum cærulescens, Fab., collected twice.

Epitheca bimaculata, Charp., once in Sealand.

Somatochlora metallica, Lind., not common.

„ *flavomaculata*, Lind., rare.

Ophiogomphus serpentinus, Charp., collected three times.

Cordulegaster annulatus, Latr., once in Sealand, several times in Jutland.

Æschna viridis, Eversm., rare,

Silkeborg, Denmark :

August, 1906.

Note on Atholus (Hister) duodecimstriatus, Schrk., 1781, and *quatuordecimstriatus*, Gyll., 1806.—I think that these two names represent two species, although this is not generally admitted, as the second name appears as a synonym in all the more recent catalogues. Stephens, in his *Manual*, 1839, p. 149, recognised them as distinct, and pointed out several distinguishing characters, and he stated that both species occurred in the "London district." I have some specimens from Moldavia which I think are *14-striatus*, and while they are exactly similar *inter se*, they differ from undoubted examples of *12-striatus* by the more sinuous frontal stria, by the narrower mandibles (*12-striatus* has the mandibles somewhat canaliculate, especially the one on the right side), by the punctate fovea behind the thoracic anterior angle, by having a short but well marked median inner humeral stria, by the dorsal striæ 1—3, especially the third, being incurved near the apical margin, and by the less transverse and more distinctly arched outline of the mesosternum. I have not seen a British example possessing these characters, but it may be of interest to those who have a native collection to examine their specimens. Sometimes *12-striatus* has a small median inner humeral stria, more or less distinct, and in the British Museum there is a single example from the Power Collection which possesses it.

Marseul, in his *Monograph*, 1854 (fig. 56 represents the variety of *12-striatus* [calling it *14-striatus*] with the humeral striæ—fig. 145 without them), and also in his "Catalogue des Coléoptères d'Europe," 1863, placed the names widely apart, but in the "Catalogus Coleopterorum Europæ et Confinium," 1866, he inserted *14-striatus* as a questionable variety of *12-striatus*.

Lately I have come to the conclusion that Thomson acted rightly in establishing the genus *Atholus*, 1862, and I have assigned about forty species to it, chiefly on the characters used by him. For more than forty years the genus has been disregarded; the species Thomson placed in it are, *corvinus*, Germ., *bimaculatus*, L., *12-striatus*, Schrk., and *14-striatus*, Gyll., so it is evident that he thought the last two species distinct.—G. LEWIS, 87, Frant Road, Tunbridge Wells: October, 1906.

Coleoptera at Woking during the past summer.—The very hot dry summer seems to have suited many of the local *Coleoptera* of this district, several of the rarer species recorded by me in past years having again put in an appearance. These have chiefly been caught on the wing, just before sunset, by persistently working favourable spots, and for the first time various beetles always associated with *Lasius fuliginosus*, as *Amphotis marginata* and two *Myrmedonia*'s, have occurred to me in this manner, away from the nests of the ants. The most important capture in the district during the past summer is, of course, *Lomechusa strumosa*, discovered by Mr. Donisthorpe on May 25th*, in the nests of *Formica sanguinea*, while collecting in company with the Rev. F. D. Morice. The following species have been taken either by my sons, while out mothing, or by myself, since May last: *Myrmedonia lugens*, Grav., and *M. laticollis*, Märk., on the wing, June; *Dinarda märkeli*, Kies., in nests of *Formica rufa*, *Lomechusa strumosa*, F., rarely, *Dinarda dentata*, Grav., sparingly, and *Quedius brevis*, Er., singly, in nests of *Formica sanguinea*, June 2nd to 14th; the last-mentioned insect does not appear to have

* Cf. Ent. Record, 1906, p. 159, and Zoologist, 1906, pp. 317, 318.

been found previously with this ant. *Homalota splendens*, Kr., one specimen, by sweeping herbage, August 27th; *H. languida*, Er., on the wing, June; *H. divisa*, Märk., in dead frog, &c., August; *Megronus cingulatus*, Mann., in rotten fungus on pine stump; *Bledius femoralis*, Gyll., a single example, on the wing, September 5th; *Aerognathus mandibularis*, Gyll., not rare on calm evenings, flying over wet rotting leaves, June 7th—28th, and singly on August 6th; *Triarthron märkeli*, Schm., *Hydnobius strigosus*, Schm., *Colon serripes*, Sahlb., *Amphotis marginata*, Er., *Thalycra sericea*, St., *Antherophagus silaceus*, Herbst, *Cryptophagus populi*, Payk., *Conopalpus testaceus*, Oliv., and *Hallomenus humeralis*, Panz., all rarely, on the wing, under old oaks, the *Conopalpus* seen in some numbers flying round the higher boughs, June; *Ptomaphagus sericatus*, Chaud., in dead frog, in company with *P. sericeus*, F.; *Odontæus mobilicornis*, F., a fine ♂, on the wing, just before dark, June 12th, near my house; *Coccinella distincta*, Fall., as usual in the vicinity of nests of *Formica rufa*, on fir trees, &c., not rare, June.—G. C. CHAMPION, Horsell, Woking: October 6th, 1906.

Rhizophagus cribratus, Gyll., in the Derwent Valley.—Yesterday morning I was pleased to find *Rhizophagus cribratus*, Gyll., at Brockwell, a low-lying and marshy wood near Winlaton, which I have not previously searched. The *Rhizophagus* occurred in powder-covered agarices growing on a dead oak tree, and amongst other species taken I should mention *Tetratoma fungorum*, which tumbled out of these fungi in some profusion. This reminds me that my friend Mr. Gardner has met with *R. cribratus* in the Hartlepool district, and he tells me that he took his examples from beneath dried cowdung; but, of course, it may be that the *Rhizophagus* in question affected some fungoid growth thus situated. The species of *Rhizophagus* which have occurred in the Derwent Valley are, *R. cribratus*, Gyll., *R. depressus*, F., *R. perforatus*, Er. (Gibside and Winlaton Mill), *R. parallelocollis*, Er. (old churchyard at Winlaton), *R. ferrugineus*, Pk., *R. dispar*, Pk., *R. bipustulatus*, F., and the very rare *R. cœruleipennis*, Sahlb. (near Gibside); whilst of the remaining three British species, *R. nitidulus*, F., and *R. politus*, Hellw., may yet be found with us.—R. S. BAGNALL, Winlaton: October 8th, 1906.

Rhizophagus parallelocollis, Er., taken in a grave.—Mr. De la Garde's note in last month's Ent. Mo. Mag. on *Rhizophagus perforatus*, Er., has reminded me that I took two specimens of its near ally *R. parallelocollis*, Er., last year in what is most probably its most frequent habitat, viz., a grave. (See Canon Fowler's note, "The Worm? that Devoureth," in Ent. Mo. Mag., vol. xxiv, p. 276). I happened to be passing our well-filled churchyard when a new grave was being dug. The grave-digger had got down about six feet and was just unearthing a very old skeleton which had obviously not been disturbed before. When examining a leg-bone, which was a most interesting pathological specimen, I came across the above beetles, which had evidently been dead for a very long time.—NORMAN H. JOY, Bradfield, near Reading: October 7th, 1906.

The habits and habitat of Tachyusa concolor, Er.—Happening a day or two ago to pass a small dried-up pond near here I got off my bicycle and commenced

splashing some water out of a puddle on to the damp mud. Several small "Staphs" at once ran out which I recognised as *Gnypeta labilis*, Er., but there was also a rather smaller species with a more narrowed hind body, and much more active movements (much resembling those of a *Myllæna*), which proved on examination at home to be *Tachyusa concolor*, Er. To-day (Oct. 5th) I examined in the same way a lake about two miles distant from the above pond and also partly dried up, and at once found the *Tachyusa*, accompanied by *Gnypeta labilis* and great numbers of *Heterocerus marginatus*, F. It is quite possible that *T. concolor* is not so rare as is supposed, but would often be found to flourish under special conditions. At the small pond it was very ready to take wing, and so presumably to distribute itself generally, although the day was quite dull; in fact it was this habit which suggested to me the examination of the lake which I have so often worked before.—ID.

Aculeate Hymenoptera at St. Fillans and the Braes of Balquhidder, Perthshire.—In the January number of the Ent. Mo. Mag., 1906, I have recorded a list of species found between June 9th and July 5th, 1906. This year I visited the same charming spot a month later, July 5th to August 3rd. The weather was not so fine as in the previous year, but still fair for Scotland; and although I was constantly on the look out I was only able to add seven species to my list, *i.e.*, *Crabro cribrarius*, Linn., scarce, *C. varius*, Lep., common, *Sphecodes hyalinatus*, Schenck, one specimen, *Halictus smeathmanellus*, Kirb., two specimens, *Nomada ruficornis*, one specimen, *Psithyrus vestalis*, Fourc., common, *Chrysis ignita*, var. *distinctus* two specimens. The following species were found again:—*Formica rufa*, Linn., common, *F. fusca*, Linn., common, *Lasius flavus*, De Geer, common, *Myrmica rubra*, Linn., common, *Crabro dimidiatus*, Fab., *Vespa norvegica*, Fab., *V. vulgaris*, Linn., rare, *Andrena albicans*, Kirb., common, *A. coitana*, Kirb., *A. fucata*, one specimen, *Nomada flavoguttata*, Kirb., three specimens, *Bombus terrestris*, Linn., common, *B. pratorum*, Linn., scarce, *B. hortorum*, Linn., *B. agrorum*, Fab., common. *Diptera* were again found in great force, *Bombus terrestris*, *B. pratorum*, *Vespa norvegica*, and several other species having understudies in close attendance, and often in some numbers. Mr. Edward Saunders has again very kindly named my captures.—G. A. JAMES ROTHNEY, Pembury, Tudor Road, Upper Norwood: October 2nd, 1906.

A correction.—In my report of *Gastrophilus nasalis*, L., in the last number of this Magazine, page 233, the name of the finder should be Mr. B. Piffard, and not "Mr. J. Piffard," as printed.—F. C. ADAMS, 50, Ashley Gardens, S.W.: October, 1906.

Empis hyalipennis, Fln., in Dumbartonshire.—On August 25th I took 4 ♀♀ of a species of *Empis* in Murroch Glen, near Bonhill, which upon examination proved to belong to *E. hyalipennis*, Fln., a species not hitherto recorded from Britain. One of the specimens was submitted to Mr. Verrall, who kindly confirmed the identification.—J. R. MALLOCH, Bonhill, Dumbartonshire: October, 1906.

Association of Diptera with Lepidopterous larvæ.—It may interest your readers to know that in September last at Tatrafruered, in Hungary, I found several specimens of a small hairy-winged midge, *Ceratopogon* sp. ?, sitting on the backs of larvæ of *Deilephila galii*. These larvæ were extremely abundant in a clearing in a pine forest where there were large growths of *Epilobium*, and several of the larvæ appeared to exude from their skins a sticky substance, which these small *Diptera* devoured.—N. CHARLES ROTHSCHILD, 148, Piccadilly, October 11th, 1906.

Lygæus equestris, L., in the Isle of Sheppey.—An example of this beautiful and (as British) exceedingly rare Hemipteron was recently sent to me to name by my friend Lieut. J. J. Jacobs, R.E. It was taken by him on the afternoon of September 22nd, on the grass on one of the landslips of the Sheppey cliffs, about four miles from Sheerness. Lieut. Jacobs has kindly presented me with the specimen.—JAMES J. WALKER, Oxford: October 13th, 1906.

Ephemera (danica, Müll. ?) male imago coupling with the female subimago.—At the end of May, last year, I was fishing Lough Arrow, near Boyle, co. Roscommon, Ireland. The day being very calm and hot I landed for lunch between one and two o'clock, and during the meal noticed thousands of "spinners" (σ imago) rising and falling over a low hedge about ten yards from the water. Female "Green Drakes" (Mayfly, subimago) kept flying ashore, and as soon as ever one reached the land it was pursued by one or more of the male "Spinners," which flew out to meet them, and generally caught them, but not always. The mated pairs for the most part fell down coupled together into the grass, and I picked up several of them, sometimes an additional male was holding on to the pair. The fact of there having been very strong winds and rain for the previous two or three days may have had something to do with this coupling of adult males with subimagos; for along the shore of the Lough dead Mayflies were literally piled up at the water's edge to a depth of two or three inches, and a scarcity of female imagos may very likely have arisen through their being wrecked and drowned in such extraordinary numbers.—S. VENOUR, Portinscale, Keswick: October 8th, 1906.

Review.

"MELANISM IN YORKSHIRE LEPIDOPTERA:" by G. T. PORRITT, F.L.S. (Report of the British Association for the Advancement of Science, Section D, York, 1906).

The county of Yorkshire, and especially its south-western portion, has become famous among Lepidopterists for the number of dark and even entirely black forms of usually pale-coloured moths that have appeared there in recent years; and our colleague, Mr. G. T. Porritt, being happily located in the district, has devoted much time and study to the investigation of this phenomenon. The outcome of his researches is embodied in the above paper, which is a very valuable summary of our present knowledge of this most interesting and still obscure subject. Mr.

Porrirt enumerates no fewer than thirty species of the larger moths which are now known to regularly produce nearly or quite black specimens in the Huddersfield district; and in some cases, as in the well-known instance of *Amphidasys betularia*, and more recently that of *Odontopera bidentata*, the melanic forms appear to be well on the way to locally supersede the ordinary type of these species. A nearly equal number of moths are there also being apparently influenced towards the same end, specimens much darker than the typical forms being often taken, though few actually melanic examples have yet occurred; while a very few species show a tendency to become lighter in colour, the case of *Acronycta menyanthidis*, which in other parts of Yorkshire is often nearly black, being especially interesting. The generally accepted explanation of the cause of this strongly localized and rapidly increasing melanism, viz., the protection afforded to the darker moths by day when at rest on walls and tree trunks blackened by the smoke of a humid manufacturing district, is largely discounted by Mr. Porrirt's observation that even pale-coloured and conspicuous moths are but little liable to the attacks of enemies under these conditions; and that instances of very marked melanism are frequent in such smokeless areas as the Hebrides and the Shetland Isles. Incidentally some very interesting information as to the chief enemies of moths is given, and the paper is well worthy of the attention of entomologists and all others interested in the study of the phenomenon of melanism.

Societies.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:

Thursday, September 13th, 1906.—Mr. H. MAIN, B.Sc., Vice-President, in the Chair.

Mr. Goulton exhibited a long series of *Calymnia trapezina* from the New Forest, the only species met with in several nights' sugaring in August. Many were var. *rufa*, and a few var. *ochrea*. He also showed larvæ of *Acronycta ligustri* from ova. Mr. Bellamy, series of *Adopæa lineola* from Gravesend. Messrs. Harrison and Main, long bred series of *Hadena contigua* and *Coremia unidentaria* from the New Forest. Mr. Barnett, (1) very dark bred examples of *Abraxas grossulariata* from Greenwich larvæ, one of which was rayed on the hind-wings; (2) very pale, dark suffused, and extremely dark forms of *Hybernia marginaria* from W. Wickham. Mr. Sich, living larvæ of *Pieris daplidice* from Geneva, feeding on mignonette. Dr. Chapman, (1) a short series of *Lampides telicanus*, bred from eggs and larvæ found in N. W. Spain, and discussed the relation between the marbling of the under-surface and the usual Lyænid spotting; (2) specimens of *Chrysophanus phlæas*, *Polyommatus bellargus*, *L. bætica*, and *L. telicanus* in illustration of his further remarks on the spotting. Messrs. West and Ashly, some seventy species of *Chrysomelidæ* and *Curculionidæ* from the New Forest this year. Mr. Clark reported numbers of *Catocala nupta* resting on the walls of Paddington Infirmary, all most conspicuously situated. Mr. Main had met with numbers near *Cossus* infected trees. Mr. J. W. Tutt gave some most interesting remarks on his trip to the French Alps in August. Mr. Kaye exhibited some very large specimens of *Thecla betulæ*, bred from Huntingdon larvæ, which were kept close in tin boxes.

Thursday, September 27th, Mr. R. ADKIN, F.E.S., President, in the Chair.

Messrs. Harrison and Main exhibited (1) a long series of *Acronycta ligustri* bred from larvæ taken at Box Hill; (2) a brood of *Thyatira batis* from New Forest ova; and (3) a series of *Melitæa cinxia* bred from the Isle of Wight, several specimens having the white band of the under-side very strongly developed. Mr. Step, for Mr. Carreras, a remarkable variety of *Polygonia c-album*, from the banks of the River Wye, having the usual dark markings suffused, enlarged, and confused almost beyond recognition. Mr. Tonge, a further series of photographs of *Lepidoptera* at rest. Mr. Carr, larvæ of *Anticlea nigrofasciaria* ready to hibernate. Mr. Colthrup, (1) a specimen of *Heliothis peltigera* taken in August on the South Coast; and (2) some fine forms of *Melitæa cinxia* from the Isle of Wight. Mr. West (Greenwich), forty-three species of *Coleoptera* taken at Great Yarmouth in June; collecting was poor, and the only species at all common were *Donacias* in the Caistor Marshes. Mr. South, (1) a specimen of *Amphidasys betularia*, intermediate between the type and var. *doubledayaria*; (2) *Orobena straminealis*, with very wide blackish borders on the outer margin of the wings; and (3) *Pyrausta nigrata*, with unusually broad white bands. Mr. Sich, a *Heliothis peltigera* bred from an ovum sent him by Mr. Eustace Banks, and a drawing of the larva. Mr. Turner (1) life-history of *Coleophora obtusella* from the Isle of Wight; (2) specimens of *Goniodoma limoniella* and *G. auroguttella* for comparison; (3) species of *Erebia* taken by Mr. Harrison and himself in Switzerland, *E. lappona*, *E. epiphron*, *E. ligea*, *E. tyndarus*, *E. goante*, and *E. blandina*; and (4) *Enodia hyperanthus*, specimens showing great variation in ground colour of the under-sides. Mr. L. Newman, a very large number of specimens mainly bred this season, including: *Xylomiges conspicillaris*, *Cucullia gnaphalii*, yellow ♂'s and melanic *Ematurga atomaria*, selected forms of *Melitæa aurinia*, a yellow *Callimorpha dominula*, an extraordinary suffused dark chocolate *Eugonia autumnaria*, varied *Chrysophanus phlæas*, melanic *Macaria liturata*, *Leucania sparganii*, a very pink *Amorpha populi*, very varied *Mimas tilix*, var. *taras* of *Hesperia malvæ*, bred *Brephos notha*, Rannoeh forms of *Drepana falcula*, a smoky *Arctia villica*, *Agrotis cursoria*, *A. ripæ*, and *A. præcox* in numbers.—
HY. J. TURNER, Hon. Secretary.

ENTOMOLOGICAL SOCIETY OF LONDON: Wednesday, October 3rd, 1906.—
Mr. F. MERRIFIELD, President, in the Chair.

Mr. A. Hall, of 16, Park Hill Rise, Croydon, and Mr. E. E. Bentall, of The Towers, Heybridge, Essex, were elected Fellows of the Society.

Commander J. J. Walker exhibited a specimen of *Calosoma sycophanta* taken in Denny Wood, New Forest, June 16th; *Lygæus equestris*, L., found in the Isle of Sheppey by Lieut. Jacobs, R.E., on September 22nd; *Sitaris muralis*, taken near Oxford in August by Mr. A. H. Hamm; two varieties of *Vanessa urticæ*, with a strong black ligament connecting the second costal and dorsal spot on the fore-wings, from the Isle of Sheppey, August; a variety of *Argynnis adippe* ♂, caught at Tubney, Berks., on July 7th; a slate-coloured variety of *Lycæna icarus* ♂, taken near Chatham, August 24th; and examples of an almost entirely black form

of *Strenia clathrata* occurring at Streatley, Berks., in August—all taken this year. Mr. G. T. Porritt, a series of *Abrazas grossulariata*, var. *varleyata*, bred this year from a pairing of the variety obtained from wild larvæ the previous season at Huddersfield. All the brood were of the variety, none showing the least tendency to revert to the ordinary form. Mr. C. P. Pickett, a gynandromorphous specimen of *Angerona prunaria* bred by him, and a male specimen of *Fidonia atomaria*, caught at Folkestone, with six wings. Professor Charles Stewart, F.R.S., a remarkable unnamed exotic larva, found in a collection of specimens received at the College of Surgeons, displaying a series of iridescent spots about the spiracles. Mr. W. J. Lucas, on behalf of Messrs. F. W. and H. Champion, specimens of the rare dragon-fly *Sympetrum flaveolum*, taken near Epping in August last, and read an account of their capture, in which it was suggested that these were part of a migration of the species such as occasionally takes place. Dr. F. A. Dixey, specimens of *Nychitona medusa*, Cram., *Pseudopontia paradoxa*, Feld., *Terias senegalensis*, Boisd., *Leuceronia pharis*, Boisd., and *L. argia*, Fabr., remarking that although there does not exist any direct evidence that the members of the genus *Nychitona* are distasteful, their habits are such as to suggest this mode of protection; and there is little doubt that they have served as models for other insects. Mr. H. J. Donisthorpe, examples of *Dinarda pygmæa*, Wasm., with our other three species, *D. hagensi*, Wasm., *D. dentata*, Gr., and *D. märkeli*, Kies., with their respective hosts, and read a note on their occurrence in this country. Also a larva of *D. dentata* sent to him by Father Wasmann, and a larva of *D. pygmæa* taken by him in Cornwall. Dr. Norman Joy, the following species of *Coleoptera* first recognised as British in 1906:—*Laccobius sinuatus*, Mots., from Lundy Island and Cambridgeshire, distinguished by its smaller size and by its more parallel form from *L. nigriceps*, Thoms.; *Homalota paradoxa*, Rey, taken in moles' nests in Berks. and Devon; *Quedius vexans*, Epp., and its larva, from moles' nests in Berks.; *Euplectus tomlini*, Joy, from a starling's nest at Bradfield, Berks.; *Corticaria crenicollis*, Mannh., from under bark at Basildon, Berks., and at Epping; *Cardiophorus erichsoni*, Buyss., taken on Lundy Island. Also a variety of *Lathrobium elongatum*, L., from South Devon, with entirely black elytra, and which he proposed to call var. *nigrum*; a curious dull aberration of *Apteropeda globosa*, Ill.; *Heterothops nigra*, Kr., taken in moles' nests from various parts of the country; a species of *Gnathonus* differing in certain characters from *G. rotundatus*, Kugel., and which occurs almost exclusively in birds' nests. Mr. L. B. Prout, on behalf of Mr. G. B. Oliver, of Tettenhall, Wolverhampton, a melanic ♀ of *Acidalia marginepunctata*, Goeze, and a melanic ♂ of *A. subsericeata*, Høw., both taken in North Cornwall this summer, together with the typical forms for comparison; also a dark aberration of *Cænonympha pamphilus*, Linn., taken in the same district in 1903, which is on the whole noted for light and brightly-marked forms. The President, a series of *Selenia bilunaria*, drawing attention to the curious angulation of the wings in these examples. Mr. H. W. Southcombe communicated a note on the formation of a new nest by *Lasius niger*, the common black ant. Mr. W. J. Kaye read "Some Notes on the Dominant Müllerian Group of Butterflies from the Potaro River District of British Guiana." Mr. G. J. Arrow, "A Contribution to the Classification of the Coleopterous Family *Passalidæ*." — H. ROWLAND BROWN, M.A.,
Hon. Sec.

ON THE BRITISH SPECIES OF *PHORA*. (PART I).

BY DR. JOHN H. WOOD.

*(Continued from page 196).*42 (39) *Only one pair of dorso-central bristles.**43 (44) *A dusky spot in the wing at the origin of the first thin vein; middle tibiæ with two inside spurs.*

♂ ♀. Thorax and abdomen black, the latter dusted with whitish; halteres pale; frons broad, with both rows of bristles strongly convex in front; third joint of antennæ large, black, and lemon-shaped; wings dark yellowish-grey, thin veins sometimes clouded, first costal division rather shorter than the other two together; femora dark brown, almost black, tibiæ and tarsi more yellow; hind tibiæ with four spines, one in the middle of the under-side and three on the outer side, namely, one in the upper third and a pair close to the lower end. A spring species. Larva lives on dead snails.

3 mm.—*maculata*, Mg.44 (43) *Wings without a spot; middle tibiæ with only one spur (normal).*45 (46) *Thorax deep black; four strong and equal scutellar bristles.*

♂. Halteres yellow or black (one specimen); frons rather narrow ($1\frac{1}{2}$ to 1) and dull, both rows of bristles strongly convex in front; third joint of antennæ red, moderately large and lemon-shaped; the yellow palpi small, rather narrow, and with the usual long marginal bristles; wings nearly clear, costa to the middle of wing, first costal division twice as long as the other two together, first thin vein comes off at the fork with a very slight curve and then runs straight to the margin; abdomen black, 6th segment shining, that and the 2nd segment lengthened as usual, the lateral margin of 2nd segment with a row of short bristles, a broad white hind margin to the 6th segment and very narrow ones to the other segments; legs yellow, middle and hind femora frequently suffused with brown along their upper margins, hind tibiæ with four spines, one in the middle of the upper-side, another in that of the under, and two on the outer side, namely, one at the upper third and the other close to the tip. Taken indoors, June and July.

2 mm.—*domestica*, n. sp.46 (45) *Thorax yellow or dusky red; the anterior pair of scutellar bristles much smaller than the posterior, scarcely more than coarse hairs.*

♂ ♀. Halteres yellow; meso-pleuræ with numerous short bristly hairs and one long and conspicuous bristle; the two front pairs of legs yellow, the hind pair blackish-brown; hind tibiæ with two spines, both on the outer side, one in the upper third, the other near the tip.

2—2 $\frac{3}{4}$ mm.—*erythronota*, Strobl.47 (1) *Second thick vein not forked. Costa never reaching beyond the middle of the wing. In all the species the anterior pair of scutellar bristles is much smaller and weaker than the posterior pair, or altogether absent.*

* *Phora maculata*, Mg., according to Becker and the specimens in my collection, should be included among the species with two pairs of dorso-central bristles, from either of which it can be easily recognised by the characters given above.—J.E.C.

- 48 (49) *Middle tibiæ with three spines, a pair in the upper third and the other at the junction of the middle and lower thirds.*

♂ ♀. Thorax, abdomen and halteres black; meso-pleuræ with numerous short bristly hairs and one long conspicuous bristle; frons glossy, about as high as broad; female proboscis elongated; wings yellowish-brown, second thick vein with several distinct bristles at the inner end, first thin vein deeply curved at its origin; legs black, the front pair paler and all the knees yellow; hind tibiæ with two large spines, both on the outer side, one at the end of the upper third, the other close to the tip. 3—3½ mm.—*mordellaria*, Fall.

- 49 (48) *The third spine on the middle tibiæ close to the tip, on the outer side.*
50 (53) *Frons with a large knob or hump on the vertex; the third spine on the middle tibiæ strong.*

Both are stout, heavily built species, with the thorax, abdomen and halteres deep black; the frons narrow (at least as high as broad); the antennæ unusually small; legs deep black, the front pair and all the knees yellowish, the femora, especially the hind pair, very stout, the hind tibiæ widened towards the tip, and the hind metatarsi thickened; armature of hind tibiæ as in *mordellaria*.

- 51 (52) *Fore tibiæ with two to four spines in a row.*

♂ ♀. Frontal knob broad, occupying at least half the width of the frons; third joint of antennæ red or reddish, round; palpi black; hind margin of 1st abdominal segment broadly whitish, usually sending two triangular prolongations of the same colour on to the dorsum of the segment; costa darkened and thickened on the outer end, fringe very thick and short; second thick vein armed with numerous small setæ; first and second thin veins much wider apart on the wing margin than at their origin (2 to 1); last joint of the fore tarsi in the male normal. 3½ mm.—*incrassata*, Mg.

- 52 (51) *Fore tibiæ with only one spine.*

♂ ♀. Frontal knob narrow, not more than one-third the width of the frons; third joint of antennæ black, lemon-shaped; palpi more or less yellow; hind margin of 1st abdominal segment black; costa not darkened or thickened on the outer end, fringe longer than in *incrassata*; second thick vein bare; first and second thin veins not much farther apart on the margin than at their origin (1½ to 1); last joint of fore tarsi in the male dilated and fringed with long hairs.

2¼ mm.—*carinifrons*, Zett.

- 53 (50) *Frons without such knob; third spine on middle tibiæ weak.*

- 54 (55) *Hind legs very stout, the femora, tibiæ, and metatarsi being as massive as in the two preceding species.*

♀. Thorax, abdomen and halteres black; frons shining, moderately broad; palpi rather large, black, and with strong bristles; wings lightly tinted with grey, thin veins fine but distinct; second thick vein ends in a prominent oval smooth swelling, from the base of

this swelling the first thin vein comes off in a very bold curve and then runs straight to the margin; no bristle at the base of the second thick vein; armature of hind tibiæ as in *mordellaria*.

2½ mm.—*femorata*, Mg.

55 (54) *Hind legs long and slender.*

56 (57) *Hind tibiæ without a spine.*

♂ ♀. Thorax, abdomen and halteres deep black; frons rather broad and glossy; palpi small and narrow, yellowish or rusty, and nearly bare; third joint of antennæ very large and prolonged into a point; wings diaphanous, with the thin veins very indistinct, second thick vein robust, curved, and with a conspicuous bristle at its base, first thin vein comes off without a curve some way from the tip of the thick vein, and runs in a straight line to the margin; hind tarsi very long, the length of the metatarsi being about three-fourths that of the tibiæ, occasionally a very tender spine or bristle is present about the middle of the hind tibiæ.

1½ mm.—*citireiformis*, Beck.

57 (56) *Hind tibiæ with two spines on the outer side, in the first and second thirds respectively.*

♂ ♀. Frons broad and dull; palpi of the male black, fringed with numerous strong stubby bristles, of the female more yellowish and with the ordinary long bristles; third antennal joint of male moderately large and lemon-shaped, of the female rather small and round; second thick vein slender and usually straight, and with a conspicuous basal bristle, first thin vein comes off close to the tip of the thick vein, and runs in a gentle and uniform curve to the margin; hind tarsi not excessively long, the metatarsi being about one half the length of the tibiæ; in all other respects like *citireiformis*.

1½ mm.—*vitripennis*, Mg.

The 3-veined species are probably all of them autumnal, making their appearance again in the spring, and occasionally waking up in the interval if the weather is mild. They seem without exception to be scarce, unless *perennis* be an exception, which Mr. Verrall met with rather freely in Sussex years ago, the date of one of his males which I have seen being 28.1.68.

Of *palposa*, with its extraordinary palpi, I have seen only a single male, taken 29.10.03 by sweeping in Stoke Wood, nor do I know of its occurrence elsewhere.

Opaca (nigricornis) is represented in my collection by one male and two females, the dates and localities being—♂, Stoke Wood, 9.4.06, ♀ ♀, Stoke Wood, 22.4.02, and Ashperton Park, 5.4.05. Through the kindness of Mr. Wingate I have been able to examine the male from Bishop Auckland (*vide* p. 111), besides three more of the same sex from Bonhill, Dumbartonshire, which were amongst an interesting lot of *Phoridæ* sent me by Mr. Malloch. With the

exception of one of my females, the others fully confirm Mr. Collin's observation (*vide* p. 179) on the usual absence of the bristle from the hind tibiæ of this species. This female is further exceptional in that the front pair of scutellar bristles are distinctly weaker than the hind pair. The peculiar pair of forceps-like organs beneath the hypopygium are highly characteristic, and unquestionably afford the readiest means of identifying the male; and it would be better, when drawing up the table, had I selected it as the leading characteristic in place of the one used.

As regards the three new species. Both sexes of *vitrea*, two of each, have been taken. It comes near *perennis*, but the differences in the venation, in the characters of the genitalia of both sexes, and in the colour of the halteres, leave no doubt whatever that it is perfectly distinct. It is also a distinctly smaller insect. Only the female of *luteifemorata* has so far turned up. Two have been taken here, namely, Stoke Wood 30.9.03 and Black Mountains 10.8.04, and one by Dr. Sharp in the New Forest in October, 1903. The New Forest insect has the thorax suffused with reddish, no trace of which is noticeable in the Herefordshire examples. *Sublugubris* is perhaps more like *vitrea* than *lugubris* with which it is compared in the table, but its stoutly built (normal) legs cannot possibly be mistaken for the long, slender limbs of *vitrea*. Both sexes have been obtained; a female by Dr. Sharp in the New Forest October, 1903, and two males by myself indoors 11.10.04 and 4.10.05.

The affinities of *unispinosa*, *nudipalpis*, and *autumnalis* with the 3-veined section seem to be indicated by the general weakness of the tibial armatures and by the very long and slender legs of *autumnalis*. Of the last mentioned I have seen only two males, kindly lent by Mr. Verrall, and with the records, Newmarket 31.1.93 and Cambridge 13.1.04.

Abroad they meet with two forms of the male of *abdominalis*: one, the type, with a yellow abdomen like that of the female, the other, a variety, with a black abdomen. Here we seem to have only the variety. *Abbreviata* is closely related to it, and is found at Cambridge; a female taken by Mr. Jenkinson in his garden and kindly given me by Dr. Sharp bears the date 20.8.02.

Dorsalis and *bergenstanmi* are both very rare. Of the former I took a pair *in cop.* at Woolhope 28.5.98, and of the latter a female 28.7.05 in Stoke Wood. The end of the abdomen is rather curiously truncated in the females of these two species, making it at first sight hard to say, without the other sex at hand for comparison, whether

the specimen is male or female. The better plan therefore is to note the relative proportions of the abdominal segments, the 2nd and 6th being distinctly lengthened in the male, and of much the same size as the others in the female.

Domestica. Altogether nine males have been met with—eight of them on windows of my own house, and one under like conditions at Ledbury, the dates ranging from June 18th to July 22nd. It bears so striking a resemblance to *bergenstammi*, that the question at first arose, could it be the male of that species? But the presence of two pairs of dorso-central bristles on the thorax in the one case and of only one pair in the other was a character too important to be disregarded. Another equally good distinction lies in the proportions of the frons. In my female *bergenstammi* it is at least half as broad again as high, whereas in these male *domestica* it is scarcely one-third broader; reversing what otherwise is I think a universal rule, that where there is a difference in this respect between the sexes, the male has the broader or lower frons. Becker also says that the abdomen of male *bergenstammi* is dusted with grey, which is certainly not the case in *domestica*; neither does he make any allusion to the glossiness of the 6th segment and its broad whitish margin, which are so conspicuous in the new species.

Fennica is an early summer insect (May and June). I possess five males, and the only female I have seen came from Mr. Malloch, who took it at Bonhill 28.5.06. Its condition, however, was poor, which was disappointing, as its completely yellow legs were so different to the dark brown ones of the male. The bristles on the 2nd thick vein, however, showed conclusively that it belonged to the *thoracica* section, whilst the presence of two spines only on the hind tibiæ, one in the upper third and the other close to the tip, pointed almost as conclusively to its being *fennica*.

Of *femorata* I have seen only two females, both from Scotland: one, kindly lent by Mr. Verrall, was found under seaweed at Nairn by Col. Yerbury 5.7.04; the other was taken by Mr. Malloch 12.5.06 at Bonhill.

The males of *citreiformis* and *vitripennis* frequent the umbels of *Heracleum spondylium* and *Angelica sylvestris* in the autumn. The former is fairly common with me, but local; the latter, on the other hand, is scarce. The female of neither have I ever taken myself, but Mr. Collin kindly gave me a female of *vitripennis*, which he had bred with others from a humble bee's nest.

DRILUS FLAVESCENS, Rossi, ♀, AND ITS LARVA.

BY E. G. BAYFORD.

On the evening of September 2nd, 1905, my friend, Mr. A. Whitaker, who had just returned from a holiday which he had been enjoying at Deal in the company of Mr. G. T. Porritt, gave me a curious larva which he had found whilst looking for bats in a cave on Folkestone Warren. The following day I examined it more closely, and by the aid of the description given by Westwood (Int. Modern Class. Insects, I, p. 253) I determined it as that of *Drilus flavescens*. To corroborate this I went out in search of *Helix nemoralis*, and was not long in finding a specimen, which, along with the larva, I placed under a small bell-glass. The larva, which was very active, became strongly excited on discovering the presence of the *Helix*, and, making a sudden rush upon it, quickly mounted the shell. Its action was precisely that of a cat after a stealthy approach towards a bird which it has marked down for its prey—one excited rush decides the event. Bending round the shell it quickly made an entrance by inserting the head and two or three following segments at the base of the columella. The *Helix* realising its danger at once withdrew into its shell, drawing in with it still more of the larva. Quickly emerging it attempted to thrust out its enemy, but was powerless to do so. It repeated these tactics several times, but each time it withdrew the larva pressed in still further. At last it gave up the struggle and remained in its shell. Meanwhile the larva had set to work devouring its victim, the juices of which could be seen quite clearly through the transparent integument passing down the gullet. Whilst watching the strenuous exertions of both parties in the combat I was struck with the great advantages, both offensive and defensive, which the possession of the setigerous tubercles gives the larva. So far as I can learn there is no adequate description of the larva. In Canon Fowler's "British Coleoptera" the description is obviously condensed from Westwood (*l.c.*) to which, indeed, the student is referred. Since the publication of the former work an excellent "Life History of *Drilus flavescens*, by Mr. L. R. Crawshay, M.A., Oxon," has appeared in the Trans. Ent. Soc., 1903, pp. 39—51, with two plates. Although I had determined my larva by the aid of Westwood's description, the latter is so inaccurate that I drew up another as complete as I possibly could without injuring my specimen. As a consequence I have laid more stress on the obvious features of which Mr. Crawshay has treated lightly, and perforce omitted the more minute but none the less important structural peculiarities which he has so fully described.

Linear, parallel-sided, scolopendroid, capable of very considerable extension. Length, 18 mm. Breadth, 2 mm.: measurements taken when the larva was quiescent. Antennæ, 1st joint, creamy-white; 2nd and 3rd reddish-testaceous; head reddish-testaceous.

Upper surface: segment 2, yellowish-testaceous with a small rectangular blackish patch on each side; 3-12 same as segment 2, but with blackish patch much larger, leaving only a central line yellowish-testaceous.

On segments 5-12 there is on each side a double row of large tubercular projections, creamy-white in colour, forming a succession of V's, at the base of each of which, on the inside, a spiracle is placed. These tubercles are armed with long spiny setæ of a reddish-testaceous colour. The spiracles are also defended by similar outstanding setæ. Under-side, creamy-white with two black streaks on each segment.

The 13th segment is produced in a downward direction forming an ambulatory stump, and has on each side a tubercular projection, horizontal with a backward direction.

Westwood apparently had not a specimen before him when he made the figure and drew up the description, for he erred in placing the tubercular processes on the under-side. In the specimen from which the above description was drawn up the lower process of the V was horizontal, the upper at an angle with it of about 45° .

When the larva had thrust itself halfway into the shell the spiny setæ seemed to cause the *Helix* very great annoyance, forcing it to shrink from contact with them and so enabling the larva to press in still further. The *Helix* then threw out a quantity of slime, but this was kept from the spiracles by their setæ, and also by the processes themselves and their setæ. It was thus impossible for the *Helix* to press its body or force its slime upon the spiracles of its enemy and so smother it.

By the 7th the snail appeared to be almost wholly consumed. The abdomen of the larva was now distended to an enormous extent, so much so, that the normally upper surface (which being of a harder consistency was incapable of lateral expansion) had become the central half of the upper surface. The tubercular processes had, of course, been forced round from dorso-lateral to dorso-central positions; the upper ones, once at 45° , were now vertical; the lower ones, formerly horizontal, were now at 45° . The hinder portion of the larva, for that was all of it that could now be seen, even when some of the shell had been snipped away, looked much like an *Oniscus* in general outline, and had also assumed a much darker colour. The rejectamenta was a deep yellowish liquid having a strong fishy odor.

From this date no movement except a slight contraction of the segments at intervals was noticed.

Although I looked at it daily I was not fortunate enough to see the change to the pupal state. Apparently it was in this state less than 24 hours, and emerged as a fine female on May 20th this year.

POLIETES HIRTICRURA, MEADE, ♀.

BY JAMES WATERSTON, B.D., B SC.

Writing in 1897, Meade has still to say of this rare species: "only the male is known." Since then the additional examples taken have been few and all of them males. I therefore avail myself of the opportunity of describing a ♀ recently secured in Arran.

The usual generic character for *Polietes*, Rnd., viz., facial ciliation, is less marked in *hirticrura* ♂ than in either of its congeners. In the ♀ this feature is still less obvious, which led us to seek some additional differentia for the ♀ ♀ of *Polietes*, Rnd., from those of the closely allied *Hyetodesia* side. Two points may be referred to, viz.:—

- (a.) The presence in all three spp. of a pair of decussating bristles below the ocellar triangle. This is rare in *Hyetodesia*.
 (b.) Between the upper fronto-orbital bristles and the eye margin there are on either side in the ♀ *Polietes* 2-3 stout curved bristles directed downwards. These are absent in the ♀ *Hyetodesia* where the line they form is occupied by a row of fine hairs.

In general the ♀ is not so dark looking as the ♂. Ground colour, silvery-grey with a bluish tinge. On this the thoracic markings stand well out, as in *P. lardaria*.

Head:—Eyes long haired, the hairs of a tawny colour. Frontal stripe, velvet black. Face and cheeks silvery, darker behind the eyes. Antennæ black. Arista swollen basally and long haired for nearly its whole length.

Thorax:—Four black stripes well defined to beyond the suture. Four dorso-central post sutural bristles. Scutellum black, with a pair of silvery patches near the apex.

Wings:—Dark tinged, as in the ♂. Bases with calyptra orange. Margin of the latter deep orange, with paler ciliation. Cross veins slightly clouded. Edging of the postrial lighter than in ♂.

Boundaries of subcostal cell, radial, anal and axillary veins yellow.

Halteres:—Knob blackish-brown; stalk lighter.

In describing the chaetotaxy of the legs, the system recently advocated in this Magazine by Mr. Grimshaw has been followed (see Ent. Mo. Mag., second series, vol. xvi, p. 173).

I have here had the benefit of Mr. Grimshaw's revision and suggestion, for which my heartiest thanks are due. Of course the detailed characters must be of very unequal value, but I have not at present investigated which are generic and which specific.

Fore-leg:—Femur. Row of dorsal bristles, two of which are long, erect, curved but beyond one-half and at two-thirds respectively. Between the latter and the apex,

and almost on the same surface, are two sub-erect specially directed bristles. Complete rows of long postero-dorsal and postero-ventral bristles. Anterior surface merely ciliated. Tibia strong, postero-ventral spine at two-thirds.

Mid-leg:—Femur. Ventral row, 4-6 irregular bristles, reaching to one half, thence to apex coarsely and evenly ciliated. Anterior row, short bristles to one-half. Sub-apical whorl of bristles, complete save ventrally. Tibia, slightly narrowed below knee. Anterior spines beyond one-half and two-thirds. Irregular row—about six—postero-dorsal spines. Two posterior spines opposite anterior at beyond one-half and two-thirds.

Hind-leg:—Femur. Complete row, sub-equal, short, antero-dorsal bristles, a similar one of longer bristles placed antero-ventrally. Femur curves anteriorly and is almost bare posteriorly, but for a tuft of loose bushy hairs at the base.

Tibia.—About nine short anterior spines. Five similar antero-ventrally, the first before one-half, the last subapically placed. Row of short posterior-dorsal bristles along the whole length. At two-thirds a long spine occurs, and from this to apex are about twelve very short bristly hairs, forming a coarse ciliation. Whole tibia slightly curved. All tibial species show an irregular whorl of spines.

I took this female from a bramble leaf in Glen Ashdale, near Whiting Bay. It was very conspicuous among a host of *P. lardaria*, E., *Morellia hortorum*, Pm., and probably also *P. albolineata*, Fm. But being without a net the presence of the last I was unable to settle. The ♂ has twice come under my observation, on both occasions in company with its congeners.

References:—Ent. Mo. Mag., 1887, Jan., p. 179.

Entomologist, 1890, p. 152.

List of Brit. Anthomyidæ, 1897, pp. 3-4.

Ann. Scot. Nat. Hist., 1904, p. 193.

Edinburgh:

Sept. 25th, 1906.

TRIENODES REUTERI, McLACH., A SPECIES OF *TRICHOPTERA*
NEW TO BRITAIN.

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

The credit of taking this interesting addition to the British list is due to my friend Mr. William Evans, who has already been successful in finding some unexpected species of *Trichoptera* in his investigation of the Fauna of the Forth area. This insect was met with by him on July 7th at the River Laggan (Forth), just at the village of

Aberfoyle. On the 14th of the same month we visited the locality together, and again found the species, but the weather was unfavourable, and the take restricted accordingly, including but few males.

In recording this species as *T. reuteri*, some explanations are necessary. *T. reuteri* was described from three ♂♂ (one from Ostrogothia, Sweden, and one each from Helsingfors and Aland, Finland). It was subsequently found at Esbo in the latter country, and Sahlberg gave me a ♂ from that place. This ♂, although rubbed, agrees with McLachlan's description as far as its condition allows comparison. He says the insect deceptively resembles some ♀ examples of *Æcetis furva*. The present insect is very different, and in appearance superficially resembles a small form of *T. conspersa*. The appendages are, however, similar to those of *reuteri*, although the inferior appendages in the Scottish insect are apparently less closely approximated when seen from beneath than in the Finnish *reuteri*. The apex of the penis is also said to be slightly upturned in *reuteri*, while in our examples it is generally rather upturned; but the character is not stable.

For a proper understanding of the three forms, *conspersa* and *reuteri* from Finland, and the Scottish insect now referred to the latter species, a full set of preparations of the genitalia of each is desirable, but in the meantime the requisite material for this is lacking. In certain groups of *Leptoceridæ* little or no importance can be attached to coloration.

13, Blackford Road, Edinburgh:

October 25th, 1906.

Lathrobium elongatum, L., v. *nigrum*, var. nov.—When studying the sexual characters of *Lathrobium brunnipes*, F., a short time ago I came across two specimens in my series with the 7th ventral segment of the abdomen very differently formed than in the rest. On examining these more carefully they proved to be a black form of *Lathrobium elongatum*, L., differing, of course, in many respects from *L. brunnipes*. One has uniformly black elytra with the apical half of the suture very narrowly and obscurely pitchy; in the other the apical third of the elytra shows a very slight trace of pitchy colour. One is labelled Slapton Ley; April, 1902," the other "South Devon; April, 1902," but the latter may also have been taken at Slapton Ley. Mr. Keys tells me that the dark form of *Lionychus quadrillum*, Duft., having no trace of the yellow markings on the elytra occurs fairly commonly at Slapton, but that it appears to be very rare elsewhere. I have thought it best to give the *Lathrobium* a varietal name to warn collectors from mistaking it for *L. brunnipes* as I did.—NORMAN H. JOY, Bradfield, near Reading: November 5th, 1906.

Coleoptera captured in Sherwood Forest, June, 1906.—Notwithstanding the dryness of the past summer, and the consequent dearth of insects generally, the following list of captures by Dr. Chaster or myself at Sherwood may prove of interest:—*Anitys rubens*, Hoffm.: we were delighted to find a few examples of this species, together with several of its larvæ,* in a very rotten damp knot of an old fallen oak, which also produced *Dorcatoma chrysomelina*, Stm., and *Xylophilus oculus*, Gyll. *Pyropterus affinis*, Payk.: many specimens, from the dry rotten débris of an old oak stump, either crawling sluggishly about or hiding in the crevices of the bark. *Cistela ceramboides*, L.: two females taken at rest by Dr. Chaster on a fallen oak, and a pair beaten by myself from an old oak; last year I captured two males and two females in the same way. *Liodes orbicularis*, Herbst, *Amphicyllus globus*, F., and *Aspidiphorus orbiculatus*, Gyll.: frequent, about fungi. *Callidium variabile*, L.: abundant under bark of fallen oak branches. *Corymbites æneus*, L., a few specimens, and *Cryptocephalus coryli*, L., females only, on young birches. *Ptilinus pectinicornis*, L.: abundant, under beech bark, boring into the solid wood, females only seen. *Rhizophagus nitidulus*, F., numerous examples, *Agathidium nigripenne*, Kug., and *Pediacus dermestoides*, F., sparingly, under beech bark. *Mycetochares bipustulata*, Ill.: under bark of very old rotten oaks. *Athous rhombeus*, Ol., and *Haplocnemus impressus*, Marsh.: beaten out of old oaks.—J. KIDSON TAYLOR, 45, South Avenue, Buxton: October 19th, 1906.

Otiorrhynchus morio, F., v. *ebeninus*, Gyll., in *Sutherland*.—In the early part of June, 1901, while on a fishing and botanising expedition in this far northern county, I met with this interesting rarity. On the 6th of the month I had left my friends in their boat to continue their sport, and while walking on the road passing along the shore of Loch Assynt, about five miles from Lochinver, I found an *Otiorrhynchus* crawling on the road. It occurred where a belt of dwarf, stunted Scotch pines crosses and for some distance borders the road. On my return home I found that the insect differed from both *O. tenebricosus*, Herbst, and *O. fuscipes*, Walt., in that the legs and antennæ were black and the punctuation of the clytra quite different. Last month I sent one of the specimens to my friend Mr. Newbery, who now returns it as *O. morio*, F., v. *ebeninus*, Gyll. He says: I am returning the *Otiorrhynchus* as *morio*, v. *ebeninus*, as I thought; it agrees with some in the General Collection at the British Museum, and also fairly well with the specimen in the Power Collection, except that yours is smaller. I have no doubt as to the correctness of the name, and think your capture should be recorded, as the species has not been taken for many years, and I had doubts myself as to whether it was not extinct.—ID.

Medon castaneus, Grav., at *Guildford*.—Amongst a few beetles captured by my sons at Guildford, on October 24th, the following are noteworthy:—*Medon castaneus*, Grav., *Notiophilus rufipes*, Curt., and *Ocyopus compressus*, Marsh., all found under stones, or at the roots of elms, in a sandy field. *Oxytelus fairmairei*, Pand., and *Thalycra sericea*, Sturm, were also taken by them in the same district on September 1st.—G. C. CHAMPION, Horsell, Woking: November 10th, 1906.

* Some of these have since been reared by Dr. Chaster.

Gyrinus urinator, Ill., in the New Forest.—On the 28th of last month I took several specimens of *Gyrinus urinator*, Ill., in the neighbourhood of Brockenhurst. The insects were apparently resting on duckweed, beneath the surface of a running stream. I have not seen any record of the species from the New Forest.—S. G. RENDEL, Broughton, Lyndhurst: October 14th, 1906.

Anisotomidæ, &c., at Oxford.—During the last fortnight I have taken, by sweeping under the beech trees at Wytham Park, a fine series of both sexes of *Anisotoma cinnamomea*. More than half the number were taken on November 3rd, a date when the sweeping-net is usually laid aside for the season; but on that day it produced at least 40 species of *Coleoptera*, including *Quedius puncticollis* (1), *Anisotoma rugosa* (1) and *litura*, black *Hydnobius punctatissimus*, *Trachyphlæus alternans*, *Mantura matthewsi*, &c.; *Pediacus dermestoides* also turning up again under bark. At Tubney, on October 20th and 27th, I got two fine ♂s of *Anisotoma rugosa* (one on each day) by sweeping under fir trees; also *A. triepkei*, *Stenus circularis*, *Colon viennense* and *zebei* (♂), *Ceuthorrhynchidius terminatus*, and *Chrysomela didymata* in plenty on *Hypericum quadrangulum*.—JAMES J. WALKER, Oxford: November 6th, 1906.

Sitaris muralis, Forst., near Oxford.—My first acquaintance with this species in the neighbourhood of Oxford was in September, 1903, when, looking for *Polia chi*, I found a single specimen on an old stone wall. Again, on October 1st, 1905, two dead specimens were obtained from a spider's web on the stone wall of a cottage, pierced by many holes of the Mason Bee, *Podalirius (Anthophora) pilipes*, Fab. The two localities were about a mile and a half apart. Up to this date no systematic attempt had been made to ascertain the relative abundance of the species. Accordingly, on August 18th last, the cottage wall was examined, and a female obtained just outside one of the burrows; another female was sticking to the wall, crushed and flattened, probably by some passer by. From this date until September 16th, when the last specimens were taken, frequent visits were paid to this and many other walls containing colonies of the bee. On nearly every occasion one or more specimens were obtained. A final examination of all the walls on September 22nd was entirely unsuccessful; and it appeared evident that the season for the imagines was over. It was not until after several visits that I hit upon the right method of searching. This was suggested by finding a female in one of the burrows; and on all subsequent occasions as much attention was given to the holes as to the general surface of the walls. The results entirely justified this procedure, for in the end more individuals were taken from the burrows of the bee than from the wall outside. On the only occasion when the species was seen *in copulâ* two pairs were found in adjoining holes; in both instances the males were nearer the mouth of the burrow. At another time two males and one female were found in a single burrow. On several occasions a large female was observed with the posterior end of her abdomen at the very mouth of the burrow. When one of these was placed in a box with a male, copulation took place almost immediately. All the

above mentioned facts point somewhat strongly to the inference that pairing invariably takes place in the comparative security afforded by the burrow.—A. H. HAMM, 22, Southfield Road, Oxford : *November 9th*, 1906.

Harpalus honestus, Dufts., at Box Hill.—I have in my collection a ♂ specimen of the bright green form of *Harpalus honestus*, Dufts., one of a pair taken about 30 years ago at Box Hill, in company with the more ordinary black or blue-black form *ignavus*, Dufts. ; the ♀ was given to Mr. T. R. Billups, who was with me at the time. The green form has not occurred to me since, though *ignavus* is still to be found in the same place.—W. WEST, 8, Morden Hill, Lewisham : *October 17th*, 1906.

Catoptria aspidiscana, Hb., in Kent.—Amongst some *Micro-Lepidoptera* received for identification from Mr. Edwin Goodwin of Watlingbury I was delighted to find a perfect example of *Catoptria aspidiscana*. The moth (a ♀) was captured in 1904 in the Maidstone district. As there is no published record of this species occurring in Kent, Mr. Goodwin is to be congratulated upon making a very interesting addition to our county list. The capture is of further interest as demonstrating how one of the *Tortricina* may be overlooked even in a county so well worked for them as Kent has been. I know this moth has been diligently sought after in many places in the county, where its food-plant (*Solidago virgaurea*) grows in the greatest profusion, and under very varied conditions. It would appear that *C. aspidiscana* must be as local in Kent as it is reported to be in its few recorded habitats, viz., Lancashire, Westmoreland, Hereford and Gloucestershire.—B. A. BOWER, Chislehurst : *November 5th*, 1906.

Tortrix pronubana, Hb., reared from British larvæ.—While at Eastbourne in September last I took three or four larvæ and a few pupæ of a *Tortrix* from a *Euonymus* hedge that was growing in the garden of a private house. The larvæ were feeding between leaves spun together, on the tender shoots thus enclosed, and the pupæ were in tough silken webs between the leaves where the larvæ had fed. As I did not know any *Tortrix* specially addicted to *Euonymus*, I concluded that if they were not one of our common polyphagous species, and the lateness of the season hardly appeared to favour such a supposition, they would probably be *T. pronubana*, which I knew had been found on *Euonymus* in Guernsey ; all doubt, however, was set at rest by the emergence on September 20th from one of the pupæ of an undoubted *T. pronubana*, and I have since reared approximately a dozen specimens, including both sexes. Although the species occurred but sparingly, it is interesting, after the capture of the two imagines at Eastbourne and Bognor respectively in the autumn of last year (Proc. Ent. Soc., 1905, p. lxiii, and Ent. Mo. Mag., vol. xli, p. 276), to know that it is breeding in this country, and it is to be hoped that now it has once obtained a footing this pretty little species may become firmly established as a British subject.—ROBERT ADKIN, Lewisham : *November*, 1906.

Eupithecia consignata, Bork.: a correction.—In the obituary notice of the late Mrs. Hutchinson, I wrote (*antè*, p. 43) as follows :—“ It is worthy of mention

that, after obtaining ova from a female captured in 1874, she, with her daughter's assistance, continued to rear *E. consignata* until the time of her death, no fresh blood being ever introduced." The accuracy of this statement having been questioned by an esteemed friend, I wrote to Miss Hutchinson, on whose authority it had been made, and a long search through notes made at the time has shown that her previous belief is, to her regret, not quite in accordance with the facts, which are as follows. In 1887 Mrs. Hutchinson received from Dr. J. H. Wood, of Tarrington, a single larva, beaten from hawthorn, of *E. consignata*, which yielded a ♂ imago in the following year: this ♂ was paired with two ♀ ♀, and at least 13 eggs were obtained, which, however, were not kept separate from the many fertile ova laid at the same time as the result of the unions of various inbred moths. With this solitary exception, no fresh blood has ever been introduced, and yet, in spite of this, the inbred race, dating originally from 1874, still continues to flourish, and shows no signs of any deterioration!—EUSTACE R. BANKES, Norden, Corfe Castle: November 7th, 1906.

Apanteles formosus, Wesm.—The late Rev. T. A. Marshall, in his Monograph of the Braconidæ, described a ♀ I bred from *Tæniocampa stabilis* as the ♀ of *Apanteles formosus*, but had his doubts about it at the time, because the cocoon from which it was bred was "a white cocoon of the usual appearance," whereas the cocoons from which I bred several ♂ ♂s were all pedunculated. Since then Mr. R. C. Bradley sent me both sexes of *A. formosus* bred from larvæ of *Ourapteryx sambucaria*: both cocoons were pedunculated, that of the ♀ of *formosus* being like that of the ♂ described by Marshall both in form and colour. How the foot stalk (peduncle) is made is not recorded by Marshall; he simply says: "This (the cocoon) is entirely unlike anything constructed by a Braconid." The larva, after making at the base a silken pad on the upper surface of the leaf, builds up the foot stalk in three sections, which are so united that you cannot detect where one begins and the other ends in the stem; at the top, the cocoon is made a little on one side. It is worth noting that all, so far as I have seen, have curves in the stem, which I believe are caused by the weight of the larva on the newly-formed work, which at the time is not sufficiently dry to carry it. Marshall says if the ♀ he described is not the ♀ of *formosus* it may be "The unknown *Ichneumon intercus*, Schr. (Enum. ins. Austr., 764), as its description, agrees very closely with the ♀ of this insect." Should it not be that insect, I propose the name of *marshallii* for it.—G. C. BIGNELL, Saltash: November 2nd, 1906.

Aculeate Hymenoptera in the New Forest, Cornwall, &c.—Among my rarer captures amongst the *Aculeates* this year in the New Forest, Cornwall, &c., the following are perhaps worth recording:—

New Forest, July.—*Pompilus unicolor*, *P. bicolor*, *P. wesmaeli*, *Stygnus solskyi*, *Pemphredon morio*, *Oxybelus mandibularis*, *Nomada obtusifrons*, on the flowers of bramble, *Nomada roberjeotiana*, visiting nests in bracken-covered sandy soil, *Stelis octomaculata*, ♀'s on *Potentilla*.

At Par, Cornwall, in August.—*Methoca ichneumonides*, one ♂ on wild parsnip, and on the same plant *Crabro saundersi*, one ♂.

On my return to Liverpool I visited the Wallasey Sandhills on two occasions, and succeeded in obtaining several ♀ and one ♂ *Celioxys mandibularis* flying round burrows of *Megachile maritima*. I also picked up about a dozen shells of *Helix nemoralis* containing cocoons of *Osmia aurulenta*.—G. ARNOLD, University of Liverpool: October, 1906.

Phora sordida, Zett., in Dumbartonshire.—On September 22nd last I took, in a wood near here, from decaying fungi several species of *Phoridae*, among which I found two ♂♂ and two ♀♀ of *Phora sordida*, Zett., a species not hitherto recorded from Britain. It is allied to *P. rufipes*, but has the basal half of the hind femora ciliated beneath, and is devoid of the characteristic scale-like abdominal hairs that are present in that species. Dr. J. H. Wood and Mr. J. E. Collin have seen a ♂, and agree in the identification of the species.—J. R. MALLOCH, Bonhill, Dumbartonshire: November, 1906.

Review.

A PRELIMINARY LIST OF DURHAM DIPTERA, WITH ANALYTICAL TABLES: by the Rev. W. J. WINGATE. Trans Nat. Hist. Soc. Northumberland, Durham, and Newcastle-upon-Tyne. New Series. Volume ii. 416-pp., 7 plates.

One would never suspect from the title that this volume was an attempt to supply an English work on *Diptera*, whereby a beginner might be able to get a general idea of the Order, and make an attempt to name his captures; but such being the case, it should appeal to all those who have been waiting for some such publication before commencing the study of this interesting Order.

A few short notes are given at the commencement upon collecting and preserving specimens, followed by an explanation of the numbering employed in the tables, &c., and a description of the terms used in describing the exterior parts of a fly, with an index; but the bulk of the volume is composed of analytical tables of the families, genera and species. These tables are not limited to the species occurring in Durham, as one would gather from the title, but even contain many species which have not yet been found in Britain, while many British species are not included. The system of numbering used in the tables, with the repetition of the distinctive numbers for each family and genus at the top of every page, makes these tables very easy of reference, but the tables themselves, being mainly compilations with many of the genera and species quite unknown to the author, are necessarily somewhat untrustworthy, and should be used with much caution.

The author has felt obliged to introduce a new system of numbering and lettering for the veins of the wing, and falls into the common error of considering the mediastinal and subcostal as branches of one vein (his VI), whereas they are two distinct veins with two distinct roots, though the mediastinal is often rudimental; he seems to have overlooked Comstock's system, an elaboration of which would have answered his purpose of brevity and been morphologically more correct.

One notices various names of genera and species incorrectly spelt, and the author should have been aware that the life-history of *Lipara* is well known, while a reference to Zetterstedt's "*Diptera Scandinavica*," vol. xiii, p. 5019, would have shown him that there is such a name as *Rhamphomyia fumipennis*, Zett.

In the present state of our knowledge of the *Diptera*, the formation of analytical tables for our British species with any degree of accuracy would be an exceedingly difficult task, the author of the work under review is, therefore, to be congratulated upon boldly attempting such an undertaking, and if the result induces only a few more collectors and students to collect and study this Order of Insects, his work will not have been in vain.

Societies.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: The Opening Meeting, of the session was held in the Society's rooms at the Royal Institution, Colquhoun Street, Liverpool, on Monday, the 15th October.—Mr. RICHARD WILDING, Vice-President, in the Chair.

In the Order *Lepidoptera*, Mr. F. N. Pierce, F.E.S., showed a case of varieties of the common magpie moth, *Abraxas grossulariata*, from Wallasey, some of the forms being of exceptional interest. Mr. Prince, the same species together with other insects from Wallasey. Dr. Edwards, two drawers of *Lepidoptera* from Lancashire and Devon, including, among others, short series of *Limenitis sibylla*, *Caligenia miniata*, *Epione apiciaria*, *Geometra papilionaria* and *Cidaria silaceata*. Mr. B. H. Crabtree, F.E.S., a couple of cases containing beautiful bred series of *Odontopera bidentata*, ab *nigra*, from Manchester, *Heliothis peltigera* from Sidmouth, *Boarmia repandata*, *Agrotis ashworthii*, and *Epunda lichenea* from N. Wales, and many other interesting species. Mr. R. Tait, jun., long series of bred insects showing variation, *Agrotis agathina*, *A. ashworthii*, *Boarmia repandata*, and *Cleora licheneria* from N. Wales; *Thecla quercus T. betulæ*, and *Angerona prunaria* from Hants; *Aplecta nebulosa* var. *robsoni*, and a beautiful specimen of *Acronycta alni* from Delamere, the last taken as a pupa from an alder. Dr. Bell of New Brighton showed cases of life-histories illustrating the early stages of many of our rare as well as common moths, mounted upon their food plants; also the results of four days' collecting in the Fens. Mr. W. Mansbridge, a series of *Aplecta nebulosa* and its black variety *robsoni* bred from ova deposited by a wild black female; a long series of *Macaria liturata* and var. *nigrofulvata*, both from Delamere; a series of *Cabera pusaria* var. *rotundaria* from Knowsley, and a series of *Rumia luteolata* from Allerton showing seasonal variation between the spring and autumn broods. The last Member also read a communication to the Society upon the general causes of insect variation. In the *Coleoptera* Dr. Corbett of Doncaster showed series of various species of beetles from that district, including the very rare *Carpophilus secpustulatus*. Messrs. J. F. Button and Geo. Ellison, interesting varieties of *Cicindela campestris* (the common tiger beetle), *Agabus nebulosus*, *Cælambus novemlineatus*, *Otiorrhynchus blandus*, and many others from the Orkney Islands collected during a visit last summer to that locality. Mr. Geo. Ellison further exhibited two specimens of the Orkney vole, *Microtus orcadensis*, a new British mammal, together with its parasitic fleas *Ceratophyllus penicilliger*, *C. gallinæ*, and *Typhlopsylla agyrtes*, and stated that all these parasites were well known to occur on the domestic fowl.—H. R. SWEETING and W. M. MANSBRIDGE, *Hon. Secretaries*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY :
Thursday, October 11th, 1906.—Mr. R. ADKIN, F.E.S., President, in the Chair.

Mr. Kaye exhibited a specimen of the extremely rare Thyridid, *Dracenta rusina*, from Trinidad, resembling an irregularly injured leaf, the surface of which had been eaten by larvæ. Mr. Sichi, the pupæ of *Pieris daplidice*, and a photograph of the larva by Mr. Tonge; they were from Geneva ova. Mr. Step, a larva, probably of *Prodenia littoralis*, found feeding inside the skin of a banana. Mr. Jäger, (1) fine series of dark green and light yellow forms of *Bryophila muralis* from Starcross; (2) *Heliothis peltigera* bred from S. Devon larvæ; (3) *Agrotis vestigialis*, with unusually clear white markings, taken at sugar at Starcross; with (4) specimens of *Laphygma exigua*. Mr. R. Adkin, a series of *Peronea permutana* reared from larvæ feeding on *Rosa spinosissima*, from Wallasey. Mr. South, nearly full-fed larvæ of *C. (L.) exigua*, feeding on plantain, dandelion, and groundsel; they were from ova of a female taken at Kingston by Mr. Richards; (2) *Euchloë cardamines*, from larvæ fed on wallflower; for Mr. Hayward (3) a *Cabera pusaria* leaden-grey in colour, and the transverse lines obsolete; (4) a dark form and a red form of *Xylophasia monoglypha*; (5) an almost black *Tæniocampa incerta*; (6) a smoky-grey *Cymatophora duplaris*; a grey-brown *Grammesia trigrammica* with only very faint transverse lines; a unicolourous fuscous-brown *Ematurga atomaria*; and (9) several dark powdered and sprinkled forms of *Tephrosia crepuscularia* from near Burton-on-Trent. Mr. West (Greenwich), the extremely local Hemipteron, *Liburnia lepida*, from Esher. Mr. Barnett, varied forms, including var. *flavescens*, of *Xanthia fulvago* from Wimbledon. Mr. Hy. J. Turner, two extremely large *Argynnis aglaia* ♀s from Gavarnie, Pyrenees, with two ♂s from the Alps, extremely small, and var. *eris*, with typical forms of *Argynnis niobe*. Messrs. Main, Dennis, and Lucas, a large number of photographic slides of ova, larvæ, and imagines at rest.

Thursday, October 25th, 1906.—The President in the Chair.

Messrs. Harrison and Main exhibited bred series of large light forms and small dark forms of *Boarmia cinctaria* from the New Forest; and of *Spilosoma fuliginosa* from Cornwall. Mr. Newman (1) a *Drepana falcula* bred on October 25th with others; (2) long series of *Agrotis obelisca*, *Aporophyla australis*, and *Anchocelis lunosa* from the Isle of Wight; (3) very dark to very light forms of *L. exigua*; (4) very dark *A. segetum* and *A. saucia*; (5) *B. muralis* and *Polyommatus corydon* taken on September 16th in the Isle of Wight; (6) full-fed larvæ of *L. exigua*; (7) long series of var. *artaxerxes* of *P. astrarche* from Aberdeen; (8) fine series of *Lobophora hexapterata* from Bexley ova; and (9) short series of *Eupithecia togata* and *E. venosata* from N. Wales. Mr. Tonge, a photograph of a pear stem with a ring of ova of *Malacosoma neustria*. Mr. South, for Rev. W. Claxton, an *Aglais urticæ* with nearly the whole fore-wings whitish in ground colour; and for Mr. Hayward, a *Cerastis ligula (spadicea)*, with the left antenna duplicated, but both shorter than that on the right. Mr. Brown, a living *Mantis religiosa* from S. E. France. Mr. MacArthur, a *Mygale avicularia* from S. America, and an unusually large *Sirex gigas* from Mus Tor, Dartmoor. Mr. Barnett, short series

of *E. rectangulata* from Welling, all dark forms, and of *Hyria muricata* from Wanborough. Mr. West (Greenwich), short series of the until recently very rare Apions, *A. astragali* and *A. sanguineum*, from Oxford. Mr. Edwards, pupa of *Manduca atropos* from Shooter's Hill. Dr. Chapman, specimens of *L. argus* (*agon*) from N. W. Spain, very large, pale beneath, with fine red borders above. Mr. Adkin, a series of somewhat suffused specimens of *Acronycta leporina* bred from Abbott's Wood larvæ. Mr. Kaye, several broods of *Heemerophila abruptaria* from dark parents, and gave results of the breeding. Mr. Turner read a paper, "Further Notes on the genus *Coleophora*," and showed life-histories of *C. badiipennella*, *C. gryphipennella*, *C. artemisiella*, *C. argentula*, and *C. genistæ*.—H. J. TURNER, Hon. Secretary.

ENTOMOLOGICAL SOCIETY OF LONDON: Wednesday, October 17th, 1906.—

Mr. F. MERRIFIELD, President, in the Chair.

Mr. H. St. J. Donisthorpe showed living specimens of the beetle *Mononychus pseudacori*, and seed-capsules of *Iris fetidissima* containing further examples, found at Niton, Isle of Wight, where the species occurred commonly. Mr. A. H. Jones, specimens of *Pieris napi*, var. *bryonia*, *Argynnis thore*, *Erebia glacialis* ab. *pluto*, a small form of *Lycæna arion* from Arosa, Switzerland, at 6000 ft.; a variety of *Melanargia galatea* in which the dark patch on the under-side of the hind-wings was much enlarged, and two varieties of *Argynnis niobè* ♀, one very pale, the other of a bluish copper colour, taken on the Splügen Pass in July last; also specimens from other localities for comparison. Mr. W. J. Kaye, a fine example of the remarkable moth *Draconia rusina*, Druce, from Trinidad. The species bears a wonderful resemblance to a decayed dead leaf, the patches on the wings suggesting the work of some leaf-mining insect. Mr. E. M. Dadd, a number of Noctuids common to the British Isles and Germany, and remarking on the insular racial characters of some British *Lepidoptera* as compared with the predominant form occurring on the continent of Europe, pointed that whereas England was the home of many dark races, e.g., *Polia chi*, v. *olivacea*, *Amphidasys betularia*, v. *double-dayaria*, the dark forms of *H. abruptaria*, *P. pedaria*, &c., and it was all the more curious that in the 22 species of *Noctuæ* under review, the tendency was always for the English form to be lighter and the continental darker. Dr. F. A. Dixey, specimens of *Ixias baliensis*, Frühst., and *Huphina nerissa*, Fabr., from the Island of Bali, Malay Archipelago, observing that if his conclusions were well founded, the associations between the two must necessarily be Müllerian and not Batesian. Mr. S. A. Neave, a number of *Lepidoptera* selected from the collection made by him in N. E. Rhodesia, in 1904 and 1905, comprising the following rare and remarkable species:—*Melanitis libya*, Distant; *Liptena homeyeri*, Dewitz; *Pentila peucetia*, Hew.; *Catochrysops gigantea*, Trim.; *Crenis pechueli*, Dewitz, and *Crenis rosa*, Hew., which are evidently two distinct species; and *Crenidomimas concordia*, Hopff., the mimic of the last two species. Also two remarkable species of the genus *Aphæus*—including the female, so rarely taken in this genus—*Acræa natalica*, Boisd., and *Acræa anemosa*, Hew., with two remarkable moths showing a close

mimetic resemblance to them. The exhibitor stated that his collection should prove interesting as regards seasonal forms, especially in the *Aerwinæ* and *Pierinæ*, of which he showed an additional example.—H. ROWLAND BROWN, *Hon. Secretary*.

Wednesday, November 7th, 1906.—The President in the Chair.

Mr. Gerard H. Gurney, Keswick Hall, Norwich; Mr. Harold Armstrong Fry, P.O. Box 46, Johannesburg, Transvaal Colony; Mr. Frederick Albert Mitchell-Hedges, 42, Kensington Park Gardens, London, W.; Mr. Gordon Merriman, Trinity Hall, Cambridge; Mr. Percy A. H. Muschamp, 20, Chemin des Astères, Geneva; and Mr. Oswin S. Wickar, Crescent Cottage, Cambridge Place, Colombo; were elected Fellows of the Society.

Mr. W. J. Lucas exhibited a photograph of *Panorpa germanica*, practically immaculate, taken by Mr. E. A. Cockayne in Sutherlandshire, and a typical form for comparison, corresponding apparently to the *borealis* of Stephens. He also showed other species of the genus to illustrate the range of spotting on the wings of both sexes. Mr. G. C. Champion, a long series of a *Henicopus* (probably *H. spiniger*, Duval) from El Barco, Galicia, Spain, to demonstrate the dimorphism of the females: one form having wholly black hairs, and the other wholly white (sometimes with a few black ones intermixed), the males showing no variation in this respect. Mr. H. St. J. Donisthorpe, seven specimens of *Prionocyphon serri-cornis*, Müll., bred from larvæ taken in the New Forest in July, living larvæ, and a larva and pupa figured of the same, and read a note on the species. Dr. T. A. Chapman, a collection of butterflies, made in Galicia last July, including *Lycæna idas*, hitherto reported only from the Sierra Nevada. It occurred at an elevation of 4500 to 5000 feet, and only where there grew a species of *Erodium*; also specimens of *L. astrarche* from practically the same ground for comparison, and *L. argus* (*ægon*) from the same district. These, while very close to the vars. *hypochiona* and *bejarensis*, differ, however, in a certain proportion of the specimens presenting the red of the marginal "peacock eyes" on the upper surface of the hind-wings of the males. The Hon. N. C. Rothschild, branches of *Viburnum lantana* showing the mines of *Sesia* (*Egeria*) *andreniformis*, now discovered by him as the food-plant of the species in Britain for the first time. Mr. E. Dukinfield Jones, two species of moths of the Brazilian genus *Molipa*, identical in appearance, bred from widely different larvæ. He also showed photographs of the larvæ *in situ*. The President mentioned a bug, *Heterotoma merioptera*, Scop., which Mr. Cecil Floersheim had found very destructive to the eggs of *Papilio machaon* and *P. asterias* in his open-air butterfly house. He said that it was remarkable to find that one of the *Capsidæ* was a carnivorous species. Dr. F. A. Dixey, specimens of Pierine butterflies to illustrate the various conditions under which white pigment might be replaced by black. He said that in his opinion melanism, though it might arise as a variation or sport, owed its establishment to the principle of selective adaptation.—H. ROWLAND-BROWN, *Hon. Secretary*.

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"	68,	"	3	"	bottom,	for	" <i>Dryocæpetes</i> "	read	" <i>Dryocætes</i> ."	
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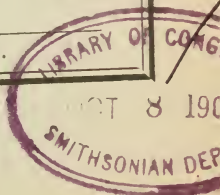
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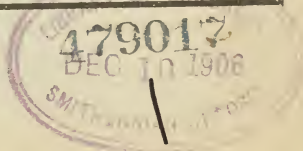
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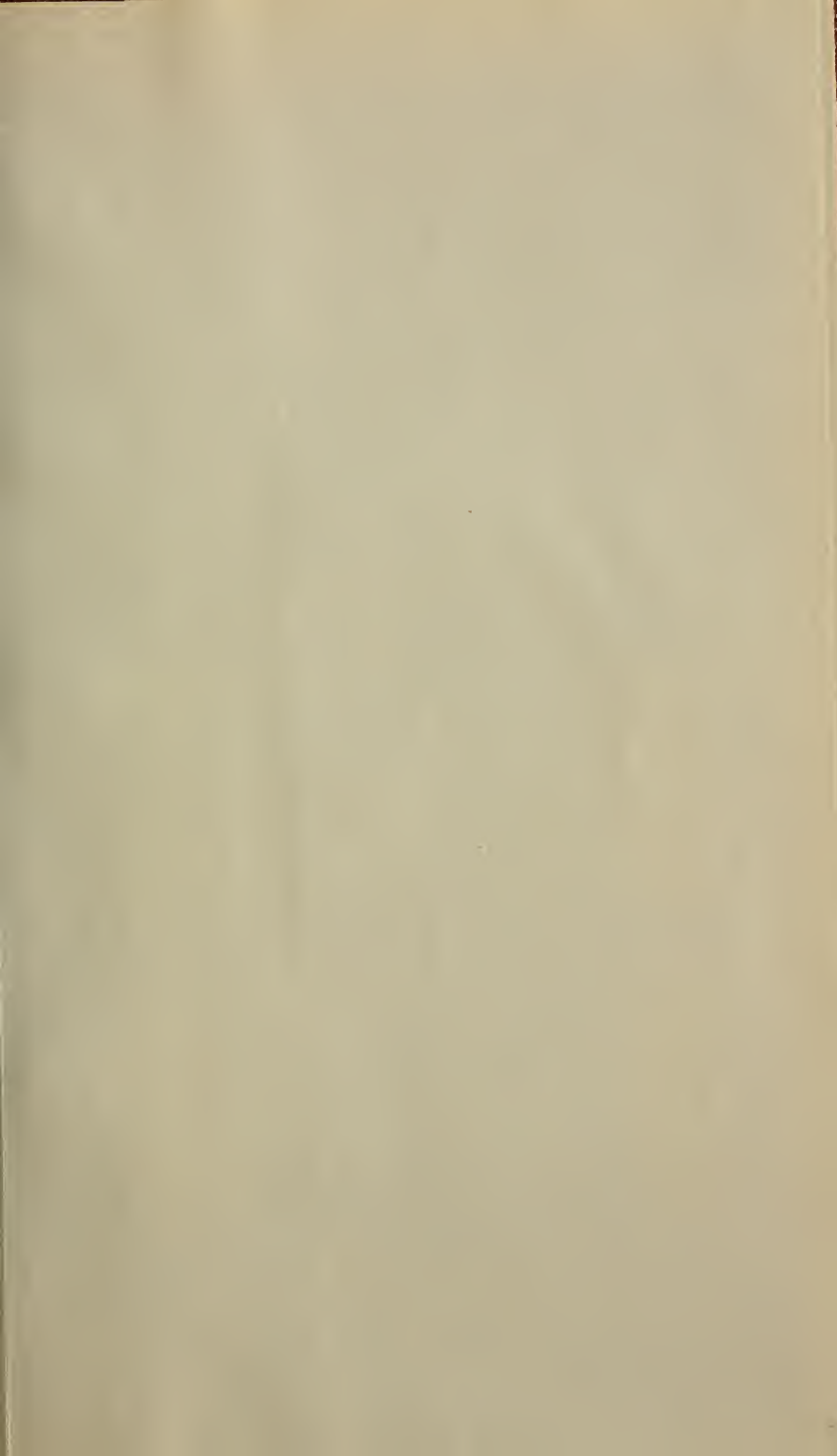
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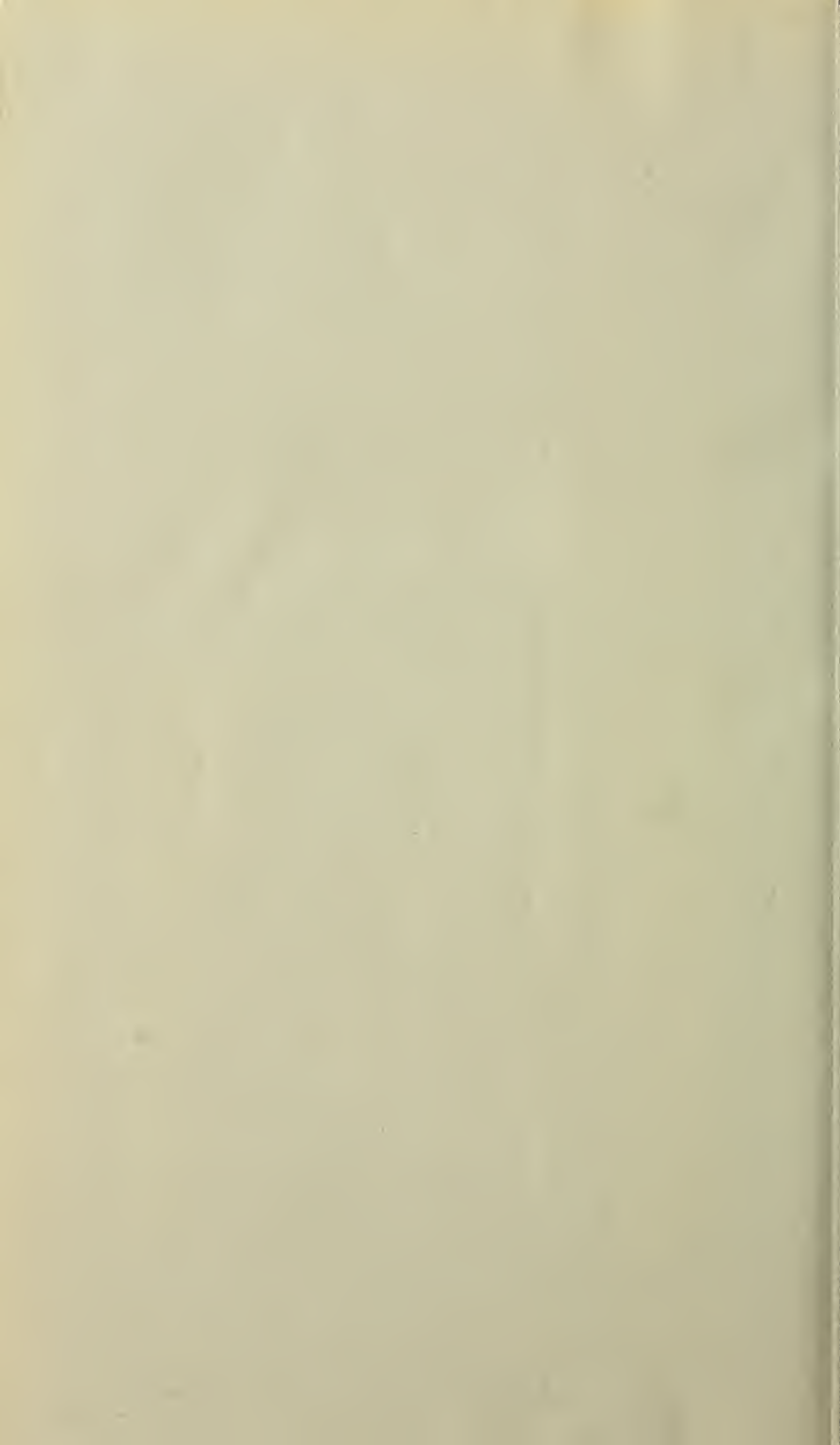
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