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

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ERRATA.

| | | | | | | |
|------|-----|------|----|-------------|------------------------------|-------------------------------|
| Page | 74, | line | 2, | from top, | for “ <i>T. heydeni</i> ” | read “ <i>T. heydeni</i> *.” |
| .. | 74 | .. | 6 | | for “ <i>T. erraticus</i> *” | read “ <i>T. erraticus</i> .” |
| .. | 77 | .. | 8 | | for “distribution” | read “distribution.” |
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| .. | 85 | .. | 1 | .. bottom, | for “acutel” | read “acutely.” |
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| .. | 107 | .. | 17 | .. top, | for “Jeanne” | read “Jeaanel.” |
| .. | 110 | .. | 20 | | for “ <i>Limerium</i> ” | read “ <i>Limmerium</i> .” |
| .. | 147 | .. | 8 | | for “Tangra” | read “Kangra.” |

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

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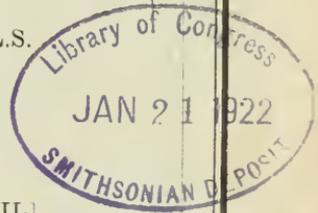
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MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 41 Queen's Gate, S.W.7 (nearest stations: South Kensington and Gloucester Road). January 18th, 1922 (Annual Meeting), February 1st. at 8 p.m.

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

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 7 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

THE LONDON NATURAL HISTORY SOCIETY, now meets in Hall 40, Winchester House, Old Broad Street, E.C. 2, on 1st and 3rd Tuesdays in the month at 6.30 p.m. General meetings 1st Tuesdays, Sectional meetings 3rd Tuesdays. (No meetings in July or August indoors, but field excursions instead.)

Hon. Sec.: W. E. GLEGG, The House, Albion Brewery, Whitechapel Road, E. 1.

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

ENTOMOLOGICAL SOCIETY OF HAMPSHIRE AND THE ISLE OF WIGHT.—This Society has developed from the Southampton and District Entomological Society. Meetings are held on the First Saturday afternoon of each month at Southampton, and other meetings will be arranged in important centres in the county from time to time. Activities being undertaken at the present time include the formation of a library, of collections of insects, and the compilation of a county insect fauna list. Will keen entomologists in the county who are interested please communicate with the

Hon. Sec., F. J. KILLINGTON, 1 St. Catherine's Road, Eastleigh, Hants.

THE

ENTOMOLOGIST'S MONTHLY MAGAZINE:

VOLUME LVIII.

[THIRD SERIES, VOL. VIII.]

ON THE OCCASIONAL OCCURRENCE OF BUTTERFLIES IN ICELAND;
WITH NOTES ON THE LEPIDOPTEROUS FAUNA OF THE NORTH
ATLANTIC ISLANDS.

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

The question as to the occurrence of any indigenous species of *Rhopalocera* in Iceland has for a long time formed a subject of discussion with those entomologists who are interested in the geographical distribution of insects. At first sight it would appear highly improbable that an island considerably larger than Ireland, lying within the influence of the Gulf Stream and thus possessing a climate much less severe than that due to its high latitude, can be entirely destitute of butterflies, several species of which are well known to extend their range to the northernmost limits of land. But all available evidence hitherto appears to show that no really native butterfly is found in Iceland, with possibly one exception to be referred to hereafter; and that most, if not all, the butterflies that have been observed within its limits are wanderers from more genial regions which have successfully braved the dangers of the stormy North Atlantic Ocean.

It is true that a great part of the interior of Iceland is altogether unsuited to insect life, consisting as it does of ice-covered mountain slopes, extensive fields of naked lava, and vast stretches of loose volcanic sand, all equally destitute of vegetation of any kind. Many parts of the island, however, especially in the north, are comparatively fertile and luxuriant, and can even boast of what may be called miniature forests of sallow, willow, and birch, the latter tree sometimes attaining a height of twenty feet or more. The Icelandic flora, too, is fairly rich, as, according to Dr. Lauder Lindsay (*Edinburgh New Philos. Journal*, new series, vol. xiv, pp. 64-101), it comprises no fewer than 426 species

of flowering plants. These conditions would appear to indicate the presence of at least a moderately extensive Lepidopterous fauna, which is not borne out by the results of such researches as have been made so far, and Iceland, in this respect, is probably one of the poorest regions of the whole earth. It must be remembered, however, that no equally accessible land of the same extent has been so inadequately explored from an entomological point of view. So far as I am aware, Iceland has never produced a single resident collector or observer of insects, and such knowledge of the subject as we possess is due to a very few of the numerous summer visitors from Europe—above all, to the late Dr. Staudinger, whose classical paper on the results of his expedition in 1856 (“Reise nach Island”: Stett. Ent. Zeitung, 18 Jahrgang, 1857, pp. 209–289) still remains the most important single work on the insect fauna of this great island.

The oldest record of Icelandic insects by N. Mohr (“Forsög til in Islands Naturhistorie”: Kjöbenhavn, 1786) includes 12 species of Lepidoptera; and the same number of species appears in a list of insects compiled by M. Paul Gaimard in the Appendix to the official narrative of the voyage of the French corvette “La Recherche” to Iceland and Greenland in 1835–6. This list is reproduced in Dr. C. W. Paijkull’s well-known work “Ein Sommer in Island” (English translation, 1868, pp. 355–6). Like the last, it mentions no butterflies, and is otherwise of not much value. In the “Table of Distribution” of the very useful little “Manual of European Butterflies” by the late W. F. Kirby, the following species are ascribed to Iceland—*Colias palaeno* L., *C. phicomone* Esp., and *Chionobas oeno* Bdv. (Boisduval); *Colias hecla* L. (Linné), *Chionobas jutta* Hb., and *Argynnis freyja* Thnb. (De Villiers et Guenée). From the known distribution of these species, it is very unlikely that any of them can occur in Iceland, and, as far as I am aware, no specimens exist in any collection, with the possible exception of the last-named butterfly, the case for whose occurrence in Iceland will be considered later on.

The expedition of Dr. Staudinger, who was accompanied by C. Kalitsch, an excellent practical collector, occupied most of the summer of 1856, from May 18th to the middle of September. His researches were chiefly made in the relatively barren south-western portion of the island, but fortunately another experienced entomologist, Dr. Krüper, spent most of June and all July of the same year in the much more luxuriant region round the lake Myvatn in the north-east. Some insects were also collected in the same year by Herr Finsterwalder on the north coast, in the Siglufjördr region, which was, however, found

to be very unproductive. The whole of the insects obtained by these entomologists are included in Dr. Staudinger's paper, in which 311 species in all are enumerated. Of this number 110 belong to the *Diptera*, 81 to *Coleoptera*, and 66 to *Hymenoptera*; the *Lepidoptera* comprising only 33 species, little more than one-tenth of the whole, and the remaining Orders being even more poorly represented; *Orthoptera*, indeed, being apparently totally unknown in Iceland. Respecting the *Lepidoptera*, Dr. Staudinger (*l. c.* p. 229) writes as follows:—"The 33 species found by us belong to the Noctuae, Geometrae, and Micro-Lepidoptera—*Papilionidae*, *Sphingidae*, and *Bombyces* are altogether absent. . . . The absence of *Papilionidae* and *Bombyces* is more surprising (than that of the *Sphingidae*). Indeed, some authors mention Diurnal Lepidoptera as occurring in Iceland, but I must decidedly contradict these statements. In my opinion it is not possible for butterflies to live in Iceland, and should they have existed in former times they must have perished. The situation of Iceland has nothing to do with it, as Diurnal Lepidoptera are known to occur much farther north. To find the reason in the volcanic devastations is very artificial, always hypothetical only, and can be refuted by the facts." He goes on to suggest that the constant rain, the stormy weather, and usually low temperature of summer, as well as the general absence of shelter, are the causes which militate against the occurrence of butterflies in Iceland.

In the summer of 1889 Iceland was visited by two well-known English entomologists, Dr. Philip B. Mason and the Rev. Francis Walker, D.D. The researches of Dr. Mason (*Ent. Mo. Mag.* vol. xxvi, pp. 198–201) were confined to the rather poor region near Reykjavik and the Geysirs in the south-west, but Dr. Walker (*Entomologist*, vol. xxii, pp. 222–25, 246–49, 273–75, 299–302), besides collecting at these places, landed at no fewer than fifteen fjords in the course of a coasting voyage round the island, and obtained insects at most of them. Although a good many Lepidoptera, including some species not included in Staudinger's list, were met with by these travellers, no butterfly of any kind was observed by either, though Dr. Walker remarks (*l. c.* p. 222): "Some of the days occupied in riding were so fine and hot, that had there been any butterflies at all in the (south-west) district, I feel sure that I should have seen them." But he also states (*l. c.* p. 222) that Dr. Jon Thoroddsen, the well-known Icelandic geologist and traveller, informed him that he had observed a single specimen of *Pyrameis cardui* in Shore Street, Reykjavik, in the previous summer. This appears to be the first reliable record of the occurrence of any butterfly in Iceland.

Dr. N. Annandale, in his very interesting little work "The Faroes and Iceland," published in 1905, remarks (p. 214): "Butterflies do not exist as natives of Iceland and the Faroes; but a specimen of the Painted Lady has been recorded from the Faroes, and several species apparently visit Iceland as occasional immigrants from Greenland, though I do not know that any have actually been recorded. There are specimens, said to have been caught in Iceland, in the Natural History Museum at Reykjavik, and they probably belong to a species of Fritillary which is well known as an Arctic form." Quite recently Dr. Annandale has informed me that this "Fritillary" is one of the smaller kinds, probably one of the circumpolar species of *Brenthis*, and it may even be the *B. freyja* reported by Kirby to occur in Iceland on the authority of De Villiers and Guenée. Without seeing the specimens, however, it is impossible to say with certainty what the insect really is; but I very much doubt whether any of the few species of butterflies that occur in East Greenland, none of which are known to be migrants, can be able to cross the 250 miles of more or less ice-encumbered sea which separates that country from Iceland.

The latest paper that I can find which deals with the subject of Icelandic Lepidoptera is one by Dr. C. Aurivillius (Arkiv för Zoologi, Band 8, No. 12, pp. 15-17), treating of the insects of that Order met with by Dr. Axel Freiherr von Klineckowstrom in Iceland and the Faeroe Islands in 1909-10. One or two species are added to the list of those already known from the former island, but again there is no mention of the occurrence of any butterfly.

Quite recently, through the kind offices of the Rev. Dr. Skat-Hoffmeyer, of Copenhagen, I have been placed in communication with Dr. Bjarni Saemundsson, the Curator of the Natural History Museum of Reykjavik, who has very courteously given me particulars of the following *Lepidoptera* now in the Museum:—

"*Tanessa atalanta*. One, taken in Reykjavik, June 15th, 1901.

"*I. cardui*. Five specimens taken near Reykjavik, July 1894, B. Gröndal; and one specimen (very fine) also near Reykjavik, October 14th, 1914.

"*Sphinx convoluti*. One or more specimens, in very poor condition, from the neighbourhood of Reykjavik.

"One specimen taken at Hvanneyri in Borgarfjord, South-west Iceland, in the spring of 1916 by Mr. Halldór Vilhjálmsson.

“One specimen taken in Reydarfjord, South-east Iceland, in September 1899, by Mr. Lára Olafsson.”

Dr. Saemundsson also remarks that “now and then people are seeing butterflies, sometimes in great numbers, without catching them, e. g. *Vanessa atalanta* (of which we have one specimen in the Museum) and maybe some of them are *V. cardui*. Otherwise butterflies are not citizens of our Fauna, only occasional visitors.” I am indebted to his kindness for specimens of *Pyrameis cardui* and *Agrius convolvuli*, both in very travel-worn condition; these I have deposited in the Hope Department of the Oxford University Museum.

Thus it would appear that Iceland is occasionally visited by at least three species of *Lepidoptera*, notorious for their migratory propensities, and possessed of powers of flight sufficient to carry them across the most stormy tract of the ocean in the Northern Hemisphere. All three are well-known visitors to the Shetland Islands at not infrequent intervals, and one of them, *Pyrameis cardui*, has been recorded by Hansen from the Faeroes as long ago as 1881. *Plusia gamma*, its frequent companion on migration, which was not observed by Dr. Staudinger in Iceland, was taken at Reykjavik by Dr. Nordenskiöld's expedition in 1883, and by Dr. Mason and Dr. Walker on their visit to the island in 1889; it was also taken by von Klinckowstrom, who records it from the Faeroes as well. Whether *Pyrameis atalanta* or *P. cardui* may be able to perpetuate its kind in one of the warm and genial summers with which Iceland is sometimes favoured, is open to question; but the capture of the latter butterfly in fine condition in October leads one to speculate as to whether this does not happen on rare occasions. The flora of Iceland includes four species of thistle, our two common British nettles, and the common mallow, so that either of these butterflies reaching the island would find suitable food-plants for its progeny.

It may be of some interest to compare the scanty Lepidopterous fauna of Iceland with those of the Faeroes and the Shetlands, the two nearest groups of islands in the North Atlantic. The following table is compiled from (a) “Distribution of Lepidoptera in the Outer Hebrides, Orkney, and Shetland,” by R. South (Entom., vol. xxi, pp. 28-30 and 98-99); (b) “Faunula Insectorum Faeröensis,” by H. G. Hansen (Naturhistorisk Tidsskrift, 3 Række, 13 Bind, pp. 229-278: Copenhagen, 1881); (c) the lists of Icelandic insects by Dr. Staudinger, Dr. Mason, Rev. F. Walker, and Dr. Aurivillius, already cited, with the addition of the species communicated to me by Dr. Saemundsson:—

| Family or Division. | SHETLAND ISLANDS. | FAEROE ISLANDS. | ICELAND. |
|------------------------|-----------------------------------|-------------------------------|---|
| | Lat. 60° 30' N. 551 sq. miles. | Lat. 62° N. 511 sq. miles. | Lat. 63° 30' N.—66° 30' N. 40,437 sq. miles. |
| Rhopalocera ... | 5 | 1 | † 3 |
| Sphingidae ... | 2 | — | 1 |
| Aretiidae ... | 1 | — | — |
| Noctuidae ... | 37 | 7 | 10 |
| Geometrina ... | 13 | 1 | 12 |
| Pyalidina ... | 7 | 1 | — |
| Crambina ... | 5 | — | 3 |
| Pterophorina ... | — | — | 1 |
| Tortricina ... | 17 | — | 4 |
| Tineina ... | 9 | 2 | 11 |
| Hepialidae ... | 2 | 1 | — |
| Total | 98 | 16 | 45 |

To the three species of butterflies noted by Mr. South as occurring in Shetland may be added *Euranesia antiopa*, recorded by Mr. J. J. F. X. King (Ent. Mo. Mag., vol. xxxvii, p. 226) as having been seen by him, but not captured, in the island of Unst on August 15th, 1901; and my friend Mr. G. Claridge Druce, the eminent botanist, who is well acquainted with our butterflies, assures me that he caught a specimen of *Aricia astrarche* var. *artaxerxes* in the same island in July 1920. *Coenonympha typhon*, which appears to be scarce, is probably the only species really indigenous to Shetland.

With the single exception of *Hadena sommeri* Lef., also common in Iceland, all the *Lepidoptera* as yet recorded from the Faeroes occur in Shetland. Perhaps the most noteworthy species is *Hepialus humuli*, the Faeroese specimens of which closely resemble in both sexes the lighter-coloured forms of the var. *hethlandica* Staud., the males especially being intermediate between that variety and the white type-form. Dr. Annandale states ("The Faroes and Iceland," p. 215) that "the Ghost Moth sometimes appears in great numbers in the Faroes at the end of July and the beginning of August," and the Oxford University Museum possesses a fine series taken by him in the island of Boro in July 1900.

As might have been expected from the generally wide distribution of Arctic forms, the majority of the Iceland *Lepidoptera* are of species also found in Northern and Central Europe, with a very slight element of more southern character, for instance as *Tripharna pronuba* L., recorded

by Dr. Staudinger and Dr. Mason. The entire absence of the characteristic Arctic genus *Anarta* is especially noteworthy, and is attributed by Dr. Staudinger to the usually unsuitable weather for these sun-loving insects. Only three well-defined species appear to be peculiar to Iceland: *Melanippe thulearia* Staud., allied to our *M. hastata*; *Crambus extinctellus* Zell., near *C. pascuellus*, but probably distinct; and *Pterophorus (Stenoptilia) islandicus* Staud., a well-marked form. Certain other species, such as *Hadena (Crymodes) exulis* (perhaps the most characteristic moth of Iceland), *Mamestra pisi*, *Cidaria truncata*, *C. immanata*, *C. munitata*, *C. designata*, *Eupithecia sobrinata*, and *E. valerianata*, present remarkable phases of variation, some which are altogether confined to the island.

There being no true night on Iceland during most of the summer months, the *Lepidoptera* may be found on the wing throughout the whole twenty-four hours, the flowers most favoured by them, according to Dr. Staudinger, being *Spiraea ulmaria*, *Silene acaulis* and *maritima*, and *Thymus serpyllum*, all of which, especially the last, grow in profusion throughout the island. Although the species are so few in number, many non-entomological travellers have been strongly impressed by the enormous numbers of individuals met with in favourable seasons and situations. And Dr. Walker remarks (*Entom.* vol. xxvi, p. 223):—“As though to make up for the total absence of diurnal *Lepidoptera*, the quantity of certain species of moths is something astonishing. I do not recollect ever having seen *Ceometridae* so abundant elsewhere—rising in a cloud from the scrub vegetation when the dwarf willow or birch was lashed by the riding-whip of our guide, on the grassy slopes of the mountains, and likewise on the meadows adjoining the homestead—everywhere most numerous.” A larva, in all probability that of *Episema (Charaeas) graminis*, is reported to work great havoc in the pasture-lands and hayfields, in certain years, just as is the case with the same species in Britain.

As it is doubtful whether the estimate of Dr. Staudinger, made nearly seventy years ago, of a maximum number of 500 indigenous species of insects of all Orders, has up to now been exceeded or even attained, it is evident that Iceland holds out but few inducements to the entomologist, except perhaps the chance that a truly native butterfly may at some future time be found in one or other of its sequestered valleys.

Aorangi, Lonsdale Road, Summertown, Oxford.

December 16th, 1921.

NOTES ON SAWFLIES, CHIEFLY AS TO OVIPOSITION.

BY THE LATE T. A. CHAPMAN, M.D., F.R.S.

The observations here noted were directed specially to the disposition of their eggs made by the several species in oviposition. Other points were noted by the way; some of them may be of value, but I am very imperfectly acquainted with the Continental literature on the subject. The Rev. F. D. Morice has kindly helped me in determining the nomenclature, etc. The species studied are: *Pteronidea curtispina* Thoms., *P. hypoxanthus* Först., *P. oligospilus* Först., *Pontania piliserra* Thoms., and *Priophorus tener* Zadd.

Pteronidea curtispina Thoms.

I have met with larvae of this species for several years past, but this year I succeeded in getting some eggs laid. The larvae feed on the edges of willow leaves and very much resemble those of *P. oligospilus* in appearance and habits, but they are of a paler green and at once distinguishable by the double white dorsal band, the two portions separated by the dark and conspicuously pulsating dorsal vessel. On looking for the eggs several days after supplying the flies with Osier, I could find none—a circumstance explained a day or two later as due to my looking for them under the leaves, fancying they must be placed similarly to those of *P. hypoxanthus* or *oligospilus*, whereas they were laid on the upper side in a manner very like that of *Trichiosoma*; at this time they were becoming conspicuous, owing to the growth of the eggs in their pockets. Luckily a few more eggs were laid, showing how easily they could be overlooked when recently deposited, even when one knew how to look for them*.

When recently laid the eggs are difficult to see; they are laid in a pocket on the upper side of the leaf, and are obviously very thin and flat, as their position is not indicated by any elevation of the leaf cuticle over them; there is of course a slight elevation to be seen when critically looked for, and there is, if not at once, very soon, a pale line round part of the egg, where air fills the angle between the upper and lower faces of the pocket, held apart by the margin of the egg, rounded no doubt, thin as the egg may be. These notes are made from a separated twig in water; probably on the growing tree this angle is filled by exuded sap. The natural appearance and colour of the cuticle over the egg suggest that a certain trace of the parenchyma of the leaf is attached to it. The egg, however, grows chiefly in thickness, so that when mature, just before hatching, its cross-section, instead of being not far from linear, is nearly a circle, and the egg and pocket stand up on the surface of the leaf very conspicuously. At this stage the pocket does not expand with the growth of the egg, and the cuticle covering the egg draws apart so that a portion of the egg is exposed. The newly laid egg is pear-shaped, as seen through the upper cuticle of the leaf—about 1.3 mm. long and 0.6 mm. at the widest part; thickness not measured. As it grows it does not increase in length, but becomes nearly 0.8 mm. in width and as much in thickness, losing

* [Enslin in Ent. Mittheil. vi, 1917, p. 241, mentions that *P. curtispina* oviposits on the upper side of the leaf, and figures a leaf with "pockets" and eggs *in situ*.—F. D. M.]

the pyriform outline and becoming oval. This egg shows, as well as that of any sawfly, how it grows by imbibing fluid from the leaf-tissues with which it is in contact, increasing its bulk perhaps five or six times. All the other species I refer to in these notes have eggs that perish if the sap fails where they are laid, though I think none of them grow appreciably, but all apparently lose fluid and die if the supply from the leaf fails. The egg of *curtispinga* is also much larger than these others, and being in a pocket can hardly belong to a species congeneric with those that lay exposed eggs, like *ribesii*. Even when the egg has grown to its full size with much of it exposed and the covering cuticle becoming brown, any attempt to remove and isolate it results in its rupture and destruction. This firmness of attachment, which exists also in the exposed eggs of many species of "Nematini," to the surface through which they draw fluid and nutriment, suggests a union between the egg and the plant that might almost be called placental.

The egg is usually deposited on the leaf just beyond and parallel with a secondary nervure at about its middle, but it may be otherwise placed and oriented. Though in my jars confined space led to several eggs being placed on one leaf, I feel sure that each egg was, so to speak, a separate laying, and that naturally only one egg is deposited on a leaf. This is confirmed by the larvae always being found solitary.

The eggs hatched at the end of a week (weather very warm), and in a further ten days the first larva spun up. The young larvae are very dark, the venter pale, but the back and head appear to be quite black. They eat the margins of the leaves, holding on by the true legs, the body stretched out free, slightly away from the leaf, with the last segments bent slightly ventrad; it would hardly be inaccurate to say that the body was straight—length 2 mm. When not long hatched and having only fed a little, the head would be called dark brown and chitinous and the back very dark green, less dark as they feed, due to expansion and not to intestinal contents.

In the 2nd instar the larva has the head brown with a slightly darker shade behind the eyes, the body green, darker above, paler below, this as seen with a lens. To the unaided eye the colour is a rather dirty olive, no white dorsal line or any other variation being visible. It keeps nearly the whole body close to the leaf-margin or edge of eaten portion. The supra-anal forks stand well back, with dark tips, as they did in first instar. When disturbed, the body is thrown away from the leaf with a jerk, but not further than to leave it still almost straight.

The larva in this (2nd) instar varies from 4.7-6.0 mm. in length, and it then moults into the last instar. I could not obtain any evidence that it had more than two moults and three instars. It now, in last instar, has the double white dorsal line; its habits of feeding, etc., seem to be the same as in previous instars. When full grown the larva is 13 mm. long, fairly cylindrical, perhaps rather thicker about 3rd and 4th abdominal segments; width about 1.3 mm. With its ventral surface along the edge of the leaf, the last segments are only turned ventrad if the straight surface is not lengthy enough. The colour is pale apple-green, slightly paler below, tracheal white line obvious. Owing to the continual rather quick pulsation of the dorsal vessel, the two portions of the white line (subcutaneons) appear to approach and recede from each other.

On the 1st and 2nd thoracic and 9th abdominal segment the white lines coalesce. The two lines and vessel occupy about a fourth of the total width in dorsal view. The supra-anal spines project about 0.5 mm. beyond the anal prolegs and end in two bluntly conical points with red tips. There are 7 pairs of prolegs. No hairs visible when viewed under a good hand-lens. Head light brown, almost green; eyes black, a brown shade of about their own width extends from them upwards, half-way to vertex. True legs nearly colourless. Below the eye a dark dot represents the antenna. The antenna is a flat plate, hardly, if at all, raised above the surface, oval, with its long axis horizontal, *i. e.* at right angle with the line joining the antenna and eye, about 0.1 mm. long and 0.06 wide. When mounted, it shows five joints, separated (except the first and second) by colourless lines, each possessing certain clear points, indicating hair-origins (hairs obsolete). The numbers of these vary in different antennae. The 1st joint has one on the upper margin of its posterior angle, the 2nd has one close to its posterior angle, then we have three clear lines marking off the three further joints; anteriorly these lines are very close together, posteriorly they are apart enough to leave room for the hair-bases, two large and a small one on the 3rd, a large and a small one on the 4th, and on the 5th two to four; the 4th joint may have one or two minute points just above the 5th, and there are other variations.

There are a few very minute hairs near the eye, and also on the apparently tubercular portions of the body, on the prolegs, and rather more and rather larger on the last segment or two.

The cocoons were placed on or between the leaves of the food-plants, and are made of a bright yellow silk, much the colour of that of the silkworm-moth, *Bombyx mori*.

From a captured larva I bred a Tachinid. Unfertilized eggs laid in confinement enabled me to rear about two dozen flies, all males. This was much greater success than I have usually had in trying to rear sawflies from eggs laid in captivity, the cut twigs on which they are laid usually withering and the eggs dying before the time for their hatching arrived.

The skin-sculpture on the dark areas of the larva consists of very numerous black dots, which range themselves along the sides of the white bands almost into cells like those of *P. oligospilus*, showing here even the black dots dividing the cells. As in other of the species here dealt with, the pale areas reveal no sculpture.

Pteronidea hypoxanthus Först.

Solitary larvae found feeding on a very smooth-leaved sallow. In August 1920 they were not rare. The youngest seen had eaten a small hole in the middle of a leaf, and, beside this and others hardly larger, an empty egg-shell was found on the underside of the leaf. The larvae seemed quite willing to adhere to the same hole till full grown, but in most cases they moved once or twice to make other holes in the same or another leaf. No larva was found except on the margin of a hole, never on the edge of the leaf, except under a certain amount of compulsion in confinement, but rarely then. By eating round the margin it gradually enlarges the hole. It has twenty legs, and these

clasp the margin of the hole along which the body is extended, the last segments being sometimes free and bent ventrad.

The egg-shells found beneath the leaf showed them to be laid solitarily, in no particular position as regards veins, etc., but not near the edge of the leaf. A very small larva about 2.6 mm. long is, contrary to the rule just noted, curled S-shaped, the true legs and first pair of prolegs grasping the edge of the hole; the same curve, a little exaggerated, raises the rest of the body from the margin to the middle of the hole, the last segment being bent ventrad.

The larva is transparent, colourless except for the green tone from intestinal contents; the head is faintly rufous, darker when seen directly, paler by transmitted light, the eyes black. A larva 7 mm. long is transparent like the younger one mentioned, but shows green intestinal contents; the head-colours are the same, subsegmentation distinct. Two larvae, 11 and 12 mm. long respectively, are not so transparent, having a black mark on the vertex and a dark tint obscuring the white dorsal region. A larva, apparently full grown and looking about for a place to spin up, has the dark, rather longitudinal mark on the vertex, the thoracic segments dorsally green, the forward abdominal segment very pale reddish brown, the others darker and all with a faint fuscous tone. All examples are transparent enough for the longitudinal and other tracheae to be very conspicuous. Below the spiracular line, in all the larger larvae, are a series of not very dark markings or slight eminences; they may vary a little, but almost always occur on the last two thoracic and first five abdominal segments. These marks are characteristic, and probably distinguish this larva from others with which it might be confounded. The reddish colour of the forward abdominal segment occurred in all larvae noted as ready to go down, though the subsegmentation is very distinct; probably for this reason it is very difficult to decide which are the intersegmental incisions. The skin-armature presents a number of hairs, singly over the dorsum, each in a circular space clear of the ordinary cellular skin-structure and apparently representing primary tubercles. The thorax has a rather complicated number, it being difficult to recognise the true margins of the segments; there appear to be a non-micropylar one on each side of dorsum, and others, stated in subsegments, on the prothorax, 3.0.2, mesothorax, 2.3.0.3, last very small, metathorax, 2.4.0.3, last very minute, and first abdominal segment, 3.3.0.3, these very minute. The further abdominal segment nearly the same, 14 rather large hairs on last segment, one of them in dark anal plate. There are 5 hairs on the lateral black marks and 4 or 5 others on the sides and a few on prolegs. The dark dorsal areas and lateral black marks show a tessellated pavement of cells, rather spindle-shaped; long axes transverse and to some extent in transverse rows, up to 13 or 14 rows to a subsegment; each cell is crowded with dark dots.

Though the eggs have all the aspect of those that have a small portion trapped in the incision in the leaf, their disposition appears to be different. It is not very difficult to separate them from the leaf, and on removing the latter a portion of leaf cuticle was torn, showing that though it is very slight and shallow the eggs are really in a pocket, of which this scrap of cuticle is the upper portion, too short to do more than reach a little way up the egg. The eggs themselves are about 0.92 mm. long and 0.4 wide. They

do not taper to the ends to any extent, *i.e.* are not ovate, and carry their full width very close to the ends, which, though crowded, have a very square appearance, especially at one end.

Pteronidea oligospilus Först.

I find this larva on Osier, one at a time. Its habits are almost identical with those of *curtispina*, and it is not very different from the larva of that species before the latter attains its double dorsal white line. Length 12-13 mm., width 1.6 mm. It looks very long and slender, widest about 1st abdominal segment. Colour dark apple-green, very much the colour of the osier leaf on which it feeds, uniform, except that the head is a little paler and has a dark line down the dorsum and a brownish cloud above the eyes; and the last segment also differs in being yellowish, with dark orange central dorsal band, ending in two short black (supra-anal) terminal spines. Feeds on edge of leaf, like *curtispina*, and when crawling along it keeps its prolegs on the margins, but the last segment is bent to upper or lower side of leaf as may happen. It is fairly cylindrical, but roughened by subsegmentation and lateral flanges, so that viewed dorsally there seems dark coloration laterally, due, however, entirely to refraction through the eminences, showing also that the larva is translucent. The subsegments are difficult to count owing to similarity of colour, but seem to be six in number, two wider in front and four narrower behind. When walking on the flat, the anal segments cannot apparently be bent down, and it is apt to go to one side or the other. There are six pairs of ventral prolegs, with anal and true legs = 20. The larva is always solitary and always on the edge of a leaf. A mounted larva skin shows little structure dorsally, but along the lateral region, above and below spiracles, there are considerable areas showing minute fusiform plates, their margins outlined by black dots and their central surface studded by very fine dots. They differ from the similar cells of *P. hypoxanthus* in not being so definitely ranged and extended transversely, and in being more pronounced along their margins. There are a couple of solitary hairs behind each spiracle and a few on the last segment. The antenna is nearly the same as noted in *P. curtispina*. The cocoon is brown and made between leaves of the food-plant. I believe the second brood goes into the earth, but not deeply.

On July 21st, 1921, some bred females oviposited on the undersides of Osier leaves, generally singly, two or three eggs near each other were probably deposited at separate visits to the leaf. The leaves chosen are those just or barely mature. The eggs are placed about half-way between the mid-rib and the margin, usually parallel to the mid-rib, but now and then to the secondary ribs. They appear to be laid on top of the small silky hairs with which the underside of the leaf is so abundantly and closely set, though without a lens the surface looks as glabrous, though not as polished below as above. Magnified, however, it is seen that they are pressed down amongst the hairs, which, rising up round each, somewhat obscure the margins of the eggs. When an attempt is made to remove the egg it is found to be firmly fixed, probably by inclusion in an incision, as in *ribesii*, *pavida*, etc., nor can they be removed without almost certain destruction. I did not succeed in hatching any, the leaves withering before the eggs had matured. They are 0.92 mm. long and 0.3 mm. broad, of the usual spindle shape.

Pontania piliserra Thoms.

The larvae of this species were found during June on Osier in leaves longitudinally rolled, without any silken threads. About June 28th they appeared to be full-fed. They agree completely with the description by Konow, kindly quoted to me by Mr. Morice, of *P. hypoxanthus*. The larva of *hypoxanthus*, however, has quite other characters and different habits.

The length of the full-grown *piliserra* larva is about 12 mm., with a width of 1.5 to 1.8 mm. Above, its colour is a dirty olive-green, with darker dorsal line; this colour is only dorsal and, when viewed from above, a little of the paler tint of the under surface, a palish green, is seen on either side of it. It widens a little at the middle of each segment. The segments are divided (dorsally) into three subsegments—a broad median, taking rather more than half the segment, a narrow anterior and a still narrower posterior one. There are a number of very minute hairs which may be seen in a mounted skin. The living larva looks quite smooth, the dorsal hairs being visible, but are more distinct in three white dots, with minute hairs, at the outer end of the dark dorsal area of the middle subsegment, and one close by the end of the dorsal part of first subsegment. All the hairs are of about the same length (0.07–0.09 mm.) and solitary, in patches nearly free from skin-points, and they no doubt represent the ordinary tubercles. The general surface of the dark area is thickly set with dark skin-points, and no doubt owes its darker colour to them, laid flat with sharp points directed backwards. There is a patch of hairs on the sides of each segment with other scattered ones, and the last two (or one?) segments have a good many hairs several times as long as the dorsal ones noted. The margin of the dark dorsal area is marked by the nearly white line of the lateral trachea, which with some of its branches is very conspicuous; the spiracles show a small thickening of the white line, which looks superficial enough to appear to demarcate the darker dorsum from the much paler green of the under surface.

The head is pale rufous in front, darkening upwards into a dark brown area along posterior margin, and widest dorsally. The antennae show a small rounded brown eminence, with a minute tubercle (another joint?) on tip. The mandibles are asymmetrical.

The larvae form very dark cocoons underground. The imagines emerged during the third week of July. Attempts to get them to lay were not very successful, still several eggs were laid and attempted layings were observed, so that the following notes were made. A rather young leaf is chosen, and the eggs are placed on the underside of it and slightly beneath the secondary ribs, the incision being just where the front margin of the rib rises from the flat surface of the leaf; the egg is almost but not quite hidden and the position is half-way between the mid-rib and the margin; the rib over the egg appears to bend back a little, but a sufficient number of eggs was not obtained to show whether this is usual. A series of eggs is laid on each leaf used under consecutive lateral ribs on one (or both) sides of the mid-rib. One leaf measured was about three-quarters of its length when fully grown and about half its full width, actually about 0.27 inch (nearly 8 mm.) wide, not reckoning the margin, still a little intumed. Attempts to find eggs actually laid on growing osiers led to no success, beyond the observation of some leaves on which a few eggs

appeared to have been laid. The presence of large numbers of Hemiptera of the genus *Anthocoris* (*sylvestris* and *confusus*), wherever there was any cover for them, appeared to account for the failure to find eggs and later larvae of an autumn brood.

The larvae live inside tunnels formed by the leaves curling so that the edges meet; in these tunnels are usually three to six larvae. I was for some time in much doubt as to how the leaves became curled. I thought it might be due to aphides, which produced a very similar effect, or perhaps to the gall-gnat (*Perrisia marginentorquens*). There were, however, seldom any aphides with the *piliserra* larvae, and the gall-gnat rarely affected more than the actual margins. Examination of many leaves inhabited by *P. piliserra* of various ages finally convinced me that they became curled by the presence of the sawfly, probably the active agent being placed by the parent fly with the eggs.

The young larvae eat the parenchyma of the underside of the leaf between the various ribs. Sometimes, when larvae are few, this appears to supply all their needs, but usually the larvae, as they get large, leave their home in the tunnel during the night and devour neighbouring leaves. I never found any silk used in the tunnels, which resulted apparently from deformation, though I found larvae once or twice hidden between spun-together leaves, where they had taken shelter after excursions for food, but which were abandoned domiciles of other larvae.

The leaf-rolling result of the attack of *Pontania piliserra* on the leaves of the osier is clearly of the same nature as the production of galls on species of *Salix* by not distantly related sawflies.

The skin-sculpture of the larva consists of points, each with one or two acute ends. These usually point backwards when pressed down flat. They are arranged in transverse rows, sometimes echeloned. With 26 rows across a larger subsegment the acute apices are not well-developed, but are very well shown on a narrower subsegment with 10 to 12 rows.

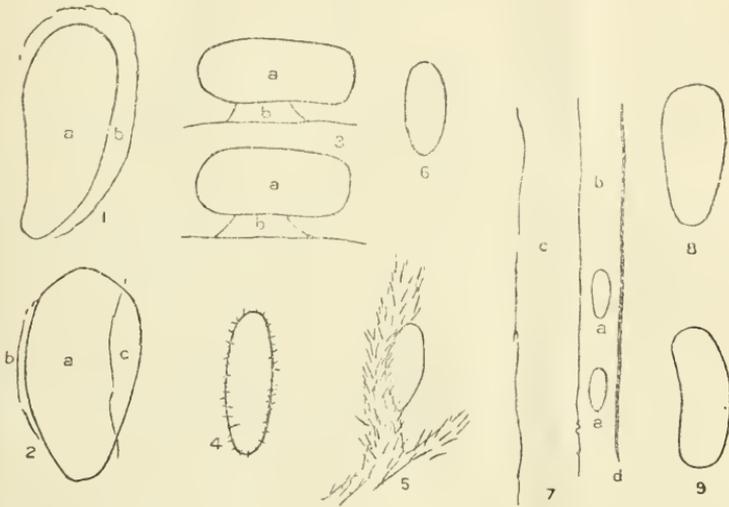
Priophorus tener Zadd.

The second-brood larvae of this species were rather frequent in my garden in 1920. I found they went freely into rough cork to pupate, and closed the outer opening with a thin glazed diaphragm, behind which a not very thick ordinary cocoon was made. I believe practically all the specimens passed the winter successfully, emerging in the spring. I succeeded in getting some females to lay eggs. This summer the spring brood of larvae occurred, but not abundantly. I discovered one larva of the autumn brood and saw indications of a few others, but they were very scarce, especially compared with their abundance the previous year.

The eggs are laid in the interior of the petioles of the raspberry; I saw the operation once or twice, but did not note the precise action of the saws, the leaves selected are those that are little more than half developed, whose petioles are still tender and soft. They are deposited in the outer or bark-like layer, about half-way between the surface and the inner more fibrous and woody central portion, and are placed longitudinally in a series, each egg being

about its own length from its neighbour. They are about 0.85 mm. long and 0.33 mm. wide, and at first are inclined to be bent into a kidney-shape, afterwards are more oval, or at least those I examined had these features, but their outlines may have been altered in the process of extraction. Perhaps the most remarkable point is that the incision of entry is practically indiscoverable, nor could I make sure of the place of exit of the young larvae, the rapidly growing young petiole no doubt healing up all traces.

The larva has many rather long hairs and a skin-sculpture of minute transverse ridges, each about 0.02 or 0.03 mm. long; pressed down on slide, one edge appears black, the ridge being more pressed to that side.



EXPLANATION OF FIGURES.

Sketched diagrammatically under camera. Fig. 7 enlarged by 6 diameters, all the others by 20.

Fig. 1. Egg of *Pteronidea curtispina* Thoms., recently laid. The surface of the leaf where it is laid shows hardly any disturbance or elevation; the egg at this stage must be very thin, but it can be made out easily on close examination. Very soon after laying, probably on egg beginning to thicken, the narrow margin of the pocket that it does not fill appears paler, owing to the entry of air. *a*, Egg; *b*, paler margin of pocket.

Fig. 2. *Pteronidea curtispina*—continued. As the egg (*a*) matures, it increases in size, fills and expands the pocket, first stretching the covering epidermis, diminishing the pale unoccupied area (*b*), then lifts it, opening the pocket on one margin (that where the saw entered to make it?), and becomes exposed (*c*). Towards hatching, half the egg may be exposed in this opening, and the egg, instead of being thin and flat, has made a close approach to being spherical.

Fig. 3. Two eggs of *Pteronidea hypoxanthus* Först.: *a*, the egg; *b*, portion of epiderm of leaf, torn up in removing the egg.

- Fig. 4. Egg of *Pteronidea oligospilus* Fürst. Lines to represent the hairs of the leaf in which it is partially buried.
- Fig. 5. Egg of *Pontania piliserra* Thoms. Secondary rib slightly pushed back to show position of egg, almost beneath it.
- Fig. 6. Egg of the same species, removed from leaf.
- Fig. 7. *Priophorus tener* Zadd. Longitudinal section of portion of petiole of raspberry, showing position of eggs (*a*), in outer spongy bark (*b*), never in central more woody portion (*c*); *d*, outer surface of petiole, $\times 6$.
- Figs. 8, 9. Two different views of eggs of the same species, extracted from petiole. The outline of 9 is probably correct for newly laid eggs, but may be due to manipulation in removing it.

Reigate.

November 1921.

A NEW BRITISH BOMBUS, *NIGRESCENS* (PÉREZ), FROM SUSSEX.

BY C. H. MORTIMER.

In August last, while collecting in the Newhaven district, I took a ♂ Humble Bee of which, though it appeared to be merely a specimen of *B. derhamellus*, the genitalia were typical of *B. sylvarum*. I concluded, after finding five similar examples near the same spot, that they could only be referred to the black race of *B. sylvarum*, known on the Continent, but not hitherto in Britain, as *nigrescens*. This identification Dr. R. C. L. Perkins has been good enough to confirm for me. The fact of as many as six of these ♂♂ having been taken at one spot, must be considered conclusive of a nest of (or containing) the variety, and precludes, therefore, any possibility of introduction from abroad.

It is much to be regretted that neither Saunders nor Sladen has given, in their respective works, any structural differences which would enable one to separate the ♀♀ and ♀♀ of *nigrescens* from those of normal *derhamellus*; but Pérez has given some slight characters for distinguishing them. I took a series of black ♀♀ at the spot where *nigrescens* occurred, but can find nothing structural which would cause me to consider them anything but normal *B. derhamellus*.

Except for slight variation in size, the six ♂♂ which I took of *nigrescens* agree in all respects with each other.

"Lotus," Dorking, Surrey.

Nov. 26th, 1921.

[Mr. Mortimer's discovery of the var. *nigrescens* of *B. sylvarum* in this country is unexpected and of great interest. Its extraordinary resemblance to *B. derhamellus* would, of course, render it liable to be overlooked. I have to thank Mr. Morice for sending me quotations from Pérez's original paper, as I do not possess this. The narrower face and

grey-haired hind trochanters are said to distinguish the female from that of *derhamellus*, but the latter appears to me to vary somewhat in both these characters in my specimens, so that the separation of this sex is likely to be difficult.—R. C. L. P.]

✓
THREE HERMAPHRODITE BEES.

BY R. C. L. PERKINS, M.A., D.SC., F.R.S.

Hylaeus confusus Nyl.

A bilaterally asymmetric example.

| Left side. | Right side. |
|---|---|
| Mandible, antenna and face coloured as in normal ♂. | Head as in ♀ black with only a triangular yellow spot along the eye-margin. |
| Antenna 13-jointed, normal in structure for ♂. | Antenna and mandible of normal ♀ structure. |
| Yellow prothoracic mark smaller. | Yellow mark on the collar larger. |
| Hind leg with yellow metatarsus. | The metatarsus black. |

The thorax and its appendages, except for the two points mentioned, appear to be ♀. The claw-joint of the left hind leg is missing, but one would expect the claws to have been ♂ in structure. Those of the other legs are clearly ♀. Abdomen apparently wholly male, the apex blunt, the ventral tubercles distinct. The more terminal segments are largely withdrawn and are difficult to see. The sculpture of the dorsal surface, however, is much less distinct than in most ♂♂, and the segments are even less punctured and more shining than in most females. The yellow of the face on the ♂ side has its inner margin nearly straight along the middle line.

This specimen was captured in June 1915 by Mr. P. Harwood, when he was in camp near Salisbury.

Halictus paucillus v. *immarginatus* Sch.

This specimen is bilaterally symmetrical.

The head is like that of the ♂, the clothing of the face as in that sex, the apex of clypens and labrum being yellow-spotted. Antennae quite abnormal, but alike, 13-jointed, much shorter than in a normal male, and as if intermediate in character between ♂ and ♀. Third and fourth joints very short—the 4th in normal ♂ is strongly elongate—the 5th nearly square in outline, longer and larger than the preceding transverse one, not at all like the transverse ♀ 5th joint, nor the elongate one of the ♂ in normal examples; the following joints are male-like, slightly elongate, but much less so than in normal ♂, but still quite unlike the ♀. Thorax in appearance, puncturation, etc., ♂, but all the legs are ♀. Abdomen entirely male outwardly, the genitalia not examined.

Taken at Isle Brewers, near Taunton. A very remarkable specimen on account of its short, but, on the whole, male-like antennae.

Nomada conjungens H.-S.

Bilaterally asymmetric.

Mandibles and clypeus coloured as in the ♂. Apex of clypeus on the right side yellow (♂) on the left redder (♀), but on the former side the inner orbits have the red line as in the ♀. White hairs of face dense on more than the right half (♂) but the rest barer, as in the ♀. Right antenna normal for ♂, left one ♀. Scutellum and postscutellum on left side with conspicuous red spot (♀), right side with only a trace. In normal ♂ it is unspotted. Propodeum on right side with long pubescence, on the left glabrous. Beneath and at the sides the thorax is male, but the hairs are less dense than in normal specimens. The right hind leg is evidently ♂, the femur being densely punctured beneath and minutely and densely pubescent, not shining and nearly glabrous like the left, which is ♀. Abdomen entirely ♀, the tip of the sting is visible.

The occurrence of such an individual is remarkable, the species being so uncommon in Devonshire that I do not see more than one living specimen in two or three years on an average.

Newton Abbot.

November 18th, 1921.

DENDROTHRIPS ORNATUS (JABL.),

A SPECIES OF THYSANOPTERA NEW TO THE BRITISH FAUNA.

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

During the visit of the British Association for the Advancement of Science at Edinburgh this year (1921), I spent a week-end at Crieff motoring round Loch Tay on September 10th.

At the end of the Loch and a mile or two beyond Taymouth Castle (near Kenmore) I was pleased to find a single specimen of *Dendrothrips ornatus* on lime, with numerous examples of *Bagnallia calcarata* (Uzel).

Dendrothrips ornatus (Jabl.).

1894. *Thrips ornata* Jablonowski, Termesz. Fuzetek, xvii, pp. 93-99, pl. iv.

1895. *Dendrothrips tiliae* Uzel, Mon. Ordnung Thysanoptera, pp. 160-162, pl. ii, f. 15 and pl. vi, figs. 84-86.

1914. *Dendrothrips ornatus* Bagnall, Ann. Mag. Nat. Hist., ser. 8, xiii, p. 297.

This insect, better known as *D. tiliae*, affects lime, and is recorded from several Central European countries, whilst I have taken it in South Norway. It is a short, squat species, with banded wings, and belongs to a very distinctive genus.

There are three European members of the genus, *D. ornatus* (Jabl.), *degeeri* Uzel, and *saltatrix* Uzel, the first two of which we now know as British, whilst outside Europe there are three known species, *indicus* Bagn., *sexmaculatus* Bagn., and *jeanneli* Bagn., from India, Ceylon, and East Africa respectively.

November 1921.

Occurrence of Bombus cullumanus (Kirby) in Sussex.—This great rarity among British Humble Bees (of which, according to Sladen, a single ♂ is the only record from Britain within the past thirty years, and which seems also to be rare throughout Europe) also occurred in the same Newhaven locality which provided me with *B. nigrescens* recorded above. I took in all nine ♂♂—a fresh example during the first week in August, and eight more or less worn specimens, some two or three miles away, a fortnight later. The number taken, as with *nigrescens*, negatives any idea of importation from the Continent, and I much hope to be able to obtain the ♀♀ and ♂♂ next summer, particularly as neither has, as yet, been satisfactorily recorded as British. Smith did, indeed, record 2 ♀♀, which he took at Southend, as ♀♀ of *cullumanus*; but, although Saunders accepted Smith's classification, there would appear to be some doubt as to whether the specimens are not merely ♀♀ of the common *B. pratorum*. I might add, however, that though I never saw *pratorum* at Newhaven except for a single ♀, this ♀ was perfectly fresh and occurred exactly where most of the ♂♂ of *cullumanus* were taken; and it may be that further investigation will establish the similarity between ♀♀ of *cullumanus* and *pratorum*, and, with it, the correctness of Smith's record. Dr. Perkins has noted that there would appear to be some connection (at least in locality, and in the date of appearance of the ♂) between *cullumanus* and another scarce British species, *B. soroensis*; and it may, therefore, be of interest to record that I also found *soroensis* to be extraordinarily abundant. On the other hand, while Dr. Perkins has also found *soroensis* abundantly this year (1921) in Gloucestershire, many of his ♂♂ were already faded in July, whereas the great majority of my own, which I took in late August and early September, were perfectly fresh. As Dr. Perkins also informs me that neither he, nor his uncle, ever took *soroensis* in Gloucestershire during a period equivalent (for one man's collecting) to fifty years; and further, that he also found this species abundantly this year in Devon, as I myself did in North Wales in mid-August, hymenopterists might do worse than watch for *cullumanus* next season, assuming some relationship to exist, as suggested, between it and *soroensis*.—C. H. MORTIMER, "Lotus," Dorking, Surrey: Nov. 26th, 1921.

Rhamphomyia conformis K. in Scotland: a correction.—In the October number of this Magazine, 1921, p. 235, I recorded an Eupid from Pitlochry under the name *R. conformis* K. This is an error; the insect is *R. stigmosa* Mcq., and I am obliged to Mr. Collin for drawing my attention to the wrong identification. I had already taken the species at Pitlochry in 1920 and correctly identified it, so that my error on this occasion is inexcusable.—A. E. J. CARTER, Monifieth: November, 1921.

Note on Swarms of Chloropisca circumdata Mg. (= *ornata* Loew, nec Mg.).—From September 25th to October 10th in the present year (1921) large numbers of this small Chloropid congregated on the ceiling of one of the laboratories in the Rothamsted Experimental Station, and I may add that my identification of the species in question has been confirmed by Mr. J. E. Collin. The insects entered through the open windows during the mild sunny weather which prevailed during that time. Swarms of Chloropids have several times been recorded in entomological literature, *vide*, for example, H. Scott (Ent. Mo. Mag. 1918, pp. 18, 43), and are also mentioned by Sharp (Insects, pt. ii): in all cases they are probably referable to the above species. They appear to have been more frequently recorded from the vicinity of Cambridge than elsewhere, and sometimes swarms have been observed in the same room during several successive years. The significance of the swarming habit is uncertain, but very possibly it is connected with hibernation, and it is noteworthy that *C. circumdata*, already in winter-quarters, can be beaten out from the thatch covering hay and other ricks during the autumn. I have no knowledge as to the life-history of this species: efforts to induce it to lay on grasses and young barley proved unsuccessful. Although the Chloropidae are among the most essentially phytophagous of all families of Diptera, an allied species, *Chloropisca glabra*, has been shown by Parker in America (*vide* Journ. Econ. Entom. II) to be predaceous in its larval stage upon Aphides.—A. D. IMMS, D.Sc., Rothamsted Experimental Station, Harpenden, Herts.: November 24th, 1921.

Obituary.

Albert Brydges Farn was born on March 9th, 1841; and so was in his eighty-first year when he died on October 31st, 1921. Of the surroundings of his childhood I know nothing: but he records that (about 1854) he used to take *T. w-album* near Braintree Silk Mill. I doubt whether he kept any diary in those early years. I first met him about midnight on July 7th, 1871, in the New Forest. Our lights brought about a meeting and a walk home to Lyndhurst together. In July 1873 he invited me to be his guest (with two other friends) at Horning, where he had taken a cottage (*sensu stricto!*). I spent there one of the happiest months I can remember. His wife, who died many years ago, was a most kindly and indefatigable hostess: perhaps we hardly realized at the time what it cost her to look after the comfort of four hungry and erratic entomologists.

By the following year Farn was established as Assistant Inspector of Vaccine Lymph in the new Local Government Board. He had already done the same work in the Public Health Department of the Privy Council Office. From 1874 to 1892 (except for a few months at the end of 1882) he lived at Dartford, working the famous fence on Dartford Heath, Darenth Wood, and other good localities in the neighbourhood. (But in 1879 "Darenth Wood is almost closed: Row Hill Wood is being cut up for building. The fence has been freshly turred!") His son Edward was at this time (1879) beginning to help him: and Farn was arranging to send him to Cambridge. But it was not to be: in January 1883 the boy died. "My only hope," Farn wrote,

"was to see him grow up a good man. We have nothing to look forward to now." In 1892 he settled at Greenhithe, a good position alike for entomology and ornithology. In 1906, having reached the age of 65, he was retired on a pension, and settled near Hereford. "I did so want to work in the West," he writes in 1918. Here he found congenial friends, and attached himself to the Woolhope Club, of which he was President in 1910. In 1912 he removed to Ganarew, where he had in vain looked for a house in 1906. He had, as usual, a definite object in settling there: and he was rewarded by many interesting captures, among them an extraordinary variety of *G. c-album*, "silvery-white with small spots of black, looking like the ghost of a *c-album*," which is worthy to rank with the black *M. galatea* from Chattenden, which he acquired in 1871.

Just a year before his death he lost a companion of more than twenty years. She was the daughter of an old friend, who had come to assist him and had stayed on.

Last July he went to St. Peter's Hospital, and underwent an operation, which was merely preliminary. He never gained sufficient strength for the main operation, but grew gradually weaker. When I visited him at the end of September, his mind and memory were as alert as ever. He spoke of old times; and I looked through many of the drawers of his collection, while he from his chair directed my attention to this or that specimen, the position of which he seemed to know by heart. He said nothing then about the disposal of his collections; but in 1909 he had written that he supposed they would be sold when he died: "it is a pity, unless they could be sold *en bloc*. However, many happy times have gone into them." And so, courageously and patiently, he waited for the end, which came on the last day of October.

Dr. H. E. Durham contributed a sympathetic "appreciation" to the "Hereford Times" of November 19th; and Mr. Frohawk sent to the "Entomologist" for December a memoir written with the knowledge gained during a friendship of forty years. I have some hope of being allowed to reprint these notices in the form of a pamphlet, together with any additional material that may be forthcoming.

Superficially, he was an incessant and incorrigible jester, but, unlike some jesters, he was never wearisome. No disappointment, no physical discomfort could quell his propensity to see and express the ludicrous aspect of things. But this frivolous and diverting manner was the envelope of many sterling qualities. Mr. Frohawk says, "he was a man of extraordinary courage, determination, and reliability. His word was the acme of accuracy and truth." He was the most loyal of friends; full of tenderness and sympathy, he longed to find those qualities in others. He disliked slovenliness, being incapable of it himself, for he was the most scholarly of naturalists.

Farn does not seem to have communicated much of his knowledge otherwise than orally. I find in this Magazine only seven notes by him between 1873 and 1906. To the "Entomologist" his contributions were more numerous, viz., eighteen, spread over forty-eight years, 1868 to 1916. He occasionally exhibited insects at meetings of the Entomological Society and of the South London Entomological Society. I find six notes by him about birds in the

"Zoologist" (1885-1902). About 1876 the "Catalogue of the Doubleday Collection" at Bethnal Green was "collated with the collections by A. B. Farn." "The Insect Hunter's Companion," by the Rev. Joseph Greene, was in 1880 "revised and extended by A. B. Farn."—FRANCIS JENKINSON.

Dr. Georg von Seidlitz died on July 15th, 1917, at Irschenhausen (Oberbayern). He was born on June 19th, 1840, in Tschornaja Rjetschka, not far from Petrograd. The "Entomologische Blätter," xiii, 1917, pp. 239-248 (a copy of which has only just been seen by us), contains a long obituary notice of his life and work, including an excellent portrait, written by the late, H. Bickhardt. As a Coleopterist, he was well known to all students of Palaearctic beetles. The bibliography given shows that his first paper, on *Peritelus*, is dated 1865, and his last, issued a fortnight before his death, entitled "Die letzten Familien der Heteromeren" (Deutsche ent. Zeitschr. 1917, pp. 65-116), formed the concluding portion of the Heteromera of the "Insecten Deutschlands." Other important works by him were the "Fauna Baltica" (1872) and the "Fauna Transsylvanica" (1888).

Francis George Whittle, who died on October 26th with tragic suddenness at Southend-on-Sea, where he had resided for many years, was one of the oldest subscribers to our Magazine, to which, however, he made few if any contributions. In entomological circles he was well known as a most energetic and accomplished worker in the Micro-Lepidoptera, and most of our collections are indebted to him for the interesting little Psychid *Epichnopteryx* (*Whittleia*) *reticella*, the life-history of which was practically discovered by him. Probably no one was so intimately acquainted as he was with the exceedingly interesting Lepidopterous fauna of the salt-marshes bordering both sides of the Thames estuary. We understand that his extensive collections are bequeathed to the Natural History Museum.

Frederick William Lambert Sladen, F.E.S., the well-known writer on *Hymenoptera* and author of "The Humble Bee," was, we regret to learn, drowned in Canada on September 10th last. We have, however, no further particulars of the accident.

We deeply regret to announce the decease of *Thomas Algernon Chapman, M.D., F.R.S.*, at his residence, Betula, Reigate, on December 17th. A full notice of his life and work will appear in the next forthcoming number of this Magazine.

Society.

ENTOMOLOGICAL SOCIETY OF LONDON: *Wednesday, November 2nd, 1921.*
—The Rt. Hon. LORD ROTHSCHILD, M.A., F.R.S., etc., President, in the Chair.

The presentation by the President of a rare copy of Scopoli's "Deliciae Florae et Faunicae" was announced, and a vote of thanks to him was carried with acclamation.

The following were elected Fellows of the Society:—Messrs. Norman N. Miller, Dar-es-Salaam, East Africa; Oliver Richardson Goodman, 210

Goswell Road, E.C. 1; K. P. U. U. Nair, M.A., Training College, Trivandrum; Frank Balfour-Browne, M.A., F.R.S.E., F.Z.S., Oaklands, Fenstanton, St. Ives, Hunts; E. Melville Du Porte, M.Sc., Ph.D., Macdonald College, Quebec, Canada; Oliver C. Cassels, D.F.C., N.D.A., West Hill, Ottery St. Mary, Devon; O. C. Ollenbach, Survey of India Dept., Dehra Dun, India; J. B. Corporaal, Pieter Bothstraat, 39 The Hague, Holland; Douglas Cator, 13 Westminster Mansions, Gt. Smith Street, S.W. 1; Marco Pallis, Tatol, Aigburth Drive, Liverpool; and Samuel Walker, 53 Micklegate Hill, York.

Mr. W. G. Sheldon exhibited a series of *Epinephele ianira* from Sutherlandshire showing an approach to var. *hispulla*; also *Pieris napi* showing an approach to var. *bryouiae*. Mr. Bethune-Baker, a series of *Zygaena filipendulae* var. *chrysanthemii*, from Birmingham. Mr. F. W. Edwards, a remarkable new insect from Kashmir, which, though probably representing a new family of Diptera, shows curious resemblances to the Mayflies. Mr. L. Newman, gynandromorphous example of *Amphidasys betularia*, var. *double-dayaria*, and an Ichneumonid parasite from *Sphinx ligustri*. Professor E. B. Poulton, F.R.S., *Oedemagena tarandi*, the warble-fly of the reindeer, captured with its model, *Bombus lapponicus murmanicus*; he also read a note regarding observations made by Mr. Arthur Loveridge on the oviposition of the beetle *Mylabris oculata* Thunb., var. *tricolor* Gerst. Canon St. Aubyn Rogers, butterflies from East Africa, including remarkable females of *Papilio dardanus*; examples of *Papilio rex* and *Mimacraea marshalli dohertyi*. Dr. W. A. Lamborn, an Oriental Danaine butterfly, observed brushing the scent-glands on its hind wings. Mr. G. Talbot (on behalf of Mr. J. J. Joicey), new and rare butterflies from New Guinea and Peru. Mr. H. Donisthorpe, a rare British Aphid, *Stomaphis quercus* L. Mr. A. T. J. Janse concluded his account on methods of collecting while travelling in South Africa, illustrated with lantern-slides.

Wednesday, November 16th, 1921.—The President in the Chair.

The Secretary announced that the Council had nominated the following Officers and Council for 1922:—*President*, The Rt. Hon. Lord Rothschild, M.A., F.R.S., etc.; *Treasurer*, W. G. Sheldon, F.Z.S.; *Secretaries*, S. A. Neave, M.A., D.Sc., F.Z.S., and H. Eltringham, M.A., D.Sc., F.Z.S.; *Librarian*, H. J. Turner; *Council*, Robert Adkin; H. E. Andrewes; Ernest C. Bedwell; James E. Collin, F.Z.S.; J. Davidson, D.Sc., F.L.S.; J. J. Joicey, F.L.S., F.Z.S., F.R.G.S., etc.; Frederick Laing; William G. F. Nelson; Professor E. B. Poulton, M.A., D.Sc., F.R.S., etc.; Norman Denbigh Riley; H. Rowland-Brown, M.A.; J. Waterston, D.Sc., B.D.

After some discussion, it was decided to hold an informal meeting on January 4th, 1922, at 5.30–7.30 p.m.

Mr. W. J. Kaye exhibited a new race of the Ithomiine butterfly *Dircema tena* from Trinidad, with a series of the typical forms from the Potaro district of British Guiana. Mr. A. W. Bacot, enlarged microphotographs of the eggs of bed-bugs. Mr. W. G. Sheldon, Lepidoptera from Sutherlandshire. Dr. A. E. Cockayne, an example of *Pyrameis atalanta* with larval head. Professor E. B. Poulton, F.R.S., discussed the question of fluorescence as evidence for the evolution of the pigments of mimetic females from those of their non-mimetic males, and said that, with the help of Dr. Cockayne, he had been able to

examine for fluorescence the Nairobi forms of *Papilio dardanus* that had been shown by Canon St. A. Rogers at the last meeting. Mr. H. Donisthorpe exhibited specimens of the Chalcid *Spalangia erythromera*, together with its Dipterous host, and the ant *Acanthomyops fuliginosus*, in the nest of which these insects live. Dr. Neave read a translation from the German of an amusing skit on modern systems of Zoological Nomenclature.—S. A. NEAVE, *Hon. Secretary.*

✓ *HALICTUS TUMULORUM* L. AND *FLAVIPES* F. AND SOME ALLIED SPECIES.

BY R. C. L. PERKINS, M.A., D.SC., F.R.S.

Neither F. Smith nor Edward Saunders recognised the distinctness of *H. tumulorum* from *H. flavipes*, both of which occur in this country, so that an additional species can be added to our list. The former in the first edition of his "Catalogue" called the British species *flavipes*, but in the later one it is given as *tumulorum*, with *flavipes* as a synonym. Kirby kept the two apart, describing the British specimens as *flavipes* and considering *tumulorum* distinct from this, and not known to him as British, his description being based on the Linnean types. Nevertheless, it is evident that Kirby's descriptions—made from males only—both refer to *tumulorum* L. and not to *flavipes* F.

Judge P. Blüthgen, to whom I am indebted for German specimens, has pointed out the real differences between the two species in his tables on German *Halicti* (*Deutsche Ent. Zeitschr.* 1920, pp. 81-132), and in other papers. The distinctions between them are for the most part difficult to appreciate, and I have not been successful myself in the perception of some of the characters given, while it is absolutely necessary that the material be in the best of condition if others of these are to be seen at all. Some of the characters considered to be of specific value are certainly not constant; but, that the species are really distinct, appears certain from the fact that the genitalia present obvious differences.

On the continent there is another closely allied species, which I have long looked for without success in this country, but which is quite likely to occur, seeing how extremely local or rare with us are some of the species of the genus that abound in Northern Europe. This species, *H. fasciatus* Nyl., was recorded by Smith on the strength of a specimen caught by him at Deal, and sent to Nylander, who returned it with this name. This specimen I have examined, and I have no doubt that it is a rather abraded example of *flavipes* ♀. Smith himself

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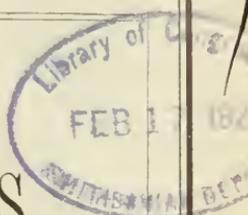
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DESIDERATA.

WANTED.--*Notonectidae* and *Cercopidae* from any part of the world, especially *Notonectae* from the Atlantic Islands and Mediterranean countries, and *N. lutea*.—
G. E. HUTCHINSON, Aysthorpe, Newton Road, Cambridge, England.

MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 41 Queen's Gate, S.W. 7 (nearest stations: South Kensington and Gloucester Road).—February 1st, March 1st, 1922, at 8 p.m.

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

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 7 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

THE LONDON NATURAL HISTORY SOCIETY, now meets in Hall 40, Winchester House, Old Broad Street, E.C. 2, on 1st and 3rd Tuesdays in the month at 6.30 p.m. General meetings 1st Tuesdays, Sectional meetings 3rd Tuesdays. (No meetings in July or August indoors, but field excursions instead.)

Hon. Sec.: W. E. GLEGG, The House, Albion Brewery, Whitechapel Road, E. 1.

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

ENTOMOLOGICAL SOCIETY OF HAMPSHIRE AND THE ISLE OF WIGHT.—This Society has developed from the Southampton and District Entomological Society. Meetings are held on the First Saturday afternoon of each month at Southampton, and other meetings will be arranged in important centres in the county from time to time. Activities being undertaken at the present time include the formation of a library, of collections of insects, and the compilation of a county insect fauna list. Will keen entomologists in the county who are interested please communicate with the

Hon. Sec., F. J. KILLINGTON, 1 St. Catherine's Road, Eastleigh, Hants.

subsequently came to the conclusion that it was only a variety or fresh specimen of *tumulorum*, so that *fasciatus* Nyl. does not occur in our list, nor have I ever seen a British specimen.

II. tumulorum is so generally distributed in England and so very abundant that it may readily serve to conceal the presence of closely allied species of similar appearance, and my own series is a very short one. I think, however, that *flavipes* is certain to prove much rarer, or at least more local, even if it is shown to be generally distributed like *tumulorum*. The few *flavipes* in my collection are casually caught, single examples, both sexes from the New Forest and the ♀ from Devonshire,* while, as I have mentioned above, it was taken by Smith at Deal. Very probably it exists in many collections mixed with *tumulorum*. It is said to be most partial to sandy places. In Devonshire I am sure it is much scarcer than *tumulorum*, if it exists there.

Including *fasciatus* Nyl., not at present known as British, but possibly existing in some collection, or hereafter to be discovered, the allied species may be distinguished by the help of the following table:—

♂ ♂.

- 1 (2) Antennae shorter, not reaching behind the postscutellum; 6th ventral segment at most a little depressed, not conspicuously foveate in the middle at the base *subauratus* Rossi (*gramineus* Sm.).
 2 (1) Antennae very long, reaching behind the brow of the propodeum; 6th ventral segment foveated at the base.
 3 (4) Occipital margin of the vertex of head sharp, the vertex very strongly raised behind the ocelli.

(Tomentose bands of abdominal segments 2-4 dense, wide, and clearly defined, as also one at the base of the 2nd segment).

. . . . *fasciatus* Nyl.

- 4 (3) Vertex of head ordinary, rounded off into the occiput.
 5 (6) Trochanters of middle pair of legs pale beneath, yellow or reddish; apical margin of the foliaceous inner process of the lacinia of the genital armature broadly rounded or nearly straight, the smaller outer process in lateral aspect very wide, fan-shaped, and at the apex as broad as long. *flavipes* F.
 6 (5) Trochanters of middle legs black; foliaceous inner process of lacinia distinctly emarginate at the apex, the outer process, in lateral view, small, subtriangular or subclavate.

. . . . *tumulorum* L.

♀ ♀.

- 1 (2) Vertex of head very strongly raised behind the ocelli, so that a sharpish edge is formed with the occipital region.

(2nd, 3rd, and 4th abdominal segments each with a wide, complete, tomentose band, which fills the apical impression of each segment).

. . . . *fasciatus* Nyl.

* The specimen being abraded, I am not quite sure of its identity with *flavipes*.

- 2 (1) Vertex rounded off into the occipital region in the ordinary manner.
- 3 (4) Punctures of mesonotum very fine and excessively dense, so that practically no surface is visible between them, or only minute spaces here and there; in fresh examples the yellow clothing is very dense.
 *subauratus* Rossi (*gramineus* Sm.).
- 4 (3) Punctures of mesonotum dense or very dense, but still the surface between them is easily seen, and the clothing is much less dense.
- 5 (6) Tomentose bands of 2nd and 3rd segments broad, filling the apical impressions, except that the band of the former is somewhat narrowed or emarginate in the middle. *flavipes*, F.
- 6 (5) Tomentose bands of 2nd and 3rd abdominal segments, except laterally, narrow, and not nearly filling the whole of the apical impressions, which to a large extent are clothed only with the minute hairs of the general surface and a row of setae springing from the base of the impressions *tumulorum* L.

A male from the New Forest, which I suspected would prove to be *flavipes*, and by examination of the genitalia found to be this species, has the penultimate antennal joint reddish beneath, but much darker than the 11th joint, while the apical joint is hardly pale at all. In Blüthgen's table the two apical joints of this species are said to be yellow beneath. Similarly there seems to be considerable variation in the colour of the legs and of the metallic tint of the head and body. In the ♂ the mesonotum of *flavipes* is said to be much more finely and densely punctured than in *tumulorum*, but this is not the case with my specimens. This author considered the descriptions of *tumulorum* in Saunders's work to apply to *flavipes* rather than to the other.

Newton Abbot.

November 14th, 1921.

ON THE OCCURRENCE OF *BOMBUS CULLUMANUS* (KIRBY) ILL. IN
 BRITAIN.

BY A. D. IMMS, M.A., D.SC., F.L.S.

A male example of this very scarce bee* was taken on a flower head of *Centaurea nigra* growing on the roadside between Dunstable and Tring on July 29th, 1921; another individual of the same sex was also observed but not captured. The locality is situated on the chalk, and numbers of freshly emerged *Lycaena corydon* were on the wing at the same time, while odd specimens of *Ortholitha bipunctaria* flew up among the herbage. The example of the bee which was captured was in perfect condition and had evidently only very recently left the

* I am indebted to Rev. F. D. Morice for examining the specimen and confirming my identification thereof.

nest. This fact, therefore, scarcely supports Sladen's conclusion ("The Humble-bee," p. 172) that it is a late appearing humble-bee even after making allowances for the exceptionally hot and long summer of 1921.

The type-specimen of *Bombus cullumanus* was taken by Kirby at Witesham in Suffolk, and Sladen mentions that four more examples were taken at Southend by Smith. The latter authority also recorded examples from the Brighton Downs and from Bristol. These captures were all made over forty years ago, and the only record of recent years is a somewhat faded male taken by Sladen on September 8th, 1911, at Ripple, Kent. It is interesting to note that the latter specimen was also taken on a head of *Centaurea nigra* by the roadside. Sladen mentions that the male only has so far been found in Britain. Perkins, in his notes on the Smith Collection of Hymenoptera in the British Museum (Ent. Mo. Mag. 1917, p. 161), states that there is a short series of males of *B. cullumanus* among the specimens, and also two supposed females, which appear to have been accepted by Saunders as belonging to the males. Perkins further adds that he was unable to see any structural characters to separate them from females of *Bombus pratorum*. According to Saunders (British Aculeate Hymenoptera) the face is broader, especially across the mandibles, and the abdominal black band is confined to the 3rd segment in *B. cullumanus*. In *B. pratorum* the face is narrower, and the black band is not confined to the 3rd abdominal segment. It is evident, therefore, that the two species are very alike in so far as the female is concerned, but it is very uncertain whether any examples of that sex have ever been taken in Britain. The male of *cullumanus* might be mistaken for either that of *pratorum* or possibly *derhamellus*, but the genitalia are very distinct and are well figured by Sladen (plate VI) and also by Handlirsch ("Hummelstudien," Ann. k.-k. Hofmus. vi, 1891). These same organs also serve to distinguish the male *cullumanus* from the same sex of *lapidarius* and of the variety *proteus* of *soroensis*. Saunders mentions that he regarded it as a variety of the latter species until the genitalia were subsequently examined. Any further distinguishing characters need not be detailed here as both Sladen's and Saunders's works are accessible to most entomologists. *Bombus cullumanus* does not appear to be a common insect on the Continent; according to Dalla Torre its range is northern and central Europe.

Rothamsted Experimental Station,
Harpenden, Herts.

December 9th, 1921.

NOTES ON COLLECTING IN NEW ZEALAND DURING THE SEASON
1920-1921.

BY G. V. HUDSON, F.E.S., F.N.Z.INST.

Apart from the spring and early summer, which is very usually most unsettled, the weather conditions for collecting in New Zealand have been better during the season of 1920-1921 than for some years past, and some good captures have been made.

On December 6th, 1920, I was collecting at Wilton's Bush, near Wellington, when I was delighted to re-discover the long lost *Arctoneura* (*Cyrtoneura*) *hudsoni* Marshall. Holding my net under a tall tree-fern I gave the stem a sharp kick which brought down a fine female fairly into the bag. The day was cloudy and cool, and to this circumstance I attribute my success, as, had there been hot sunshine at the time, I feel sure the insect would have taken flight instead of falling into the net. *A. hudsoni* is a very fine Mycetophilid described and figured by Dr. Marshall in the "Transactions of the New Zealand Institute," vol. xxviii. page 263, from a single specimen taken by me at Karori about the year 1884, and until last December, so far as I am aware, the insect had not been taken since that time.

On December 15th, whilst collecting in a deep forest ravine below the reservoir at Wainuiomata, I had the good fortune to capture a specimen of a very large and handsome species of *Tanyderus*, apparently at present undescribed.

On December 28th, accompanied by my wife and daughter, I left Wellington for the Lake Wakatipu, reaching Kinloch, at the head of the lake, on December 31st, and remaining there until January 12th. Four of the best days, January 1st, 5th, 8th, and 10th, were devoted to working Bold Peak, at altitudes from 2000 to 6000 feet above the sea-level. On January 1st my daughter discovered a large mountain *Perla* at the foot of a waterfall just above the forest (3600 ft.), and subsequently obtained a good series during a flying visit to Lake Harris (4000 ft.) on January 9th. During our ascent of Bold Peak we found *Sabatinca chrysargyra* Meyr., flying over moss in broken sunshine in the Fagus forest at about 3000 feet. Higher up, amongst the subalpine veronicas, several interesting species of *Chloroclystis* were secured, and larvae of *Argyrophenga antipodum* occurred amongst the tussocks. Few insects were found above this, although on previous visits I have found *Erebia butleri* abundant amongst the shaggy tufts of *Danthonia* grass, which grows in profusion between 4000 and 5000 feet. On January 5th, on our second ascent of Bold Peak, my daughter captured,

amongst rocks at about 5000 feet, a fine specimen of the remarkable broad-winged Anthomyid fly *Exsul singularis* Hutton, and this specimen is now in the British Museum (Natural History). Higher up, at about 6000 feet, we secured several specimens of *Erebia pluto*, *Tauroscopa glaucophanes*, and *Orocrambus melampetrus*, all three insects being excellent examples of melanic colouring at high altitudes. Descending the mountain between 4.30 and 6.30 P.M., we found *Porina fusca* Philp., amongst the Veronicas at about 4000 feet, and on the tussock grass, between the Veronica bushes, we took a fine series of the grand weevil *Tocris laevicostatus* Broun. These beetles were evidently just emerging from the tussocks prior to nightfall (we being then on the shady side of the mountain), as not a single specimen was seen during our ascent, over the same ground, about midday.

On January 14th we left Queenstown, situated on the middle arm of the lake, for Skippers, and reached a hut on the lower slopes of Mount Aurum on the following day. The road to Skippers is one of the most perilous in the Dominion, and the country all around is extremely rough. The prevailing vegetation is tussock grass with small patches of *Fagus* forest in some of the ravines, and in many places the ground is much overrun by marjoram (*Origanum vulgare*). The collecting here was not nearly as good as around the head of Lake Wakatipu. Four days' hard work produced a good series of *Notoreas anthracias* Meyr., several Tineids, some probably new, and two very fine specimens of a variety? of the remarkable giant Tipulid *Cerzadia plumosa* O. S. On this trip my daughter was fortunate enough to capture a specimen of the beautiful little *Choristella philpotti* Tillyard, the sole representative of the family Panorpidae at present known in New Zealand. This was in a wooded ravine at about 3000 feet where *Scoparia trapezophora*, Meyr., and the gorgeous weevil, *Pachyura sumptuosa* Broun, were also secured. The last named insect was found quite commonly on the foliage of *Phyllocladus alpinus*, and was very variable in respect of the pale transverse markings on the elytra. A single specimen of the same species was also taken on December 21st amongst mixed *Fagus* forest, in Gollan's Valley, on the eastern side of Wellington Harbour.

The past season has also proved noteworthy through the rediscovery of *Titanomis sisyrota* Meyr., a very rare Tineid of quite exceptional interest. In the "New Zealand Journal of Science" for June 1921, page 141, Mr. H. Hamilton reports this occurrence as follows: "After an interval of at least twenty years, during which it was generally thought that this moth must be extinct, it is gratifying to record a reappearance.

During a collecting trip to Rangataua, on the main trunk line, in January of this year, my wife and I were enjoying the hospitality of Mr. and Mrs. Larking at their residence. The night being warm the drawing-room windows were open, and, consequently many *Prionoplus reticularis* were annoying the ladies. Mrs. Hamilton struck down what she thought to be a beetle, but seeing the visitor was a moth, promptly acted on a collector's instinct and secured it in a matchbox. Thus was a fine female specimen of *Titanomis sisyrota* secured under peculiar circumstances. Rangataua is situated between the boundaries of the beech forests that fringe Mount Ruapehu and the outlying Rimu-Kahikatea-Maire belt. It would be hard, therefore, to localize this moth to any definite plant association, but the occurrence of beech forests in all localities where it has been found is significant."

So far as I have been able to ascertain, *Titanomis sisyrota* has only previously occurred on the following occasions:—

1. The first capture was made by the late Mr. R. Helms at Grey-mouth? in 1874, but the moth was not then described. This occurrence was communicated to me verbally by Mr. Helms.
2. There is a female specimen in my collection taken in Nelson in the "seventies," but no particulars are available.
3. In the collection formed by the late Mr. A. P. Buller, now in the Dominion Museum, there is an extremely damaged male specimen of *Titanomis sisyrota*, probably captured in the Nelson district.
4. In February 1882 Miss Collins captured a female specimen in the drawing-room of her residence at Wakapuaka, Nelson, and kindly gave it to me. I sent this specimen to Mr. Stainton, in 1885, for description. Subsequently, however, Mr. Stainton handed it over to Mr. Meyrick, who described it in the "Transactions of the New Zealand Institute" for 1887, page 104.
5. The next occurrence was in March 1886, when Mr. Clement W. Lee found a female specimen at Otaki, in the North Island. This is now in my collection.
6. Mr. Bannehr captured a specimen on the Dun Mountain, near Nelson, prior to 1898, when I saw the insect in his collection.
7. Mr. Philpott has recorded the discovery of a broken dead specimen at Haldane, Southland in 1900.

Hillview, Karori,
Wellington, N.Z.
July 1921.

SOME INDIAN COLEOPTERA (7).*

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

The seventh contribution of this series contains descriptions of a few more Staphylinidae, various Clavicornes, and one or more Ptinidae, Melandryidae, and Mordellidae. Many additional species of *Quedius*, *Cryptophagus*, *Corticaria*, etc., have come to hand from Kumaon, but these cannot be determined at present. Unnamed Indian *Mordella* and *Mordellistena* are to be found in collections, but none appear to have been recorded. Amongst the Cryptophagids, a specimen of *Henoticus indicus* Grouv. (1916), from Nainital, and several examples of the cosmopolitan *Cryptophilus integer* Heer, from Sarda, Bengal, have been identified.

The species or varieties enumerated or described in this paper are as follows, the genera marked with an asterisk being additions to the Indian fauna:—

| | |
|--|--|
| STAPHYLINIDAE. | CUCUJIDAE. |
| <i>Bolitobius spinipes</i> , n. sp. | * <i>Platycotylus inusitatus</i> Ollif. |
| " <i>zeanthopterus</i> , n. sp. | COLYDIIDAE. |
| <i>Mycetoporus fasciatocollis</i> , n. sp. | <i>Cerylon setulosum</i> , n. sp. |
| <i>Quedius (Raphirus) conicus</i> , n. sp. | " <i>striativentre</i> , n. sp. |
| <i>Lathrobium semicaeruleum</i> Cam., | THORICITIDAE. |
| var. <i>ochreonotatum</i> , n. | * <i>Thorictodes erraticus</i> , n. sp. |
| * <i>Pseudobium laeriventre</i> , n. sp. | PTINIDAE. |
| CRYPTOPHAGIDAE. | * <i>Sphindus semirufus</i> , n. sp. |
| <i>Antherophagus himalaicus</i> , n. sp. | MELANDRYIDAE. |
| <i>Cryptophagus atratus</i> , n. sp. | * <i>Phloeotrypa quercicola</i> , n. sp. |
| LATHRIDIIDAE. | <i>Osphya dissimilis</i> , n. sp. |
| <i>Corticaria orientalis</i> , n. sp. | MORDELLIDAE. |
| " <i>rhombifera</i> , n. sp. | <i>Mordella argenteoguttata</i> , n. sp. |
| " <i>inflata</i> , n. sp. | <i>Mordellistena cuneigera</i> , n. sp. |
| " <i>nebulosa</i> , n. sp. | " <i>humeronotata</i> , n. sp. |
| " <i>parvicollis</i> , n. sp. | |

Bolitobius spinipes, n. sp.

Black, shining, the basal joints and tip of the antennae, an oblong humeral patch on each elytron, the femora, and anterior coxae testaceous; the abdomen and under surface clothed with long, stiff, decumbent, bristly hairs, the abdominal segments with longer projecting setae at each hind angle. Head smooth, long, about half the width of the base of the prothorax, parallel-sided behind the eyes; antennae rather short, joints 1-4 shining, 2-4 slender, 5-11 opaque, stout, 5 triangular, 6-10 transverse, 11 oval. Prothorax smooth, as long as broad, widest a little before the base, subconical as seen from above, the apex with four and the base with two setigerous punctures. Elytra wider than the prothorax, about as long as broad, very finely alutaceous; each with

* Continued from Vol. LVII. p. 206, September, 1921.

three rows of 5 or 6 punctures—sutural, subhumeral, and marginal,—the sutural stria deep, the subhumeral groove oblique, curved, shallow; accessory punctures wanting. Abdomen rather closely (except the exposed dorsal segments 1 and 2 in the middle), strongly punctate. Legs moderately long; tibiae strongly spinose.

Length 7 mm.

Hab. Nainital, W. Almora Division of Kumaon (*H. G. C.*).

One specimen. This insect has the general facies of a *Mycetoporus*, but the elongate apical joint of the maxillary palpi brings it into *Bolitobius*. It has shorter legs and antennae than the European *B. atricapillus* F.; the head is broader, the elytra are narrower, the tibiae are very strongly spinose, and the abdomen is strongly punctured and clothed with decumbent bristly hairs. Two Burmese representatives of this genus were described by Fauvel in 1895, but they are not related to this or the following species.

Bolitobius xanthopterus, n. sp.

Black, shining, the four basal joints and the tip of the antennae, the palpi, elytra (the inflexed outer margins excepted), legs, and anterior coxae, and the apical margin of each abdominal segment, testaceous; the abdomen and under surface clothed with long, decumbent, bristly hairs, the abdominal segments with longer projecting setae at each hind angle, the elytra with a few fine, erect hairs. Head smooth, rather narrow, less than half the width of the base of the prothorax; antennae rather long, joints 1-4 shining, slender, 5-11 opaque, moderately stout, 5-10 about as long as broad, 11 oval. Prothorax as long as broad, subconical, smooth; the apex with four and the base with two setigerous punctures. Elytra much wider than the prothorax, about as long as broad, each with three rows of 5 or 6 punctures—sutural, subhumeral, and marginal,—the sutural stria deep; accessory punctures wanting. Abdomen rather sparsely punctured, the exposed dorsal segments 1 and 2 smooth in the middle. Tibiae spinose.

Length 5-6 mm.

Hab. Ranikhet Division of Kumaon (*H. G. C.*).

Four specimens. Separable from *D. spinipes* by the testaceous elytra (the inflexed lateral margins excepted), palpi, and legs; the less thickened antennae, narrower head, relatively broader elytra, and less strongly spinose tibiae.

Mycetoporus fasciatocollis, n. sp.

Narrow, shining, black, the mouth-parts, palpi (the stout infusate penultimate joint of the maxillary pair excepted), the base of the antennae, the basal two-thirds of the prothorax, the elytra with an oblong humeral patch (omitting an oblique ramus within) and an apical fascia (extending forwards at the sides and nearly meeting the humeral streak), the apical margin of each

abdominal segment, and the legs testaceous; the elytra and under surface clothed with rather long, decumbent, pallid hairs. Head smooth, subconical; antennae moderately long, joints 5-11 gradually thickened, 5-8 about as long as broad, 9 and 10 transverse, 11 oval, rather stout. Prothorax as long as broad, subconical, smooth; the apex with four and the base with two setigerous punctures. Elytra considerably longer than broad, wider than the prothorax; each with three rows of about ten punctures—sutural, sublumeral, and marginal; accessory punctures wanting. Abdomen sparsely punctate, rapidly narrowed from the base.

Length $4\frac{1}{2}$ mm.

Hab. W. Almora in Kumaon (*H. G. C.*).

One specimen. Near the European *M. splendidus* Grav., the antennae infusate (except at the base) and a little more slender; the prothorax nigro-fasciate in front; the elytra black on the disc, with the sides in part and the apex testaceous, the seriate punctures more numerous; the abdominal segments black, testaceous at the apex. The only recorded Indian species of this genus, so far as I am aware, are *M. braminus* and *M. nitidus* Motsch.

Quedius (Raphirus) conicus, n. sp.

♂. Obconic, robust, very shining, sparsely clothed with stiff, adpressed, bristly hairs, the head and prothorax smooth and glabrous, except for the usual setae around the eyes and along the sides of the pronotum; black, the inflexed lateral portions of the elytra piceous, the antennae, palpi, and legs rufo-testaceous. Head very large, orbicular; eyes extremely large, occupying almost the whole of the sides of the head; antennae long, slender, joints 3-10 gradually decreasing in length. Prothorax wider than the head, very convex, transverse, laterally compressed and with the sides (as seen from above) subparallel from the middle forward, the margins narrow, scarcely visible from the dorsal aspect; the disc with two widely separated punctures towards the anterior margin. Scutellum coarsely punctured. Elytra broader than long, narrower than the prothorax; impressed with very coarse, angular, somewhat scattered punctures. Abdomen narrowing from the base, iridescent, sparsely, finely punctate. Anterior tarsi broadly dilated.

Length $8\frac{1}{2}$, width of prothorax $1\frac{1}{2}$ mm.

Hab. Ranikhet Division of Kumaon (*H. G. C.*).

One specimen only of this remarkable insect has been received. The greatly developed, very convex, broad prothorax, the large head, and the rapidly narrowed abdomen, give it a conical shape; the elytra, too, are extremely coarsely, rather sparsely punctured. This is one of several species of *Quedius* sent from Kumaon: one of them was described in the last volume of this Magazine (p. 273) under the name *Q. rugosus* Cam.; another, a form with brilliant cyaneous elytra

(resembling *Philonthus cyanipennis* F. in this respect), *Q. himalayicus* Bernh., has been sent in abundance from various localities in Almora.

Lathrobium semicaeruleum Cam., var. *ochreonotatum*, n.

Lathrobium semicaeruleum Cam. Ent. Mo. Mag. 1921, p. 274.

Var. Elytra each with a large ochreous apical patch, sometimes extending forward to the middle.

Hab. R. Sarda Gorge [xii.1918] and W. Almora and Ranikhet Divisions of Kumaon [vi.1917] (*H. G. C.*).

Amongst a series of *L. semicaeruleum* sent from Kumaon, there are four specimens with a large ochreous patch at the apex of the elytra, differing in no other way from the type.

Pseudobium laeviventre, n. sp.

Narrow, shining, sparsely clothed with fine, semierect hairs; rufous or piceous, the elytra usually darker than the prothorax, and invariably with a narrow flavous space at the apex, the abdomen black, the antennal joints 1 and 2, the palpi, and legs (the darker femora excepted) rufous or testaceous. Head elongate, wider than and about as long as the prothorax, impressed with rather coarse, scattered punctures; antennae long, joints 2 and 3 longer than those following, 4-10 subequal in length. Prothorax elongate, narrow; with a row of closely-packed punctures along each side of the rather broad, smooth, median space, and some scattered irregularly distributed punctures at the sides. Elytra as long as and much broader than the prothorax; with rows of rather coarse punctures separated on the disc by smooth, sharply raised, narrow lines, the flavous apical margin almost impunctate. Abdomen very finely, sparsely punctate, the interspaces smooth and shining.

♂. Sixth ventral segment deeply triangularly emarginate.

Length $4\frac{1}{2}$ -5 mm.

Hab. Swal R. Division [ii.1919], Ranikhet and E. and W. Divisions [x.1918] of Almora, Kumaon (*H. G. C.*).

Five specimens. A form of the Mediterranean *P. labile* Er., differing from a series of that insect before me (captured by myself in Corsica, Sardinia, the Eastern Pyrenees, and Algeria) by their larger size; the more coarsely striato-punctate, costate elytra; and the sparsely punctured, polished abdomen. The abdomen in *P. labile*, viewed under the microscope, is extremely finely shagreened (and in consequence less shining) and the puncturing is closer.

(To be continued.)

The "Zoological Record."—Owing to the collapse of the International Catalogue of Scientific Literature in connection with which the Record was published from 1906 to 1914, the Zoological Society of London has undertaken to bear the whole financial responsibility for the preparation and printing of the Record. Owing to the great increase of the cost of printing and to the very meagre support accorded to the Record by Zoologists and Zoological Institutes generally, the financial burden of this undertaking on the Zoological Society is becoming very severe. The cost of printing the Record now amounts to between £1500 and £2000 annually, and the Society receives back by Subscribers and sales less than 25 per cent. of this sum; I fear, therefore, unless Zoologists are prepared to make greater efforts to support the undertaking, there is a strong possibility that the Council of the Zoological Society may refuse to find this large sum each year. It appears, therefore, to be the duty of every Zoologist to help so far as he is able to support this most invaluable work. All particulars and forms of subscription can be obtained from the Secretary of the Zoological Society, Regent's Park, London, N.W. 8. The price of the whole volume is now £2 10s., and that of the separate parts a proportional smaller sum; the Insecta is 15s.—W. L. SCLATER, Editor, "Zoological Record," London: January 1922.

Coleoptera at the Lizard, Cornwall, in 1920 and 1921.—In the hope of securing further examples of the new British *Cathormiocerus*, subsequently identified as *C. attaphilus* Bris., of which two specimens from the district were already in my possession, and of obtaining *Meligethes subrugosus* Gyll. in quantity, three only of that species having been taken by me in 1919, I spent June 21st to July 5th, 1920, at the Lizard. Of the former beetle, despite considerable search, the result of my visit was a single capture only; of the *Meligethes* I took upwards of 200 specimens (and doubtless could have doubled that quantity had I desired so many), thereby justifying Canon Fowler's observation: "Only one British specimen is known. . . . It will probably be found in Britain in some numbers."—Col. Brit. Isls. iii, p. 246. Vegetation was luxuriant in growth and perfect in condition, and *Jasione montana*, on which the *Meligethes* chiefly occurred, was abundant everywhere. *Miarus micros* Germ. was equally plentiful in the same flower heads. *Agabus brunneus* F. was again in evidence, but I met with it nowhere else in the district than in the little water-course noted in my first record of Lizard Coleoptera in this Magazine (1919, p. 259). The Carabidae I neglected this time, and *Masoreus wetterhali* Gyll. was the only noteworthy species taken. Just beyond Cadgwith, in the mud of a partly dried up pool, 17 *Platystethus alutaceus* Thoms. saved the reputation of an otherwise blank day in that neighbourhood, *Philonthus micans* Gr., *P. quisquiliarius* Gyll., and **Gabrius pennatus* Sharp occurring in the same place; these with *Atheta angusticollis* Thoms. (1) and *A. muscorum* Bris. (1) are all the Staphylinids worth mentioning. *Meligethes pelicularius* Gyll. was found in numbers and about twenty *M. exilis* Sturm. came off thyme; *Heterotomus pulicarius* L. (*Brachypterus gravidus* Ill.) was frequent; *Sericoderus lateralis* Gyll. and **Monotoma 4-dentata* Thoms. (*brevicollis* Aubé) were captured at the roots of plants; *Cardiophorus erichsoni* Buys. (2) by sweeping; *Ceuthorrhynchus chrysanthemi* Germ. (20), all of which, curiously enough, were taken off isolated small

clusters of ox-eye daisy (*C. leucanthemum*), huge patches, perhaps about half an acre in extent, yielding none; *Sitones cambricus* Steph. (2); *Trachyphloeus laticollis* Boh., *T. myrmecophilus* Seidl., *T. bifoveolatus* Beck (*scaber* L.) in some numbers; *Cathormiocerus maritimus* Rye (17), *Orthochaetes setiger* Beck, and *O. insignis* Aubé. *Apion stolidum* Germ., and *A. pomonae* F. were the only individuals of any interest amongst masses of commoner species of that genus. Of the Heteromera the only noteworthy examples were *Mordellistena inaequalis* Muls. (teste G. C. C.) and *Sphaeriestes (Salpingus) ater* Pk., very variable in size and occurring on flowers and tall grasses all along the coast. The nearest trees were three-quarters of a mile distant as the crow flies, and then only a small copse, at Landewedenack. Decaying seaweed under suitable conditions for Coleoptera is rare at the Lizard, and the only habitat I found yielded very few individuals and those of the commonest species only, although I spent some time examining the weed.

In 1921, June 10th-25th, I again went to the Lizard, on the way down staying a night at Helston, and the following morning walking out to the "Bar," a small-scale Slapton Ley. I had half-an-hour only to spend on the sands, but was rewarded with several *Lionychus* ab. *unicolor* Schill., *Corticaria crenulata* Gyll., *Apion confluens* Kirby, etc. On reaching the Lizard there was a marked contrast for the worse in the condition of the flora compared with that of last year. Little rain had fallen during the spring and none at all for several weeks prior to my arrival. The herbage was stunted and sparse, the grass short and parched, the ground hard-baked, *Jasione* being very uncommon comparatively, and the *Meligethes* and *Miarus* proved to be quite rare. I had decided on this visit to concentrate my attention on the quest for the *Cathormiocerus*, but present conditions were hopeless for the work, so I accordingly got out the water-net for temporary use, trusting that rain would soon fall. The little rills were very low in water—some were quite dried up—but the moss on the stones and boulders was teeming with life. I used a beating tray, 2 ft. square, and a few minutes after shaking a handful of moss upon it there was at least a beetle of some sort for every $\frac{1}{4}$ in. of surface. *Helophori* were the most abundant, but nearly all were of the commonest species, several *H. *aequalis* Thoms. being the only interesting form obtained. *Ochthebi* were next in quantity, but consisted almost entirely of *O. impressicollis* Lap. and *O. impressus* Marsh. I got, however, *O. *nanus* Steph., one only; 1 **Paracymus scutellaris* Rosenh. (*nigroaeneus* Sahlb.) was also taken. Of *Hydraena* four species occurred in fair numbers, viz., *testacea* Curt., *riparia* Kug., *gracilis* Germ., and **atricapilla* Wat., and *O. *poweri* Rye from a trickle on the rocks on the shore, in some numbers. Of Staphylinids there were some 50 species, but the only kinds worth noting were *Tachyusa atra* Grav. (lots), *Atheta oblita* Er., and *A. *gyllenhali* Thoms., *Lathrobium multipunctum* Gr., *L. angustatum* Lac., *Lesteva fontinalis* Kies. (3), and **Mycetoporus angularis* Rey. *Limnius tuberculatus* Müll. and *L. troglodytes* Gyll., in abundance, were also taken.

The seaweed on the beach, so very barren last year, was now full of things. I bottled a few in a cursory way just to see what they might be, and regret now that I gave the matter so little thought, as refugees from the drought were there in numbers. My holiday, however, was already half spent, no rain had fallen, *Cathormiocerus*, my especial quest, had proved

elusive, and I was getting anxious to be doing serious work in that direction. It may be worth while, however, to record the species I found in the weed: *Exaleochara morion* Gr., *Oryzopoda opaca* Gr., *Tachyusa atra* Gr., *Atheta elongatula* Gr., *A. longiuscula* Gr. (*vicina*), *A. triangulum* Kr., *A. oblita* Er. (♂), *A. palustris* Kies., *A. sordida* Marsh., *A. atramentaria* Gyll., *A. fungi* Gr. (var.), *A. longicornis* Gr., *Philonthus ventralis* Gr., *Gabrius nigrifolius* Gr., *G. pennatus* Sharp, *Xantholinus linearis* Ol., *Oxytelus rugosus* F., *O. laqueatus* Marsh., *O. nitidulus* Gr., *O. sculptus* Gr., *Homalium excavatum* Steph. The remainder of my time was devoted to the *Cathormiocerus* search, and by persistently setting traps I succeeded in coaxing four specimens from their subterranean retreats before I returned home. Rain fell a few hours after I had left, and thanks to my friend, Mr. N. Micklewood, who remained some days longer, and who (although not an entomologist) was good enough to continue to practise my methods, eleven more examples were taken. In addition to the *C. attaphilus* Bris. in question (recorded in Ent. Mo. Mag. 1921, p. 100), the various species of *Trachyphloeus* mentioned above, as well as *Caenopsis waltoni* Boh., were taken in numbers in the traps. There also occurred **Pselaphus dresdensis* Herbst (1), and *Stenichnus pusillus* Müll. (2), as well as many other species of Coleoptera. It is perhaps worth noting that *Ctenioptus sulphureus* L. was flying about in numbers and had the habit of settling on the back of our necks whilst we were kneeling and making their presence rather unpleasant by nibbling our skins with their mandibles. Species marked with an asterisk are apparently new to the County List.—J. H. KEYS, 7 Whimble Street, Plymouth: December 1921.

Haliplus obliquus Er. infested with acarid parasites.—It is generally known that the aquatic bugs (*Corixa*, *Notonecta*, etc.) are not infrequently infested with acarid parasites; apparently definite examples are lacking amongst the beetles. A specimen of *Haliplus obliquus* Er. was taken on August 28th, 1921, at the Madingley Pools, near Cambridge, infested with two larval acarid parasites. One of these is attached to the wing, and the other to the dorsal surface of the abdomen. Dr. D. Keilin, of the Quick Laboratory, has very kindly examined the specimens, and informs me that they are larval Hydrachnids. He considers that it is worth putting on record.—E. J. PEARCE, The Lodge, Corpus Christi College, Cambridge: January 16th, 1922.

Anthonomus cinctus Kollar in Kent.—Having seen the report of Mr. Harwood's interesting capture at Darent of *A. cinctus*, recorded in this Magazine for October last (vol. lvii, p. 226), I enquired of Miss Worsley, who is doing some interesting work from an economic point of view at Malling on the "Apple-blossom Weevil," whether she had found any weevils differing in any particulars from the majority of those she was finding, and I was much interested to receive from her a description of a single specimen she had taken which apparently differed from the others. Unfortunately she had not preserved it, but on December 15th I received from her two other examples which I suspected might be *A. cinctus*. Mr. Harwood has very kindly examined one of these and has identified it as *Anthonomus cinctus*.—C. A. W. DUFFIELD, Wye, Kent: January 1922.

Sirex juvenecus F. in Yorkshire.—In connection with Mr. Bayford's note on the above (Ent. Mo. Mag. vol. lvii, p. 277), and the information conveyed that there has only been three previous records from Yorkshire, I am reminded that I have been lacking in not placing on record four specimens I received from Mr. W. Fletcher, of Wakefield, in 1914. I was under the impression they were the commoner *S. noctilio* F. until I submitted them to the Rev. F. D. Morice, when I was pleased to learn they were the rarer *S. juvenecus* F.—J. W. SAUNT, 53 Enfield Road, Stoke, Coventry: December 21st, 1921.

Lepidoptera in the Dolgelly district, Merionethshire.—While collecting in the valley of the Gwynant, a mountain-torrent which flows through a wooded valley and joins the Mawddach about three miles below Dolgelly, I have been fortunate enough to obtain several Lepidoptera, which I believe have only rarely or never been recorded from this district. I append a list.

Colias edusa, one specimen, September 1918; *Vanessa c-album*, often common, sometimes seen in April as well as in September; *Lycæna phlaeas*, var. *schmidtii*, one specimen, September 1912; *Sphinx ligustri*, one larva on a solitary ash-tree on the slopes of Cader Idris; *Stauropus fagi*, two larvae 1917, one imago 1918; *Acronycta abii*, two larvae 1916; *Polyphoca ridens*, larvae often very common, imagines not uncommon; *Agrotis ashworthii*, one larva 1920; *Xylophasia scolopacina*, several large specimens were taken at privet-blossom in August 1919; *Stilbia anomala*, common on heathy tracts; *Taenio-campa miniosa*, in 1918 this was abundant at sallow-bloom; *Cirrhoedia xerampelina*, of regular occurrence; *Lithophane socia*, one specimen at sallow, April 1920; *Mesoleuca ocellata*, common; *Perizoma blandiata*, one specimen, 1917—this specimen was captured on the south side of the Mawddach, not near Cwm Bychan, which I believe is a regular locality for it; *Eupithecia linariata*, one specimen; *Eurymene dolabraria*, one specimen bred from a larva found on oak; *Tephrosia consonaria*, occurs regularly; *Tephrosia punctularia*, common every year.

Since I have only collected in the locality regularly in April, August, and September, this list is necessarily very incomplete, but it may prove of interest—E. NEVILL-WILLMER, Trafford Hall, near Chester: December 1921.

Chloropisca circumdata Mg. (= *ornata* Loew, nec Mg.) occurring in houses.—Dr. Imms's note on p. 20 of this Volume about this species has decided me that I ought to report a similar occurrence here. It was at the beginning of September that I first noticed numbers of the flies in the top rooms of this house. They were chiefly in a room which I use for my study, and in a neighbouring bedroom, but also in the other rooms on the same floor; and there were none at all in the lower parts of the house. The two rooms where they were chiefly observed had windows facing, those of the bedroom North only, those of the study East and South. The study is a large room, formerly used for billiards, and the flies were in every part of it, but were most numerous on the ceiling in the S.E. corner between the windows. Here they were packed so close together that in a test-case, a narrow-mouthed cyanide bottle of barely 2-inch inside diameter, placed over as many as it would cover in a typical portion of the mass, was found to contain 17 individuals (the sexes were

approximately equal). They were as numerous as this over an area of about 50 square feet of the ceiling, and beyond that became less and less so as one got further away from that corner, but nowhere failed entirely, and it would be safe to estimate that there were about 50,000 present. Dr. Sharp, in the *Camb. Nat. Hist., Insects*, pt. ii, p. 505, speaks of "many millions" occurring in a single apartment; had there been one million in my room there must have been at least a dozen per square inch over the whole of the ceiling, and many millions would mean several layers thick: do they really occur in this abundance? I could see no explanation of their presence; the house is quite surrounded by garden; not far away is a place where under trees the grass is allowed to grow rough and is only scythed occasionally, not mown at all, but otherwise I see no ground where the species would be likely to breed in special numbers. They certainly did seem to come in after the first cold nights at the end of the summer (there had been one or two slight ground-frosts immediately before their arrival); but if they come into the house for the purpose of hibernation, a suggestion to which Dr. Inms refers, then the question immediately arises: How is it that they died so soon? For after about two weeks they began to drop, and before long were all dead; not one has survived. Moreover, why did they come into the rooms on the second floor only and none into those immediately beneath? In the latter rooms we had a similar visitation, on a much smaller scale, of another insect altogether—a Chalcid, which Mr. G. T. Lyle has kindly identified for me as *Pteromalus deplanatus* Nees, which is also known to have this habit of entering houses. Can there be any connection between the two species by any chance? I only came to live in this house in October 1920, so yet have to learn whether either or both of these insects will prove to be annual visitors, or if the unusual character of the summer of 1921 may be partly responsible.—
COLBRAN J. WAINWRIGHT, Daylesford, Handsworth Wood, Birmingham:
January 1922.

Review.

"MECOPTERA: MONOGRAPHIC REVISION." By P. ESEEN-PETERSEN, "Catalogue Systématique et Descriptif des Collections Zoologiques du Baron Edm. de Selys Longchamps." Fasc. v (deuxième partie). Pp. 1-172, pls. i and ii, figs. 1-188. Brussels, 1921.

Another addition has just been made to the series of magnificent monographs forming the Selysian Catalogue. On the present occasion the particular group of insects dealt with is that known as the Mecoptera, or Scorpion-flies, of which 179 recent species, belonging to 17 genera, have been described. These are arranged in five families, the largest of which, the Panorpidæ, is subdivided into three subfamilies. That family, with 8 genera and 112 species, is represented in Europe, Asia, Australia, New Zealand, and North America. The Meropidæ (containing only *Merope tuber* Newman) and the Notiothaumidæ (consisting of *Notiothauma reedi* McLachlan) occur in the United States and Chile respectively. The family Boreidæ comprises the single genus *Boreus*, with 10 European and North American species. Finally, the Bittacidæ include 6 genera and 55 species, from Europe, Asia, Australia, Africa, and North and South America.

The appearance of this volume, delayed by the War since 1914, comes at a time when interest in the group has been renewed by the recent discovery in the Permian and Triassic deposits of Australia, not only of true Mecoptera, but also of related forms belonging to new Orders. Indeed, Dr. R. J. Tillyard, to whom we are indebted for our knowledge of these discoveries, sees in these earliest endopterygote insects something very near to the common ancestors of the Diptera, Lepidoptera, and other recent Orders possessing a complete metamorphosis.

The author of the monograph is the well-known writer on the so-called "neuropterous" or "neuropteroid" insects, Mr. P. Esben-Petersen, of Silkeborg, Denmark, and entomologists in this country will be gratified to learn that English has been adopted as the language of the text. Mr. Esben-Petersen is also responsible for the excellent illustrations which add so largely to the scientific value of the monograph. In addition to two well-executed plates, exhibiting many remarkable and interesting forms, the text is enriched by no fewer than 188 figures of wing-venation and male genital armature, from the author's own photographs and drawings.—HERBERT CAMPION.

Obituary.

Dr. Thomas Algernon Chapman, F.R.S., etc., as announced in our last issue, died at Reigate, Surrey, on December 17th, 1921. He was born at Glasgow on June 2nd, 1842. At an early age he qualified as L.R.C.S. Edinburgh and M.D. Glasgow (with honours), and was resident physician and surgeon of Glasgow Royal Infirmary for a time. He then joined the staff of the Abergavenny Asylum, remaining there till 1871. During his 25 years at Hereford, 1871-1896, he was medical superintendent of the County and City Asylum. After his retirement he went, in 1897, to reside at Reigate, but up till then he was not known personally to many of us resident in the south. His cheery manner and attractive personality soon brought him many friends, and from that time onward, till failing health prevented, he was a constant attendant at the meetings of the Entomological Society of London, often taking part in the discussions on these occasions.

In the obituary notice of Mr. T. Chapman, published in this Magazine (xvi, p. 138, 1879), the following remarks were made concerning his son: "It may safely be presumed that early training under a parent genuinely devoted to natural history has developed in Dr. Algernon Chapman that talent for biological work which has hitherto so eminently characterized his writings." In writing a memoir of the junior man, 42 years later, we can add that his subsequent work was even more thorough, and that this standard was maintained till the last.

From 1897-1914, when war put an end to travel, it was his practice to spend some considerable time each year on the Continent for entomological purposes—in the spring occasionally to the Riviera, and in the summer to various places in the Alps or Pyrenees, Sicily, Spain, Norway, etc. When the French army was mobilised in 1914, he was at Gavarnie with the present writer, who had also had the privilege of accompanying him on his five visits to Spain, and on various occasions to places in the Alps, and a better field-companion than



Z. Chapman

Chapman it would be difficult to find. His object invariably was to try to solve some problem concerning the oviposition or life-history (particularly with regard to Lycaenid-larvae living with ants) of certain Lepidoptera. Accordingly, some particular species would be selected for investigation each year—often a Lycaenid, an *Erebia*, a Tortricid, or a Psychid—and a journey made to places where such insects were known to occur. When this work was accomplished, and he seldom failed to elucidate new facts, the insects bred or studied, no longer required, were presented by him to his friends. Therefore, at his death, he possessed no collection in the ordinary sense of the word.

Amongst his most important contributions to science, are the life-histories of various butterflies—*Callophrys acis*, *Albulina pheretes*, *Agriades thersites* and *escheri*, *Polygonmatus eros*, *Lycaena arion* (concluding portion), and *Scolitantides orion* (Trans. Ent. Soc. London, 1910–1915). In Vols. iii, iv, and vi of this Magazine (1866–1870) there are papers by his father and by himself. One of these articles by the son, the first written by him so far as we are aware (iii, p. 94, 1866), was on the habits and oviposition of a Dipteron, *Atherix ibis*; and the last, entitled “Notes on some sawflies, chiefly as to oviposition,” appeared in January 1922 (*op. cit.* lviii, pp. 8–16), the proofs of this paper having been actually ready for him at the time of his decease. His contributions to entomology extend, therefore, over a period of 56 years. Those written at Abergavenny and Hereford concerned British insects—Diptera, Coleoptera, Hymenoptera, and Lepidoptera. Seven of the earlier papers, all of which were published in this Magazine, 1868–1891, are of particular value: (1) Habits and transformations of *Hylesinus crenatus*, *fraxini*, and *vittatus*; (2) *Aphodius porcus*, a cuckoo parasite of *Geotrupes stercorarius*; (3) Oeconomy of the British species of *Scolytus* [less *ratzeburgi*], (4) of the Chrysidæ parasitic on *Odynerus spinipes*, (5) of *Abdera bifasciata*, and (6) of *Bombylus*; (7) Oviposition of *Metoecus*. The remainder are to be found in one or other of our entomological journals, or in the “Transactions of the Entomological Society of London.”

This Society owes much to his generosity, as he contributed largely towards the cost of the great number of illustrations accompanying his papers. He was always ready, too, to help entomologists, and on more than one occasion he entertained the numerous members of one or two of the local London entomological societies at his Reigate home.

Chapman was elected a Fellow of the Entomological Society in 1891, serving many times as Vice-President, though he could never be induced to accept the office of President, much to the regret of his friends; a Fellow of the Zoological Society in 1897; and a Fellow of the Royal Society in 1918.

His funeral took place at Reigate Cemetery on December 21st, 1921.

The void left in the ranks of our philosophical Entomologists by the death of Dr. Chapman is indeed one which may not be adequately filled for a long time to come. He was never married, his last years at Reigate being passed with two unmarried sisters, to whom we tender our sincere condolence and sympathy in the loss of their greatly esteemed and respected brother. The photograph here reproduced was taken in 1905.—G. C. C.

Societies.

YORKSHIRE NATURALISTS' UNION: ENTOMOLOGICAL SECTION.—The Annual Meetings of this Section were held at Leeds on October 29th, 1921. In the absence through illness of the President, Dr. O. E. CROFT, F.E.S. was Chairman of the afternoon meeting. Mr. B. Morley and Mr. M. L. Thompson, F.E.S. paid a tribute to the work, and expressed the loss the Section had sustained in the deaths during the year of Dr. H. H. Corbett, F.E.S., Mr. J. W. Carter, F.E.S., and Mr. John Gardner, F.E.S.

It was decided to make a special excursion for the investigation of Askham Bogs during the following summer.

Mr. G. T. Porritt, F.L.S., was re-elected President, and Mr. B. Morley Secretary of the Section, and the various committees were appointed.

The reports of the various committees were presented, and the following is a summary of their contents:—

Coleoptera.—Dr. W. J. Fordham, F.E.S., said that twelve species had been added to the county list as follows: *Stenus carbonarius* and *Ocupsa maura* both from flood-refuse at Bubwith by himself; *Erirehinus scirpi* from Hawksworth by Mr. H. H. Wallis; *Synalypsa setigera*, *Enicmus histrio*, *Eston*, *Scalby*, *Hull*, and *Richmond*, *Trichopteryx montandoni*, Harwood Dale, *Chaetocnema subcoerulea*, Forge Valley, Scarborough, *Bruchidius debilis*, East Ayton, *Dorytomus melanophthalmus* Ellerburn and Staintondale, and *Erythrapion brachypterum*, Scalby, all by Mr. G. B. Walsh; *Heptaaulacus villosus*, Redear, and *Hapalaraca pygmaea*, Kildale, by Mr. M. L. Thompson, F.E.S. Other species noted were *Carabus nitens*, which had occurred in several localities, and various moorland forms, such as *Pterostichus lepidus* and *Miscodera arctica* in new localities; *Pelobius tardus* had again occurred in the Hull district, and *Dytiscus circumflexus* had extended its range.

Lepidoptera.—Mr. B. Morley said that the season had been almost as bad as the previous one, notwithstanding the brilliant and prolonged hot summer, and apparently the species which had been almost exterminated during the cold season of 1920, had not yet been able to re-establish themselves to anything like normal numbers. On the other hand, several of the better local species, such as *Xanthia aurago* at Skelnanthorpe, and the nearly black var. *scopariae* of *Agrotis agathina* near Penistone, had been more abundant as larvae than for some years. Species had appeared very early, beginning with the winter moths. A large emergence of *Phigalia pedaria* was worn out before the end of January, and *Hybernia rupicaprararia*, *H. leucopheuria*, *H. marginaria*, and *Anisopteryx aescularia* were all on the wing during the same month. Many of the later species also emerged correspondingly early, so much so that numbers of them produced second, and in some cases third, broods. Among the few better things which had been taken was a fine *Cidaria suffumata*, var. *porrittii*, at Clayton West, near Huddersfield, by Mr. W. Buckley; *Aplecta occulta* at Shelley by Dr. H. Douglas Smart, F.E.S.; and Mr. Porritt had found larvae of *Dianthoccia carpophaga* commonly on *Silene inflata*, in it adding a species new to the Huddersfield area. The Rev. C. D. Ash, *Thera firmata* at Skipwith, and *Nonagriä arundineta* with its var. *dissoluta* had been again common in the Wharfe Valley. Mr. T. A. Lofthouse, F.E.S., *Paedisca semifuscana* at Askham Bogs, *Glyphipteryx*

haworthana from Pilmoor, and *G. equitella* from the Yorkshire side of the Tees. Taken in 1919 by Mr. T. H. Fisher, but only recently identified, were a specimen of *Incurvaria tenuicornis* at Skelmanthorpe, and *Chrysoclista bimaculella* near Penistone.

Hymenoptera.—Mr. Rosse Butterfield, F.E.S. *Mellinus arvensis* from Allerthorpe and *Psithyrus distinctus*, var. *subrufipes*, from Ilkley by Dr. Fordham were new to the county. Several species resting on slender authority had been substantiated. Mr. A. E. Bradley had taken a few nearly black *Bombus hortorum* at Scarcroft near Leeds, and half-a-dozen males of *Bombus distinguendus* in the same district. He himself saw queens of *Bombus jonellus* and *B. lapponicus* at flowers of bilberry at Embsay and near Harden. *Agenia variegata* was found preying on spiders on an old oak stump at Shipley Glen.

Neuroptera.—Mr. Porritt. Practically nothing new or of interest had been done in this Order. He had found a considerable colony of *Pyrrosoma nymphula* on Harden Moss, and *Chrysopa perla* not uncommonly in Honley Wood, both new to the Huddersfield area, but abundant enough in the county generally.

Hemiptera.—Dr. Fordham noted that the first instalment of his "List of Yorkshire Hemiptera-Heteroptera" had appeared in the October number of the "Naturalist," and the rest would follow in due course.

Diptera.—Mr. C. A. Cheetham, F.E.S., said that about three hundred species had been added to the County list, some of them (see F. W. Edwards's paper in Trans. Ent. Society of London) being additions to the British list.

Plant Galls.—Mr. W. Falconer, F.E.S., reported that considerable work had been done by this Committee, and most of the species had already been recorded in the "Naturalist." Among others, the dipteran *Lipara lucens*, which causes a cigar-shaped gall on *Phragmites communis*, was apparently new to the north of England. Amongst the Midge Galls the following had not previously been recorded for the county: *Perissia floriperda* on bladder campion, *P. schlehtendali* on tuberous bitter vetch, *P. vaccinatorum* on bilberry, *P. virgaureae* on golden-rod, *P. acerispanis* from maple, all in the Huddersfield district; *P. mali* on crab-apple at York and Scarborough, and *Rhopalomyia tanaceticola* on tansy at Huddersfield and Skipwith Common.

The Evening Meeting, presided over by Mr. B. MORLEY, was devoted to the examination of the exhibits and discussion. Among the Exhibits, in addition to many of those already mentioned in the reports, were the following:—

Coleoptera.—By Dr. Fordham, the melanic form of *Stenus argus* from flood-refuse at Bubwith; *Haltica britteni* abundant over a limited area, from heather at Ravenscar; *Helophorus porculus* from roots of *Cakile* at Sandsend; *Hydroporus borealis (davisii)* from near Sandsend; and an ? undescribed *Atheta* from Bubwith flood-refuse. Mr. M. L. Thompson, other species in addition to his new records. The three boys, Caird, Ilincks, and Kitchen, again showed various species from the Leeds district. These boys give promise of doing good work among the Coleoptera in future years.

Lepidoptera.—Mr. B. Morley, a series of second brood *Acronycta menyanthidis*, including a fine melanic specimen from the South-West Riding Moors;

local specimens of the var. *rosea* of *Noctua glareosa*, and an extremely variable series of *Tryphaena fimbria*, specimens of a fine form of *Cidaria truncata* of the var. *rufescens* type, but much darker, from Clayton West, near Huddersfield; also a series of *Sesia andreniformis*, with its mine and pupa, from Surrey. Dr. H. Douglas Smart, F.E.S., a series of *Pieris napi* from various Yorkshire districts, and other localities in Britain and Ireland, with those of various European countries for comparison; series of *Zygaena filipendulae* and *Z. loniceræ* from Filey, showing the local variation, with specimens of *Z. trifolii* and *Z. hippocrepidis* for comparison; also a melanic *Noctua xanthographa* from Shelley.

Hymenoptera.—Dr. Fordham, *Annophila sabulosa* and the Chrysid *Notozus parzeri* from Allertorpe, the latter very abundant in a sandpit, but not seen elsewhere. Mr. E. G. Bayford, F.E.S., a specimen of the true *Sirex juvencus* from Barnsley this year, making the fourth British example. Mr. F. Rhodes, F.E.S., a series of *Bombus distinguendus* from Sunnydale.

Hemiptera.—Mr. Rhodes, *Dictyonota crassicornis* and other species from Heaton and Sunnydale in the Bradford district.

Diptera.—Mr. Cheetham, the following, all new to the county: *Pachyrhinus scurra* and *Urellia stellata* from Skipwith; *Toroneura muliebris* and *Neottiophilum praeustum* from Farnley; *Enareta conjuncta* from Allertorpe; *Phaenomyia fuscipennis* and *Conops flavipes* from Nidd; *Xylota lenta* and *Ardoptera irrorata* from Rawdon; *Tipula signata*, *Oxyecera pardalina*, *Therioptectes montanus*, *Didea intermedia*, *Dexia vacua*, and *Helomyza variegata*, all from Austwick; *Hydrophorus borealis* from Helwith Moss; *Pipunculus littoralis* and *Syrphus annulipes* from Pateley Bridge. Dr. Fordham, *Lasiopogon cinctus* and *Dioctria baunhaueri* from Allertorpe Common; *Porphyrops nasuta* and *Eutarsus arcticus* from Bubwith, also all new to the county.

Plant Galls.—Mr. Falconer, the Hymenopteron *Isosoma graminicola* new to the United Kingdom; the Dipteron *Atrichosema aceris* from maple, new to the North of England; the Homopteron *Pemphigus flayinis* on black poplar, and *Asterodiaspis quercicola* on oak, both new to the North of England, besides many of the species alluded to in the report.

A most interesting and stimulating discussion followed on "Parasitism in Insects," such topics as "Stung larvae are careless and do not attempt to hide," "Do birds know this and avoid them?" "How do hyper-parasites know of the presence of parasites' eggs or larvae, or both?" "Are parasites' eggs laid on eggs of hosts or on small larvae, and do they hibernate as eggs or larvae in the hosts? if as larvae they cannot continue damaging the hosts during hibernation, or they would die," were dealt with.—E. G. BAYFORD.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY :
October 13th, 1921.—Mr. K. G. BLAIR, B.Sc., F.E.S., President, in the Chair.

Mr. A. W. Vesterling, 167 Castle Street, Battersea, was elected a member.

Mr. Grosvenor exhibited the chief Palaearctic species of the genus *Zygaena*. Mr. Blenkarn, the scarce weevil, *Epipolaeus caliginosus* from Dover. Mr. Newman, *Rumicla phlacas* with ab. *obsolcta*, ab. *suffusa*, a golden form, and ab.

parvipuncta; he reported *Euvanessa antiopa* seen by his son at Bexley, Messrs. O. R. and A. de B. Goodman, *Nordmannia ilicis*, var. *cerri* and var. *aesculi*, with *Klugia spini* having (1) straight white line below, (2) concave ditto, (3) and greatly widened ditto, all but the last two from Digne.

October 27th, 1921.—The President in the Chair.

Mr. J. Vernon, "Lymnouth," Reigate, Surrey, was elected a member.

Mr. A. A. W. Buckstone exhibited several local series of *Ematurga atomaria* from Southern areas with var. *unicolorata* from Burnley, including a very dark form from Horsley and some pale yellow forms from Oxford. Mr. Bunnett, larvae of *Arctia villica* from Reigate, and a varied series of Surrey *Rumicia phlaeas*. Capt. Crocker, long series of *Malacosoma neustric* bred from two pairings from Oxford, (1) all light with narrow band, (2) mixed light-dark forms; he also showed a very long series of *Rumicia phlaeas*, including ab. *alba*, ab. *ignita*, ab. *intermediu*, ab. *obliteratu*, ab. *caeruleo-punctata*, ab. *radiata*, ab. *turcica*, ab. *suffusa*, and others, with unnamed and intermediate forms. Mr. O. R. Goodman, ab. *navarina* of *Melitaea athuliu* from St. Martin Vésnbe. Mr. Dennis, photographs of the English *Cimex lectularius* and the tropical *C. rotundatus*, which has conspicuous sculpturing.

November 10th, 1921.—The President in the Chair.

Rev. E. N. Frampton, M.A., Halstead Rectory, Kent, and Dr. H. D. Smart, Shelley, Huddersfield, were elected members.

Mr. Laurence Chubb, of the Commons Preservation Society, gave a lecture, with lantern-slides.

December 8th, 1921.—The President in the Chair.

Mr. H. Worsley-Wood, of Acton, was elected a member.

Mr. R. Adkin exhibited a series of *Diaphora mendica* from Co. Cork and from Co. Tyrone, Ireland, pointing out the var. *rustica*, males white and slightly spotted of the former series, and naming the latter series as var. *venosa*, in which both sexes were pale grey spotted with black and veins dark grey. Mr. Staniland, large galls on the roots and branches of crab-apple from N. London formed by the woolly aphid *Schizoneura lanigera*. Mr. B. Adkin, specimens of *Brenthia selene* and *B. euphrosyne*, and enquired what was the upper side difference, if any. Mr. H. Moore, a short series of *Teracolus puniceus*=*hetaera* from Nairobi. Mr. K. G. Blair, a *Papilio muchao* without the red spot at the anal angle of the fore wing, and a very light form of *Crambus pascuellus* from Tring. Mr. Blenkarn, the local Coleoptera, *Pentarthrum hulloni* from Killarney, and *Lissodema cursor* from Ranmore Common. Mr. Dennis, the oak "spangle" gall, *Neuroterus monismatis* from N. Essex. Mr. Bunnett, the var. *doubledayaria* of *Amphidasis betularia* with an intermediate form from S.E. London. Mr. R. Adkin read a Report as the Society's Delegate to the Conference of Corresponding Societies of the British Association.—HY. J. TURNER, Hon. Editor of Proceedings.

ENTOMOLOGICAL SOCIETY OF LONDON: *Wednesday, December 7th, 1921.*
—The Rt. Hon. LORD ROTHSCHILD, M.A., F.R.S., etc., President, in the Chair.

The Secretary again read the list of nominations of Officers and Council for the ensuing year, and said that he had not received any alternative names.

The following were elected Fellows of the Society:—Messrs. W. Beven Whitney, B.Sc., A.M.Inst.C.E., Glen Doone, Gerrard's Cross, Bucks; Edward Nevill Willmer, Trafford Hall, nr. Chester, and Corpus Christi College, Oxford; and John Glover Hugo Frew, M.Sc., 262 Church Road, Yardley, Birmingham, and Rothamsted Experimental Station, Harpenden.

The Secretary expressed the hope that the informal meeting to be held on January 4th, 1922, between 5.30–7.30 p.m., would be well attended, and said that Dr. Cockayne had kindly offered to show the effect of fluorescence on butterflies, an exhibit which would be of great interest to Fellows.

Professor H. Maxwell-Lefroy exhibited, on behalf of Dr. A. Moore, a new method of preserving insects. Mr. G. Talbot discussed the existence in Africa of a remarkable *Papilio* of the *antimachus* group, and also exhibited, on behalf of Mr. J. J. Joicey, a gynandromorphous example of *Argynnis hyperbius castesti*. Mr. R. Adkin brought for exhibition a series of *Aglais urticae*; this exhibit gave rise to some discussion on the comparative rarity of *A. urticae* in 1921, and on the relative abundance and apparent spread in the South of England of *Vanessa c-album*. Mr. W. J. Kaye exhibited *Heliconius* from Trinidad, and a remarkable Erycinid, *Nymphidium maravalica*, with its supposed model, *Adelpha iphiclea*. Professor E. B. Poulton, F.R.S., black varieties of the Longicorn beetle, *Grammoptera analis*, on behalf of Mr. Joseph Collins; he also gave an account of some observations of Mr. A. H. Hamm on the third brood of *Heodes phlaeas* from the Newbury district in 1921, and exhibited the specimens referred to. Mr. R. Stenton, some living Mantids bred from an egg-case taken by Mr. J. C. F. Fryer on an imported Japanese maple.

The following papers were read:—"Descriptions of South American Micro-Lepidoptera," by Mr. E. Meyrick, B.A., F.R.S., F.Z.S.; "Notes on Orthoptera in the British Museum, II Group, *Calliptamini*," by Mr. B. Uvarov.

Mr. C. Nicholson read some notes on *Vespidæ*, and on a remarkable nest of *Vespa vulgaris*, illustrated with lantern-slides.

THE BRITISH SPECIES OF *HALICTUS* AND *SPHECODES*.

BY R. C. L. PERKINS, M.A., D.SC, F.Z.S.

For the purpose of tabulation the British *Halicti* are here divided into three groups, the second containing by far the greatest number of species. This group is, however, composite, and contains more than one of the subgenera that have been proposed by those who have divided this extensive genus.

The groups may be distinguished as follows:—

- 1 (2) A distinct pattern of white spots or bands of hair on the abdomen these being placed along the apical margins of the segments.
 Group I.
- 2 (1) Spots or bands situated at the base of the segments or wanting.
- 3 (4) Thorax not metallic, except slightly so in *prasinus* Sm., which has the propodeum black, not metallic, and the apical dorsal segment of the ♂ blood-red. . . . Group II.
- 4 (3) Thorax including the propodeum distinctly metallic; the apical dorsal segment of the ♂ not blood-red.
 Group III.

The extensive second group may be tabulated as follows:—

GROUP II.

♂ ♂.

- 1 (2) A very large species, expanse of wings often 17 mm. or more, the hind tibiae clear testaceous.
 (Mandibles, labrum, and often the apex of the clypeus also black; abdomen with tomentose bands, the 5th ventral segment conspicuously emarginate, 6th with a deep longitudinal impression)
 *xanthopus* K.
- 2 (1) Hind tibiae black or black and flavous.
- 3 (4) Apex of clypeus, labrum, mandibles, and the antennae both above and beneath black, the abdomen beneath bare or only with short hairs.
 (Antennae long and slender; propodeum coarsely rugose above and also on its posterior face; abdomen elongate, subcylindrical, polished, the punctures for the most part sparse and with distinct tomentose spots in fresh specimens, the 4th and 5th ventral segments widely emarginate) *laevigatus* K.
- 4 (3) Apex of clypeus in most species, and often the labrum and mandibles, yellow or yellow marked, antennae often red or fulvous beneath. When all are black the abdomen has long hairs on the 2nd ventral segment, easily seen in lateral aspect.
- 5 (6) Hind tibiae and the tarsi (except sometimes the claw-joint) black. A large species, generally 15 mm. or more in expanse, with distinct tomentose abdominal spots, the 1st and 2nd segments densely, nearly evenly punctured except at the apex. Wings infusate or smoky.
 (Anterior area of the propodeum closely rugose, and viewed from in front, its hind margin is raised in the middle; the lateral areas not margined behind) *nitidus* Panz. (*G-notatus* K.).
- 6 (5) Species which have both the hind tibiae and tarsi black are either small, or, if large, either the first abdominal segment is very remotely punctured or the wings are clear* hyaline.
- 7 (8) Seventh abdominal segment wholly red both on its upper and its reflexed surfaces.
 (Head and thorax often distinctly metallic; mesonotum finely, densely punctured; anterior area of the propodeum densely and

* This character will at once distinguish the rare black-legged variety of *leucozonius* on the most casual inspection.

finely rugose; fifth ventral segment of abdomen emarginate fringed with decumbent golden cilia, those at the sides being very long)

.... *prasinus* Sm.

- 8 (7) Seventh segment not wholly blood-red.
- 9 (12) Robust species with tomentose abdominal markings, the 6th ventral either with a median longitudinal carina covered with minute hairs, or else with two bare shining ridges, strongly converging towards the base, the subtriangular area between them pubescent and flattened or depressed.
- 10 (11) Sixth ventral segment with a median carina interrupted towards the base; basal abdominal segment polished and very sparsely punctured on the disc; hind metatarsus dark
- *zonulus* Sm.
- 11 (10) Sixth ventral segment with convergent ridges; basal segment generally less shining and not very sparsely punctured on the disc; hind metatarsus, except as a rare aberration, whitish yellow on at least the basal part *leucozonius* K.
- 12 (9) Sixth ventral segment not as in either of the preceding (some species are narrow, with long cylindrical abdomen; many are quite small and, in some, tomentose abdominal markings are absent).
- 13 (16) Flagellum of antennae black or blackish fuscous beneath, abdomen with tomentose spots, its ventral segments seen from the side with copious long erect hairs.
- (Mesonotum densely, evenly punctured, propodeum closely longitudinally rugose on its anterior area, lateral areas much smoother, punctate, not margined behind, three basal abdominal segments black right up to the apical margin, the first with copious, distinct puncturation; hind metatarsi pale flavous).
- 14 (15) Inner margin of stigma generally testaceous, sometimes brown; extreme apex of the stipites of the genitalia hairy, as well as the lacinia * *4-notatus* K.
- 15 (14) Inner margin of stigma dark brown or nearly black; end of the stipites of genital armature not hairy
- *lativentris* Sch. (*decipiens* P.).
- 16 (13) Flagellum of antennae in most species distinctly rufescent or sometimes fulvescent beneath; if black, either the ventral abdominal segments have only very short hairs beneath, or tomentose spots are wanting.
- 17 (36) Second ventral segment (viewed from the side) with at most very short erect hairs on its middle part, sometimes with only very short subdecumbent ones, or even almost glabrous; antennae always long, reaching at least to the end of the thorax when laid back.
- 18 (27) Antennae with the flagellum black or blackish fuscous beneath.
- 19 (20) Scutellum for a large part at least (and often wholly) roughly sculptured and without definite punctures, the sculpture being unlike that of the mesonotum; antennae very long, when the head is laid back they reach at least to the end of the first abdominal segment
- *fulvicornis* K. *ab.*

* In a recent work Judge P. Blüthgen has shown that the much wider face of *4-notatus* separates it from *lativentris*, an excellent character overlooked by me.

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THE NATURALIST:

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AND

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MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 41 Queen's Gate, S.W. 7 (nearest stations: South Kensington and Gloucester Road).—March 1st, 15th, April 5th, May 3rd, June 7th, 1922, at 8 p.m.

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

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 7 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

THE LONDON NATURAL HISTORY SOCIETY, now meets in Hall 40, Winchester House, Old Broad Street, E.C. 2, on 1st and 3rd Tuesdays in the month at 6.30 p.m. General meetings 1st Tuesdays, Sectional meetings 3rd Tuesdays. (No meetings in July or August indoors, but field excursions instead.)

Hon. Sec.: W. E. GLEGG, The House, Albion Brewery, Whitechapel Road, E. 1.

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

ENTOMOLOGICAL SOCIETY OF HAMPSHIRE AND THE ISLE OF WIGHT.—This Society has developed from the Southampton and District Entomological Society. Meetings are held on the First Saturday afternoon of each month at Southampton, and other meetings will be arranged in important centres in the county from time to time. Activities being undertaken at the present time include the formation of a library, of collections of insects, and the compilation of a county insect fauna list. Will keen entomologists in the county who are interested please communicate with the

Hon. Sec., F. J. KILLINGTON, 1 St. Catherine's Road, Eastleigh, Hants.

- 20 (19) Scutellum generally to a large extent distinctly punctured, the surface not much rougher than that of the mesonotum; antennae shorter; when the head is laid back, not reaching to the apex of the basal abdominal segment.
- 21 (22) Face in front view extremely wide across the eyes, transverse, the clypeus hardly produced.
(Ventral segments with short erect hairs; general appearance most like *fulvicornis*, which it approaches in the length of the antennae, but separable at once by its finely punctate, smoother scutellum, and the narrow and very elongate 2nd and 3rd joints of the hind tarsi, as viewed from the side.)
.... *laticeps* Sch. (= *semipunctulatus* E.S. nec Sch.).
- 22 (21) Clypeus more or less strongly produced, the face not extraordinarily wide.
- 23 (24) Labrum not entirely bright flavous, often black, pitchy, or reddish, or to a small extent flavous *calceatus* Scop.
- 24 (23) Labrum bright flavous (like the apex of the clypeus) over the whole surface or almost so.
- 25 (26) Face in front view broader, more strongly rounded at the sides and, if the portion beyond the apical margin of the eyes is left out of consideration, almost circular in outline.
(Tomentose spots at sides of 2nd segment dense and conspicuous in good specimens.) *calceatus* var. (*cylindricus* F.).
- 26 (27) Face in front view narrow and subelongate; leaving out the produced clypeal portion, the outline is suboval.
(Tomentose spots often feeble or indistinct, even in fresh examples.) *albipes* K.
- 27 (18) Antennae with at least a considerable number of the flagellar joints distinctly rufescent, or in some species fulvescent, beneath.
- 28 (29) Propodeum, seen from in front, more or less finely rugose anteriorly, the wrinkles not reaching the brow of the declivous posterior surface, but leaving a large part with mere surface rugosity or granular-like sculpture. Lateral angles of the pronotum distinct and subprominent, rectangles or nearly so.
(Second ventral segment of abdomen with more or less numerous short but erect hairs, the hind tibiae usually with a yellow line from base to apex above.) *malachurus* K. (*longulus* Sm.).
- 29 (25) Propodeum generally rugose right up to the brow of the declivity; lateral pronotal angles very indistinct.
- 30 (31) Second joint of the hind tarsi viewed laterally very elongate, nearly parallel-sided, about twice as long as wide; face in front view very wide, evidently transverse across the eyes, the clypeus hardly produced.

(In normal examples the basal abdominal segment is copiously or even densely punctured, but on its apical portion impunctate or almost so, the surface there being evidently (microscopically) rugulose, not polished. Red-banded specimens occasionally occur.)

.... *laticeps* Sch. (*semipunctulatus* E. S.).



31 (30) Second joint of hind tarsi, viewed laterally, either subtriangular and much less than twice as long as wide, or the face is not extraordinarily wide.

32 (33) Antennae not extraordinarily long; they extend when the head is laid back, behind the thorax, but not so far as the apical margin of the basal abdominal segment. A smaller species.

(Basal abdominal segment generally with a very feeble apical impression, which, however, is nearly always visible right across the segment in some aspects, and on this part the surface is excessively finely, but evidently, sculptured.)

.... *pauvillus* var. *immarginatus* Sch.

33 (32) Antennae extraordinarily long, extending, when the head is laid back, to the apex of the basal abdominal segment or even further, three or four of the apical joints lying beyond the brow of the propodeum. Larger species.

(First abdominal segment without an evident apical impression, and, along the apical margin, smooth and polished, without evident minute surface-sculpture.)

34 (35) Face in front view widely ovate or roundish; scutellum roughly or rugosely sculptured, the punctures generally effaced, the sculpture therefore unlike that of the mesonotum; fourth abdominal segment viewed from the side with the general clothing consisting of excessively minute hairs, only just visibly rising above the surface; tarsal joints of all the legs longer, the second joint of the hind ones (viewed laterally) longer than wide.

(Tomentose spots at base of 2nd abdominal segment laterally dense and distinct in good specimens.)

.... *fulvicornis* K.

35 (34) Face in front view long-ovate; scutellum punctured much like the mesonotum; fourth abdominal segment viewed laterally with conspicuous, erect, and not excessively short, hairs; tarsi of all the legs short, the second joint of the hind ones, viewed laterally, about as wide as long.

(Tomentose spots at the sides of the 2nd abdominal segment indistinct or wanting). *freygessneri* Alfk.

36 (17) Second ventral segment of the abdomen well clothed with long, erect hairs, as seen in lateral aspect, the following ones also often more or less similarly clothed; in *laevis* alone with very short hairs or nearly glabrous, but this species has short antennae, which do not reach nearly to the end of the thorax.

37 (54) Antennae often short, or at most of moderate length, when the head is laid back they reach at most to about the end of the anterior area of the propodeum; the 5th and 6th joints are at most a little elongate, in some species not at all so.

38 (41) Anterior area of propodeum rugose throughout and bounded posteriorly by a sharp, fine, raised margin.

39 (40) Hind angles of the propodeum with a raised margin; abdomen with only very short hairs on the ventral segments

.... *laevis* K.

- 40 (39) Hind angles of propodeum rounded off and not margined; ventral segments with long erect hairs
 *puncticollis* Mor.
- 41 (38) Anterior area of propodeum not bounded by a raised margin behind.
- 42 (53) Species without a strong constriction at the base of the second abdominal segment; size not extremely small nor the form extremely narrow.
- 43 (44) Mandibles not marked with flavous; mesonotum highly polished and remotely punctured; apex of clypeus and labrum often black, but in some varieties one of these or both may be flavous.
 (Fourth joint of antennae, viewed beneath, distinctly elongate; stigma either wholly brown or at least with a brown margin.)
 *villosulus* K.
- 44 (43) Mandibles with a flavous mark like the apex of the clypeus; mesonotum in some species not highly polished nor sparsely punctured.
- 45 (46) Stigma very pale, its lower margin yellowish, at most somewhat darker than the disc; 4th antennal joint, viewed beneath, not at all elongate, the following ones wider than long.
 (Mesonotum shining, the punctures very feeble, more or less indefinite in outline, and remote, face suboval.)
 *brevicornis* Sch.
- 46 (45) Stigma with the lower margin at least conspicuously dark, or brown; 4th antennal joint, viewed beneath, generally distinctly elongate.
 (Face either broad and round or else conspicuously elongated.)
- 47 (48) Face broad and round. *pauperatus* Brullé (= *breviceps* E. S.).
- 48 (47) Face narrow and elongate.
- 49 (50) Hind metatarsus wholly, or at least on its basal portion, whitish yellow *punctatissimus* Sch.
- 50 (49) Hind metatarsus yellowish brown, brown or nearly black.
- 51 (52) Mesonotum on the disc finely and closely punctured, minutely sculptured between the punctures so as to be only moderately shining at most; lacinia of genital armature very short
 *punctatissimus* var.
- 52 (51) Mesonotum on the disc shining and more strongly punctured; lacinia long *angusticeps* Perk.
- 53 (42) A strong constriction at the base of the 2nd abdominal segment; a very minute and narrow species; hind tarsi in normal examples dark or fuscous *minutissimus* K. (var. = *arnoldi* ♂ E. S.).
- 54 (37) Antennae long and slender, reaching, when the head is laid back, beyond the brow of the propodeum; 5th and 6th joints strongly elongate.
- 55 (56) 3rd, 4th, and 5th ventral segments with a tuft of dense, long hairs on each side, the two latter comparatively glabrous between the tufts.
 (Anterior area of the propodeum very finely sculptured on its posterior part at least, where the surface appears merely granulate, or the whole area may be thus sculptured and without distinct wrinkles; hind metatarsi usually clear testaceous, rarely dark.)
 *nitidiusculus* K.

56 (55) 3rd, 4th, and 5th segments beneath without these conspicuous lateral tufts.

(Anterior area of the propodeum usually with dense, fine wrinkles over practically the whole surface.)

57 (58) 2nd joint of hind tarsi, viewed on the outer side, and seen at its widest, quite elongate; face in front view wide, the clypeus little produced.

(Hind tarsi dark.) *minutus* K.

58 (57) 2nd joint of hind tarsi, viewed at its widest, only about as long as wide; face longer and narrower, the clypeus produced.

(Tarsi variable in colour, either clear testaceous or dark.)

. *rufitarsis* Zett. (*atricornis* Sm.).

(To be continued.)

A FEW NOTES ON COLEOPTERA IN 1921.

BY HORACE DONISTHORPE, F.Z.S., F.E.S., ETC.

Personally I had a very successful year with Coleoptera in 1921, and the following notes only deal with a few of my captures. Although the continuous hot weather and drought rendered general collecting almost useless, hunting for a special beetle often proved successful, the species being concentrated in a smaller area.

Pselaphus dresdensis Hbst. On May 30th, 1905, Mr. G. E. Bryant took one specimen of this rare Pselaphid at Wisley Pond, Surrey [Ent. Mo. Mag. xli, p. 159 (1905)], and, though he subsequently captured more specimens, it had not been found there since, as far as I am aware. I have tried for it on several occasions during the last few years without success until 1921 when I found it in numbers. The water in the pond was very low when I visited it on July 11th, and one could walk knee-deep through the dry moss and sphagnum nearly to the middle. It had occurred to me that the species might be concentrated near the water, and such proved to be the case. By pulling up handfuls of a stiff green moss (in my experience it did not occur in sphagnum), and shaking it over paper the *Pselaphus* was found to be present in numbers.

Triptax lacordairei Crotch. On June 25th I found this beetle in numbers, with its larvae in a bunch of fungus (*Pleurotus enosmus*) on an old stump in Darenth Wood. Some of this fungus was taken home and put into a tin, and many more of the beetles were reared from the larvae during the year. I have been hunting for this insect at Darenth Wood for the last thirty years. It was originally taken by Champion in that locality very many years ago [Ent. Mo. Mag. vi, p. 136 (1869) etc.], and subsequently by Walker in 1889 and 1898; but only a few specimens have been found since the first capture.

Meligethes fulvipes Bris. This is another species I have been looking for for many years. The late H. S. Gorham told me he had taken it in Chippenham Fen and that it should occur in Wicken Fen. The records in Fowler do not by any means apply to a Fen species; however, on August 11th

I swept up a yellow-legged *Meligethes* in a Fen near Waterbeach, Cambridge-shire, which proved to be this species.

Corticaria eppelsheimi Reitt. On October 7th this beetle occurred in some numbers, both in the "packing" of a *fuliginosus* nest situated in a birch-tree near Woking and under bark of an oak tree near by. I am indebted to Mr. Champion for the identification of the insect. It will be remembered it was first added to the British list [Ent. Mo. Mag. xlv, p. 127 (1908)] on specimens taken by him at Woking and in the New Forest. As far as I am aware, no other collector has recorded this species from Britain.

Laemophloeus bimaculatus Pk. On June 21st and July 1st *L. bimaculatus* was present in numbers under bark of a dead hornbeam and some dead beeches in Richmond Park. The drought had no doubt killed these fine trees, which were situated in a grove in one part of the Park: in the autumn they were cut down and removed. Richmond Park is a very old record given by Fowler for this beetle. Although I have collected there regularly for many years past I never found it there before.

Henoticus californicus Mann. I reared a series of this beetle from larvae which were feeding on the mould on parchment covers of jam-jars from a London jam factory, given to me in 1920. The perfect insects hatched out from February 2nd to 27th, 1921. On putting them away in my cabinet I perceived that they were identical with a beetle which had been named for me *Henoticus serratus* Gyll., and which I had captured on a window in Newbury Station on August 23rd, 1906. Moreover, Mr. Black kindly lent me a specimen of the true *H. serratus*, which species he had recently captured in Scotland, and I found my specimen did not agree with it. Mr. S. A. Blenkarn first recorded *H. californicus* Mann. (= *germanicus* Reitt.) in Britain from a London warehouse in 1912 [Ent. Mo. Mag. xlviii, p. 263, 286 (1912)]; it will thus be seen that my capture has six years' priority. The correction in the synonymy has recently been made by Mr. Champion [*op. cit.* lvii, p. 12 (1921)].

Trogoderma khapra Arrow. Towards the end of last year a sample of malt was sent to me from a brewery at Salisbury, which contained a number of dead specimens of this beetle and very many living larvae of the same. Some of the malt I placed in a small plaster-of-Paris cell, and the rest in a large glass-topped box. The larvae do not seem to have eaten any of the grain since I had them, though some holes have been eaten in the plaster, and are now all huddled together in corners of the boxes, evidently hibernating. I believe most of the *Dermestidae* hibernate in the larval stage; I have now, in my study, living larvae of *Trinodes hirtus*, *Tiresias serra*, *Anthrenus (claviger?)*, and the *Trogoderma*, none of which are eating, but are in good condition, though quiescent. *T. khapra* is becoming a most serious pest in this country, the insect having increased and spread to an alarming extent: Salisbury is quite a new area for it. An interesting paper on the beetle may be found in the "Brewer's Gazette" (July 7th-August 4th, 1921), written and illustrated by Mr. James Scott. The author is not an entomologist, and some amusing remarks occur—"Mr. G. J. Arrow, Entomologist to the British Museum, who eventually identified them as *Trogoderma khapra*. In consequence, his own name was bracketed behind that of the insects!" etc.—otherwise the paper is accurate and instructive, and explains the origin and

introduction of the species into this country, and how it is spreading. Walker records [Ent. Mo. Mag. liii, p. 165 (1917)] that on July 30th, 1908, he found a few specimens and larvae of a *Trogoderma* in a granary at Strood, Kent, which prove to be identical with the species described by Arrow in 1917.

Caenocara bovistae Hoffm. I have recorded [Ent. Rec. xxxii, p. 199 (1920)] that in September 1920 I collected a number of Lycoperdons at Freckenham and Barton Mills, which I took home and placed on damp sand in large glass bowls, tied over with muslin; and that at the former locality I had captured several female *C. bovistae* crawling on large puff-balls. Nothing appeared in the bowl for either locality (except *Pocadius ferrugineus* in large numbers in both, and nothing further from the Barton Mills puff-balls) until April 19th, 1921, when five specimens of *C. bovistae* were observed running about on the lycoperdons. The beetles continued to appear up to May 30th; some twenty-nine in all being reared, consisting of six ♂♂ and twenty-three ♀♀. When mature the perfect insects ate their way out of puff-balls of various species and sizes. Fowler does not refer to the differences between the sexes; the ♂ characters are very distinct—it is smaller, less rounded, and the seventh joint of the antennae (the first of the three serrate joints) is considerably longer transversely and more pointed than in the ♀.

The only other insects which hatched out in the bowl were seven specimens of the Cryptinid *Phygadeuon assimilis*, all covered with the hypopi of an Acarus, some so thickly that they were hardly able to walk. As nothing else ever hatched out from the puff-balls, and as I subsequently most carefully examined the contents of the bowl without finding a trace of any other insect, I can only conclude that the Ichneumon is parasitic on the *Caenocara*, or possibly on *Pocadius*; though as it was not present in the Barton Mills bowl (where *Pocadius* was most abundant), this does not seem so probable.

Cryptocephalus biguttatus Scop. In 1916 the late W. E. Sharp showed me the spot near Crowthorne where he discovered this fine beetle. We were not fortunate enough to find it on that occasion, and on other visits I was equally unsuccessful. In 1920 I found what appeared to me to be a very suitable locality some distance away from the original spot; but I only succeeded in taking a specimen of *C. lineola*. In July 1921 I made several visits to my locality, and eventually obtained a nice series of both *C. biguttatus* and *C. lineola*. Dr. Nicholson pointed out [Ent. Mo. Mag. lvii, p. 36 (1921)] that the beetle always occurs on *Erica tetralix*, and this is undoubtedly the case. I must confess, however, that I only actually spotted one on the plant, hanging on to a flower-head, when it was very conspicuous (I saw five specimens of *C. lineola* in the same position); but the rest I swept over a large area, only where this *Erica* was growing. My explanation is as follows:—I have shown [Ent. Mo. Mag. liii, p. 128 (1917)] that all the species of *Cryptocephalus* (as do *Clythra* and *Gynandrophthalma*) lay a covered egg which they let fall. The egg is covered with the excreta of the beetle, which she arranges round it with her posterior tarsi, and whilst doing this she hangs on to a plant or leaf with the other legs. Some *C. biguttatus* ♀♀ I took laid naked eggs in the tubes in which they had been placed, and little bits of excreta were also present—the beetles not being able to arrange it round the eggs when they could not hang on to something. The covered eggs would be dropped amongst the moss, etc.,

at the roots of the heather, and the larvae, when hatched, feed on the lichen and algae at the roots of the herbage. It is also probable that as the ♂ likewise sits on the *Erica*, both sexes devour the nectar of the flowers—the ♀ thus putting the plant to a twofold use.

Cassida nebulosa L. My experience with this beetle has so far been rather unfortunate; although I have perhaps been able to add a little to the knowledge of its life-history. Having heard that it had been taken by the late W. E. Sharp and others on *Gnaphalium*, in the neighbourhood of Wokingham, I paid a visit to that locality on September 6th, 1920. After much exploring I found a field in which the food-plant occurred in abundance. Having swept for some time without result, I settled down to searching the plants, and eventually found two *Cassida nebulosa* pupae, but nothing more. The pupa is narrower, more pointed, and has shorter tail-forks than in other species I have previously reared, i. e., *C. murraeu*, *C. viridis*, etc.

Neither of the two *nebulosa* pupae hatched, but from both some thirteen very small Chalcids emerged from two and three holes bored through the dorsal surface of the mesothorax and abdomen. In July 1921 I again visited this field, only to find it had been ploughed up—no sign of the food-plant being present. I next went to Cambridgeshire, as Mr. Allen had kindly furnished me with a plan of a fen near Waterbeach, where he and Dr. Nicholson had taken *C. nebulosa* on *Chenopodium album* in 1919. I journeyed to Cambridge on August 24th, and, hiring a bicycle, rode out to the spot, only to find that this field also had been ploughed up, no *Chenopodium* being present. Having noticed, as I rode out from Waterbeach, a field with mixed herbage, which had looked likely to me, I returned to that spot, where I at once found a good patch of *Chenopodium album*. By sweeping and searching I obtained one perfect insect and one larva. (I also found a specimen of *Cassida equestris* on the *Chenopodium*—there being no Water-mint, the usual food-plant of *C. equestris*, anywhere near. This specimen had beautiful golden rims to the base of the thorax and elytra, which persisted for some weeks after death before they disappeared.) *C. album* is plentiful in some of the roads near my house at Putney. The perfect insect ate the leaves and buds of the plant, and the larvae round holes in the leaves. The excreta, which is carried on the forked tails, closely resembles the buds of the plant. The larva pupated on August 28th, but, alas! early in September a number of the same small Chalcids emerged from four holes bored through the dorsal surface of the meso-, metathorax, and first abdominal segments.

Apion brachypterum Sharp. In July I swept a number of a small red *Apion* in Richmond Park, which Dr. Sharp tells me is *A. brachypterum*. The beetle was very abundant (July 26th, etc.), but only on bracken in one part of the Park.

Xyleborus saxeseni Ratz. This little Scolytid was very common on the trees in Richmond Park on which I had found *Laemophloeus bimaculatus*. I have frequently found it before, both in the Park and elsewhere, but never in such numbers, nor had I ever found the male. On May 6th and July 19th I captured single specimens of that sex for the first time.

19 Hazlewell Road, Putney Hill, S.W. 15.

January 30th, 1922.

NOTE ON SOME HYMENOPTEROUS PARASITES AND OTHER ENEMIES
OF *TORTRIX VIRIDANA* LINN.; WITH FURTHER RECORDS OF
CHALCIDIDAE SWARMING IN BUILDINGS.

BY HUGH SCOTT, M.A., SC.D., F.E.S.

The two subjects mentioned in the title may at first sight seem quite unrelated one to the other, but in reality there is a connection between them. In the "Entomologist's Monthly Magazine" for Jan. 1919, p. 13, I published an account of the occurrence of vast swarms of females of the Chalcidid *Pteromalus deplanatus* Nees in certain houses for several seasons in succession. Names of a number of insects said to be hosts of this parasite were collected from the literature, and it was shown to be very unlikely that the swarms were derived from Anobiid beetles in the woodwork of the buildings (as had been supposed), but much more probable that they were parasites of the too abundant *Tortrix viridana*. Proof is now forthcoming that this moth is a host (though not the only host) of the *Pteromalus*, as in 1921 I bred 43 examples of the latter, all apparently females, from pupae of the *Tortrix*. The purpose of the present paper is to give particulars of this, and of the breeding of three other species of parasites (Ichneumonidae) from *Tortrix viridana*; a brief note on other enemies of this moth; and, finally, to place on record certain further occurrences of swarms of Chalcidids, both *Pteromalus deplanatus* and *Stenomalus muscarum*, in buildings. Certain works have been consulted, but the literature has not been exhaustively searched, my purpose being mainly to put on record my own observations, to be made use of by other workers if needed.

I. BREEDING OF *PTEROMALUS DEPLANATUS* FROM
TORTRIX VIRIDANA.

A number of pupae of the *Tortrix* were collected on June 7th, 1921, by beating oak-trees in a wood in the Southern part of Cambridgeshire. The pupae were placed on some soil in a glass bowl with gauze stretched over the top, and the soil was occasionally lightly moistened. When a series of the moths had emerged, there remained some abnormally small and short pupae, from which the Chalcidids issued as follows:—19 came out from two pupae on June 29th; these were removed that day, and 12 more emerged from a single pupa on June 30th or July 1st; finally, on July 6th the remaining pupae were broken open and examined, and from one of them 12 more examples of the *Pteromalus* ran actively out. The 43 Chalcidids therefore emerged from four pupae, and in two cases the actual number from a single pupa was seen to be 12. In each

of the three pupae, from which they issued without assistance, they made a single small hole of rather irregular shape. In one case this is thoracic and ventral in position, on the left side, piercing through the sheaths of the imaginal legs. In the other two pupae the hole is ventro-lateral and abdominal, immediately behind the wing-sheaths.

The 43 specimens have been examined by Dr. Waterston and are almost certainly all females: only in a few cases it is not possible to be absolutely sure of the sex without floating the specimen off its card.

Dr. Waterston has kindly supplied the following record:—In the British Museum there is a ♀ of *Pt. deplanatus* bred from the mine of a Tineid moth in crab-apple at Fairhill, Tonbridge, Kent, in April 1917, by P. A. Buxton.

II. ICHNEUMONIDAE BRED FROM *TORTRIX VIRIDANA*.

The three species of Ichneumonidae bred from other pupae of the *Tortrix* collected at the same time are:—

(i) *Phaeogenes stimulator* Gravenhorst (Ichneumoninae: see Morley, *Ichn.* Brit. I, p. 260). One ♂ and five ♀♀, emerged 27-30.vi.1921. They were named by comparison with the series arranged by Mr. Morley in the British Museum, which includes a ♀ (*ex Coll. Linn. Soc.*) named by Gravenhorst. My five ♀♀ vary in length (excluding antennae) from about 5.5 to 8 mm. The smallest ♀, which emerged later than the rest, has the antennae abnormally short, with much fewer segments than the normal; the funicle is rather a light ferruginous colour throughout, the whitish band, which in normal specimens occupies about segments 9-11, not being distinguished from the rest; in this example also the abdomen does not seem to have attained its full black coloration, but is dark ferruginous, especially towards the apex.

Morley (*loc. cit.*) states that this species is widely distributed on the Continent, and has been frequently bred from pupae of *Tortrix viridana*.

(ii) *Pimpla brassicariae* Poda (Pimplinae: see Morley, *op. cit.* III, p. 109). One small ♀, emerged between June 27th and 29th, 1921. Named by comparison with the series arranged by Mr. Morley in the British Museum, and with specimens in the Cambridge Museum also named by him. This specimen is referred to *brassicariae* mainly on account of the characteristic, markedly canaliculate, form of the first segment of the gaster, and the absence of pale vittae on the mesonotum. Its inner orbital margins are, however, narrowly white, the apex of the scutellum and postscutellum are also white, and the hind tibiae are pale-banded, in all of which features it inclines more to the closely-allied *P. rufata* Gmel. The British Museum contains specimens of both these species named by Gravenhorst, and my example agrees with Gravenhorst's specimen of *brassicariae* more closely than with his example of *rufata*.

Morley (*loc. cit.*) does not record *P. brassicariae* from *Tortrix viridana*, though he does record *P. rufata* from that host.

(iii) *Labrorhynchus nigricornis* Wesmael (Ophioninae: see Morley, *op. cit.* V. p. 247). One ♂, emerged between June 27th and 29th, 1921. Determined by comparison with examples in the Cambridge Museum which were named by Mr. Morley: apparently quite-typical. Not recorded by Morley as bred from *Tortrix viridana*.

The eight pupae from which these Ichneumonids emerged were all found in the breeding-vessel. None are quite the full length and several are very small and short, one which is only 6 mm. long being the tiniest of all the pupae collected. All the Ichneumonids emerged at the head end. In two cases the head end is entirely gone, a jagged edge being left all round. In a third, not only the part forming the sheath of the imaginal head, but also all the part covering the antennae and legs, has broken neatly away, leaving a wide opening between the wing-sheaths. In the remaining five pupae there is a rather small and very irregular opening, antero-ventral, just behind the imaginal eyes and in the region of the mouth-parts.

In addition to the above three species, the following list of Ichneumonids recorded from *Tortrix viridana* has been compiled from Morley's "Ichneumonologia Britannica," Vols. I-V. The volume- and page-references are to that work. Several of these species are, however, only recorded therein as having been bred from this host on the Continent, not in England:—

Vol. I (ICHNEUMONINAE): p. 267, *Diadromus candidatus* Grav. Vol. II (CRYPTINAE): p. 133, *Hemiteles areator* Panz. Vol. III (PIMPLINAE): p. 51, *Theronia atalantae* Poda; [p. 60, *Pimpla graminellae* Holmgr., somewhat doubtful]; p. 63, *P. inquisitor* Scop.; p. 80, *P. pictipes* Grav.; p. 100, *P. examiner* Fabr.; p. 105, *P. maculator* Fabr.; p. 112, *P. rufata* Gmel.; p. 168, *Glypta cicatricosa* Ratz.; p. 242, *Phytodiaetus polyzonias* Forst.; p. 244, *Ph. coryphaeus* Grav. Vol. IV (TRYPHONINAE): p. 37, *Exochus globulipes* Desv. Vol. V (OPHIONINAE): p. 115, *Limmerium albidum* Gmel.

III. OTHER ENEMIES OF *TORTRIX VIRIDANA*.

My observations under this head are very slight.

(i) *Calopteryx virgo*. On June 21st, 1921, by one of the streams at Queen's Bower, New Forest, a ♂ dragonfly of this species was seen fluttering a few feet above the ground and carrying a specimen of the *Tortrix*. On being approached it dropped the moth, which seemed to be dead.

(ii) *Empidae*, sp. On the preceding day, June 20th, in New Park Enclosure (Brockenhurst), at about 9 p.m. (summer time), a large reddish-brown fly was noticed carrying a specimen of the *Tortrix*. The fly was probably *Empis livida* (see below), though in the failing light it could not be very clearly seen and I was unable to catch it. It dropped the moth, which in this case also appeared to be quite dead.

In Professor Poulton's lists of "Predaceous Insects and their Prey" *Tortrix viridana* is mentioned (Trans. Ent. Soc. Lond. 1906, pp. 356, 382, 389) as being the prey of the Asilid fly *Neoitamus cyanurus*, and of *Empis livida*, in great numbers in both cases. In Mr. H. Champion's lists of "Dragonflies and their Prey" [Ann. & Mag. Nat. Hist. (8) xiii, 1914, pp. 495-504] it appears in four separate records, as the prey of *Enallagma cyathigerum*, *Agrion puella* (twice), and *Anax imperator*.

IV. FURTHER RECORDS OF SWARMS OF CHALCIDIDAE IN BUILDINGS.

A. *PTEROMALUS DEPLANATUS*. It is unnecessary to recapitulate the particulars given in my former paper. Some additional information may be condensed as follows:—

Hascombe, Surrey. The Rev. C. Sadler, who supplied most of the information on which my former paper was based, has reported that the Chalcidid invasion was just as bad in 1919 as in 1918, while in 1920 the insects were much less abundant, causing practically no inconvenience in the house, though during mild weather in November, and when artificial heating was begun in the church, they appeared in the latter building in considerable numbers. In 1921 Mr. Sadler wrote on February 25th, that after a mild spell the creatures had reappeared in his house in a semi-torpid state; but during the succeeding summer they were so much less than in the preceding years that he scarcely noticed them again till after October 23rd, when, artificial heating having been started in the church, they appeared in great numbers in the stoke-hole and crawling about other parts of the building. He also alluded (writing 25.ii.1921) to a cottage about two miles away, where a first-floor room facing East had been severely infested, while in the ground-floor room below none of the *Pteromali* had been seen.

Hever, Kent. Mr. E. G. B. Meade-Waldo reported that while the Chalcidid incursion into his house was bad in 1918, it was much worse in 1919, but very much less in 1920. This tallies with the report from Hascombe. Mr. Meade-Waldo stated that in 1919 the invasion seemed to be at its height later than in the preceding year, October, November, and December being the months when the greatest inconvenience was caused: even carpets were covered with the creatures, which sometimes extinguished lights by their numbers. Their extreme abundance in 1919 coincided with the worst visitation of *Tortrix viridana* and other oak-moths which he could remember occurring in the district. The woods were bare till July.* In 1920, on the other hand, defoliation of the woods was bad early in the season, but seemed to be suddenly checked about May, after which the trees recovered.

* Mr. Meade-Waldo added that larvae fell and ate plants beneath the trees, even rhododendrons being attacked. Some warblers and other birds forsook their nests, owing, as was thought, to the foliage being so matted together with larval webs, which were quite visible from a distance. Adults of the *Tortrix* and other moths were present in incredible numbers, as also were the Chalcidids later in the same year.

Crawley, Sussex. Early in 1920 I heard that infestations of houses had occurred in this district, but did not see specimens of the insects or go into the matter in detail.

Handsworth, Birmingham. A small visitation is recorded by Mr. C. J. Wainwright, Ent. Mo. Mag. 1922, p. 39.

Felden, Herts. In my earlier paper (p. 14) I mentioned that a swarm had occurred in this place, but gave no details. Mr. Claude Morley has now kindly told me that the insects were present only on the South-East window of a bedroom with three windows, in the late Albert Piffard's house, and that the date when he saw them was September 27th–October 1st, 1901. The date of the year is worthy of note, because it is possible that there is a definite periodicity in the occurrence of these swarms of parasites, depending on a periodicity in the extra abundance of their hosts, as has been observed with other parasites and their hosts. It may be that swarms occurred about 1901, and that then followed a cycle of years in which the Chalcidids were not so numerous as to swarm, till they began to attract notice again by their myriads from about 1916 onwards.

B. STENOMALUS MUSCARUM. This Chalcidid also is known to swarm in houses at times, and two occurrences of this which have come to my notice may be recorded. It seems that nothing is known with real certainty as to the hosts of this parasite, though it is said to have been bred from puparia of Muscid flies.

Little Shelford, Cambridgeshire. A great swarm occurred in 1920 at the house of the late J. F. Eaden, M.A. A sample from the infested rooms, received 22. xi. 1920, consisted almost entirely of the Anthomyiid fly *Limnophora humilis* Zett. (= *septemnotata* Zett.), of which about 166 examples, all ♀, were counted*, and of *Stenomalus muscarum* (J. Waterston det.), of which several thousands at least, all ♀, were present. Besides these two species the sample contained only six specimens of *Pteromalus deplanatus*: also a single specimen of *Rhyphus* and of a Culicid, but these might occur on any window, and cannot be regarded as part of the swarm.

Mrs. Eaden stated that visitations of myriads of small insects have taken place in the house for a long succession of years. A number of rooms are affected more or less, but especially three first-floor rooms facing South-East and one (warmed by pipes) facing North-West. The South-East rooms are three in a row, two large rooms each with a big window, and between them a smaller room with a much smaller window: the two big rooms are heavily, but the small room very little, infested. The insects are most numerous in the narrow crevices round the window-sashes. They have not been observed to get behind the glass of pictures. The flies appeared about the end of August, the Chalcidids later, about September. The insects disappear in frosty weather. It is thought that the Chalcidids have been present in the

* The house at Little Shelford is distant about $3\frac{1}{2}$ miles as the crow flies from Babraham Hall, where occurred the vast swarm of *Limnophora* and of *Chloropiscea* recorded by the writer, Ent. Mo. Mag. 1916, p. 18. Since then a number of records have been published on swarms, especially in Scotland, of which the *Limnophora* was a principal component: see "Scottish Naturalist," 1916 pp. 81, 114, 139; 1917, p. 118: cf. Ent. Mo. Mag. 1922, pp. 20, 38.

swarms for some years at least, but this is not sure, as previous swarms have not been critically examined. I saw the rooms on May 25th, 1921, but there was then no trace of flies or Chalcidids, alive or dead, exposed or concealed; but this must be attributed partly to thorough cleaning up of dead and torpid insects. The rooms face gardens and park-land.

Vevey, Switzerland. Dr. Charles Ferrière, of the Museum at Berne, wrote (March 12th, 1919) that he had seen in October 1916 thousands of Chalcidids in a house near Vevey, in rooms facing South, and had determined them as *Stenomalus muscarum*, but not with entire certainty.

The occurrence of the *Stenomalus* in company with hibernating flies is discussed by Major T. K. Gaskell and Dr. Waterston, "Scottish Naturalist," 1916, pp. 139-142. The places from which the latter had seen samples are Largo, Fifeshire (in company with the *Limnophora* and several other flies); Swindon, Gloucestershire (in company with *Limnophora* and *Pollenia rudis*); and Hever, Kent (on windows in Mr. Meade-Waldo's house, xii.1915).

University Museum of Zoology, Cambridge.

February 6th, 1922.

NOTES ON THE BIONOMICS OF AN APHIDOPHAGOUS FLY OF THE
GENUS *LEUCOPIS* IN THE ANGLO-EGYPTIAN SUDAN,

BY R. COTTAM,

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During November 1914 the larva of a small silvery-grey fly belonging to the genus *Leucopis* was noticed feeding on the dura aphid (*Aphis sorghi* Theob.), and the following year, from February to April, an opportunity presented itself of studying its habits in the vicinity of Khartoum. A crop of dura (*Sorghum vulgare* Pers.) growing at the Mogren—the junction of the Blue and White Niles—was heavily infested with *A. sorghi*, and in company with the larvae of the syrphid (*Syrphus aegyptius* Wd.) and the coccinellids (*Coccinella vicina* Muls. and *C. undecimpunctata* Linn.) were large numbers of the larva of the *Leucopis* species preying upon the aphid. The combined efforts of these predacious larvae had a marked effect in keeping the aphid in check. A *Leucopis* species was further noted, in February of that year, as being the only predacious insect attacking the cotton aphid (*A. gossypii* Glover) infesting cotton on Tuti Island near Khartoum North.

Throughout the entire period from February to April, when the dura crop was cut, all stages of the fly were present on the dura leaves,

indicating that breeding was continuous and that the generations overlapped. The adults could frequently be seen hovering over the honey-dewed leaves, and on two occasions in the laboratory were observed feeding on the honey-dew, though they could not be induced to take a sugar solution offered them. Flies confined in breeding cages paired in the evening and the females commenced egg-laying two days after emerging from their pupal cases. Oviposition lasted two days and the females then died. Possibly under natural conditions the flies live longer.

When engaged in ovipositing the female *Leucopis* hovers over the aphid-infested leaves as does a female syrphid. The eggs are deposited singly on the leaves, close to the colonies of aphides and are attached in a horizontal position to the surface of the leaf. When on dura leaves they were invariably found on the underside of the leaf, but on cotton leaves were seen only on the upperside. They may readily be distinguished from the eggs of *Syrphus aegyptius*, with which they occur, by their small size; they are barely visible to the naked eye, while the syrphid egg is 1 mm. in length. The eggs of the coccinellids are also comparatively large, and are moreover arranged in a vertical position on the leaf. From breeding experiments, it was found that the average number of eggs laid by one fly was 34; possibly a number considerably in excess of this would be produced by flies being under natural conditions.

The larvæ occur among the aphides on which they feed. Their method of progression resembles that of a geometer caterpillar, and may be described as follows:—The insect grasps the surface of the leaf apparently with its mouth and then, arching its body, brings its posterior end close to its head. Attaching itself by its anal prolegs it releases its head-end and extends itself to take fresh hold with its mouth. When feeding the larva seizes either the leg or body of an aphid by means of its mandibles and sucks the body-juices. When once a hold upon an aphid has been obtained it is rarely, if ever, released until the unfortunate creature has been sucked dry. The empty aphid skins are left attached to the leaf.

Under laboratory conditions the life-cycle from egg to adult was completed in eleven days, the various stages being as follows:—egg-stage, 2 days; larval stage, 5 days; pupal stage, 4 days. The entire life-cycle may be considered as being thirteen days, for, as noted above, the adult female commences egg-laying two days after emergence. The larva was observed to moult only twice during its five days of development. When ready to moult it attaches itself to the leaf, a longitudinal

split appears on the dorsum of the old skin and the larva slowly frees itself, leaving the old skin attached to the leaf. Frequently the larva is seen eating aphides before it has left the old skin. Prior to pupating the larva attaches itself very firmly to the leaf in a horizontal position by means of a sticky black fluid; the pupal case is formed of the old larval skin. The adult escapes by pushing off the lid of the pupal case.

Economic importance.—This small fly undoubtedly assists materially in the control of the aphides affecting the two main crops of the Sudan, its short life-cycle compensating for the relatively small numbers of eggs produced by each female. The number of *Leucopis* eggs—exclusive of other stages—found on twelve aphid-infested dura leaves, picked at random, varied from 7 to 153, with an average of 93.

Descriptions of stages.—*Adult.* Length 2·25 mm., general colour silvery-grey. Head, thorax, and abdomen silvery-grey, sparsely clothed with black bristles. Head large, almost as broad as the thorax and with three ocelli; compound eyes dark brown and widely separated in both sexes; antennae greyish-brown, arista bare. Thorax with four longitudinal dorsal stripes, the inner pair grey, the outer pair greyish-black; halteres ivory-white. Abdomen with two conspicuous black spots on the dorsum of the second segment.

Egg.—Length ·33 mm., colour ivory-white when newly deposited, darkening to leaden as the embryo develops. In shape elongate-oval, tapering towards either end. Surface marked with shallow longitudinal striae.

Larva.—Length when mature 3 mm. First-stage larva ivory-white in colour, spiny, with two prominent anal processes—the spiracles—resembling the eye-stalks of a snail and projecting from either side of the anal segment; body flattened dorso-ventrally, narrow anteriorly, and abruptly truncated posteriorly. Second-stage larva transparent glossy white with a girdle of spiny tubercles of the same colour on each segment; a series of longitudinal ivory-white stripes visible through the skin on the dorsum. Mature larva glossy transparent creamy-white, much flattened dorso-ventrally; spiny tubercles arranged in girdles, those situated laterally being larger than those on the dorsum; lateral tubercles arranged in three longitudinal rows; white lines showing through the skin of the dorsum each in the form of a **V**, three in number, situated parallel to each other and with their apices directed posteriorly; apices of spiracles black.

Pupa.—Length 2·5 mm. to 3·5 mm., colour light to dark brown. In shape elongate-oval, flattened dorso-ventrally; two prominent processes on the anal segment.

Natural enemy.—A chalcid, as yet undetermined, has been bred from the pupa of the *Leucopis* species. This parasite is 1.75 mm. in length and Prussian blue in colour, with black and yellow legs.

Summary.

The occurrence of an aphidophagous fly of the genus *Leucopis* is recorded, and the following observations on its life-history and habits noted:—

1. Its life-cycle is completed in 13 days.
2. Breeding is continuous while aphides are present on the plant.
3. It occurs in sufficient numbers and is so voracious in its feeding-habits as to constitute a valuable check to the increase of the aphides infesting dura and cotton.
4. It is parasitised by a minute hymenopteron.

Khartoum.

November 3rd, 1921.

“*Études de Zoogéographie*,” par J. Sainte-Claire Deville.—In the “*Annales de la Société entomologique de Belgique*,” lxi, pp. 390–421 (Jan. 1922), under the above title, there is a paper by Col. Deville on the geographical distribution of certain palaeartic Coleoptera of particular interest to British entomologists, many of our well-known beetles being enumerated in it. Eleven species, ten of which are British, have been specially selected for illustration, and sketch-maps showing the distribution of each of them are given: the insects thus mentioned are *Leistus rufibarbis* Dej., *Empleurus (Helophorus) porculus* Bedel, *Hydroporus obsoletus* Aubé, *Pseudopsis sulcata* Newm., *Boreaphilus velox* Heer [a Staphylinid related to *Eudectus*], *Stenus guynemeri* Duv., *Chrysomela banksi* F., *Calathus piceus* Marsh., *Anchonidium unguiculare* Aubé, *Paraphaedon tumidulus* Germ., and *Quedius tristis* Grav. The author calls attention to a work by Dr. R. F. Scharff, entitled “*European Animals, their Geographical History and Geographical Distribution*,” London, 1907, the perusal of which has assisted him in the present “*Études*” on the Coleoptera.—Eds.

“*Konowia*,” *Zeitschrift für systematische Insektenkunde: another entomological periodical.*—This new venture is a continuation of the “*Zeitschr. für syst. Hymen. und Dipterologie*,” which was supervised by the late Pastor Konow till his death, when it came to an abrupt end. “*Konowia*” is edited by Dr. Reinh. Meyer, of Landsberg a. Warthe, Germany, and published by Fritz Wagner in Vienna. Band I, Heft. 1–2, pp. 1–96, was issued on Jan. 15th, 1922, the entire volume to include three parts, each with two hefts, and the subscription price for Great Britain and Colonies is fixed at ten shillings. The first part contains papers on *Hymenoptera* by Dr. E. Enslin, Dr. H. Hedicke, Dr. F. K. Stöckert, Dr. H. Friese, and Dr. H. Habermehl, *Diptera* by Th. Becker and Dr. Günther Enderlein, *Trichoptera* by R. P. L. Navás, and *Thysanoptera* by Dr. Hermann Priesner. The annual subscription, if the same amount of matter is given in the following hefts, is moderate, considering the present cost of printing, etc.—Eds.

Carpophilus ligneus Murray in Britain.—On several occasions recently specimens of this beetle have been sent to the Natural History Museum for determination. They come from different localities and in each case were found in connection with merchandise, *e.g.* dried Californian plums (Liverpool per *H. Britten*); dried apples (Penarth, *Tomlin*); jelly blocks (London); also from Birmingham and the Isle of Wight. The species was described from Mexico and later taken in some numbers by the collectors for the "Biologia Centrali-Americana," but does not appear to have been hitherto noticed in Europe as a pest to commerce. Its congener, *C. hemipterus* L., widely known as the "Dried-fruit Beetle," is now of almost cosmopolitan distribution as a pest of dried fruits and other provisions, and if the adoption of similar habits by *C. ligneus* is at all general its rapid spread as a commercial pest is to be anticipated. Of the species recorded by Fowler it is most nearly related to *C. sexpustulatus* F., the affinities of these species being indicated by the following key:—

1. Thorax strongly convex from side to side, its base as wide as that of elytra: elytra not as long as together broad, 2.
 Thorax dorsally depressed with lateral margins notably explanate, base narrower than that of elytra, the sides sinuate before the posterior angles; elytra longer than together broad 3.
2. Thorax much narrowed at apex, elytra each with large pale spot at apex. *hemipterus* L.
 Thorax scarcely narrower at apex than at base, elytra without apical pale spot *dimidiatus* F. (*mutilatus* Er.).
3. Base of thorax truncate, punctuation of upper side strong, form more elongate; elytra distinctly longer than broad (7 : 6), each with 2 or 3 indistinct pale spots. *sexpustulatus* F.
 Base of thorax broadly rounded, sinuate in middle, punctuation fine; elytra scarcely longer than together broad, without pale spots *ligneus* Murr.

—K. G. BLAIR, British Museum (Nat. Hist.): *February 2nd, 1922.*

Lissodema cursor Gyll., *etc.*, at Box Hill.—I have pleasure in recording the capture of a specimen of *Lissodema cursor* under bark on Ranmore Common, on August 1st last. The season here has, in common with most places, been very erratic, *Cassida fastuosa* occurred in its usual haunt fairly abundantly in the spring and early summer, but species like *Licinus depressus* and *Lebia chlorocephala* were almost, if not entirely (in the latter case), absent. Two specimens each of *Lebia cyanocephala* and *Bythinus glabratus* resulted from hours of hunting.—STANLEY A. BLENKARN, Burford Lodge, Box Hill Dorking: *January 20th, 1922.*

Deiopeia pulchella L. at Southsea.—In the latter end of September I took a specimen of *Deiopeia pulchella* ♂ in a small field near the sea at Southsea, Hants. As I gather from the works of reference which I have at hand that the species is a rare immigrant, I thought that it might be worth recording.—NORMAN L. COLE, Moncrieff, Cirencester, Glos.: *February 10th, 1922.*

Obituary.

William Lucas Distant, we regret to announce, died on February 4th, in a nursing home at Wanstead, Essex, aged 77 years. He was born at Rotherhithe on November 12th, 1845, and was the only surviving son of Capt. Alexander Distant, in whose company on a whaling voyage to the Malayan Peninsula, in 1867, he first developed a love for natural history. In his early life Distant was connected with a tannery in London, and while engaged in this business he paid two lengthy visits to the Transvaal, and thus became interested in the fauna of that region. The experiences of his first journey there, 1890-1, are related in his "Naturalist in the Transvaal" (1892). The second visit, made a few years later, was of much longer duration (about four years in all), and gave him sufficient time to amass a large collection of insects, many of these being described and figured in his "Insecta Transvaaliensia," twelve parts of which (forming Vol. I) were issued, 1900-11. From April 1899-November 1920 he was employed by the Trustees of the Natural History Museum at S. Kensington to look after and rearrange their extensive collection of Rhynchota, this work occupying him two or three days a week, till failing health put an end to it. Distant began by taking up the study of exotic Lepidoptera, and his first article on this subject appeared in this Magazine in November 1874. But after the publication of the "Rhopalocera Malayana" (1882-6) he devoted nearly the whole of his time to the Rhynchota. His chief contributions on this subject are, *Heteroptera*, Vol. I, and *Homoptera*, Vol. I (part), of the "Biologia Centrali-Americana" (1880-1905); a "Monograph of the Oriental Cicadidae" (1889-92); and the *Heteroptera* and *Homoptera* of the "Fauna of British India," 7 vols. in all, 1902-18. A very large number of papers by him on these and kindred subjects have appeared in our scientific journals, mainly in the "Annals and Magazine of Natural History" and in the "Entomologist"; his last paper in the "Annals," on Rhynchota from New Caledonia, is dated November 1920. In addition to this lengthy list, he has contributed numerous papers to foreign periodicals, and described the Rhynchota captured by expeditions to the Seychelles, New Guinea, New Caledonia, Kashmir, etc.

A contemporary of Bates, Pascoe, Meldola, McLachlan, C. O. Waterhouse, and W. F. Kirby, he was well known to the older school of entomologists. The death of his wife in 1914, and the loss of one of his sons by drowning in Australia in 1913 and the death of another in hospital in Alexandria in 1915, greatly affected him, and we fear that the subsequent years of his life must have been very unhappy, aggravated in the end by the development of cancer, to which he finally succumbed. Few men, however, have kept up their love of entomological work over so long a period, 1874-1920, and he will be missed by many of the habitués of the Insect Room of the Natural History Museum.

Distant was elected a member of the Société Entomologique de France in 1868, and a Fellow of the Entomological Society of London in 1875, serving as Secretary of the latter in 1878-80, and as Vice-President in 1881 and 1900. He was Director and Honorary Secretary of the Anthropological Institute, 1878-81; Editor of the "Zoologist," 1897-1914; and was also a member of the Société Entomologique de Belgique.

His collection of insects, containing about 50,000 specimens, chiefly Rhynchota, including over 2500 types, was acquired by the Trustees of the British Museum some years ago.

Louis Bedel, the French Coleopterist, we have just been informed, died on Jan. 26th.

Societies.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *January 12th, 1922.*—Mr. E. J. BUNNETT, M.A., Vice-President, in the Chair.

Mr. Bunnett exhibited *Heliophobus hispidus*, the dark form from Torquay and the lighter form from Dorset, and a very dark aberration of *Ortholita palumbaria*. Mr. Withycombe, larvae of *Taeniorhynchus richardi* (Dipt.) attached by siphons to roots of *Typha angustifolia* from Epping, with illustrative photographs. Mr. Hy. J. Turner, for Mr. Thomas Greer, Co. Tyrone, the following aberrations recently taken by him: *Euchloë cardamines*, (1) ♂ ab. *marginata*, (2) ♂ dark streaks on the orange blotches, (3) ♂ very small, (4) ♂ unusually large, (5) ♀ ab. *radiata*, (6) ♀ with orange streaks above and below; *Melitaea aurinia*, ♀ dull obscure coloration; *Pararge megaera*, (1) ♂ with apical ocellus reduced to a small dot, (2) ♂ with double apical ocellus; *Polyommatus icarus*, (1) gynandromorph right side ♂, left side ♀, (2) ♂ with faint red marginal blotches upper side hind margin hind wings, under side ab. *icarinus*, (3) ♀ with marginal red blotches extended to form a band. Mr. Goodman, *Cocconynpha tiphon*, typical and race *philoxenus* from Britain and race *isis* from the Dauphiné. —HY. J. TURNER, *Hon. Editor of Proceedings.*

ENTOMOLOGICAL SOCIETY OF LONDON: *Wednesday, January 18th, 1922 (Annual Meeting).*—The Rt. Hon. LORD ROTHSCHILD, M.A., F.R.S., etc., President, in the Chair.

Dr. Neave, one of the Secretaries, read the Report of the Council, which was adopted on the motion of Mr. T. H. Grosvenor, seconded by Mr. S. Edwards. The Treasurer then read his Report and Balance Sheet, which was adopted on the motion of Mr. A. E. Tonge, seconded by Dr. E. A. Cockayne. The Fellows nominated by the Council as Officers and Council for the ensuing year were declared by the President to be formally appointed. The President then delivered his address, illustrated with lantern-slides, after which a vote of thanks to him with a request that his address might appear in the "Proceedings" was passed with acclamation, on the motion of Mr. G. T. Bethune-Baker. A vote of thanks to the Officers was also passed on the motion of Mr. E. E. Green, seconded by Dr. C. J. Gahan.

Wednesday, February 1st, 1922.—The President in the Chair.

The President announced the Vice-Presidents for the ensuing year to be Mr. R. Adkin, Mr. E. C. Bedwell, and Professor E. B. Poulton, D.Sc., F.R.S., etc.

The Treasurer read a letter from the Hon. N. C. Rothschild announcing the death of Mr. W. Purdey of Thanet Gardens, Folkestone, and a vote of

condolence was passed to his relatives. The Rev. F. D. Morice also gave a short account of the life of the late Mr. F. W. Sladen.

The following were elected Fellows of the Society:—Dr. R. E. McConnell, Arua, Uganda; Dr. E. T. Fernald, Ph.D., Professor of Entomology, Massachusetts Agricultural College, Amherst, Mass., U.S.A.; and Dr. Alfred Moore, 31 Alfred Place, South Kensington.

The President, Mr. Sheldon, and Mr. Adkin all brought for exhibition some remarkable series of *Cularia truncata*, *C. citrata*, and *C. concinnata*. Rev. F. D. Morice made a short communication on the life-history of a British sawfly, *Pristiphora pallipes* Lep. Mr. H. J. Turner exhibited, on behalf of Mr. Thomas Greer, a series of aberrations of British Lepidoptera from Co. Tyrone. Mr. Ashby, some butterflies from Piedmont, Italy, and said that he considered the Val di San Bartelemi, close to Nus, to be one of the best collecting-grounds in Northern Italy. Mr. J. H. Durrant, on behalf of Dr. Gahan, some living examples of the Cassidid beetle *Aspidomorpha sanctae-crucis* from India; the causes of the brilliant metallic coloration of this beetle were discussed by Mr. Arrow and by Mr. Willoughby Ellis, and Dr. Neave commented on the habits of similar African species.

A paper by Mr. Martin E. Mosely was read on "Two new British Species of *Hydroptila*."—S. A. NEAVE, *Hon. Secretary*.

SOME INDIAN COLEOPTERA (7).

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

(Continued from p. 34.)

Antherophagus himalaicus, n. sp.

Shining, pale testaceous, the elytra usually a little darker, the eyes, tips of the mandibles, and bases of the tibiae infuscate or black, the antennae (joint 1 excepted) more or less infuscate; the upper surface very closely, finely punctate, and clothed with short, fine, adpressed yellowish pubescence, the elytra with rows of punctures showing through from the inner surface. Antennae very stout in ♂, more slender and shorter in ♀. Eyes small, depressed. Prothorax transverse, subquadrate, a little widened at the base, the basal depressions shallow.

Length 4-5 mm. (♂ ♀.)

Hab. W. Bhatkot, Kumaon, alt. 6000 ft. (*H. G. C.*: ♂ ♀: v.1920), Chaubattia, Almora District, alt. 6-7000 ft. (*S. R. Archer*, in *Mus. Brit.*: ♀).

One ♂, six ♀ ♀, the ♂ labelled as having been found on *Paeonia ernodi*. A form of the European *A. nigricornis* F., with smaller, less convex eyes, the specimens before me being intermediate in this respect between *A. nigricornis* and *A. microphthalmus* Grouv. (1919), the type of which (♂) was captured at Mangphu near Darjeeling. This latter is a much broader insect than *A. himalaicus*.

Cryptophagus atratus, n. sp.

Moderately elongate, narrow, shining, finely cinereo-pubescent; black or piceous, the antennae (the club excepted) sometimes ferruginous, the knees and tarsi testaceous; densely, finely, the elytra more coarsely and not so closely punctate. Antennae of ♂ long, rather slender, with a stout 3-jointed club, joints 9 and 10 strongly transverse; shorter in ♀. Prothorax strongly transverse, the sides armed with a small straight tooth at about the middle, the lateral anterior callosities oblique, pointed behind; the transverse basal groove deep, abruptly terminating in a short oblique depression on each side near the hind angles; the disc without trace of median plica before the base. Elytra considerably wider than the prothorax, narrowing from about the middle. Legs long and slender: anterior tarsi with the basal joints slightly thickened, and the posterior tarsi 4-jointed, in ♂.

Length 2-2½ mm.

Hab. Dudhatoli, Garhwal, alt. 9000 ft. [vi.1920], Sunderdhunga, alt. 8000-12,000 ft., Upper Gumti Valley [iv.1919], W. Almora in Kumaon [iv.1918] (*H. G. C.*).

Found in profusion by beating flowering plants at high elevations. A small, shining black form, with slender legs, unusually long antennae in ♂, etc. It is not included in the late A. Grouvelle's account of the Indian species of the genus (*Mém. Ent.* i, pp. 64-78, April 1916). The dark coloration is exceptional in the genus *Cryptophagus*.

Corticaria orientalis, n. sp.

Elongate, subcylindrical, shining, clothed with rather long, pallid, decumbent hairs which are seriatly arranged on the elytra; ferruginous, the antennae, legs, and elytra testaceous, the suture usually more or less infuscate; the head and prothorax densely, rugosely punctate, the elytra with rows of rather coarse punctures placed in fine, shallow striae, the interstices flat and irregularly uniseriate-punctate, the sutural stria deeply impressed towards the apex. Head narrower than the prothorax; eyes rather large. Prothorax transverse, cordate, foveate in the middle before the base, the margins sharply crenulate. Elytra elongate, slightly wider than the prothorax, narrowing from about the middle.

Length 2-2½ mm.

Hab. W. Almora Division of Kumaon, alt. 7000-9000 ft. [5. vi. 1917], Dudhatoli, Nainital, Ranikhet (*H. G. C.*).

Sent in numbers from Kumaon. This seems to be a common and widely distributed insect in India, but no name has been found for it in the literature examined. It is narrower and relatively more elongate than the European *C. cylindrica* Mann.; the prothorax is transversely cordate, rugose, deeply foveate before the base, and sharply

crenulate at the sides; the elytra are pale testaceous, usually with a darker suture, and the striae (the sutural one excepted) are finer and shallower.

Corticaria rhombifera, n. sp.

Moderately elongate, robust, clothed with rather long, pallid pubescence, the head and prothorax subopaque, the elytra and under surface shining; piceous or rufo-piceous, the elytra testaceous, with a broad, sharply angulate, post-median fascia (sometimes extending forward at the sides), and a narrow streak along the suture before the tip, black or piceous, the antennae, palpi, and legs testaceous or obscure testaceous; the head and prothorax densely, rugosely punctate, the elytra with irregular rows of closely placed coarse punctures, which are placed in almost obsolete striae, the sutural stria sharply defined and deeply impressed towards the apex, the interstices narrow and uneven. Head narrower than the prothorax, the eyes small, prominent; antennae moderately long. Prothorax about as long as broad, subangularly widened at the middle, and narrowed thence to the apex, the disc interruptedly sulcate, the sulcus terminating in a fovea near the base, the lateral margin without definite crenulation. Elytra oblong-oval, widening to a little beyond the middle and there more than twice the width of the prothorax, longitudinally impressed at the base within the humeri, the latter obtuse. Beneath sparsely, finely punctate.

Length 2-2 $\frac{1}{10}$ mm.

Hab. Dudhatoli, Garhwal, alt. 9000 ft. (*H. G. C.*: vi. 1920).

Found in great abundance by beating flowering plants. This species is recognizable by the testaceous, sharply nigro-fasciate elytra (the fascia being dilated into a rhomboidal patch on the disc of each elytron), and the rugose, opaque head and prothorax. It cannot be identified with any of the Indian *Corticariae* named by Motschulsky. There are no visible external sexual characters.

Corticaria inflata, n. sp.

Obscure ferruginous, the elytra testaceous, with an angulate nigro-piceous submedian fascia not quite reaching the suture or outer margin; shining, finely pubescent; the head and prothorax rather closely, somewhat coarsely punctate, the elytra with irregular rows of fine punctures and a definite sutural stria, which is deeply impressed at the base and apex, the base also longitudinally excavate on each side within the humeri. Prothorax convex, slightly longer than broad, very little wider than the head, rounded at the sides; transversely furrowed behind the middle, and with a deep central groove, in which is placed a small basal fovea. Elytra ovate, gibbous, at the middle more than twice the width of the prothorax, the humeri rounded.

Length 1 $\frac{9}{10}$ -2 mm.

Hab. Pindar Valley, Kumaon, alt. 8000-11,000 ft. (*H. G. C.*).

Two specimens. Smaller and less elongate than *C. rhombifera*; the head and prothorax shining and not so rugose, the latter sulcate; the elytra ovate, shorter, gibbous, deeply tri-impressed at the base, and with the dark fascia interrupted and less angulate.

Corticaria nebulosa, n. sp.

Oboval, robust, shining, clothed with rather long pallid hairs; rufopiceous, the elytra obscure testaceous with a broad, indeterminate blackish space extending across the middle, the antennae and legs ferruginous; the head and prothorax densely, rugosely punctate, the elytra with rows of coarse punctures placed in fine shallow striae, the interstices transversely rugulose and irregularly uniseriate-punctate, the sutural stria deeply impressed towards the apex. Head a little narrower than the prothorax. Prothorax about as broad as long, rounded at the sides, slightly constricted and narrowed posteriorly, with a deep central fovea before the base, the margins without definite teeth. Elytra oval, broad, convex, the humeri obtuse.

Length $2-2\frac{1}{10}$ mm.

Hab. W. Almora Division of Kumaon (*H. G. C.*).

Two specimens. Near the palaeartic *C. pubescens* Gyll., the elytra convex, oval, and less elongate; the head and prothorax more rugose, the latter rapidly narrowed towards the base and the margins without distinct teeth.

Corticaria parvicollis, n. sp.

Elongate, narrow, subcylindrical, shining, clothed with rather long, pallid hairs which are seriatly arranged on the elytra; testaceous, the head and prothorax reddish, the suture of the elytra slightly infuscate; the head and prothorax closely, rather finely punctate, the elytra very closely, subseriate-punctate, smoother towards the apex, the sutural stria only distinct, the interstices transversely rugulose. Head narrower than the prothorax, the eyes rather large; prothorax strongly transverse, comparatively small, rounded and irregularly crenulate at the sides, constricted behind the median denticle, which is a little more prominent than the others, and with a deep transverse fovea before the base. Elytra elongate, wider than the prothorax, slightly rounded at the sides.

Length $1\frac{9}{10}$ mm.

Hab. W. Almora District of Kumaon (*H. G. C.*).

One specimen. Less elongate and much smaller than *C. orientalis*; the prothorax small, strongly transverse, and subangulate at the sides; the elytra closely, finely, confusedly punctate (the interstitial punctures similar to the rest), the sutural stria only distinct. *C. parvicollis* is not unlike the European *C. elongata* Humm.

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THE NATURALIST:

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EDITED BY

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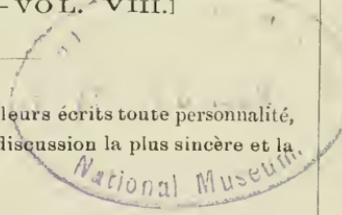
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RECORDS WANTED FOR NORTH HERTS AND SOUTH BEDS.

The Letchworth and District Naturalists' Society, who manage Letchworth Museum, are endeavouring to work up the lists of fauna and flora of the region covered by their activities (a twelve-mile radius). The writer, being entomological recorder for the above Society, would therefore be extremely grateful for any records of insects, other than Lepidoptera, taken by entomologists who have collected at Royston, or any other locality in North Herts or South Beds.

RAY PALMER, F.E.S., "Ingleholme," Norton Way, Letchworth.

MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 41 Queen's Gate, S.W.7 (nearest stations: South Kensington and Gloucester Road). April 5th, May 3rd, June 7th, 1922, at 8 p.m.

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

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 7 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

THE LONDON NATURAL HISTORY SOCIETY, now meets in Hall 40, Winchester House, Old Broad Street, E.C. 2, on 1st and 3rd Tuesdays in the month at 6.30 p.m. General meetings 1st Tuesdays. Sectional meetings 3rd Tuesdays. (No meetings in July or August indoors, but field excursions instead.)

Hon. Sec.: W. E. GLEGG, The House, Albion Brewery, Whitechapel Road, E. 1.

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

ENTOMOLOGICAL SOCIETY OF HAMPSHIRE AND THE ISLE OF WIGHT.—This Society has developed from the Southampton and District Entomological Society. Meetings are held on the First Saturday afternoon of each month at Southampton, and other meetings will be arranged in important centres in the county from time to time. Activities being undertaken at the present time include the formation of a library, of collections of insects, and the compilation of a county insect fauna list. Will keen entomologists in the county who are interested please communicate with the

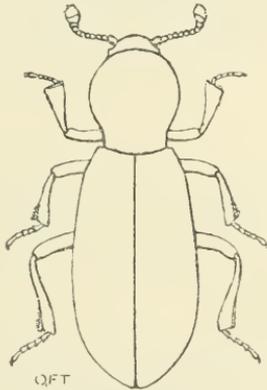
Hon. Sec., F. J. KILLINGTON, 1 St. Catherine's Road, Eastleigh, Hants.

Hab. W. Almora District of Kumaon (*H. G. C.*).

A long series, sexes not identified. A very small, narrow form, with transversely subquadrate, somewhat coarsely punctured prothorax, sharply curvato-striate elytra, and the first ventral segment with two longitudinal impressed lines, which separate the smoother central space from the coarsely punctured lateral portions. The European *C. histeroideus* F. has narrower tibiae and wants the ventral lines. Various species of *Cerylon* from Ceylon and India have been described by Motschulsky, Sharp, and Grouvelle, but the Kumaon insect cannot be identified with any of them. A smaller undescribed form from Dehra Dun (*C. arcuatum* Grouv. in litt.) comes near it.

Thorictodes erraticus, n. sp.

Elongate, convex, moderately shining, finely pubescent, ferruginous; above and beneath rather closely punctured, the puncturing a little closer on



Thorictodes erraticus. ×20.

the prothorax than on the elytra, the interspaces alutaceous. Head small; eyes minute, hidden beneath the angular lateral prominences of the head, in front of which the antennae are inserted; antennae short, stout, 11-jointed, 1 very stout, 9-11 fused into a broad club. Prothorax longer than broad, oblongo-cordate, strongly rounded at the sides, sinuously narrowed towards the base and also much narrowed in front. Elytra oblong-oval, about twice the length of the prothorax, widest towards the apex, hollowed at the base, the humeri angular. Legs stout; anterior tibiae broad, elongate-triangular, the intermediate and posterior pairs narrower, the latter slightly bowed inward; tarsi 5-jointed, thickened.

Length $2\frac{1}{2}$ mm.

Hab. W. Almora District of Kumaon (*H. G. C.*).

One specimen. More elongate, more robust, and much larger than *T. heydeni* Reitt., the type of the genus; the elytra narrowed at the

base and with the humeri angular in front, the legs and antennae much stouter. *T. heydeni* is a minute, shining, ferruginous, oblong insect, described from examples introduced into France, etc. Ganglbauer gives a long account of its characters, and adds Egypt and Algeria as localities. It appears to have been carried in cargoes of rice. The Indian *T. erraticus*,* sent unmounted in spirit, may have been found indoors? In general facies it resembles the Lathridiid-genus *Merophysia*.

Sphindus semirufus, n. sp.

Oblong, robust, shining, thickly clothed with long, soft, decumbent, whitish hairs; black, the head (eyes excepted), antennae, prothorax, scutellum, and legs rufo-testaceous; the head, prothorax, and scutellum closely punctured, the elytra with rows of fine punctures extending to the apex, and the interstices flat, alutaceous, and obsoletely punctulate. Head broad; eyes coarsely faceted; antennae short, joint 1 stout, 2 much shorter and narrower, 3-7 slender, 8-10 forming an oblong club, 8 and 9 strongly transverse, 8 smaller and shorter than 9. Prothorax convex, transverse, rounded at the sides, narrowed anteriorly. Elytra long, subparallel in their basal half. Tarsi 5-jointed.

Length $2\frac{1}{2}$ mm.

Hab. Sitapur in Kumaon (*H. G. C.*).

One specimen. Larger and more convex than the European *S. dubius* Gyll., the upper surface shining, differently coloured, and clothed with longer hairs. The general facies is that of a *Cis*.

Phloeotrya quercicola, n. sp.

Elongate, narrow, parallel-sided, dull, finely pubescent; nigro-piceous, the suture reddish in one specimen, the antennal joints 1 and 2 and the apices of the others, and the tarsi, testaceous; densely, very finely, reticulate-punctate, the sculpture of the prothorax coarser and transversely rugose. Head sulcate down the middle; joint 4 of maxillary palpi long and cultriform in ♂, a little shorter in ♀; antennae moderately long, not very slender, joints 6-10 slightly decreasing in length. Prothorax very convex, longer than broad, obliquely narrowed at the base (as seen from above), sulcate down the middle posteriorly, and with an oblique, basal fovea on each side of this. Elytra very elongate, as wide as the prothorax, subparallel to near the tip, and with a shallow groove near the suture, the sutural region somewhat depressed. Terminal ventral segment triangularly depressed in the middle behind, and the anterior tarsi thickened, in ♂. Basal joint of posterior tarsi as long as 2-4 united.

Length 5-7, breadth $1\frac{1}{2}$ -2 mm.

Hab. Bhatkot, Ranikhet Division of Kumaon (*H. G. C.* : iv.1920).

* Figured by Jacobson in his "Coleoptera of Russia," pl. 22, fig. 29.

Two ♂♂ and one ♀, bred from an oak snag. A small form resembling the Japanese *P. obscura* Lewis, the elytra parallel-sided, the head sulcate down the middle. The prothorax in the ♀ has an incomplete smooth median line in front of the short basal sulcus.

Osphya dissimilis, n. sp.

♀. Moderately elongate, shining, closely, finely pubescent; brassy-green, the anterior margin of the head, the labrum, antennae (the infusate joints 8-11 excepted), abdomen, and legs (the infusate penultimate tarsal joint excepted) testaceous; the head and prothorax densely, finely, the elytra confluent, rugulose punctate. Head much narrower than the prothorax, rather small; antennae comparatively short, slender, joints 2, 4, 5 subequal in length, 3, 6, and 7 a little longer, 8-11 stouter, elongate; joint 4 of maxillary rather short, subcultriform. Prothorax transverse, convex, narrowed anteriorly, trisinate at the base, the base itself slightly depressed in the middle and near the obtuse hind angles, the margins not in the least explanate. Elytra long, much wider than the prothorax, parallel to about the middle, depressed on the disc below the base; the sculpture becoming a little coarser and transversely rugose anteriorly. Legs rather slender; penultimate tarsal joint broad, deeply excavate, emarginate at the tip.

Length $5\frac{1}{2}$ mm.

Hab. W. Almora Division of Kumaon (*H. G. C.*: vi.1917).

One specimen. This insect differs from typical *Osphya* in the form of the antennae and in the less elongate terminal joint of the maxillary palpi; but it undoubtedly belongs to the same genus.

Mordella argenteoguttata, n. sp.

Elongate, cuneiform, shining, sericeo-pubescent, the reticulate surface-sculpture fine; black, with sharply defined, silvery-white markings—the prothorax with a transverse fascia of variable width extending across the disc anteriorly, emitting two short longitudinal streaks in the middle behind, and an angulate fascia running along the basal margin (sometimes continued forward along the lateral margins), the elytra each five spots, one at the base transverse, three rounded or oval, longitudinally-arranged down the middle of the disc (the intermediate one placed nearer the suture), and a smaller submarginal one at some distance below the base, the lower surface with a series of large triangular patches along the sides, and the ventral segments sometimes with a transverse patch at the middle; the rest of the vestiture black, brownish on the head. Antennae short, the joints from the fifth onward moderately widened and subserrate; maxillary palpi moderately stout, joint 4 somewhat cultriform. Pygidium long, tapering, convex.

Length (excl. pygid.) $4\frac{1}{2}$ -5 mm. (♂ ♀.)

Hab. W. Bhatkot, Ranikhet Division of Kumaon (*H. G. C.*: v.1920).

Six examples, found on *Symplocos*-blossom. At the same locality ten specimens (σ ♀) of a black *Mordella* were captured, and these are so like the common Palearctic *M. aculeata* L., that they can be provisionally referred to that species, the only apparent difference being the somewhat smoother sculpture of the upper surface when the vestiture is removed.

Mordellistena cuneigera, n. sp.

Moderately elongate, subcuneiform, shining, finely pubescent; testaceous, the eyes, the elytra with the suture narrowly and the sides broadly (leaving a cuneiform testaceous dorsal vitta on each which does not quite reach the apex), and the apex of the abdomen, black, the antennal joints 4-11 infuscate. Antennae long, slender, joint 3 small, short, 4-11 much longer, subequal. Posterior tibiae with two, joint 1 of posterior tarsi with three and 2 with two, oblique ridges. Pygidium long, slender, acuminate.

Length (excl. pygid.) 3 mm.

Hab. Khaul in Almora, alt. 4500 ft. (*H. G. C.*).

One specimen. A small testaceous form, the elytra black, each with a cuneiform testaceous dorsal streak.

Mordellistena humeronotata, n. sp.

Moderately elongate, narrow, cuneiform, shining, clothed with fine, silky, brownish pubescence; black, the antennal joints 1 and 2, the palpi in part or entirely, and a large humeral spot on each elytron, testaceous. Antennae (σ) very long, joints 3 and 4 small, short, together barely as long as 5, 5-11 elongate, subequal, rather stout, (♀) much shorter, and with joints 5-11 less thickened; terminal joint of maxillary palpi elongate, obliquely truncate at the tip. Prothorax moderately transverse. Pygidium long, pointed, stout at the base. Posterior tibiae and joint 1 of posterior tarsi each with two oblique ridges, joint 2 of the latter with one ridge only.

Length (excl. pygid.) 2-2½ mm.

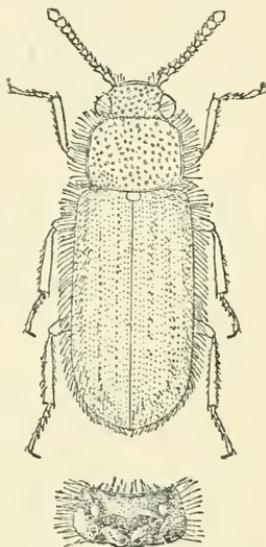
Hab. W. Bhatkot, Ranikhet Division of Kumaon (*H. G. C.*: v. 1920).

Found in plenty on *Symplocos*-blossom, with the above-mentioned species of *Mordella*. A small black scriceo-pubescent insect with a testaceous humeral spot on each elytron, a form of coloration occurring amongst other members of the same genus. Two black species of *Mordellistena* have also been found in Almora, Kumaon: one of these seems to be the common Palearctic *M. pumila* Gyll. and the other is nearly related to *M. inaequalis* Muls.

THE GEOGRAPHICAL DISTRIBUTION AND SYNONYMY OF THE
DASYTID-BEETLE *ACANTHOCNEMUS NIGRICANS* HOPE
(=*CILIATUS* PERRIS).

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

Bourgeois (Bull. Soc. Ent. Fr. 1904, pp. 25, 26), in a paper entitled "Sur le cosmopolitisme de l'*Acanthocnemus ciliatus* Perris, Coléoptère de la tribu des Dasytides," gives a detailed account of the extraordinary distribution of this beetle and of its formidable synonymy. The species, he says, has been described under six different names, and referred to three different genera. Nevertheless, two specific names have still to be added, *nigricans* and *fuscipennis* Hope, one of which, *nigricans*, must replace that of *ciliatus* Perris, it having 21 years' priority. The types of Hope's insects, both of which were referred by him to the genus *Dasytes*, and both from Adelaide, S. Australia, have been lent me by Prof. Poulton, and they agree perfectly with an example of *Acanthocnemus ciliatus* from Erbalunga, Corsica, kindly communicated by Lt.-Col. J. St. Claire Deville. Mr. A. M. Lea, in re-describing these Australian insects in 1909, is the only author who has noticed one of the most important characters of the genus, viz. the presence of very deep, almost circular foveae (these having a silvery appearance in certain lights) on the propleura, about which the French and German writers say nothing, their diagnoses having doubtless been drawn up from carded specimens. *A. nigricans* has the general appearance of a Trogositid or Cryptophagid, and the hairy body and ciliate elytral margins of certain Dasytids, amongst which the genus seems best placed.* The insect has been described by Lea, as well as by other authors, and it is only necessary to say that it is of a flattened, subcylindrical shape, blackish or fuscous in colour, with the antennae and legs more or less ferruginous; the numerous specimens before me measure from 4-5¼ mm. in length and 1½-2 mm. in width. The characters of the genus given below were taken from Australian and Rhodesian examples before the descriptions



Acanthocnemus nigricans
Hope, ♂, × 9, the long
hairs on the dorsal sur-
face omitted; the lower
figure shows the pro-
sternal foveae.

* The genus *Antiroon* Gorb. (1886), type *A. cribripennis*, from Panama, described as a Melyrid, is a Trogositid allied to *Diontolobus* Solier.

of the Continental authors had been seen by me, or the identity of their insects with Hope's species had been suspected. This definition adds a few particulars regarding the structure of the mouth-parts, tarsi, prosternum, etc. In the short basal joint of the tarsi and the flattened subcylindrical body, *Acanthocnemus* approaches *Pelecophorus* Latr., which includes two or three species from Mauritius and Réunion; but it differs from that genus in the structure of the palpi, antennae, tibiae, and tarsal claws, the bristly vestiture, and the deeply foveate prosternum. The specimens assumed to be ♂ have four visible joints only to the anterior tarsi, a character common to several genera of Malachiids.

The revised synonymy and generic definition will stand thus:—

ACANTHOCNEMUS.

Acanthocnemus Perris, Ann. Soc. Ent. Fr. 1866, p. 187; Bourgeois, Bull. Soc. Ent. Fr. 1904, p. 26; Reitter, Faun. Germ., Käfer, iii, p. 283 (1911).

Eurema Abeille de Perrin, L'Echange, x, p. 93 (1894); Bull. Soc. Ent. Fr. 1896, p. 261.

Hovacnemus Fairmaire, Ann. Soc. Ent. Belg. xlii, p. 232 (1898).

Dasytes (Paykull), Sect. 1, Lea, Trans. Ent. Soc. Lond. 1909, p. 239.

Head transverse, broad, the epistoma short, confused with the front; labrum short; eyes large, entire; mandibles stout, dentate before the middle within, feebly emarginate at the tip; terminal joint of the maxillary and labial palpi narrow, subcylindrical, truncate at apex, the penultimate joint short; antennae 11-jointed, stout, joint 1 very stout, 2-11 perfoliate, 2 and 3 obconic, 4-8 submoniliform, transverse, 9-11 much stouter than those preceding, together forming a loose club; prothorax transverse, sharply margined at sides and base; scutellum strongly transverse; elytra long, flattened, subparallel, with numerous rows of punctures, the epipleura reaching as far as the apex of the metasternum; prosternum with a deep, almost circular, flat-bottomed fovea on each flank exterior to the sinuous transverse ridge closing the anterior coxal cavities in front, the cavities themselves widely open behind, and the coxae contiguous; five ventral segments exposed; tibiae asperate, subdenticulate on their outer edge, the spurs short; tarsi simple, 5-jointed, 1 short, wanting or fused with 2 on anterior pair in ♂, 5 long, the claws long, simple; body subcylindrical, hairy, the hairs forming a close fringe along the elytral margins, the antennae and tibiae setose.

Type, *Dasytes nigricans* Hope (= *Acanthocnemus ciliatus* Perris).

Acanthocnemus nigricans.

Dasytes nigricans Hope, Trans. Ent. Soc. Lond. 1845, p. 105¹; Lea, *op. cit.* 1909, p. 243².

Dasytes fuscipennis Hope, *loc. cit.* ³; Lea, *op. cit.* p. 241 ⁴.

Acanthocnemus ciliatus Perris, Ann. Soc. Ent. Fr. 1866, p. 188 ⁵; Schilsky, in Küster's Käf. Europas, xxxi, no. 16 (1895) ⁶; Bourg., Bull. Soc. Ent. Fr. 1904, pp. 25, 26 ⁷.

Acanthocnemus truquii Baudi, Berl. ent. Zeitschr. 1873, p. 321 ⁸.

Acanthocnemus fauveli Bourg. Rev. d'Ent. 1884, p. 289 ⁹.

Eurema dilutum Abeille de Perrin, L'Echange, x, p. 93 (1894) ¹⁰; Bull. Soc. Ent. Fr. 1896, p. 261 ¹¹.

Acanthocnemus kraatzi Schilsky, Deutsche ent. Zeitschr. 1896, p. 361 ¹².

Hovacnemus pallitarsis Fairm. Ann. Soc. Ent. Belg. xlii, p. 232 (1898) ¹³.

Hab. AUSTRALIA ⁷; S. AUSTRALIA, Adelaide ¹⁻⁴ (*Fortnum: types in Mus. Oxon.; Mus. Brit.*); W. AUSTRALIA ⁴; NEW SOUTH WALES ⁴; QUEENSLAND ⁴; TASMANIA ⁴; NEW CALEDONIA ⁹; SIAM (*Vitalis de Salvaza: iv.1920*); BURMA (*coll. H. E. Andrewes*); INDIA, Tenasserim ⁷ (*Fea: 1887*); MADAGASCAR ¹³; S. and N.W. RHODESIA, various localities (*Dr. Marshall, H. C. Dollman: 1901-1915*); GUINEA ¹²; ALGERIA ¹⁰; CORSICA ^{5 6}; SARDINIA ¹¹; CYPRUS ⁸.

According to Mr. Lea ⁴, this is probably the most widely distributed Malacoderm beetle in Australia, occurring under the bark of *Eucalyptus*-trees, and also coming to light at night. It would therefore appear that Australia is the real home of *A. nigricans*, Fortnum having captured specimens at Adelaide as long ago as 1841. The next record, 1866, is that of an example found by Revelière under the bark of a juniper in Corsica. Presumably the insect has been transported by commerce, either in the larval or imaginal condition, in cereals, etc., like *Plochionus pallens*, *Tenebroides mauritanicus*, *Silvanus surinamensis*, *Platycotylus inusitatus*, etc., and has now become cosmopolitan throughout the warmer parts of the Old World. The present writer has recorded* the capture of living examples of an Argentine Dasytid, *Astylus atromaculatus* Blanch., at Durban and Pretoria, which were probably brought there in hay during the Boer War.

Horsell.

March 1922.

* Ann. Mag. Nat. Hist. (9) ii, p. 352 (Oct. 1918).

NOTES ON THE LIFE-HISTORY
OF *RHIZOPHAGUS PARALLELOCOLLIS* GYLL.

BY K. G. BLAIR, B.SC., F.E.S.

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Sometimes called the "Grave-yard Beetle," *R. parallelocollis* has long been known as a frequenter of grave-yards and cemeteries, where it occasionally abounds; otherwise it is found, though rarely, like most of its congeners, under bark or in fungi. Its life-history, and consequently the reason for this peculiar partiality, was unknown until in the course of some exhumations in the cemetery at Ivry, France, during the winter of 1886-87, the beetle and its larva were found in numbers on some of the bodies exhumed. M. Mégnin*, who was investigating the entomology of these graves, noted that the beetles were only present on bodies that had been buried for two years, and always in the company of the dipteran *Phora aterrima*, the latter in very large numbers. He also remarked that while the *Rhizophagus* was usually found upon the fatter portions of the corpse, the *Phora* larvae were more abundant on the leaner portions. He supposed that corpses of more recent date than two years had not reached the right state of putrefaction for the requirements of the beetle, and that corpses of three years and upwards had passed beyond this state; hence he concluded that the presence of *Rhizophagus* on an exhumed corpse was evidence that it had been buried for about two years.

About the same time that these observations were made a larva supposed to be that of *R. parallelocollis* was described by Rey (Ann. Soc. Linn. Lyon, 1887, p. 176, pl. i, fig. 34). It was found in the earth, having no association with graves, and apparently at shallow depth, and is said to live, with the perfect insect, amongst old roots and pieces of wood attacked by various other insects. This description, however, does not tally with larvae recently found with the perfect beetle upon an exhumed corpse, and is either inaccurate, or, more probably, applies to the larva of another species of *Rhizophagus*. Another description and figure given by Mégnin in the work referred to are unfortunately too lacking in detail to be definitely recognisable.

Both beetles and larvae have recently been referred to the Natural History Museum by Dr. B. H. Spilsbury for identification. Again they were in the company of the larvae of a Phorid, in this case *P. vitri-*

* P. Mégnin, "La Faune des Cadavres," 1894. See also notices in Ent. Mo. Mag. vol. xxii, 1888, p. 276; *ibid.* (2) xviii, 1907, p. 3.

pennis Mg.*, and were most numerous on certain parts of the body, such as the backs of the hands and the forearms, where the skin had been destroyed (probably by the Phorid larvae), and also in the hair. In this case the corpse had been buried for only ten months and was in a remarkably good state of preservation; the coffin of sound oak was quite good, with the joints perfect except that when the lid was removed a little fluid exuded from the joints at the bottom. The grave was in a dry loam, and was unusually shallow, the floor, which was lined with the turf cut from the surface, being only 4 ft. 9 in. below surface level.

The larvae are elongate, subparallel, slightly depressed, of a whitish colour, with the ninth abdominal segment flattened above and bifurcate behind, somewhat resembling that segment in the larvae of the Elaterid genus *Athous*. The form of this segment in those species of *Rhizophagus* of which the larvae have been described gives excellent diagnostic characters.

In *R. parallelocollis* (as received from Dr. Spilsbury) there are two conical brown tubercles on the disc, each having a single hair; each lateral margin bears two similar setigerous tubercles; and each of the terminal lobes, which are separated by a deep round emargination, is itself subdivided into three branches, one dorsal, strong, upcurved and sharply pointed, and two ventral, an inner and an outer, smaller and less strongly chitinised, each bifid or double-pointed at the apex, with a long hair arising from between the points.

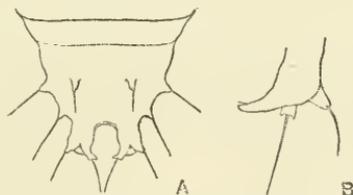


Fig. A.—*R. parallelocollis*. 9th abdominal segment of larva, viewed from above.
B.—Lateral view of terminal process of same, more highly magnified.

A comparison of this segment as described in the larvae of other species of the genus may be of use.

R. bipustulatus (Perris, Ann. Soc. Linn. Lyon, 1877, p. 286, fig. 16, as *R. nitidulus*). Very similar to above; also with two dorsal and two pairs of lateral setigerous tubercles, but each of the terminal lobes is divided into two

* For this determination I am indebted to Mr. F. W. Edwards, who informs me that in the only two previous records of this species being reared the larvae were found in the nests of Wasps and Humble-Bees.

dorsal lobes, each bifid with a median hair, and one ventral, conical, with a much shorter hair.

R. dispar (Perris, *ibid.* fig. 35) apparently lacks both dorsal and lateral tubercles (though this may be an omission by the artist) and each terminal lobe is divided into three simple conical lobes, two dorsal, of which the external is the larger, and one ventral, each bearing a seta.

R. depressus (Perris, Ann. Soc. Ent. France, 1853, pl. xviii, fig. 90) agrees with the last in having the terminal lobes divided each into three conical setigerous branches, but here the internal dorsal is the larger; the two setigerous tubercles are present on the disc, and there are *four* pairs of lateral tubercles.

The larva described by Rey (*vide supra*) as that of *R. parallelocollis* has the two dorsal and *one* pair of lateral tubercles (all apparently *without setae*) and the terminal lobes are divided each into two, one dorsal, strong, and curved upwards, and one ventral, short and somewhat internally placed, provided with a seta (? *R. perforatus*).

The larvae of this genus are mostly found under bark, in the galleries of various Scolytidae, on which they are predacious, though they are said to feed also on the excrement of these larvae. They are sometimes found in fungi, but it is probable that they are feeding upon the dipterous and coleopterous larvae by which these are often riddled, and are not themselves fungivorous.

It is interesting to note that one other species of the genus, *R. perforatus*, shows a tendency to adopt habits similar to those of *R. parallelocollis*. In addition to records of its occurrence under bark it has been found in the carcase of a dog, under a dead fowl, around an old mutton bone (cooked) that had been buried eight days, and under dried cow-dung. In all these cases the presence of the *Rhizophagus* is probably to be explained as a devourer of carrion-feeding larvae rather than as itself a carrion-feeder. (N.B.—It is perhaps to this species that Rey's larva should be assigned.)

Taking all these points into consideration, it seems only reasonable to assume that the larvae of *R. parallelocollis* are predacious upon the Phorid larvae in whose company they seem invariably to be found, and that the supposed preference of the *Rhizophagus* larvae for the fat portions of the corpse while the Phorids are more numerous upon the lean portions may be due partly to accident and partly to the Phorids having been somewhat thinned out in the vicinity of the *Rhizophagus*. The presence of the *Rhizophagus* larvae in the hair, where also the Phorid larvae and puparia were abundant (the Phorid larvae avoiding moist situations when about to pupate), is a further indication that the *Rhizophagus* larvae were there merely to prey upon the Phorids.

The question remains: how do the beetles effect entrance to a coffin buried many feet in the earth? In the present instance Dr. Spilsbury feels certain that the mature beetles could not have done so, and indeed it is probable, if only on account of their numbers, that they had matured from larvae that had developed there. As the beetle is seldom found away from grave-yards, it is tolerably certain that the eggs could not have been laid upon the corpse before the coffin was closed (as may be the case with *Phora*, although burial took place in the month of February). The probability seems in favour of the newly hatched larva having effected entrance, but whether the beetle burrows down to oviposit on the surface of the coffin, or whether she lays her eggs on the surface and the young larvae burrow down, or whether the eggs were laid on the sods with which the bottom of the grave was lined, we have no evidence. In any case in the course of the ten months during which in this instance, the corpse had been buried the beetles had evidently passed through at least one life-cycle, thus proving that their presence on a corpse cannot be taken, as claimed by M. Mégnin, as evidence that two years have elapsed since burial.

British Museum (Natural History).

February 1922.

THREE NEW ORTHOPTERA FROM PALESTINE AND N.W. PERSIA.

BY B. P. UVAROV, F.E.S.

The following new species of Orthoptera from Palestine and one new subspecies from N.W. Persia are described from collections sent to the Imperial Bureau of Entomology by Dr. P. A. Buxton, at present Government Entomologist at Jerusalem. The types are preserved in the British Museum collection.

1. *Sphingonotus coeruleans* L., subsp. *coerulipes*, n.

One male and two females taken 25th–26th August, 1919, at Kazvin, N.W. Persia, differ from the typical (European) specimens of *S. coeruleans* by the following characters, which compel me to separate them as a distinct geographical race:—

Frontal ridge of the ♀ between the antennae somewhat convex, with the margins slightly diverging downwards, just below the ocellum constricted and distinctly impressed, disappearing before it reaches half-way between the ocellum and clypeus. False vein in the discoidal field perfectly straight, parallel to the hind radial; the hind discoidal area about three times as broad as the fore discoidal. Hind femora on the inner side bluish black, with a broad pale ring before the apex. Hind tibiae sky-blue, with the inside of their

base black, and a pale streak along the basal quarter of the outer side. Wings faintly bluish basally.

In the paratypic male the frontal ridge in its lower part is more raised as in the female and almost reaching the clypeus, but still its margins are far less raised than in the typical *coerulans*.

| | ♀ (type). | ♂ (paratype). |
|---------------------|-----------|---------------|
| Length of body..... | 25 mm. | 16 mm. |
| „ pronotum..... | 5 | 3.5 |
| „ elytra | 26 | 16 |
| „ hind femora..... | 13 | 9 |

These three specimens have been previously named by me in my paper on the Orthoptera of Mesopotamia* as *S. coerulans* L., but when I revised the whole material of the genus *Sphingonotus* in the British Museum, I came to the conclusion that there is more than one species (with additional geographical races) of *Sphingonotus* with hyaline wings in the deserts of the Western Asia. Thus, the typical *S. coerulans coerulans* seems to be confined to the more northern parts of the country, and Dr. Buxton's collection contains a long series of very typical specimens, taken at the Southern coast of Caspian Sea— at Enzeli, Gilan, and Menjil. The series of specimens from Baghdad and Amara proved to be *S. mecheriae* Krauss, described from the Algerian Sahara. One specimen from Enzeli belongs to *S. rubescens* Walk., which is probably identical with *S. aegyptiacus* Sauss., and represents a very good species which will be redescribed by me elsewhere; there is also one specimen of it in Dr. Buxton's Palestine lot, taken at Amman, Transjordan, alt. 2500 ft., 21. vii. 1921. A small lot of Mesopotamian Orthoptera sent in by Mr. Y. Ramachandra Rao included one more species of that group taken at Baghdad, 15. vii. 1920—*S. vosseleri* Krauss, also described originally from the Algerian Sahara. It is obvious that the Asiatic species of *Sphingonotus* with hyaline wings should be revised on the basis of large series of specimens.

2. *Sphingonotus angulatus*, sp. n. (Fig. 1.)

♀. Similar in size and the pattern of wings to *Sphingonotus callosus* Fieb., but differing from it in the shape of the head, sculpture of the pronotum, and the shape and position of the discoidal intercalate vein.

Antennae distinctly longer than the head and pronotum together, very slightly flattened, with the apex somewhat attenuate. Face with scattered puncturation, in profile somewhat reclinate; frontal ridge in profile rotundato-prominent between the antennae, feebly, but distinctly depressed just below the ocellum, practically straight and distinctly reclinate in the rest; when

* Journal of the Bombay Nat. Hist. Soc., xxvii, No. 1, p. 804, No. 22 (1921).

seen from the front it is gradually widened from the fastigium towards the ocellum, distinctly constricted below the latter and gradually widened farther downwards, disappearing just before the clypeus; its surface not strongly impressed; the margins above the ocellum sharp and smooth, below it thick, rounded and callous, irregular. Temporal foveolae scarcely marginated, slightly impressed, indistinct, elongato-oval. Fastigium of the vertex strongly sloping, in profile widely rounded, impressed, with an indistinct median carinula; its margins scarcely elevated in the front half and more so in the hind half where they are thick, callous, and slightly convergent backwards; the maximal width of the fastigium is just before the eyes and measures more than a half of its length and twice as much as the maximal width of the frontal ridge. Occiput smooth, but not shining. Lateral facial keels practically straight, feebly divergent downwards, fairly thick, callous, disappearing before they reach the clypeus. Cheeks somewhat swollen, smooth, with the

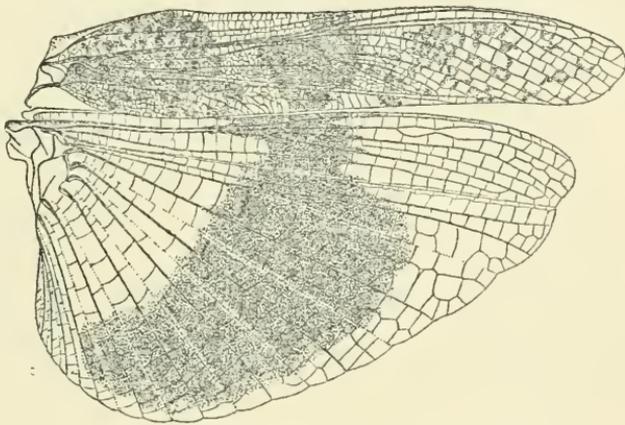


Fig. 1.—*Sphingonotus angulatus*, sp. n.

puncturation more dense at the lower margin and scattered elsewhere. Eyes perfectly oval, their maximal length subequal to two-thirds of their height; their lower end almost acutely angular. Pronotum strongly constricted in the prozona, which is a little longer than one-third of the whole pronotal disc and regularly convex; the fore margin slightly rotundato-prominent with a shallow emargination in the middle; the first and second transverse sulci well distinct, narrow, bent backwards in the middle, parallel to each other; the fore part of the prozona (*i. e.*, that between the fore margin and the first sulcus) somewhat raised tectiformly, but without a distinct median carinula, with two shallow impressions sideways of the raised middle part; no trace of the median carina between the first and the third sulcus; two transversely elongate callous tubercles between the second and the third sulcus; the metazona feebly convex, slightly rugulose, with a feeble median keel: the hind margin obtusely rounded, with the sides slightly sinuate; shoulders distinctly prominent, rounded; lateral lobes much higher than long, their front margin practically straight, the front angle obtuse, not rounded, the lower margin strongly oblique, scarcely sinuate before the middle, the hind angle acutely attenuate sideways, the hind margin practically straight. Episternum

rotundato-triangular, about twice as long as it is high. Mesosternal lobes separated by an interspace about twice as broad as it is long, and distinctly broader than one of the lobes. Metasternal interspace almost twice as broad as it is long. Elytra about five times as long as their maximal width, gradually and not strongly narrowed towards the obliquely rounded apex; more than the basal half densely reticulated, subcoriaceous; mediastinal area rather broad, quickly narrowed at the apex, with a distinct false vein; scapular area in its middle a little narrower than the mediastinal, sinuate, gradually narrowed towards the apex, with a false vein beyond the middle, not reaching the apex of the area; radial veins distinctly sinuate; discoidal area densely and irregularly reticulated, somewhat broader than the mediastinal area in its broadest part; the false discoidal vein well developed, though in the apical part somewhat irregular, in the basal half subparallel to the hind radial vein, and beyond the middle approaching to the latter, but not touching it; interulnar area in its broadest part as wide as the discoidal area, with about five irregular rows of cells and a scarcely developed, irregular, false vein; the interfurcal area at its base about half as broad as the discoidal, slightly narrowed towards the apex, with 3-4 very irregular rows of cells; more than the basal third of the apical part of elytra rather densely and irregularly reticulated, subcoriaceous, the rest hyalinous with regular elongated cells; the axillar vein confluent apically with the anal vein. Wings rather broad, with two apical lobes rounded. Hind femora broad basally, with the apex attenuate; the upper carina regularly bent, without a preapical emargination.

Coloration brownish ochraceous, densely marmorated with dark chocolate-brown and whitish. Antennae pale ochraceous, somewhat darker apically, with brownish rings. Face whitish, with dark grey puncturation; margins of the frontal costa near the fastigium and not far above the clypeus, black; cheeks whitish ochraceous with grey marmoration, dark grey punctures and one black spot near the edges of the clypeus. Fastigium and vertex ochraceous, densely marmorated with velvety-black. Occiput of a lighter shade than the vertex, with an indefinite dark median fascia and sharply defined from above blackish postocular fasciae. Pronotum ochraceous; its middle part marmorated with black and velvety-brown, while the sides of the disc are paler, forming an X-shaped design; the two callous tubercles in the middle of the disc, before the hind sulcus, white; hind margin with three pairs of brown spots; the lateral lobes with an indistinct dark fascia along the upper margin and with a velvety-brown spot in the middle, surrounded by whitish. Elytra ochraceous; the basal third densely marmorated with chocolate-brown, the colour being darker along the apical border, which is irregular and oblique; the postmedian fascia brownish, distinctly interrupted between the radial veins and suddenly widened behind them; the apical third part of the elytra with irregularly scattered brownish spots, more dense at the base of that part where an indefinite fascia is formed by them. Wings hyalinous; a broad black fascia starts from the middle of the fore margin and runs towards the hind angle, but neither reaches the latter nor touches the hind margin; the fascia is distinctly constricted at the anal vein, and its post-anal part is then suddenly widened, being in its broadest part more than twice as broad as the preanal part; its outer margin is very convex, while the inner one is only so feebly; the veins and veinlets in the apical lobes are brownish.

Fore and middle legs with brown ringlets. Hind femora with three indefinite dark fasciae on the upper side, and still more indistinct ones on the outer side; the inner side pale with the basal half and a preapical ring black. Hind tibiae pale, with the base and tips of the spines black.

♂ (paratype). Differs from the ♀ in having more distinct transverse fasciae on the elytra, the postmedian one being very distinctly interrupted between the radial veins; the fascia of the wings is much narrower and not sharply defined, interrupted at the anal vein; the two apical lobes infumate.

| | ♀ (type). | ♂ (paratype). |
|---------------------|-----------|---------------|
| Length of body..... | 24.5 mm. | 17.5 mm. |
| „ pronotum..... | 5 | 3.75 |
| „ elytra | 23 | 17.5 |
| „ hind femur | 10.5 | 9 |

The type is from Haifa, Palestine, 25. vi. 1921; the 17 paratypes (13 males and 4 females) are partly from the same locality, but mostly from Akka, 9-29. vi. 1921; one male is from Amman, Transjordan, 2500 ft., 30. viii. 1921.

In its general appearance this species is not unlike *S. callosus* Fieb. (specimens of which have been sent by Dr. P. A. Buxton from the same localities), but of course is easily separated by the sculpture of the pronotum and shape of the head. In these characters *S. angulatus* resembles *S. coeruleans* L., but differs from it not only in the coloration of the wings (a character very unreliable in this genus), but also in the form of the discoidal false vein, which is in the new species much more sinuate and more approximated apically to the radial vein; further differences are to be found in the broader rounded hind margin of the pronotum and the more attenuate hind angles of its lateral lobes.

The general coloration, of course, varies considerably, as does also the band of the wings, which may, probably, disappear altogether; the apical lobes of the wings are in the males either infumate or with distinctly darkened veins and veinlets.

Paradrymadusa annulicornis, sp. n. (Fig. 2.)

♂. Antennae slender, very long. Pronotum rounded, with but very short and obtuse lateral keels near its hind margin, which is very broadly rotundato-truncate; lateral lobes obliquely trapezoidal; their fore margin straight, oblique, forming a very obtuse and rounded angle with the lower margin which is short and straight; hind angle more obtuse and more widely rounded than the fore angle; hind margin strongly oblique, very long, scarcely sinuate. Prosternum with two short obtuse spines. Mesosternal lobes triangular, with the sides distinctly convex. Front femora armed with three spinules along the fore lower margin and with two short spinules on the inner

knee-lobe; front tibiae with three spines along the upper side and with six spines on each margin of the lower side. Middle femora with three spinules on the fore lower carina; the outer knee-lobes with two and the inner ones with only one short spinule. Hind femora very long, strongly incrassate in the basal half; their filiform part longer than one-third of the whole femur; both lower carinae with 10-12 fairly strong spinules each; the knee-lobes unarmed. Elytra short, oval; the tympanal field strongly reticulate, coriaceous throughout. Anal segment (fig. 2) produced into two narrow conical appendages, rotundato-emarginate between them. Supra-anal plate almost hidden under the anal segment, directed vertically downwards, acutely triangular, sulcate along its middle. Cerci pilose, short, depressed dorso-

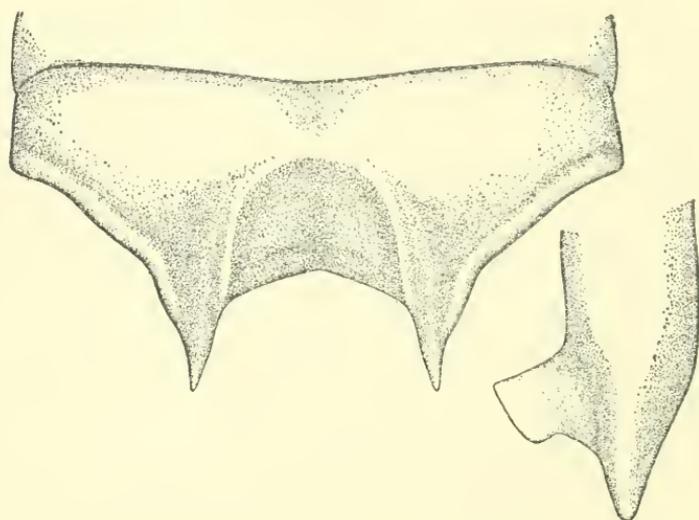


Fig. 2.—*Paradrymadusa annulicornis*, sp. n.

ventrally, conical, slightly incurved, with a strongly flattened trapezoidal tooth just beyond the middle (fig. 2). Subgenital plate with an acute triangular emargination; styli short, cylindrical.

General coloration uniform brownish-ochraceous. Antennae pale with indistinct brownish rings basally, and brownish with widely distant narrow pale rings in the rest. Pronotum above rufous, somewhat velvety; its hind margin pale, with brown points. Elytra uniformly brownish, with the cellules between the reticulation of a somewhat darker shade. All spinules of the legs with brown tips.

Length of body 33 mm.; pronotum 11 mm.; elytra 6.5 mm.; front femur 10 mm.; hind femur 34 mm.

The paratypic female in the last larval stage agrees in all characters with the described male; its ovipositor is slightly recurved, and the dimensions are as follows: length of body (somewhat contracted) 23 mm.; pronotum 11 mm.; hind femur 29 mm.; ovipositor 16 mm.

The type is from Haifa, Palestine, 14. vii. 1921; the paratype from the same locality, 12. vi. 1921.

This species is easily recognised by the very peculiar shape of the male cerci, as well as by the coloration, especially that of the antennae.

London.

January 1922.

SPHECODES SCABRICOLLIS WESM. IN SOMERSET, AND DESCRIPTION
OF ♀ OF *S. KERSHAWI* PERK.

BY R. C. L. PERKINS, M.A., D.SC., F.R.S.

In this Magazine for 1917 (p. 47) I brought forward *S. scabricollis* Wesm. as British on the evidence of a ♂ in the Kirby collection, where it stood in the series of *S. divisus* K. (*similis* Wesm.). This specimen was no doubt obtained about 120 years ago, and in the great number of British *Sphécodes* that have passed through my hands I have seen no other, nor is there any record of another.

Recently amongst some Hymenoptera sent to me for determination by Col. T. Jermyn I found a fine ♀ *Sphécodes* which was evidently new to me, and I have little doubt that this is the other sex of the *scabricollis* in Kirby's collection.

S. scabricollis is one of the rarest of European *Sphécodes*, and the ♀ is very imperfectly known. Dr. R. Meyer, in his recent work on the genus, suspects that v. Hagens confused this sex with that of the almost equally rare *S. schenkii*, the descriptions of these being almost identical, and he himself did not know the ♀ of *scabricollis*.

The following is a description of the Somerset specimen:—

Size of *S. pellucidus* (*pilifrons*), black, the apical part of the mandibles red, the last tarsal joint of all the legs more or less testaceous. The two basal abdominal segments are red and a basal spot is visible on each side of the third, which, like the preceding, is red beneath. Face very wide, the temples very strongly rounded off behind the eyes, much as in *gibbus*, the clypeus dull and less coarsely punctured than in that species; antennae blackish fuscous beneath, hardly at all inclined to rufescence. The front and vertex of the head are very roughly sculptured, in some aspects appearing very rugose, but in others the dense punctures causing the rugosity are easily seen, though they are very much less definite and deep than those of the mesonotum, and the head is quite dull as compared with the latter. Face beneath the antennae densely clothed with pale hairs, mesonotum and vertex more thinly with finer, erect ones, amongst which there appear to be a few darker hairs intermixed. Mesonotum in the middle with coarse, deep punctures, more or less irregular, and leaving considerable, smooth, polished spaces between them, but where they are close

together rugose, or tending to run into one another, the smooth surface here and there with an excessively minute puncture; towards the sides the punctures become very dense and less coarse. The scutellum is very coarsely punctured, the punctures dense all over and leaving very little smooth space anywhere, while on the posterior half they are rather finer and still denser than in front. Anterior area of the propodeum very strongly longitudinally rugose, the wrinkles more or less connected posteriorly before reaching the brow; at the sides the propodeum is much duller, with irregular and comparatively feeble sculpture. Wings largely hyaline basally, but distinctly infuscate on the apical part, and with the appearance of a distinct, smoky, apical band. Stigma dark brown, the venation for the most part evidently paler than this, more yellow. Hooks of the hind wings, 8 on one, 9 on the other. Spines of the hind tibiae dark, but some of them in certain aspects have a reddish tinge, and the fringe in which they are placed is not pure white, but sordid, as is that on the metatarsus.

Basal segment of the abdomen with very fine and extremely remote punctures (which, however, are scattered over the disc as on other parts) except along the apical margin; second segment with the punctures much more numerous, but not dense, except at the sides, where they become larger, the paler apical part or apical impression of the segment without visible sculpture, while that of the 3rd and 4th has an extremely fine transverse rugulosity; pygidial area very small for the size of the insect, and very minutely granulate, the hairs around it sordid, greyish.

The single specimen described is in very fresh condition and had probably only recently emerged, even the minute marginal cilia of the wings being perfect. It was caught on August 8th, 1919, at Shapwick, Somerset (*Jermyn*).

Mr. Morice has, with his usual kindness, lent me the only Continental example he possessed named "*scabricollis*?" This specimen was caught by him at Bozen, Tirol, on June 9th, 1899, and had evidently been very long on the wing, as the margins of these organs are very much frayed and their colour is entirely brownish. The punctures on the mesonotum are a little closer, and the abdominal punctures are rather more developed than in the British specimen, but these and other slight differences are not greater than one finds between individuals of any series of *gibbus* or of other species. I refer the Somerset specimen to *scabricollis* rather than to *schneckii* because the scutellum cannot be considered at all remotely punctured, the apical impunctate part of the 2nd abdominal segment occupies considerably less than half the surface of the segment, and on account of some other differences in Meyer's description of *schneckii*. The English specimen could only belong to one of these.

The ♂ of *S. kershawi* Perk., from Macao, China, was described

in this Magazine, 1921, pp. 9, 10. The description of the ♀ is as follows:—

Head in shape and sculpture very like the ♂, and the face with almost similar, dense, whitish pubescence. Antennae blackish fuscous beneath, the 5th and 6th joints nearly square in outline, the latter slightly the longer, the 4th strongly transverse. Mesonotum as in the ♂, the scutellum with a line of punctures along the front suture, but immediately behind these with a rather large polished transverse space, behind which it is densely and coarsely rugose-punctate; propodeum as in the ♂, but the lateral areas are less coarsely rugose. Abdomen with the three basal segments red, the apical impression of the third more yellow; puncturation almost like that of the ♂, the punctures of the 1st only a little less dense; the pale-coloured apical impression of the 3rd and the black one of the 4th are subopaque, but no definite sculpture is visible under a strong lens; pygidial area small, the hairs around it sordid, brownish-fuscous. Hind tibiae and metatarsi fringed above with white or silvery hairs, the spines on the former few, pale, and translucent, and only seen on careful examination. Wings and size of insect as in the ♂; the alar hooks 6-7. In the latter sex the basal abdominal segment varies to red with at most some indefinite infuscation.

The female and variety of the ♂ were captured with the type by Mr. J. C. Kershaw.

Newton Abbot,
February 24th, 1922.

"Faune Coléoptérologique des îles Baléares," by Szymon Tenenbaum, Warsaw, 1915.—We are indebted to the author for his interesting paper on the beetles of the Balearic Islands, which has not yet been noticed in the "Zoological Record." He spent the summer of 1913 collecting at La Palma in Majorca, Iviza, and some of the smaller islands, but in these latter places he was not able to remain very long, owing to the difficulty of obtaining fresh water, etc. The number of species enumerated is 1677, 352 of which were added as the result of M. Tenenbaum's visit. The *Curculionidae* include 268, the *Carabidae* 223, the *Staphylinidae* 177, the *Chrysomelidae* 123, the *Tenebrionidae* 87, the *Scarabaeidae* 68, and the *Dytiscidae* 40 species. Altogether, 67 of them, apart from varieties or aberrations, are stated to be endemic. The new *Tenebrionidae*, *Colotes*, etc., obtained by the author were described by him in separate papers, but they are comprised in the foregoing list. The pamphlet itself extend to 150 pages; a résumé in the French language is given on pp. 145-150.—Evs.

"The Coleoptera of Russia and Western Europe," by G. G. Jacobson, St. Petersburg, 1905-1915.—A copy of this important book on Palaearctic beetles, so far as published, has recently been received in London from the author by Mr. B. P. Uvarov. It comprises 1024 pages of letterpress (up to the commencement of the *Notoxidae* = *Anthicidae*), and the very well drawn coloured plates intended to illustrate the entire work, 83 in all, about 2460 species being

figured. The MSS. of the rest of the letterpress is said to be finished, and the author hopes to be able to publish it before very long, the delay, of course, being due to the present state of affairs on the Continent. Unfortunately for most of us, the text (including the title-page) is in the Russian language, but as many eastern species are here figured for the first time, the plates alone will be of great assistance to working Coleopterists. The author gives tables for all the families, genera, etc., and a list of the species under each genus, with full references. He also enumerates the genera and species likely to occur in Asiatic Russia, *i. e.*, many from Japan, China, etc. The portions of the book so far published, including the plates, are priced at £3 in London, and they can be obtained through Mr. Uvarov, British Museum (Nat. History), Cromwell Road, S.W.—EDS.

Nebria iberica Oliveira, a British Species.—Early last year my friend Lt.-Col. Sainte Claire Deville, when writing to me respecting *Nebria*, on which genus he had published two notes (Bull. Soc. Ent. France, 1921, pp. 68, 157), mentioned two forms—one in which the upper surface of all the tarsi is furnished with some little hairs (*brevicollis* vera), and the other in which the hairs are not present on the posterior tarsi, the upper surface of which is entirely glabrous (*iberica* Paul. d'Oliv.)—and asked me to send him fresh unset specimens from the British Isles. Although this insect (*brevicollis* Brit. Cat.) is one of our most common and widely distributed beetles, it was not until September that I was able to find a single specimen. On September 17th, when collecting with my friend Mr. P. Harwood, at Westerham, we found a few examples of a *Nebria* in a sand-pit, and these I sent to Lt.-Col. Deville. He informed me they were not *brevicollis* s. str., but were the recently separated *iberica* P. d'Oliv.=*klínckowströmi* Mjöb.; they have upperside of the posterior tarsi quite glabrous and the striae of elytra not so deep. He pointed out that it would be extremely interesting to know if the two forms existed in the British Isles, as they do in "les départements françaises au sud de la Manche." It occurred to me that it would be important to find out if possible whether Fabricius's type of *N. brevicollis* possessed the fine hairs on the posterior tarsi; as it was certain, without looking up his original description (Ent. Syst. i, p. 150), that he would not have mentioned so small a detail. I therefore wrote to Mr. H. E. Andrewes, who has done so much valuable work on the types of the *Curabidae*, to ask him about this point. He replied that the point was a very interesting one, and he has very kindly taken a great deal of trouble to elucidate it. He wrote to the museums at Copenhagen, Kiel, and Berlin. Mr. Henriksen wrote to him from Copenhagen that the type was not there; and Dr. Reibisch from Kiel that there are three examples of *N. brevicollis* in Fabricius's collection all with pubescent hind tarsi, like the specimens taken now commonly in that neighbourhood. Mr. Andrewes says that Helwig's and Hoffmannsegg's collections formed the basis of the Zoological Museum in Berlin, and the type came from Helwig's collection. Dr. W. Horn informs him there are five examples from the Helwig and Rossi collections in that museum, and all of them have a fine, sparse pubescence on the upper surface of the hind tarsi. Mr. Andrewes considers that the type is among these five specimens. This appears to settle the question that the form with pubescence on the hind tarsi is the *brevicollis* F. Mr. Andrewes also told me

(*in litt.*, 25.x.21) that on seeing Deville's paper he had examined the tarsi of his supposed *N. brevicollis* (which came from various localities in England, Scotland, Ireland, France, Italy, and Austria) and found most of them to be pilose. In September 1921 he was in the Lake District at Borrowdale and "took a few specimens of *Nebria* of which only one had the hind tarsi pilose, in the others the upper surface was quite glabrous (= *N. iberica* Oliveira)." He kindly asked me to look over all his specimens, and he appears to have *N. brevicollis* F. from Borrowdale, Arran, Dublin, Cromer, Reading, Christchurch, Weymouth, Rouen, Provence, Jura, Bregenz, and Nancy; and *N. iberica* Oliv. from Borrowdale, Connemara, Morthoe, and Valembrosa. I find that the series in my cabinet all come from Richmond Park and all are *N. brevicollis*. Lt.-Col. Ste. Claire Deville tells me Mr. Champion has sent him *N. brevicollis* from Surrey and Scotland. He further states that he is convinced that the two insects are truly distinct. He and Dr. Jeannel have verified the observations of Pasteur Huberthal on the male genitalia (the penis of *iberica* is much more slender, less constricted at the base and less strongly curved inwards than in *brevicollis*) and have found them to be absolutely true.—HORACE DONISTHORPE, 19 Hazlewell Rd., Putney Hill: *March 11th*, 1922.

Notes on various Coleoptera.—Late in January, 1921, when collecting near Sherborne, Dorset, I had the good fortune to come across an old uprooted tree to which plenty of earth was attached. Here the following species put in an appearance: *Dacne humeralis* F., *Rhizophagus parallelcolitis* Gyll., and *Trichonyx sulcicollis* Reich. The first two species occurred only twice under bark on the outer extremities of the roots, but the *Trichonyx*, of which four or five examples were taken, were found where the earth formed a thick layer over the partly decayed roots. As far as could be judged from a rather rapid examination, they were preying on some very small wingless insects that occurred rather abundantly in this portion of the roots. These and the *Trichonyx* were taken home alive and kept for over a week in the hope of settling this point. However, though the former unquestionably disappeared, the *Trichonyx* were not observed devouring them. As far as my present knowledge goes, the three species mentioned above have not been recorded for Dorset before.

Two years ago I received three specimens of a *Haemonia* (which I have not been able to determine satisfactorily) from Mr. A. Hutchinson, of Pembroke College, Cambridge. He took them in the water-net at Talkin Tarn, Cumberland, on 9.ix.1920, whilst working the bottom of the Tarn for *Deronectes depressus* F. Since this, Dr. Joy, Dr. A. W. Nicholson, and Mr. Blair have all very kindly examined the specimens, and have given their opinions on them. Provisionally, I am inclined to regard them as intermediates between *Haemonia curtisi* Lac. and *H. curtisi* Lac. var. *appendiculata* Pz. I have not examined the aedeagus, as I have not got specimens of the European species with which to compare them, but I hope shortly to be able to do so. It is well known that the species of *Haemonia*, at any rate as constituted at present, rest on very unsatisfactory characters, and that they require critical examination and comparison *inter se* before they can be regarded as distinct species.—E. J. PEARCE, The Lodge, Corpus Christi College, Cambridge: *March 12th*, 1922.

Insects observed on a glacier in New Zealand.—On January 11th, 1922, during an attempted ascent of Ruapehu, a slightly active volcano, 9000 feet high, in the centre of the North Island of New Zealand, I had the good fortune to observe many hundreds of insects stranded on a glacier at a height of 7500 feet. Five orders were represented among the insects thus seen. They were all lowland forms, and must either have been blown up from the surrounding plains, or, as I think more probable, were migrating across country. It has been previously observed that insects occasionally congregate on mountain-tops during migration. Ruapehu is the highest summit in the North Island, and is surrounded by many miles of undulating forest and tussock-clad country, practically in its primitive condition and ranging from 2000 to 4000 feet in height above sea-level. It thus seems highly probable that insect swarms should occur on this mountain.

At first sight I thought the glacier was covered with fine dust, but on a closer examination the "dust" proved to be minute Dipterous insects. Apart from these, the *Coccinellidae*, *Leis antipodum* Muls., *Coccinella 11-punctata* L., and another species of *Coccinella* with large black spots (not as yet identified), were by far the most abundant. Other *Coleoptera* observed were *Metriorhynchus erraticus* Er., *Pyronota festiva* F., *P. edwardsi* Sharp, and a small *Hister* with extremely rugose elytra (not yet identified). These *Coleoptera* were moribund, but they revived when held in my hand. The *Lepidoptera* that were seen belonged to the families *Noctuidae*, *Geometridae*, *Tortricidae*, and *Tineidae*, but were all in too poor condition for identification, and most of them were dead. Other *Diptera* seen included a Crane-fly, *Macromastix clara* White, and a Stratiomyid, *Odontomyia chloris* Walk. Among the *Neuroptera* (*sensu lato*) were two dragon-flies, *Somatochlora smühii* White and *Xanthocnemis zealandica* McL., two Stone-flies, *Leptoperla maculata* and a closely-allied species, and a Caddis-fly, *Pseudonema obsoleta* McL. The *Hemiptera* were represented by the two "bugs," *Oncocentias vittatus* F. and *Nysius clavicornis*.

All these insects were collected in about ten minutes, as clouds came down and necessitated a hurried retreat from the mountain.—STELLA HUDSON, Hillview, Karori, Wellington, N.Z.: January 22nd, 1922.

THE BRITISH SPECIES OF *HALICTUS* AND *SPHECODES*.

BY R. C. L. PERKINS, M.A., D.SC., F.R.S.

[Continued from p. 52.]

GROUP II.

♀ ♀.

- 1 (4) Thorax clothed with very bright fulvous-brown hairs.
- 2 (3) Hind tibiae clear testaceous or yellow; propodeum with the anterior area very finely rugose, not shining, and with the hind angles rounded off; a very large species 10-13 mm. long
 *xanthopus* K.
- 3 (2) Hind tibiae not clear testaceous; propodeum with the anterior area strongly rugose, shining, the hind angles strongly prominent; species 7-9 mm. long *laevigatus* K.

- 4 (1) Thorax rarely with brown hairs, which are not conspicuously bright, generally with pale or griseous hairs.
- 5 (6) Basal abdominal segment with a large area of appressed tomentum on each side, thorax often distinctly submetallic; length about 8-10 mm., expanse usually 14 mm. or more.
(Thoracic sculpture much as described below under *nitidus*.)
 *prasinus* Sm.
- 6 (5) Basal segment merely hairy at the sides.
- 7 (8) A large species, with conspicuous tomentose pattern; mesonotum dull, with dense shallow punctures; propodeum with the anterior area finely rugose, the lateral angles being rounded off and without a raised margin behind; expanse usually 18 mm. or more, length usually 10 mm. or more, unless the segments are contracted.
(Clothing of head and thorax cinereous, wings with smoky infuscation) *nitidus* Panz. (*G-notatus* K.).
- 8 (7) Species of the size of the preceding, or approaching it, have the mesonotum strongly punctate, or the propodeum with a raised margin behind, the angles not rounded off.
- 9 (12) Large and robust species (expanse 14 mm. or more), abdomen with conspicuous tomentose pattern, and the three basal segments entirely black right to the actual apical margin, the propodeum with raised margin* at the hind angles, or at least bounded there by strong rugosity.
(Mesonotum densely, strongly punctate, the anterior area of the propodeum strongly rugose and generally shining between the wrinkles.)
- 10 (11) Basal abdominal segment highly polished, with only a few widely separated punctures on the disc
 *zonulus* Sm.
- 11 (10) Basal segment not polished, but with microscopic sculpture between the punctures, which are numerous on the disc.
(Thoracic hairs paler (less brown) than in the preceding.)
 *leucozonius* K.
- 12 (9) Species smaller, or at least less robust, than the two preceding; the larger ones have some or all of the more basal segments pale along the apical margins, or else the propodeum is not margined behind, while others lack a conspicuous pattern of white tomentum.
- 13 (16) Tomentose spots or bands at the base of 2nd and 3rd segments distinct to the naked eye, and these segments black right up to the apical margins; mesonotum densely, strongly punctured, the propodeum closely rugose, dull or scarcely shining, without a raised margin behind, the angles rounded off. Subrobust, medium-sized species, expanse of wings 12 mm. or more.
- 14 (15) Inner margin of stigma pale, yellowish or testaceous; basal abdominal segment usually less polished, especially on the apical part, and there more densely punctured, the 2nd segment with the punctures even and almost as dense as possible all over, dull or scarcely shining; face very wide *4-notatus* K.

* This character is easily seen in these and other species when the propodeum is viewed from above, or a little in front, the head of the insect being towards the observer.

- 15 (14) Inner margin of stigma dark, brown or blackish; basal abdominal segment very shining, and on its apical part much less closely punctured, the second segment usually distinctly shining and with the punctures less extremely close, especially about the middle; face obviously less wide. *lativentris* Sch. (*decipiens* Perk.).
- 16 (15) Abdomen in some species distinctly pale along the apical margins of at least some of the more basal segments, or with a raised line at the hind angles of the propodeum; some are quite small (not 12 mm. in expanse of wings), the mesonotum often finely punctured, and in some the distinct tomentose pattern is absent.
- 17 (34) Propodeum at the hind angles with a raised margin (occasionally confused with upstanding rugosities), so that the posterior declivous face is separated by this from the upper surface.
- 18 (19) Lateral pronotal angles in dorsal aspect distinct or subprominent, rectangles, or nearly so.
 (Anterior area of propodeum finely rugose in front, the wrinkles fading out posteriorly so that the surface becomes only minutely rugulose or granulate in appearance; basal abdominal segment with copious, but extremely fine punctures on the disc.)
 *malachurus* K. (small var. = *longulus* Sm.).
- 19 (18) Pronotal angles indistinct or very obtuse.
- 20 (31) Mesonotum often dull or only moderately shining under a strong lens, owing to the minute sculpture, over at least a large part of the surface, between the punctures; abdomen often with lateral spots or band of dense tomentum at the base of the 2nd segment.
- 21 (24) Larger species, the alar expanse even in small examples usually 13 mm. (in well-developed *calceatus* 17 mm., in *albipes* 15 mm., and larger examples of each occur), median (supraclypeal) plate of face very densely punctured.
- 22 (23) Basal abdominal segment in perfectly clean specimens with a very conspicuous *glaucous bloom, the ridges which define the apical impression at the sides usually more distinctly produced inwardly, so that the impression is more distinct across nearly the whole width of the segment, which is often somewhat flattened in the middle apically; 2nd segment in the middle more clothed with minute pubescence *albipes* K.
- 23 (22) Basal segment at most with a very slight glaucous bloom, polished black, widely convex in the middle apically, the disc of the 2nd segment much less clothed with minute hairs, or almost glabrous there.
 (As a species larger than *albipes*, and with the face of different shape, more rounded at the sides.)
 *calceatus* Scop. (*cylindricus* F.).
- 24 (21) Smaller species, individual large examples of some rarely attaining 13 mm. in expanse; supraclypeal plate not very densely punctured, except in aberrant examples, and then the expanse is less than above.

* To see this clearly the segment should be touched over with a brush dampened with pure benzol.

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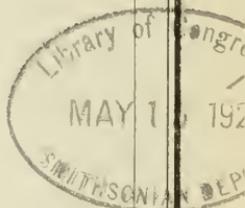
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Road, Harpenden.

RECORDS WANTED FOR NORTH HERTS AND SOUTH BEDS.

The Letchworth and District Naturalists' Society, who manage Letchworth Museum, are endeavouring to work up the lists of fauna and flora of the region covered by their activities (a twelve-mile radius). The writer, being entomological recorder for the above Society, would therefore be extremely grateful for any records of insects, other than Lepidoptera, taken by entomologists who have collected at Royston, or any other locality in North Herts or South Beds.

RAY PALMER, F.E.S., "Ingleholme," Norton Way, Letchworth.

MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 41 Queen's Gate, S.W.7
(nearest stations: South Kensington and Gloucester Road).—May 3rd, June 7th,
1922, at 8 p.m.

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

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY
SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays
in each month, at 7 p.m. The lantern will be at the disposal of Members for the
exhibition of slides.

THE LONDON NATURAL HISTORY SOCIETY, now meets in Hall 40,
Winchester House, Old Broad Street, E.C. 2, on 1st and 3rd Tuesdays in the
month at 6.30 p.m. General meetings 1st Tuesdays, Sectional meetings 3rd
Tuesdays. (No meetings in July or August indoors, but field excursions instead.)

Hon. Sec.: W. E. GLEGG, The House, Albion Brewery, Whitechapel Road. E. 1.

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

ENTOMOLOGICAL SOCIETY OF HAMPSHIRE AND THE ISLE OF
WIGHT.—This Society has developed from the Southampton and District Entomo-
logical Society. Meetings are held on the First Saturday afternoon of each month
at Southampton, and other meetings will be arranged in important centres in
the county from time to time. Activities being undertaken at the present time
include the formation of a library, of collections of insects, and the compilation of a
county insect fauna list. Will keen entomologists in the county who are interested
please communicate with the

Hon. Sec., F. J. KILLINGTON, 1 St. Catherine's Road, Eastleigh, Hants.

- 25 (28) Basal abdominal segment with extremely fine, but numerous punctures on the disc, or else the segment has a complete, or all but complete, apical impression, easily seen in some aspects, though feeble.
- 26 (27) Basal segment on its apical part widely convex between the lateral ridges, so that there is no definite apical impression on the middle part; the 2nd segment also with the apical impression effaced or very indistinct in the middle; face very wide
 *laticeps* Sch. (*semipunctulatus* E. S.).
- 27 (26) Basal segment with complete apical impression, or almost so; that of the second segment still more distinct; face less wide
 *paucivittus* var. *immarginatus* Sch.
- 28 (25) Basal abdominal segment polished black, at most with a few hardly perceptible punctures, and without an apical impression on the middle part, the segment being evenly convex there between the lateral ridges.
- 29 (30) Face in front view broadly ovate or widely roundish.
 (Tomentose spots of 2nd abdominal segment distinct and dense in good specimens.) *fulvicornis* K.
- 30 (29) Face, in front view *, somewhat oblong-ovate, the clypeus more produced.
 (Sculpture of front of head denser and much less distinct in most specimens, often not distinguishable as puncturation, but rather as obscure granulation or reticulation, more rarely almost like that of *fulvicornis*; punctures of mesonotum still finer than in the preceding and the tomentose spots of the 2nd abdominal segment often indistinct or hardly noticeable.)
 *freygessneri* Alfk.
- 31 (20) Mesonotum smooth and shining all over between the punctures, which are either coarse or deep and distinct.
 (Second abdominal segment without a tomentose spot on each side at the base, or at most with a very small one.)
- 32 (33) Abdomen polished, practically impunctate, at most with a few isolated punctures *laevis* K.
- 33 (32) Abdomen with the 2nd and 3rd segments copiously and finely punctured, at least on the basal portion
 *puncticollis* Mor.
- 34 (17) Propodeum at the hind angles without a distinct raised margin, its angles rounded off.
- 35 (36) Mesonotum very strongly shining, the surface smooth, the punctures not at all close; basal segment of abdomen finely punctured, the punctures not becoming conspicuously dense towards the sides, nor is it densely punctured along the apical margin.
 *villosulus* K.
- 36 (35) Mesonotum rarely very shining, generally for a large part the surface is minutely sculptured between the punctures, which are more or less dense, at least about the middle, except in one species, and this has the disc of the basal abdominal segment very remotely punctured, but towards the sides the punctures (which are extremely

* When viewed from behind the ocelli, the face is narrow and long, while that of *fulvicornis* is wide and much less conspicuously produced apically.

fine) become conspicuously dense, and the stigma is very pale, almost white: in some species the basal segment is very densely punctate along the apical margin.

- 37 (38) Basal segment of the abdomen with only a few very feeble punctures over the whole polished disc, but towards the sides there is an excessively fine, copious or dense, puncturation.
(Mesonotum shining, the punctures remote and very shallow, more or less ill-defined in their outlines; stigma very pale, almost white.) *brevicornis* Sch.
- 38 (37) When the disc of the basal segment is polished and nearly impunctate, there is no dense minute puncturation at the sides.
(Mesonotum more or less closely, or at least copiously, punctured.)
- 39 (40) Mesonotal punctures strong for the size of the insect; the basal abdominal segment for the most part very remotely punctured, but along its apical margin with very dense, fine, distinct punctures.
(Face in front view wide, wider than long.)
. *pauperatus* Br. (*breviceps* E. S.).
- 40 (39) If the basal segment has any resemblance in sculpture to the preceding, then the mesonotum is very finely punctured.
- 41 (42) Face long and narrow, or oblong-ovate, the basal abdominal segment finely and copiously punctured, both on its apical portion and elsewhere; size not very minute. *punctatissimus* Sch.
- 42 (41) Face in most species roundish or widely ovate; if otherwise the puncturation of the basal segment is not like that of the preceding species.
- 43 (44) A very minute, narrow species (expanse 8 mm. or less) the anterior area of the propodeum with some wrinkles in front, these being often short and failing on the posterior part of the area, though the middle one is sometimes percurrent as a fine median carina.
. *minutissimus* K.
- 44 (43) Species only ordinarily small, except that some examples of *pauvillus* do not exceed the preceding in size, but that species has the anterior area of the propodeum comparatively strongly, generally reticulately, rugose throughout.
- 45*(50) Inner spur of hind tibiae with several spine-like and more or less pointed teeth; apical impression of the basal abdominal segment obliterated at least on the middle part; 2nd segment at the base without a distinct tomentose spot on each side.
- 46 (49) Second abdominal segment on its apical portion or depression either with numerous distinct punctures, or, if with only a few feeble ones, the surface is without distinct, minute, transverse rugulosity; face wide, broadly ovate.
- 47 (48) 2nd abdominal segment less deep black, being more densely clothed with minute hairs, its apical impression generally copiously and distinctly punctured, and not polished, that of the 3rd segment

* This heading and the corresponding one (50) is only necessary to include the scarce aberrations of *pauvillus*, in which the raised line at the hind angles of the propodeum is wanting. The species belongs to the group of *calceatus*, and has no real affinity with the *nitidiusculus* section.

- usually with much less distinct punctures; anterior area of the propodeum finely rugose, the wrinkles generally disappearing before reaching the end, so that the surface becomes merely granulate or minutely sculptured *nitidiusculus* K.
- 48 (47) 2nd abdominal segment blacker, less clothed, its apical impression generally with less distinct and much less numerous punctures (often closely resembling that of the third segment in this respect) and with the surface strongly shining; anterior area more rugose, the wrinkles extending over the whole surface
 *minutus* K.
- 49 (46) Apical portion of 2nd abdominal segment impunctate or practically so, and under a strong lens with an excessively fine transverse rugulosity apparent; face longish or oblong-ovate, the clypeus more produced.
 (Basal abdominal segment impunctate or nearly so.)
 *rufitarsis* Zett.
- 50 (45) Inner spur of hind tibiae with the teeth short and blunt or widely rounded at the tips, not spine-like; apical impression of the basal segment hardly effaced even in the middle; fresh examples have small tomentose lateral spots on the 2nd abdominal segment
 *pauvillus* var. *immarginatus*.

GROUP I.

- 1 (4) ♂ with the 5th ventral segment strongly emarginate; ♀ with the apical impression of the basal abdominal segment finely but copiously punctured.
- 2 (3) ♂ mandibles strongly dilated at base; ♀ tibiae black or dark beneath the scopal hairs *tetrazonius* Kl. (*4-cinctus* K. nec F.).
- 3 (2) ♂ mandibles ordinary; ♀ tibiae yellow.
 (a) Antennae of ♂ with the flagellum mostly yellow (above and beneath) *rubicundus* var. **nesiotis*, n.
 (b) Antennae of ♂ with flagellum not yellow
 *rubicundus* Chr.
- 4 (1) ♂ 5th ventral segment with nearly straight apical margin; ♀ with the apical impression of 1st segment of abdomen minutely rugulose, with at most excessively feeble indistinct punctures, sometimes wanting *maculatus* Sm.

GROUP III.

- 1 (6) ♂ hind tibiae for the most part or wholly yellow, if (as a variety) widely black in the middle, then the apical impressions of the 2nd, 3rd, and 4th abdominal segments are filled with complete bands of dense tomentum.
 ♀ with the apical impression of the 1st abdominal segment densely finely punctured.
- 2 (3) ♂ 5th ventral segment at most slightly depressed; antennae only moderately long; ♀ mesonotum so densely punctured that hardly

* I propose this name for the curious form of ♂ found by F. Smith on Lundy Island.

any smooth surface is visible between the punctures, and the pubescence is very dense *subauratus* Rossi (*gramineus* Sm.).

- 3 (2) ♂ 5th ventral segment strongly and conspicuously foveate at the base; antennae extremely long.

♀ mesonotum very densely punctured, but the general surface remains visible, the sculpture not being so rugose, and the clothing much less.

- 4 (5) ♂ trochanters of middle legs entirely yellow or red beneath, the penultimate antennal joint also pale beneath, and sometimes the apical one; foliaceous process of the lacinia of the genital armature with its apical margin straight or slightly rounded.

♀ tomentose band of 3rd abdominal segment broad and entire, occupying the whole apical impression

. *flavipes* F.

- 5 (4) ♂ middle trochanters and penultimate antennal joint not thus coloured; process of lacinia emarginate at the apex.

♀ tomentose band of 3rd segment interrupted, or at least very much narrowed, in the middle *tumulorum* L.

- 6 (1) ♂ hind tibiae black, at most the tips and base pale.

♀ apical portion—there being no distinct impression—of the basal abdominal segment impunctate, or practically so.

- 7 (8) ♂ tarsi black or dark, and the mesonotum shining.

♀ mesonotum shining, the punctures irregular, of unequal size, the abdomen usually conspicuously metallic, and in good specimens with distinct tomentose markings . . . *sneathmanellus* K.

- 8 (7) ♂ either the tarsi are black and the mesonotum dull, or the former are whitish.

♀ mesonotum dull or scarcely shining, the abdomen black, sometimes with slight metallic tint.

- 9 (10) ♂ tarsi black or dark.

♀ apical expression of 2nd abdominal segment closely and very finely rugulose transversely under a strong lens, dull or hardly shining; face longer, less rounded at the sides

. *morio* F.

- 10 (9) ♂ tarsi nearly white.

♀ apical impression of 2nd segment smooth or nearly so and very shining; face shorter and wider

. *leucopus* K.

As sculpture and other minute structural characters are chiefly used for the separation of the species *Halictus* and *Sphæcodes*, it is necessary above all things that the specimens be perfectly clean. Very fine pins are advisable for the smaller species, and the pin is best inserted in the middle of the thorax at the suture joining the mesonotum and scutellum. A very strong simple lens is used for describing the characters of all species, whether large or small, for the sake of uniformity, a compound microscope being quite unnecessary for seeing any characters here described, genital or other.

In the table of *Halictus* two supposed British species are sunk, *longulus* Sm. and *arnoldi* E. Saund. The former appears to me merely a small slender variety of *malachurus*, far less remarkable than some variations that occur in other species. The two forms as a rule are recorded from the same localities, where these have been much investigated, and, although *longulus* ♀ has been taken by several collectors in numbers at the end of July and in August, no ♂ distinct from *malachurus* seems ever to have occurred. The genital armature figured by Saunders as that of *longulus* is clearly that of *H. paucillus* v. *immarginatus*, very large males of which are frequent. Smith's supposed males of *longulus* were merely *fulvicornis* K. On the Continent a ♂ has been assigned to *longulus*, but, although the ♀ is common, this ♂ is so rare that I have been unable to procure one, and I suspect that it will prove to be either a variety of *malachurus* or to belong to some other species more rare than *longulus*. As we noticed on one occasion that a colony of *H. maculatus* produced a second brood in September, of larger size than the fresh individuals that emerged in July, it may be that a similar case is presented by *malachurus* in some seasons. As to *H. arnoldi* the ♂, in my opinion, is at most a slight variety of *minutissimus* K., while the ♀ type belongs to a different group (*sensu restr.*) of *Halictus*, and has no connection with the ♂. But for the supposition that these were sexes of one species, I do not think that Saunders would have described it.

Although I have not seen British specimens agreeing with recent descriptions, made after examination of Schenck's types, of *paucillus*, ours being the species called *immarginatus* Sch. on the Continent, yet the characters supposed to separate the two are so slight, and British specimens of *immarginatus* are so variable, sometimes closely approaching *paucillus*, that I have considered the two forms as mere varieties of one species.

(To be continued.)

A SCALY-WINGED PSOCID, NEW TO SCIENCE, DISCOVERED IN
BRITAIN*.

BY DR. GÜNTHER ENDERLEIN (BERLIN).

I have received from England, through Dr. Hugh Scott, an interesting and hitherto unknown genus of Copeognatha, belonging to the subfamily *Echinopsocinae* of the *Lepidopsocidae*. It was found in

* In the manuscript from which this paper is translated the title is "*Beiträge zur Kenntnis der Copeognathen, VI*," and it is stated in a footnote that no. V. of this series was published in *Zool. Jahrb., Abt. f. Syst.*, Bd. 41, 1918, pp. 437-8, pl. 8 and 1 text-fig.

a house at Crowborough, Sussex, by Dr. F. J. H. Jenkinson. Up till now only two genera of Echinopsocinae were known, namely *Echinopsocus* Enderl. 1903 and *Scolopama* Enderl. 1906. The former was discovered in New Guinea (*E. erinaceus* Enderl.), the latter in Ceylon (*S. halterata* Enderl.). The discovery of this third genus in Europe is therefore astonishing, and one cannot altogether rule out the possibility that it may have been accidentally imported into England, particularly as the creature, though indeed small, is nevertheless remarkable from its covering of scales and striking coloration, and would otherwise almost certainly have been already recorded.

Table of genera of subfamily ECHINOPSOCINAE.

1. Radialis not touching the media at any point. Axillaris and subcosta not developed. Media two-branched. Wing with quite bluntly-rounded apex *Pteroxanium* Enderl., nov. gen.
Radial-ramus touching the media. Axillaris and subcosta developed. Wings acuminate 2.
2. Media two-branched. Basal section of radial-ramus completely reduced. Wings very sharply drawn out at apex *Echinopsocus* Enderl., 1903.
Media three-branched. Basal section of radial-ramus present. Wings moderately sharp at apex *Scolopama* Enderl., 1906.

Fam. LEPIDOPSOCIDAE. Subfam. ECHINOPSOCINAE.

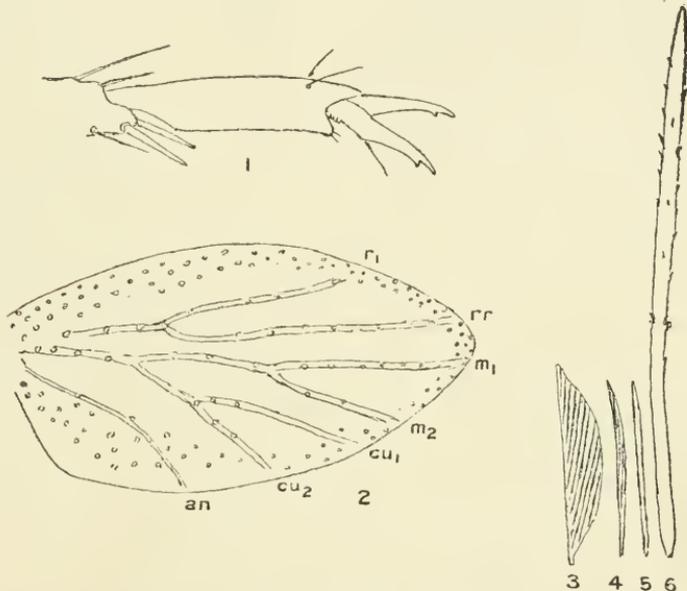
PTEROXANIUM, nov. gen.

[Type: *P. squamosum*, nov. spec., England.]

Antennae 2+22-segmented, the flagellar segments slender, becoming gradually longer towards the apex; each flagellar segment, except the apical segments, a little dilated at the end. *Eyes* with rather long pubescence. *Prothorax* very short, compressed from front to back, and somewhat drawn up dorsally in the form of a lamella, so that it reaches over the mesothorax. *Wings* scale-shaped, curved like elytra, and reaching to the apex of the abdomen: rather bluntly rounded at the apex: subcosta (*sc.*) not developed: *r*₁ and *rr* forming a handle nearer the base than the middle, *rr* not forked: radius nowhere united with media (*m*): media (*m*₁ and *m*₂) two-branched: cubitus (*cu*₁ and *cu*₂) forked: analis (*an*) distinct: axillaris (*ax*) not discernible. A fairly broad border round the wing-margin, and the veins, are set with large, stout, perpendicularly erect bristles (the hollow cups in which they are inserted are indicated in fig. 2), which are set with a certain number of microscopically fine, obliquely upstanding, points (fig. 6). The wings are set with asymmetrical scales, one side of which is straight, the other curved (fig. 3); the longitudinal fluting on these runs a little obliquely to the straight side of the scale. Besides scales the wings bear also hairs of the same length as the scales, and all gradations between scales and hairs. *Hind wings* apparently quite absent. *Tarsal claws* slender, with a sharp tooth near the apex.

Pteroxanium squamosum, nov. spec.

♀. *Head* of a pale brownish shade, frons and vertex when viewed in certain directions (especially obliquely from behind) with a faint greyish-white lustre, with which is mingled a trace of bluish sheen: clypeolus and labrum black, clypens only black in the front third or as far as the middle. *Antennae* yellowish-brown, very slender, the scanty pubescence very long, about three times as long as the thickness of the flagellum. *Maxillary palp* yellowish-brown, terminal segment broadened to the apex somewhat in the form of an axe. *Frons* and *vertex* with scattered brown spots, which are denser at the hind margin of the frons and the margins of the eyes: clothed with long, bristly, upstanding, moderately dense, brass-yellow hairs. *Thorax*



Pteroxanium squamosum, ♀: 1, terminal segment and claws of hind tarsus; 2, venation of front wing, $\times 48$; 3, scale from front wing; 4, intermediate between scale and ordinary hair of wing; 5, ordinary hair of wing; 6, one of the erect perpendicular bristles from the wing; 3-6, all equally magnified.

and *abdomen* light brownish-yellow: abdomen above somewhat flattened and set with scales, with not very sharply defined blackish markings, especially near the lateral margins. *Femora* dark brown, light brownish-yellow at the extreme apex. *Tibiae* dark brown, the following parts light brownish-yellow; in the front leg, the 4th and 7th sevenths; middle leg, 3rd and 6th sixths; hind leg, 3rd, 4th, and 7th sevenths; the tibiae bear numerous, very long, upstanding bristles. *Tarsi* light brownish-yellow, first quarter of the metatarsus infuscated. *Wing-membrane* hyaline, veins very pale, completely covered with scales, hairs and bristles: hairs and scales dense, shining light brass-yellow*, on the 4th fifth and the 10th tenth of the wing blackish-brown:

* In the two specimens retained in England, the parts which Dr. Enderlein describes as light brass-yellow appear (in bright daylight) more of a pale straw or buff: but the texture of the scales is such that their colour and reflection probably look very different according to the nature and direction of the illumination.—H. S.

the erect, perpendicular bristles are blackish, in the apical fifth light brass-yellow: in the undenuded wing the veins are only recognizable by the longitudinal series of bristles along them, but they themselves are quite indistinct. *Length*: body (of dried insect) ca. $2\frac{1}{4}$ mm.; front wing, $1\frac{1}{4}$ mm.; antenna, ca. 3 mm.; hind tibia, 2 mm.

Hab. Crowborough, Sussex: in a house, October 1st, 1921, four specimens (*F. J. H. Jenkinson*).

Two *cotypes* in the author's collection: also one example in the British Museum and one in Cambridge University Museum.

[Dr. Jenkinson states that he only saw the four examples which were captured: one was found among some clothes which had lain overnight in a bedroom, another was on a table in another room, and he cannot recall exactly in what part of the house the remaining two were taken. The house had been occupied only just twelve months. The occurrence of various species of Psocids, both fully-winged and flightless, inside houses, has been frequently observed. It is mentioned, for instance, by E. E. Green in his supplementary note to Dr. Enderlein's important paper on the scaly-winged Copeognatha of Ceylon, *Spolia Zeylanica*, iv. 1906, p. 123. Sometimes certain species are present in very great numbers, forming veritable swarms on the ceilings and walls of rooms: the occurrence of such a swarm (composed of two winged British species) in a quite new house at Cambridge is recorded in *Ent. Mo. Mag.* 1916, p. 20.—HUGH SCOTT].

A NEW FUNGUS-FEEDING GALL-MIDGE.

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

The remarkable insect to be described below was first obtained in the larval state in Verdly Wood, North Sussex (a few miles south of Haslemere), in the summer of 1921 by Mr. J. Ramsbottom of the Botanical Department of the British Museum, who was collecting with Mr. E. E. Green at the time. Mr. Green at the first glance took them for *Coccidae*, but soon discovered them to be *Cecidomyiidae* and passed them on to me. Subsequently I myself found some dead pupae in a wood at Datchworth, Herts. Probably therefore the species, though hitherto overlooked, is widely distributed in suitable localities.

The habitat of the larva is in a bark-encrusting fungus which Mr. Ramsbottom has determined as a species of *Hypochnus*, probably *H. fuscus*. Small, more or less circular, blister-like swellings are formed on the surface of the fungus; the swellings are about 2 mm. in diameter

when fully formed, and often crowded closely together. Each swelling contains a single larva, which when full-grown pupates within the swelling; before emergence the pupa pushes itself half-way out through the side of the swelling, and when this has taken place the whole cap of the blister easily becomes detached, leaving a shallow depression on the surface of the fungus. So far as I am aware this is the first record of a Cecidomyiid fly producing a more or less definite gall on a fungus, and for that reason I have thought it worth while to write an account of the species.

From the material collected by Mr. Ramsbottom I was fortunate enough to rear 3 ♂♂ and 3 ♀♀. An examination of these specimens shows that they belong to the tribe Cecidomyiariae, and by the table of genera in Kieffer's monograph in Wytzman's "Genera Insectorum" appear to run down to either *Frauenfeldiella* or *Calodiplosis*, according as the palpi are taken as two or three-segmented. From these, however, they differ in many respects, and as I have been unable to trace any subsequently described genus into which they will fit, I feel compelled reluctantly to propose a new generic name, overburdened as the family already is with such names.

MYCOCECIS, gen. n.

♂ ♀. Eyes touching. Palpi 2-segmented (apart from the palpiger), very short, and the segments indistinctly separated. Antennal flagellum 12-segmented, the first two segments connate; each with two hair-whorls and three rings of looped filaments, eight equal-sized loops in each ring; terminal segment with a small, conical, connate, pubescent knob. First scapal segment simple, rounded. Mesonotum without scales. Abdomen rather densely but shortly hairy; short and broad. Legs densely covered with close-lying hair-like scales or flattened, blunt-tipped hairs, sometimes showing a single median striation. Claws each with a long sharp tooth arising near the base. Empodium and pulvilli rudimentary, less than half as long as the claws. Wings densely covered with close-lying hairs; costa without scales. *Sc* absent, or only faintly traceable at the base. *R*₁ well separated from the costa, ending about the middle of the wing, *R*_s slightly curved downwards, ending very slightly before the middle of the wing-tip; *r-cu* almost in a line with *R*_s, much longer and stronger than the basal section of *R*_s. *Cu* forking a short distance before the tip of *R*₁.

♂. Flagellar segments each with two conspicuous swellings, the basal one almost sessile and about two-thirds as long as the apical one, this latter with a terminal neck which is about half its breadth and nearly two-thirds its length. Loops nearly as long as the greatest diameter of the segments. Hypopygium: both dorsal and ventral anal lamellae (tenth tergite and sternite) with a rather deep and rounded emargination. Aedeagus (stylet) rather stout but slightly chitinised. Side-pieces rather over twice as long as broad, without lobes. Claspers rather short and stout, tapering, with a single short terminal claw.

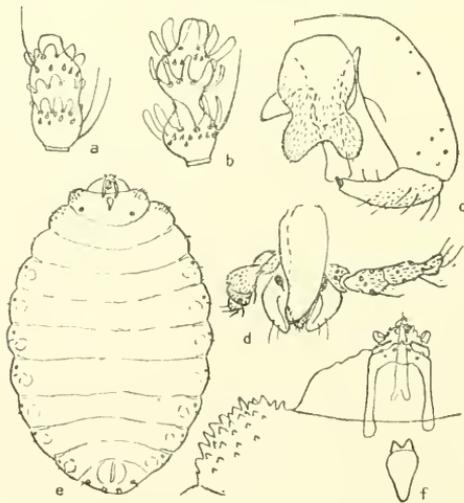
♀. Flagellar segments slightly though distinctly constricted just beyond the first ring of loops; neck rather shorter than in the ♂. Loops about a quarter as long as the diameter of the segment. Ovipositor non-protrusible, with a pair of small, simple, oval lamellae, and a pair of large, rounded, ventral lobes.

Pupa flattened, subcircular in form. Exuvium hyaline, smooth, without any apparent spines or tubercles. Prothoracic horns strongly chitinised, about half as long as the separated antennal sheaths, slender, almost bristle-like, somewhat tapering to the rather blunt tip, which is slightly curved; perforations scarcely visible even under a magnification of 300.

Larva whitish, broadly oval, flattened, the integument almost completely bare, and without well-marked tubercles. Spatule well-marked, pear-shaped, with two small equilateral-triangular points in front. First two thoracic segments microscopically papillose at the sides. A minute bristle in the middle of the side margin of each segment, and in addition four similar bristles behind the anus. A small tubercle on the ventral surface near the lateral margin of each segment. Spiracles all sessile and unmodified, the first and last pairs somewhat larger than the others.

Mycocecis ovalis, sp. n.

Head rather abruptly broadened just below the middle. Eyes large, broadly contiguous above the antennae, widely separated behind the mouth



Mycocecis ovalis, sp. n.—a, Flagellar segment of ♀; b, flagellar segment of ♂; c, hypopygium of ♂; d, mouth-parts of ♂; e, larva; f, head and prothorax of larva. (All $\times 150$, except e, which is $\times 40$.)

parts, considerably emarginate anteriorly. Antennae dark brown, somewhat longer than the whole body in the ♂, not much longer than the head and thorax together in the ♀; verticillate hairs black, about two-thirds as long as

the whole segment. Palpi pale yellowish, very short, scarcely one-third as long as the vertical diameter of the head; palpiger (or perhaps the first palpal segment) sub-globular, first (or second?) segment oval, second (or third?) segment elongate-oval, about half as long again as the first, each segment with four or five short bristles. Labella short, shorter than the palpi, each with one or two sub-apical bristles. Hypopharynx in ♂ rather broad and pubescent, in ♀ narrower and bare. *Thorax* shining dark brown; membranous parts dark reddish in life. Mesonotum with the usual two rows of long black bristly hair; similar hair on the margins; scutellum paler than the rest of the thorax, with long dark marginal bristles. *Abdomen* rather short and broad, with dark reddish membrane, tergites blackish-brown; clothed rather densely with black hair. *Legs* uniformly clothed with black hair-like scales. *Wings* scarcely twice as long as broad, with dense black close-lying hairs and rather long black fringes. One pore near the base of the feebly-marked *Sc*, two at the tip of *R*₁, and one on *R*_s at a point half-way between the base and tip of *R*₁. *Halteres* pale at the base, knob black. *Wing-length* about 2 mm.

Co-types in the British Museum: 1 ♂, 2 ♀ ♀ dry; 1 ♂, 2 ♀ ♀ in balsam

The broadly oval shape of the larvae and pupae is peculiar, but not unique among the *Cecidomyiidae*. Somewhat similar larvae and pupae have been described by Rübsaamen for *Rhabdophaga pseudococcus*, a species which forms white cocoons on the under sides of willow leaves. I have myself found larvae not at all unlike those described above, feeding openly on a fungus (a species of *Corticium*?) encrusting a fallen log; in this case I failed to rear the larvae and did not preserve any.

British Museum (Natural History).

April 1922.

Choleva angustata F., and its allies: supplementary note.—Dr. R. Jeanne in a recent paper entitled "Sur les *Choleva* des îles Britanniques" (Bull. Soc. Ent. Fr. 1922, pp. 49, 50) comments upon the five species of the genus characterized and figured by me in this Magazine in 1918, pp. 30-33, figs. 1-5. He accepts all of them as distinct, two being unknown to him on the Continent, and makes various corrections in the synonymy, concluding with the remark that *C. angustata* Fabr., *C. cisteloides* Fröl., and *C. sturmi* Bris. are not found in Britain! He appears to have overlooked the fact that the type of *C. (Cistela) angustata* Fabr. (Sp. Ins. i. p. 148, 1781) was from "Anglia," and that it is contained in the Banksian Collection at the British Museum in London. I was also unaware of this when my paper was written, and now find that my identification of the species was incorrect, thus misleading Dr. Jeanne. Mr. Blair, in 1920, in his "Further Notes on Fabrician types in the Banks Collection" (Ann. and Mag. Nat. Hist. (9) v. p. 162) states that *C. angustata* F. appears to be the *C. sturmi* of Continental entomologists, but this is evidently not the case. He and Mr. Champion have been kind enough to compare my 1918 material with the Fabrician type, a ♂, still in a fair state of preservation, and it works

out as a pallid or immature example of the insect named by me *C. cisteloïdes*, so far as can be ascertained without an examination of the genital armature. The posterior femora are unarmed and rather stout, the posterior trochanters are armed with a sharp, curved spine, and the ventral segments 2-5 have each a small shallow depression in the middle; the species, therefore, belongs to section 2 of my table. Dr. Jeannel does not tell us much about his "vrai *C. angustata* F.," but as he compares it with my *C. sturmi*, it presumably has toothed posterior femora; the aedeagus is described by him as having a small quadrangular plate at the tip, while that of *C. sturmi* Bris. (*cf.* Bull. Soc. Ent. Fr. 1922, p. 27) has the apex broad, brusquely retracted into a narrow, feebly bilobed, quadrilateral plate. Accepting his synonymy as correct, except as regards the Fabrician insect, the names of the five British species noticed by me in 1918 will stand thus:—

Section 1.

1. *fugniezi* Jeannel (Jan. 1922). Type, La Grotte de Lheim.
angustata Britten (nec Fabr.).
2. *jeanneli*, n. n. Type, Britain.
sturmi Britten (nec Brisout).

Section 2.

3. *glauca* Britten. Type, Britain.
4. *angustata* Fabr. Type, "Anglia."
cisteloïdes Britten (nec Frölich, 1799).
pyrenaïca Jeannel (Jan. 1922). Type, La Bonde, France.
5. *oblonga* Latreille (1807). Type, Southern France.
intermedia Kraatz, Britten.

—H. BRITTON, Manchester Museum, Victoria University, Manchester: *April, 1922.*

Coleoptera in Worcestershire in 1921.—The following species of Coleoptera have been taken in this district by Mr. Perrins or myself during the last seasons:—*Dryocoetes alni*, found in profusion by Mr. Perrins in an alder grove near Kidderminster: in a plantation of about an acre scarcely a tree was to be found which was not or had not been attacked. *Saprinus virescens*, in plenty with *Phaedon tumidulus*, about 30 specimens were taken from the one locality; two or three specimens of a blue variety were found. *Lema melanopa*, attacking oats and doing considerable damage to the leaves of the plant. *Cryptocephalus sexpunctatus*, discovered by Mr. Perrins on aspen, on which tree I afterwards took a series; the insects cling firmly to the top of the tree, and could be obtained by bending down the main stem and picking them off by hand; a strong wind which was blowing may account for the departure from the usual habits of the species. *Huplocnemus impressus*, one specimen taken by sweeping under old oaks. *Zeugophora flavicollis*, on aspen in September. *Acidota crenata*, by sweeping under old trees. *Scolytus pruni*, in old apple-trees, making its gallery in June. *Ptinus sexpunctatus*, *Corynetes coerulesus*, and *Trox scaber* were all fairly common on the walls of my house at night during June. *Opilo mollis*, about a dozen specimens taken from an old oak, also at night, apparently preying on *Xestobium tessellatum*.—G. H. ASHE, Hartlebury, Kidderminster, *April 5th, 1922.*

Curious malformation in Forficula auricularia Linn.—Mr. B. Morley of Skelmanthorpe, near Huddersfield, has given me a very curious *Forficula auricularia* which he took in that district last year. It is a large specimen of the variety *forcipata*, and the right side calliper seems to me to be of abnormal length, even for that variety. On the left side there is no calliper at all, nor can I find any trace of there ever having been one. If one did not know the Earwig had this variety *forcipata*, the ordinary man might well be excused for supposing that in this specimen both callipers had been developed into one long one on the right side!—GEO. T. PORRITT, Elm Lea, Dalton, Huddersfield: *March 16th, 1922.*

Miridae (Capsidae) common to Britain and N. America.—Mr. H. H. Knight in a paper entitled "Nearctic Records for Species of Miridae known heretofore from the Palaearctic Region" (Canad. Ent. liii, pp. 280-288, Dec. 1921) adds several European species to the American list, eight of which are British. He is able to account for 48 species of *Miridae* which are common to the two regions, and as many of them are found in this country it seems worth while calling attention to the distribution of the insects in question, two only wanting confirmation (*Bothynotus pilosus* Boh. and *Apocremnus variabilis* Fall.). The species common to Britain and N. America are:—*Teratocoris saundersi* D. & S., *Miris dolabratus* L. and *M. ferrugatus* Fall., *Megaloceraea reticornis* Geoffr.* (*longicornis* Fall.), *Monalocoris filicis* L., *Camptobrochis lutescens* Schill., *Calocoris bipunctatus* F., *Adelphocoris lineolatus* Goeze* (*chenopodii* Fall.), *Lygus pabulinus* L., *L. pratensis* L., *L. pastinacae* Fall., *L. rubicundus* Fall., *Poeciloscytus unifasciatus* F., *Deracocoris ruber* L. (*lanarius* L.), *Pilophorus claratus* L., *Orthotylus concolor* Kirschb.,* *Chlamydatus pulicarius* Fall., *Plagiognathus chrysanthemi* Wolff* (*viridulus* Fall.), *Psallus albicola* D. & S.,* *Megalocolens molliculus* Fall.,* *Blepharidopterus angulatus* Fall.,* *Globiceps dispar* Boh.,* *Neocoris bohemanii* Fall., *Heterotoma merioptera* Scop., *Pithanus markéli* H.-S., *Cytorrhinus caricis* Fall., *Halticus apterus* L., *Orthocephalus mutabilis* Fall. The species marked with an asterisk have been added by Mr. Knight. The others are nearly all mentioned by Dr. Horvath in his paper "Les Relations entre les Faunes Hémiptérologiques de l'Europe et l'Amérique du Nord" (Ann. Mus. Hung. vi. pp. 1-14, 1908).—G. C. CHAMPION, Horsell: *April, 1922.*

A Dolichopid fly swarming in houses.—Though a number of kinds of Diptera and other insects have been recorded as swarming in buildings, this habit has not frequently, if ever before, been observed among *Dolichopodidae*. Towards the end of June, 1921, the writer was staying at West Trevoze, Padstow, N. Cornwall. The house was suddenly invaded by great numbers of the Dolichopid fly *Medeterus petrophilus* Kowarz; the swarm was not so dense as those of *Chloropisca circumdata* (one of which the writer also observed this summer in Serrope House, Cambridge), nor was the phenomenon so severely localised. The insects occurred in large numbers in most rooms, but the chief swarm (which must have numbered a few thousands) was in a lower room facing east. The same species was also noticed in other houses near by in great numbers, though not so great as in Trevoze. The insects remained quiescent, and the swarm persisted for several days, gradually dwindling away. The phenomenon was quite new to the occupiers of the house. *M. petrophilus*

occurs abundantly on the neighbouring "towans," and it is just possible that the extraordinarily high temperature and the drought were factors in determining the migration.—C. G. LAMB, University Museum of Zoology, Cambridge: *March 2nd, 1922.*

Some North Derbyshire Hymenoptera and Diptera.—To one accustomed to the profuse vegetation of the woodland and hedgerows of Warwickshire, two days in the mining village of Danesmoor at Whitsuntide 1921, was not very alluring entomologically, as with the slag heaps of Clay Cross Ironworks on one hand, shale dumps of the pit on the other, and the prevailing erratic weather conditions, there were small hopes for collecting in this apparently barren region. Much to my surprise, I was fortunate in taking some interesting specimens during the fitful spells of sunshine, a few at Padley Wood, the remainder beside the Midland Railway line between the village and Clay Cross. I am indebted for much kind assistance in the determination of my captures, in the *Hymenoptera* to the Rev. F. D. Morice, and in the *Diptera* to the Rev. Alfred Thornley. *Monophadnus geniculatus* Htg., *Fenusa* (*Kaliosysphinga*) *dohrni* Tischb., *Pocilosoma tridens* Knw., *Dolerus haematodes* Schr., *D. picipes* Kl., *D. nigratus* Müll., *D. aeneus* Htg., *Rhogogaster aucupariae* Kl., *Pachyne-matus ditellatus* Lep., *P. xanthocarpus* Htg., *Trichiocampus eradiatus* Htg., *Microcryptus labralis* Gr. (taken 1914), *Linerium geniculatum* Gr., *Halictus rubicundus* Christ., *H. atricornis* Smith, *H. leucopus* Kirb., *Andrena albicans* Kirb., *A. cineraria* Linn., *A. trimmerana* Kirb., *A. gwynana* Kirb., *A. angustior* Kirb., *A. similis* Smith., *A. saundersella* Per., *Nomada alternata* Kirb., *N. lath-buriana* Kirb., *N. bifida* Thoms., *N. fabriciana* Linn. *Rhamphomyia spissirostris* Fln., *Syrphus tricinctus* Fln., *Gymnochaeta viridis* Fln., *Cynomyia mortuorum* L., *Pollenia rudis* Fln., *Polietes lardaria* F., *Phaonia* (*Hycodesia*) *errans* Mg., *Psila fimetaria* L., *Opomyza florum* F., also a brown lacewing-fly *Micromus paganus* Linn., and a moth *Tortrix palleana* Hübn., bred from larva taken in 1914.—J. W. SAUNT, 53 Enfield Road, Stoke, Coventry: *April 15th, 1922.*

Obituary.

Vincent Robert Perkins died at his residence in Wotton-under-Edge, Gloucestershire, on April 3rd last, aged 91. He was the eldest son of the Rev. B. R. Perkins, who for fifty years was Vicar of the parish, and also Headmaster of the Grammar School.

As young men, he and his younger brother were enthusiastic collectors of Lepidoptera in the early days of the "Entomologists' Annual" and the "Weekly Intelligencer," their father's beautiful garden and the hills and woods around the town providing delightful and profitable collecting grounds. Vincent, after a short time spent in London, was for a while in the Bank of England at Newcastle-on-Tyne, where he made the acquaintance of Bold and other collectors in the North, but by far the greater part of his life was spent at Wotton. In the "seventies" of last century, when resident for some years in London, he was a frequent attendant at meetings of Scientific Societies, but subsequently he lived in the house which had formerly belonged to his father the Vicar.

Until comparatively recent years he continued his collecting of Insects of the Wotton district, and not only those of one Order, but practically all groups at one time or another interested him. From about the year 1875 the Aculeate Hymenoptera were especial objects of search, and later the Homopterous bugs seemed to have received a good deal of attention.

Soon after beginning to collect Hymenoptera he added to the British list the Fossor, *Crabro gonager*, which for a considerable time was not found elsewhere in this country, although it is now known to be rather widely distributed. His observations on the nesting habits of the bee, *Osmia bicolor*, which he observed concealing the snail-shell, in which its cells are placed, with great numbers of "bents" (or pieces of dry grass stems) have been quoted by many writers. His pleasure lay, certainly, in field-work rather than in minute study of the specimens captured, and probably he had neither the inclination nor the power to discriminate difficult species, nor was he a prolific writer to the magazines. Besides contributing to lists of Gloucestershire insects of other groups, he himself wrote that on the Aculeate Hymenoptera—in reality a list of the species found around Wotton rather than a county list. Such errors as exist in this are mostly, if not all, due, I believe, to determinations made not by himself, but by specialists to whom he sent insects for determination. So recently as last August, when the writer, his nephew, spent many hours in his company, his interest in his past collecting days was almost as keen as ever, and his eagerness to know exactly where one had been and what insects one had seen in his old haunts was surprising.

Apart from Entomology all matters of Natural History interested him, and at one time he possessed a number of specimens of our rarer birds, and got together a large collection of birds' eggs.

He was local Secretary of the Bristol and Gloucestershire Archaeological Society, was actively interested, as Trustee or otherwise, in various Charities in connection with the town, and also in the local schools; in past times he had been Mayor and Alderman of Wotton, and was the last survivor of those who had served in either of these positions. He was elected a Fellow of the Entomological Society of London in 1879 and resigned in 1917. His two daughters survive him.—R. C. L. P.

✓ *Frederick William Lambart Sladen* (F.E.S. since 1902, and "Dominion Apiarist" of Canada), who died suddenly on September 7th last year—not exactly, as was first reported by drowning—but from heart-disease, while bathing at Duck Island, Lake Ontario, had not long entered upon his 46th year, having been born at Blackheath in May 1876. His father was Lieut.-Col. J. Sladen, R.A., and his mother Lady Sarah Sladen (née Lambart) was a sister of the late Earl of Cavan. He was educated at home, and spent most of his life till he left England in 1912—or at any rate till his marriage in 1902—at his father's house, Ripple Court, near Dover, among surroundings in many ways ideal as a preparation for his future work in life as a Hymenopterist and professional expert in Apiculture. At the age of 16 he had already had several years of practical Bee-keeping, and had experimented with some success in domesticating Humble-bees—a work which he continued for many years,

continually revising and improving his methods, long after he had found that it could never be made commercially remunerative. In his case, however, the labour taken was by no means "Labour lost," since we owe to it his admirable and well-known monograph "The Humble Bee" (1912). He had also already acquired much familiarity with Kentish insects generally, paying chief attention to the bionomics of the Aculeate Hymenoptera, and especially of the Bees (both social and solitary).

It was at this time (1892) that he produced quite a sensation among the few Hymenopterists of the day, by circulating among them copies of a really wonderful little booklet, composed, stylographed in imitation of printing, illustrated, and even bound (!), entirely by himself. Small though it was, it contained many quite new observations on the bionomics of our various species of Humble-bee; and, both in its title, and more or less even in its contents, anticipated the great work, already alluded to, which was to appear twenty years later, just before its author finally left this country. It is to this little essay that the late E. Saunders chiefly referred when he wrote in his "Hymenoptera Aculeata," etc. (p. 360): "Mr. F. W. L. Sladen has lately paid a good deal of attention to the habits of the British *Bombi*, and in the remarks which follow I have drawn largely from information very kindly supplied by him."

Between 1895 and 1912 Sladen not unfrequently contributed notes to this Magazine. All but one dealt with *Hymenoptera*, and the following at least are of more than temporary interest:—Descriptions, etc. of two Bees new to Britain, *Sphecodes rubicundus* (Nov. 1895) and *Cilissa melanura* (Oct. 1897); *Bombi* in captivity and the Habits of *Psithyrus* (Oct. 1899); A Scent-producing Organ [viz., the "Canal" of Nassanoff] in the Abdomen of the Workers of *Apis mellifica* (Sept. 1902). Here we may note, parenthetically, that Sladen also first discovered and explained—not, however, in Ent. Mo. Mag. but in the "British Bee Journal" (Dec. 14th, 1911)—the true function of another structure in the worker Hive-bee, namely the "auricle" at the base of the hind metatarsus. To the "British Bee Journal" also he communicated many other papers—mostly on Apiculture—one series of which ("Queen-rearing in England") was republished as a book in 1905, and followed by a 2nd (enlarged) edition in 1913. After settling in Canada he published in the "Canadian Entomologist" several papers of a systematic character, e. g., on certain genera of North American Wild Bees, and the relations of their species to congeners in Europe.

During his last fifteen years in England (though still continuing to collect, study, and occasionally write on Aculeates other than Hive-bees) he was occupied chiefly with practical Apiculture. In fact, he adopted this as a definite profession, establishing and managing (practically single-handed) the well-known "Ripple Court Apiary" on his own premises. Here, besides dealing, not unprofitably, in honey, queens, bee-keeping appliances, etc., he paid special attention to the production by scientific methods of improved races; arranged exportations of Humble-bees to the Antipodes, and of Hive-bees, specially selected, to many of our more distant Colonies; competed in Exhibitions, etc., etc. This side of Sladen's activities can only be discussed adequately by an expert in Apiculture, and fortunately this has been done

already, so that we need only refer our readers for a complete account of it to an admirable "Obituary Notice" of our lamented colleague which appeared in the "British Bee Journal" of October 6, 1921. They will find there a most comprehensive and interesting survey of Sladen's whole career, which has helped the present writer much in preparing the above imperfect sketch of his too short life and his most noteworthy contributions to our knowledge of the group on which he specialized with such conspicuous and fruitful industry.—M.

George Alexander James Rothney, 1849-1922.—G. A. James Rothney, who died on January 31st in his 73rd year, was a keen entomologist, especially interested in the Aculeate Hymenoptera, and one whose broad outlook took in many sides of his favourite science—that of the naturalist perhaps even more than the keen collector and student of systematics; the artistic side, revealing the setting of the insect world in the whole scheme of nature; above all, the human and personal, delighting in memories of his scientific comrades.

Where shall we find so fine a picture of Edward Saunders as that given by him in the "Proceedings of the Royal Society" (B. vol. 91, p. xvi)?—"I can see him now as he was in 1868 to 1870, looking so very young and boyish, but standing up and reading learned papers at the Entomological Society on the *Buprestidae*, listened to and holding his own with the giants of those days." And then memories of his later years and home-life, and the conclusion:—"He was the kindest helper and friend that anyone could have." One thinks, too, of Rothney's pleasure in recovering and placing near his own in the Hope Museum at Oxford, a collection recalling, as he wrote, "a memory of good, cheery old Fredk. Smith, one of the dearest and most interesting of men."

The naturalist and artistic sides of his nature are evident in his graphic story of a tremendous flight of Winged Termites at Barrackpore—"a real 'Brock's benefit' in White Ants," and in the delightful "picture-memories" recorded in this Magazine (1920, p. 175), memories which, as he said, "I love to dwell upon now my collecting days are over."

Rothney's great collection of Oriental *Aculeata* was begun in 1872, the year when he sailed to the East in the service of C. W. Scott & Co., merchants, of Calcutta, soon to become John Dickinson & Co. His own captures were chiefly made in Barrackpore Park near his house, also in Calcutta, Mussoorie, Allahabad, and N. W. P. The collection is also rich in specimens from other famous entomologists—Bates, Bingham, Cameron, Forel, and F. Smith, and includes a very fine series taken by natives in the Khasia Hills, Assam, and extremely rich in types of new species not only among the *Aculeata* but also the *Phytophaga* and *Parasitica*. The ants, which are a special feature, include species from many other parts of the world. Together with this splendid collection in its cabinet he presented nearly 100 volumes and numbers of unbound separata, forming a library of the Oriental Hymenoptera, including all publications concerned with the Rothney collection, also 14 volumes of his own papers, correspondence, and notes, chiefly on Indian Hymenoptera and Lepidoptera. He also presented his own series of the Trans. Ent. Soc. Lond., dating from 1868, the year of his election, and arranged for its continuance and uniform binding until the end of 1922. "1868-1922 inclusive is a pretty good show"

he wrote on December 31st. In addition to the Hymenoptera, he gave fine series of other Oriental insects and a small cabinet containing his British Aculeates, including the first male and female of *Formica exsecta* taken in Britain, and the example, for many years unique as a British insect, of *Odynerus herrichii* (= *basalis*) taken in Dorset in 1868.

I well remember the extraordinary care and interest he took in the transport by road of these collections to Oxford, personally superintending the packing in the van and arranging that it should arrive so that I could superintend the unpacking and at once send him a telegram when all was safe. I recall, too, the characteristic generosity with which he sent a present to the carter when the telegram came—generosity combined with wise foresight, for the man had been told what he might expect if he used all care and discretion. And he never lost sight of or forgot his collection, but would seize every chance of adding to it by the purchase of further series of Hymenoptera, especially pleased when they were Oriental species from new districts, or insects of all kinds from ex-enemy countries. These generous gifts were continued in the last years of his life and referred to in letters dictated a few weeks before his death. He bequeathed £150 to the Entomological Society, and £50 to the Hope Department to provide further accommodation for his favourite Oriental Hymenoptera.

He kept all his keen interest in natural history up to the end. A fortnight before his death he listened to a long scientific paper read to him by his daughter and only finished when it was nearly midnight, and dictated a letter telling of his interest in it, and his pleasure at his daughter's interest. And a few days earlier he had supplied further details concerning the capture of rare British insects, and made an important correction in the data previously given. "I don't know how it is," he wrote, "but as one gets older and towards the end of the lane one turns to one's first love—*British Butterflies*."

It was the same with his other great interest—Rugby football. After hearing the summary of current events in the newspaper he would always say "Now turn to the football news." Rothney was one of those wise Englishmen who know well that the worst thing to do in the Tropics is to live a sedentary life chiefly occupied in cursing the weather. He was the first to start distance running in India; he introduced Rugby Football into Calcutta in the year of his arrival, and, when Captain and Secretary of the Club in 1878, it was at his suggestion that the Calcutta Cup was presented to the Rugby Union, to be competed for annually by England and Scotland.

With his brain clear and active as ever he died as he would have wished, very quietly, with his two daughters by his side.—E. B. P.

Julius Jaeger.—In his eighty-ninth year, the veteran Lepidopterist, J. Jaeger, passed away on January 5th last, at his home in North Kensington. Born in 1834 at Biedenkopf in Germany, he came to this country as a Professor of Music about 1854, and remained in that profession until his retirement a good many years ago, having at the time of his death lived in England for 68 years. From boyhood he was an ardent entomologist, and the long summer holidays which his profession allowed were largely spent in collecting *Lepidoptera* in Wales, and in various parts of England. Starcross was a favourite

locality with him, and it was while spending what was probably his first holiday in South Devon, that he was the first to discover and make known that *Callimorpha hera*, until then regarded as one of our greatest rarities, was common in that district; and it was rather a "sore point" with him at the time that the late C. G. Barrett, in his "Lepidoptera of the British Islands," seemed to give the credit of this to another man. His most notable capture was the beautiful fresh specimen of *Ophiusa stolidi* which he took on September 23rd, 1903, at Galampton, South Devon, on a post which the writer of this has himself sugared very many times. Jaeger recorded this interesting capture in our Magazine for November of the same year (p. 269), and the specimen, which still remains unique as British, was also figured on the coloured plate published by us in September 1911. Some of the writer's most enjoyable entomological expeditions were spent with Jaeger at Galampton, and we there took together such then rare species as *Heliothis armigera*, *Leucania vitellina*, *L. albipuncta*, *Laphygma exigua*, as well as many other good, but less notable, Lepidoptera. Jaeger, too, found the larva of *Deilephila livornica* at Starcross, and succeeded in breeding the perfect insect. Jaeger never pretended to be in any sense a scientific entomologist: his greatest delight was to get into the haunts of various local species and take them himself, and from eggs obtained to watch their habits by breeding them through at home. His interest in *Lepidoptera* was strong until quite the end of his long life, and after he could no longer do any field-work, he was breeding them up to within two or three years of his death. So recently as December 21st last he wrote to the writer a long and cheerful letter on entomological and other matters, but saying that, although in fairly good health, his sight was so bad that he could do but little of anything. It was, therefore, a shock to hear from his step-daughter in just over a fortnight later that he was gone, after three days' illness from broncho-pneumonia.

For a collector throughout so many years, his collection is not an extensive one, and contains but few great rarities, but it shows a good representation of the more ordinary and local moths. This is accounted for from the fact that he did little exchanging, and no buying, the collection thus being largely the result of his own work. For many years he was associated with the South London Entomological Society, where he often spoke and exhibited his specimens. There he made many friends, and having made an intimate friend he probably never lost him in life, his great cheerfulness and geniality being very attractive. Among such friends who predeceased him may be mentioned W. H. Tugwell and Sydney Webb, and his visits to the latter at Dover were greatly enjoyed by him, in looking and chatting over his well-known fine collection.

He has left a son, and a step-daughter (Miss Townsend), the former now having a large practice as a medical man in the district in which his father resided for so many years, and to them we extend our sincere sympathy in their loss.—G. T. P.

Arthur W. Bacot.—The death of this entomologist was announced in the daily press on April 12th, in a telegram from Cairo, in the following words:— "Science has claimed another victim in Mr. Arthur Bacot, who died here this morning from typhus, which he contracted while carrying out research work

for which he was recently lent to the Egyptian Government by the Lister Institute. Mr. Bacot was well known for his researches into the conveyance of plague by rats, and also for his work in connection with trench fever during the war." He was entomologist to the Lister Institute of Preventive Medicine. Some years ago he visited Sierra Leone for the Yellow Fever Commission, and was the author of numerous papers on entomological subjects, insects and disease, and yellow fever. Bacot was elected a Fellow of the Entomological Society of London in 1907, and resided at Loughton, Essex.

Societies.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY :
January 26th, 1922. Annual Meeting,—MR. STANLEY EDWARDS, F.L.S., Vice-President, in the Chair.

The Report of the Council, Statement of the Treasurer, and Balance Sheet were received and adopted. The following members were declared elected Officers and Council for the ensuing year:—*President*, E. J. Bunnett, M.A., F.E.S.; *Vice-Presidents*, K. G. Blair, B.Sc., F.E.S., and N. D. Riley, F.E.S., F.Z.S.; *Treasurer*, A. E. Tonge, F.E.S.; *Librarian*, A. W. Dods; *Curator*, S. R. Ashby, F.E.S.; *Assist. Curator*, T. L. Barnett; *Editor of Proceedings*, Hy. J. Turner, F.E.S.; *Hon. Secretaries*, Stanley Edwards, F.L.S., F.E.S., and Hy. J. Turner, F.E.S.; *Recorder*, L. E. Dunster; *Lanternist*, A. W. Dennis; *Council*, T. L. Barnett, A. A. W. Buckstone, L. E. Dunster, O. K. Goodman, F.E.S., T. H. L. Grosvenor, F.E.S., H. A. Leeds, G. S. Robertson, M.D., E. Step, F.L.S., and S. Syms.

The President being unwell, his Annual Address was read by Mr. Riley. It was entitled, "Will o' the Wisp," with which he dealt historically and biologically, ascribing the phenomenon to the male Ghost-Moth.

The new President, Mr. E. J. BUNNETT, then took the Chair, and votes of thanks were passed to the retiring Officers and Council.

Major C. E. Lyles, 6 Hyde Park Mansions, and Mr. J. H. Adkin, Whitecliff Road, Purley, were elected members.

Mr. C. Craufurd exhibited an *Aglais urticae* with a curious deficiency of colour in two streaks on the hind margin of the hind wings; the scaling was perfect.

February 9th, 1922.—The President in the Chair.

Miss Alice K. Lock, 77 Grove Hill Road, S.E., was elected a member.

Mr. R. Adkin exhibited a second brood series of *Brenthis selene* from Abbot's Wood, Sussex, taken at end of July and in August. Mr. A. A. W. Buckstone, a large form of the same species racial in the Is. of Arran, and a series of a small race from Headley; and an aberrant form of *Taeniocampa incerta*, resembling both *T. munda* and *T. gracilis*. Mr. H. W. Andrews, the *Anthomyiidae* (Dipt.), *Hylephila sponso*, said to be rare, but common in Kent; and species of local *Limnophora*. Mr. Blenkarn, *Cryptocephalus coryli* from Mickleham, with a spot on each elytron; and the racial form of *Phyllodecta laticollis* from Killarney, Dec. 1921. Mr. H. J. Turner, for Mr. Greer of

Stewartstown, aberrations of butterflies, *Euchlōe cardamines*, *Pararge megera*, *Polyommatus icarus*. Mr. Frohawk, aberrations of *Aglais urticae*, *Pieris napi*, *Argynnis paphia*, *Euchlōe cardamines*, *P. brassicae*.—HY. J. TURNER, Hon. Editor of Proceedings.

THE LONDON NATURAL HISTORY SOCIETY.—Members have been giving more attention to other branches of Natural History instead of concentrating on Entomology lately, but in spite of this several very interesting Lepidoptera exhibits have been shown, including a fine series of *Grapta c-album*, bred by Mr. R. W. Robbins from pupae obtained in the west of England, showing that both the "marbled" and "non-marbled" forms appear at the same time and in the same locality. Dr. Cockayne has shown *Plebeius argus*, a long series of gynandromorphs with varieties, and some freshly emerged *Euvanessa antiopa* with white borders caught last year showing that the whiteness is not due to fading of the pigment after emergence. Mr. J. Riches exhibited selected varieties from his extensive collection of *Abraxas grossulariata*, bred in North London by himself. Mr. H. B. Williams has shown *Dryas paphia* and its var. *valesina*. Mr. W. A. Southey, several forms of *Heemerophila abruptaria*; and Mr. Worsley Wood, series of *Erebia blandina*, *Chrysophanus phlaeas*, *Brephos parthenias*, and *Pseudolerpna pruinata*, with varieties. On January 3rd, Mr. L. W. Newman gave an interesting lecture on the effects of last year's drought on the various species of Lepidoptera. A large number of Plant Galls have been exhibited caused chiefly by *Eriophyidae*, Diptera, or Hymenoptera species.—H. J. BURKILL, *Minutes Secretary: March 10th, 1922.*

ENTOMOLOGICAL SOCIETY OF LONDON: *Wednesday, March 1st, 1922.*—The Rt. Hon. LORD ROTHSCHILD, M.A., F.R.S., etc., President, in the Chair.

The following were elected Fellows of the Society:—Mrs. Margaret Rae, Courthill, Birkenhead; A. F. Rosa, M.D., 28 Pitt Street, Edinburgh; Mr. Frank Russell, F.G.S., Aulden House, Worksop; and Captain Francis Moysey, Suffolk Regiment, Talodi, Nuba Mountains, Sudan.

The Treasurer made a statement on the Wicken Fen Fund. He called attention to the valuable work that is being done on this Nature Reserve and made an appeal for contributions towards its maintenance. The Treasurer announced that the late Mr. G. A. J. Rothney had bequeathed the sum of £150 to the Society.

The President announced the death of Professor Geldart, and a vote of condolence with his relatives was passed.

Dr. Waterston exhibited a Brazilian bee, *Melipona scutellaris* Latr., taken near Brighton; also a stem of *Arundo phragmites* from which numerous pupae of a Chalcid, *Geniocerus flavimanus* Thoms., were projecting; Mr. H. Mace, a number of butterflies from the neighbourhood of Khartoum; Mr. R. Adkin, *Diaphora mendica* var. *venosa*, n., from Co. Tyrone, and compared it with other races of the species; Mr. E. B. Ashby, numerous insects of various orders from Piedmont, Italy; Professor E. B. Poulton read some notes on the utilization of derived plant pigments in the colouring of Lepidoptera; he also read a communication from the late Dr. T. A. Chapman on germinal "factors" and

their independent existence and development; Mr. Hugh Main read some notes on the metamorphoses of *Orthophagus taurus* L., illustrated with some remarkable lantern-slides.

The following papers were read:—"Gynandromorphous *Plebeius argus* L.," by Dr. E. A. Cockayne; "Butterflies from the Nile," by Mr. H. Mace; "Types of Oriental *Carabidae* in the Stettin Museum," by Mr. H. E. Andrewes; and "New Genera and Species of Neotropical *Curculionidae*," by Dr. G. A. K. Marshall.

NOTES ON SOME AUSTRALIAN ANTS.

BIOLOGICAL NOTES BY E. B. POULTON, D.SC., M.A., F.R.S.,
AND NOTES AND DESCRIPTIONS OF NEW FORMS BY
W. C. CRAWLEY, B.A., F.E.S., F.R.M.S.

The following paper contains an account of some ants collected during 1914 in West Australia, South Australia, Victoria, and New South Wales. The notes on the habits of each species were made at the time of capture, and Professor Poulton has added further observations from memory. These are indicated by quotation marks and the initials "E. B. P." All captures without the addition of any name or initials were made by Professor Poulton, who contributes the following general notes:—

"During my brief visit to Australia—July 29th to August 27th, 1914, with a few hours at Fremantle on August 31st—I was much struck with the dominant position of the ants in the insect fauna. Other insects were scarce, especially the Lepidoptera; indeed the only day on which I saw an abundance of varied insect life was August 31st, at Cottesloe Beach, Fremantle, where the 'wattle' (*Acacia* spp.) was in bloom and attractive to many species. The important position taken by the ants is shown by the species recorded in the present paper, although allowance must be made for the fact that ants are more easily found in a time of scarcity than most insects. But I do not doubt that their pre-dominance in Australia is real.

"I noticed when collecting *Camponotus nigriceps* race *dimidiata* (*infra* p. 125) under the bark of a prostrate tree-trunk near Healesville, Victoria, that Hemiptera on the bark of an adjacent tree were ant-like in appearance and especially in their movements; also at the same time small Coleoptera under and in rotten logs and on bark were, when running, very ant-like. Mr. R. E. Turner has recorded a unique feature in the mimicry, by a fossorial wasp, *Aphelostoma tasmanica* Westw., of the

formidable 'Bull-dog' ants of the genus *Myrmecia*. When alarmed, the wasp often picks up a fragment of dead stick or leaf, which it carries in its mandibles, thus increasing the resemblance to an ant (Proc. Ent. Soc. Lond. 1919, p. xxxvii). I anticipate that the mimicry of ants will prove to be a special feature of the Australian fauna.

"In making the collection here described I received the kindest help from Mr. L. le Seouef, Director of the Zoological Gardens, Perth, and from Mr. H. M. Giles, the Head Keeper; and at and near Healesville from Mr. R. Kelly. A few of the ants were collected in the Blue Mountains, N.S.W., by Prof. von Luschan, of Berlin."

Sub-family I. *PONERINAE* Lep.

Myrmecia vindex Sm.—♀. From many adjacent nests of various sizes. S. Perth, Swan River bank near Zoological Gardens, 2.viii.14 (*L. le Seouef*; *E. B. P.*).

"This species is one of the well-known 'Bull-dog' ants of Australia, a term no doubt applied to many others in the genus. The number of nests in a small area seemed to be a definite habit and is probably advantageous on the Müllerian principle. An enemy having experienced the defensive powers at the mouth of one nest would carefully avoid disturbing others. Thus each nest would help in guarding the rest. The behaviour of the ants was different from any I have seen. Around and just inside the entrance, which appeared to descend vertically into the earth, was a little group of ants. The head of each ant was always facing outwards in the direction of possible attack. When disturbed, the ants walked slowly, with widely opened mandibles, towards the enemy. I have never seen suggested, in the bearing of an insect, so firm a confidence in the possession of terrible powers of defence and such relentless determination to use them. The result was to make them particularly easy to capture with the forceps; for retreat of any kind or the avoidance of danger by rapid movement was quite foreign to their nature."—*E. B. P.*

Some species of ants, by a system of colonisation in addition to the general mode of founding nests by means of fertilised females, succeed in establishing enormous colonies consisting of scores or even hundreds of separate nests, all the members of the different nests being on friendly terms with each other. This is the case with the common European *Formica rufa* and others, and it is possible that some species of *Myrmecia* have a similar habit. It would be interesting to ascertain

whether the members of the different nests of *M. vindex* referred to above were friendly to each other.

M. forficata F.—4 ♀ ♀. Under log in bush, Victoria, near Healesville, Narbethong, Springbank. One ♀ has a ♀ of *Camponotus ferruginipes*, sp. n., fixed to its leg. "When the two were captured and put in the same box, the *Camponotus* seized the leg of the Ponerine. When the box was opened a few hours later the *Camponotus* was dead but still holding on tightly to the living *Myrmecia*."—E. B. P.

One deälated ♀ was taken under a log in the same locality (*R. Kelly*), and 3 ♀ under a stone near Black Spur in the same district (*E. B. P.*), 15.viii.14.

Amblyopone ferruginea Sm.—8 ♀ ♀. From nest under stone, Blue Mts., N.S.W., near Mt. Victoria, 23.viii.14.

A. australis Erichs.—2 ♀ ♀. Victoria, Healesville to Narbethong, Maryville road, 15.viii.14.

Euponera (Brachyponera) lutea Mayr.—♀ ♂. Near Perth, Yallingup to Mammoth and Lake Caves, under log or stone in bush, 31.vii.14.

♀ ♀, 5 ♂ ♂, and one alate ♀ were taken by H. M. Giles at Munding Weir, near Perth, 3.viii.14, and a single deälate ♀, taken at an earlier date by the same collector, bears the note "Probably Perth District." ♂ ♂ and ♀ ♀ of this very abundant species are often taken after the marriage flight without ♀ ♀, and it was probably from such a ♂ and ♀ that Mayr described the sexes of his species, as he says "*Probably* belonging to this species." Up to recent years I had never received either ♂ ♂ or ♀ ♀ taken with the ♀ ♀, and therefore when Prof. Poulton showed me some ♀ ♀ and one deälate ♀ (queen) taken together under a stone close to the platform at Picton Junction, near Perth, 1.viii.14, the ♀ differing entirely from Mayr's ♀, it occurred to me that this ♀ was the true female of *E. lutea*. I described this ant in 1918 (*Ent. Rec.* xxx. 5, p. 86) as the true ♀ of this species, or alternatively a "B" form. There is no doubt, however, that the ♀ described by Mayr is the typical ♀ of *lutea*, and therefore the very interesting one discovered by Prof. Poulton must be considered as a "B" form. It is just possible that it may be a parasitic ♀ of another species, though this is not so probable from its appearance. I have recently received many ♂ ♂ and ♀ ♀ taken in nests with ♀ ♀ from different parts of Australia, all the ♀ ♀ being the typical forms. It is a very variable ant as regards colour, ranging from pale yellow to almost black in the same colony, and numerous myrmecophiles are found in its populous nests. The figures

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THE NATURALIST:

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EDITED BY

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AND

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WITH THE ASSISTANCE AS REFEREES IN SPECIAL DEPARTMENTS OF

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VOLUME LVIII.

[THIRD SERIES—VOL. VIII.]

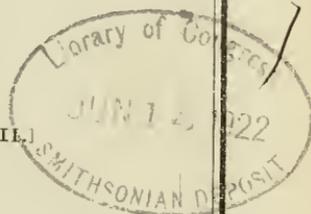
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The Letchworth and District Naturalists' Society, who manage Letchworth Museum, are endeavouring to work up the lists of fauna and flora of the region covered by their activities (a twelve-mile radius). The writer, being entomological recorder for the above Society, would therefore be extremely grateful for any records of insects, other than Lepidoptera, taken by entomologists who have collected at Royston, or any other locality in North Herts or South Beds.

RAY PALMER, F.E.S., "Ingleholme," Norton Way, Letchworth.

MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 41 Queen's Gate, S.W. 7
nearest stations: South Kensington and Gloucester Road).—June 7th, Oct. 4th,
1922, at 8 p.m.

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

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 7 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

THE LONDON NATURAL HISTORY SOCIETY, now meets in Hall 40, Winchester House, Old Broad Street, E.C. 2, on 1st and 3rd Tuesdays in the month at 6.30 p.m. General meetings 1st Tuesdays. Sectional meetings 3rd Tuesdays. (No meetings in July or August indoors, but field excursions instead.)

Hon. Sec.: W. E. GLEGG, The House, Albion Brewery, Whitechapel Road, E. 1.

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

ENTOMOLOGICAL SOCIETY OF HAMPSHIRE AND THE ISLE OF WIGHT. This Society has developed from the Southampton and District Entomological Society. Meetings are held on the First Saturday afternoon of each month at Southampton, and other meetings will be arranged in important centres in the county from time to time. Activities being undertaken at the present time include the formation of a library, of collections of insects, and the compilation of a county insect fauna list. Will keen entomologists in the county who are interested please communicate with the

Hon. Sec., F. J. KILLINGTON, 1 St. Catherine's Road, Eastleigh, Hants.

show the great difference in size and structure in the two forms of ♀. In profile the scale of the "B" ♀ is thick like that of the ♂, not knife-edged as in the normal ♀.

Rhytidoponera (Chalcoponera) metallica Sm.—♀. One under log, Mundaring Weir, 3.viii.14; one ♂, Mundaring Weir, 3.viii.14 (*H. M. Giles*); and 6 under stone, Adelaide, Mt. Lofty Range, 10.viii.14.

The specimens from the latter locality are all uniform dark metallic green, and the coarse longitudinal striae on the front do not continue so

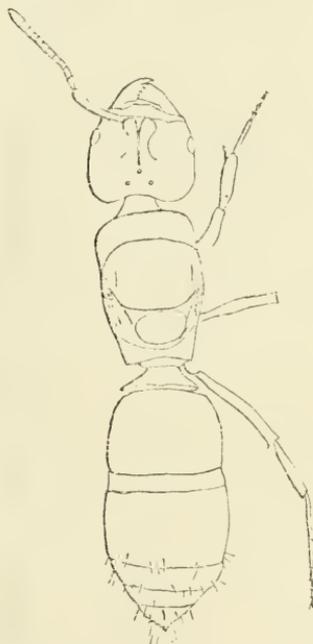


Fig. 1.—Normal ♀ of *Euponera lutea* Mayr. (On same scale as fig. 2.)



Fig. 2.—"B" ♀ of *Euponera lutea* Mayr. (On same scale as fig. 1.)

far as in typical specimens; the scale is straight, not concave, behind; the first segment of gaster has shallow punctures among the fine striae, and the second segment has fewer and shallower ones. The anterior border of the clypeus has a somewhat more pointed form, and the head is not quite so emarginate behind as in typical forms.

This very abundant ant varies greatly, and a number of varieties in addition to those already described might readily be named, but in all probability many of these slight variations are found in the same colony, especially the colour variations. The metallic sheen ranges in all shades from red and purple to green and blue.

R. (C.) metallica Sm., var. *tasmaniensis* Emery.—5 ♀. Near Perth, Yallingup to Mammoth and Lake Caves, under log or stone in bush, 31.vii.14.

R. (C.) metallica Sm., var. *cristulata* Forel.—♂ ♀. Blue Mts., N.S.W., near Mt. Victoria. Nest under stone, 23.viii.14.

For description of the ♂, which was taken on this occasion for the first time, see Ent. Rec. xxx. 5, p. 88 (1918).

R. (C.) victoriarum André.—2 ♂, 6 ♀. Victoria, near Healesville, Narbethong, Springbank. Nest under log in bush, 15.viii.14.

♂ (hitherto undescribed). Length 4.8 mm. Black; tip of gaster, articulations of legs and terminal joints of tarsi, ferruginous, also mesonotum; antennae dark brown. Wings pale brown and iridescent, nervures dark brown.

Head broader than long, narrowing in front and behind. Mandibles with 7-8 teeth. Clypeus bulbous, depressed along anterior border, which is feebly convex. Frontal area triangular, slightly impressed. Eyes large and oblong, placed obliquely across the side of head in front of middle, occupying a little more than $\frac{1}{2}$ the side. Scapes short, about twice as long as broad, nearly twice as long as 1st segment of funiculus which is about as broad as long; 2nd joint long, longer than the scape and 1st joint together, the rest diminishing in length and increasing in breadth to the apical, which is about as long as the 2nd. All except 1st much longer than broad. The whole antenna $\frac{3}{4}$ as long as the whole insect.

Scutellum prominent, a transverse impression dividing it from the scutum. Base of epinotum equals the declivity, the latter plane, sub-bordered. Scale from above longer than broad, the sides concave in front, the concavity forming a ridge which ends in a blunt tooth at each side. Underneath is a flat lamella ending in a blunt tooth directed forwards; in the centre of the lamella is a circular translucent aperture.

Pilosity: body sparsely provided with erect brown hairs; pubescence nil except on antennae. Tibiae with erect hairs.

Gaster and mandibles shining, the rest sub-matt. Mandibles with very few small punctures; rest of head roughened, mostly longitudinally. Scutum anteriorly with a short longitudinal impression from which radiate fine striae. Median furrows with broad transverse grooves, shining, the rest and the scutellum irregularly and longitudinally rugose-striate. Epinotum irregularly and coarsely transversely reticulate. Node with irregular lines. Gaster shining and smooth, with traces here and there of superficial striae.

Sub-family III. MYRMICINAE Lep.

Aphaenogaster (Nyctalomyrma) longiceps Sm.—13 ♀ ♀, near Healesville, Victoria, under rotting log, 16.viii.14. These ♀ ♀ agree perfectly with Smith's type.

A. (N.) poultoni Crawley.—Three ♀ ♀, taken by Prof. Poulton in the Zoological Gardens, Perth. I have received numbers of this species from the neighbourhood of Perth.

“I have no special recollection of the nest of *longiceps*, but I feel sure that the log when raised only disclosed a series of tunnels from which the ants were taken. The openings to the nests of *poultoni* in the Zoological Gardens were very characteristic. They were scattered sparingly over the bare turf and were all alike, being deep, circular, little craters, from memory about $1\frac{1}{2}$ inches in diameter, with a small central hole passing vertically downward. The crater was surrounded by a wall of pure yellow sand evidently brought up from below the superficial soil, from which it was entirely free. The yellow sand also lined the crater, which, with its wall, was a very conspicuous object. Very few ants were seen in the craters, never more than one or, at the most, two in each.”—E. B. P.

A. poultoni is described in a paper now being printed for the Ann. and Mag. Nat. Hist.

Pheidole variabilis Mayr var.—A single ♀ under stone, Blue Mts., N.S.W., near Mt. Victoria, 23.viii.14. This appears to be one of the numerous varieties of this species. It is very like var. *rugociput* For. from Queensland, as it has the whole head longitudinally striate and reticulate between the striae, but the scapes are somewhat shorter than in *rugociput*.

Monomorium (Mitara) ilia For.—♂♂ and 4 ♀♀, from nests in rotten wood, S. Perth, Zoological Gardens, and Swan River Bank, 2.viii.14 (*L. le Seouef*; *H. M. Giles*; *E. B. P.*).

Crematogaster australis Mayr.—♂♂, many ♂♂, 3 alate and one dealate ♀, S. Perth, Swan River bank, near Zoological Gardens. From 3 nests in rotten *Melaleuca* trunk, 2.viii.14 (*L. le Seouef*; *E. B. P.*). “The nests, of which two were found on one tree, were excessively populous.”—E. B. P.

This I take to be Mayr’s species from his description, though I have never seen a co-type or a specimen named by a myrmecologist who has seen the type, and I am not completely satisfied that this is *australis*.

C. rufotestacea Mayr.—5 ♂♂, under log or stone in bush, near Perth, Yallingup to Mammoth and Lake Caves, 31.vii.14.

This is a very abundant species in Western Australia.

Sub-family IV. *DOLICHODERINAE* Forel.

Iridomyrmex detectus Sm.—♂♂. Mundaring Weir, near Perth, 3.viii.14; Perth, stations on railway to Busselton, 30.vii.14; Adelaide, Outer Harbour, 27.viii.14. “The entrance to the nests was very characteristic, being a single opening, leading vertically downwards, in the

centre of a bare, smooth, circular patch, from memory about a foot in diameter. Across this patch the ants ran with great rapidity in their journeys to and from the nest. Known as the 'meat ant.'—E. B. P.

Abundant almost over the whole continent.

I. discors For.—♂ ♀. Under log or stone in bush, near Perth, Yallingup to Mammoth and Lake Caves, 31.vii.14. Also a very abundant species in West Australia.

I. conifer For.—♂. Perth, stations to Busselton; Yallingup, close to sea, 30.vii.14. An extremely abundant species in W. Australia. The nests harbour a great number of myrmecophiles.

"The nests, which were especially common near the sea at Yallingup, resembled a small *Formica rufa* nest, but the material was coarser, grey in colour, and freely intermixed with sand. Near one of the nests in this locality a crowd of ants was seen busily engaged in attacking some object. One scoop with a moderate-sized pill-box secured 32 ♀ with their prey, a Noctuid larva. The contents of the box were poured into a cyanide bottle, and, when examined later, were found to include a large larva of the Myrmelconid genus *Palpares*. It seems probable that this predaceous insect had been attracted by the number of ants at one spot and had tunnelled towards and beneath them. Its flexible limbs suggested that it had been alive when put into the bottle."—E. B. P.

I. emeryi Crawley.—♂ ♀ ♀. This species was described in Ent. Rec. xxx. 5, p. 90, 1918. "A moderate-sized flat stone formed the roof of a chamber the floor of which was crowded with winged ♀ ♀, while the ♂ ♂ were hanging, as densely packed, from the ceiling. The close proximity of the sexes—for the chamber was low—combined with their absolute segregation, was a very striking sight."—E. B. P. In the original description the locality was given as Victoria; it should be N. S. Wales, Blue Mts., near Mt. Victoria, 23.viii.14.

I. fornicatus Em.—10 ♀ ♀, under stone, Blue Mts., N.S.W., near Mt. Victoria, 23.viii.14. Kindly determined for me by Prof. Emery.

I. itinerans Lowne, race *nitidiceps* André.—1 ♀, near Perth, Yallingup to Mammoth and Lake Caves, under log or stone in bush, 31.vii.14. The specimen is damaged, but it is almost certainly this species, which I have frequently received from the Perth district.

I. rufoniger Lowre.—4 ♀ ♀, in flower of pink Mesembryanthemum, Adelaide, Outer Harbour, 27.viii.14.

I. sp.—♂ ♀, under stone, Victoria, near Healesville, near Black Spur, 15.viii.14. I am unable to identify this species at present.

I. (Doleromyrma) darwinianus For., var. *fidu* For.—8 ♂♂. Yallingup to Mammoth and Lake Caves, under log or stone in bush, 31.vii.14. Kindly identified by Prof. Emery.

Leptomyrma erythrocephalus F.—1 ♂, under stone, Blue Mts. N.S.W., near Mt. Victoria, 23.viii.14 (*von Luschan*).

Turneria frenchi For.—7 ♂♂, under stone, Blue Mts., N.S.W., near Mt. Victoria, 23.viii.14. Not having been able to compare this striking little species with Forel's co-types, I place it with some hesitation under *frenchi*, though it agrees fairly well with the description.

Sub-family V. CAMPONOTINAE Forel.

Notoncus sp.—4 ♂♂, 1 ♀ alate. These 5 specimens do not quite agree with any of the published descriptions. They are very like *gilberti* For., from Queensland, but are without the striae on the thorax. There are so few representatives of this genus in our collections in this country that I let them stand over for further material. The ♂♂ measure 4.5 to 5.1 mm. Near Perth, Cottesloe Beach, sea to railway station, in one nest, under a stone or piece of tin.

Notoncus sp.—A single specimen, a ♀, differing from the above, but indeterminable at present. Near Perth, Yallingup to Mammoth and Lake Caves, under log or stone in bush, 31.vii.14.

Camponotus (Myrmoturba) nigriceps Sm., race *dimidiata* Rog.—20 ♂♂, from nest under bark of prostrate trunk, Victoria, near Healesville, 16.viii.14. 9 ♂♂, under stone, Blue Mts., near Mt. Victoria, 23.viii.14 (*von Luschan*). "The ant-like Hemiptera and beetles with ant-like movements (*supra*, p. 118) were found near the Healesville nest."—E. B. P.

C. (Myrmophyma) testaceipes Sm.—6 ♀♀, 16 ♂♂, under log, near Perth, Mundaring Weir, 3.viii.14.

C. (Myrmogonia) claripes Mayr, race?—4 ♂♂ minor, near Perth, Yallingup to Mammoth and Lake Caves, under log or stone in bush, 31.vii.14.

Difficult to identify without ♂♂ major.

C. (Myrmosphincta) suffusus Sm., var. *bendigensis* For.—A single ♂ under stone, Blue Mts., N.S.W., near Mt. Victoria, 23.viii.14 (*von Luschan*).

C. (Myrmosaga) ferruginipes, sp. n.

♂ major. Length 9 mm. Deep black; masticatory border of mandibles reddish, funiculi dark red-brown, legs bright ferruginous.

Head very slightly broader than long, widest at eyes, sides feebly convex. Mandibles 6-dentate. Scapes pass the occiput by more than a quarter of their length. Clypeus feebly carinate. Anterior border very sinuate. Eyes flat, placed above the middle of sides.

Pronotum broad in front, the shoulders rather prominent and bordered. Base of epinotum $1\frac{1}{4}$ as long as declivity, saddle-shaped. Scale in profile twice as high as broad, bluntly rounded at top. From above it is wider than long.

Pilosity sparse, brown-yellow. A slight pubescence on head and gaster. Tibiae and scapes without erect hairs.

Moderately shining. Mandibles shining, with a few punctures and lines at base; clypeus, cheeks, and the space between the frontal carinae have small, scattered, irregular punctures. Whole of head and thorax minutely and closely reticulate and semi-matt; on sides of thorax and on base of epinotum the sculpture has a more or less transverse direction. Scale with extremely fine encircling striae; gaster with even finer transverse striae. Legs microscopically reticulate-striate.

A single specimen, fastened, as related on p. 120, to the leg of a *Myrmecia forficata*, near Healesville, Victoria. The gaster is unfortunately somewhat damaged and some legs are missing. It is quite unlike any of the described forms of this subgenus from Australia. The *C. (M.) chalcus* Crawley, originally taken at Yallingup, comes nearest this species, but differs principally in colour. It has since turned out to be a very abundant species in Western Australia. See Ent. Rec. xxx. 5, 1918.

29 Holland Park Road,
London, W. 14.
March 1922.

SOME INDIAN COLEOPTERA (8).*

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

The eighth contribution of this series contains descriptions of, or notes on, the few known Dasytids inhabiting the Himalaya, the Nilgiri Hills, etc., nineteen in all. Three others have already been recorded by me from India, *Eulobonyx exasperatus* and *E. sericeus* Champ. (Ent. Mo. Mag. 1920, pp. 71, 72) and the cosmopolitan *Acanthocnemus nigricans* Hope (= *ciliatus* Perris) (*op. cit.* 1922, pp. 77-79). A peculiar *Cis* is also described. The species enumerated in this paper are

* Continued from *ante*, p. 76.

as follows, the genera marked with an asterisk being new to the Indian fauna :—

| DASYTIDÆ. | | |
|--|--|--------------------------------------|
| * <i>Haplocnemus moestus</i> Gorh. | | <i>Dasytes scabricollis</i> , n. sp. |
| „ <i>indicus</i> , n. sp. | | „ <i>kashmirensis</i> , n. sp. |
| * <i>Donaldia maindroni</i> Pic. | | „ <i>danacaeoides</i> , n. sp. |
| * <i>Procerallus</i> (n. gen.) <i>aplocnemiformis</i> Pic. | | „ <i>kumaonensis</i> , n. sp. |
| * <i>Amauronia westwoodi</i> , n. sp. | | „ <i>speculifer</i> , n. sp. |
| * <i>Danacaeomimus</i> (n. gen.) <i>nigropectus</i> , n. sp. | | „ <i>monilicornis</i> , n. sp. |
| <i>Dasytes cambiensis</i> Gorh. | | „ <i>breviusculus</i> , n. sp. |
| „ <i>mutabilis</i> , n. sp. | | „ <i>aureescens</i> , n. sp. |
| „ <i>aeneonitens</i> , n. sp. | | CISIDÆ. |
| „ <i>discretus</i> Gorh. | | <i>Cis fasciculosus</i> , n. sp. |

HAPLOCNEMUS Stephens.

1. *Haplocnemus moestus*.

Dasytes moestus Gorh. Ann. Soc. Ent. Belg. xxxix, p. 323 (1895).

Hab. Belgaum (*Andrewes*).

Gorham, in describing this species from numerous unset examples, alludes to its oblong, convex body, the coarse elytral puncturing, and the securiform apical joint of the maxillary palpi; but he does not appear to have noticed the long free appendage of the tarsal claws, a character bringing it into *Haplocnemus* Steph. A cinereo-pilose, brassy-black or aeneo-piceous insect, with the two basal joints of the antennae testaceous (a streak on 1 above excepted) and the others piceous, the legs piceous, with the tarsi paler; the antennae of the ♂ longer than in the ♀, and with joints 5–10 more strongly serrate; the elytral epipleura long and sharply defined. *H. moestus* (length $2\frac{1}{2}$ –3 mm.) is smaller than any European *Haplocnemus* known to me, and has comparatively slender antennae, and, as Gorham remarks, it is not unlike *Cis micans* F. *Dasytes* (*Indiodasytes*) *madurensis* Pic (Mélanges exot.-ent. xviii, p. 14, 1916), from Madura, seems to be an allied form, but it is said to have the epipleura “fere nullis.”

2. *Haplocnemus indicus*, n. sp.

Elongate, convex, shining, cinereo-pilose, brassy-black, the palpi, antennae, and legs black, the tarsi paler. Head much narrower than the prothorax, closely punctate; antennae (♂) moderately long, moderately stout, with joints 5–10 triangular, (♀) a little shorter and slender. Prothorax short, arcuately narrowed anteriorly, sparsely, rather coarsely punctured, the punctures showing a tendency to become longitudinally confluent on the disc in some specimens. Elytra a little wider than the prothorax, moderately elongate, coarsely, closely punctured, the epipleura long.

Length 3–3½ mm.

Hab. Nilgiri Hills (*H. L. Andrewes*), Madras (*ex coll. Tomlin*).

Four specimens, including one ♂; the ♀ from Madras is labelled as having been captured in Nov. 1907. Larger and more elongate than *H. moestus*, the antennae entirely black, and a little longer and stouter. The puncturing of the prothorax is variable.

DONALDIA Alluand.

1. *Donaldia maindroni*.

Xamerpus maindroni and vars. *pallidithorax*, *bimaculata*, and *unimaculata* Pic, L'Echange, xxii, pp. 7, 8 (1906).

Oblong, convex, shining, clothed with rather long, semierect, pallid hairs; variable in colour, according to the predominance of the black or testaceous markings—the darker examples with the margins of the prothorax, the elytral epipleura, and an oblique streak on the disc below the base, testaceous and the rest of the surface infuscate, the lighter individuals with the head, prothorax, and elytra testaceous, and the elytra with a transverse or triangular scutellar patch, extending down the suture and sometimes dilated into a triangular common patch at the middle also, a spot or streak opposite to this near the margin, and an oblique streak towards the apex, infuscate or black; the antennae with joints 1-4 testaceous and the others black or piceous, the legs testaceous, the metasternum and abdomen black; the head and prothorax alutaceous, closely, shallowly umbilicate-punctate, the elytra very coarsely punctured. Head much narrower than the prothorax, the eyes not prominent; antennae long, joints 2-4 rather slender, 5-10 moderately widened, triangular, longer than broad, 11 ovate; terminal joint of maxillary palpi broad, securiform. Prothorax broad, short, arenately narrowed anteriorly, the margins narrowly explanate. Elytra subparallel in ♂, broader and more rounded at the sides in ♀, at the base not wider than the prothorax, somewhat acuminate at the apex: the epipleura broad at the base, gradually narrowed, about reaching the first ventral suture. Legs rather short; tibiae narrow, simple; tarsal joints 1-4 short, subequal in width, the claws with a small membranous lobe at the base.

Var. ? The prothoracic margins and the elytra testaceous; the elytra each with an elongate, posteriorly-acuminate patch near the suture (enclosing a testaceous narrow streak), two short streaks exterior to it at the middle (the outer one extending forward to the base in one example) and another near the apex, black or piceous; the prothorax more rugose, and with a smooth median line at the base.

Length $2\frac{3}{4}$ -3 mm. (♂ ♀.)

Hab. Nilgiri Hills (*H. L. Andrewes*, *Sir G. F. Hampson*), Madras (*ex coll. Tomlin*), Coonoor (*types of Pic*), Nuwera Eliya and Dikoya, Ceylon (*G. Lewis*: i, ii. 1882).

Twelve specimens seen, including two of the variety?; the others vary greatly in the development of the elytral markings and in the colour

of the head and prothorax. This species is nearly related to *Donaldia clegans* Alluaud (Bull. Soc. Ent. Fr. 1898, pp. 102-104), from Mauritius, and should be included in the same genus, from which it differs in the less dilated outer joints of the antennae, the less developed prothorax, and the narrower elytral epipleura. *Malthacodes pictus* Waterh. (1876), from Rodriguez, and the European *Phloeophilus* Steph. are also somewhat similarly maculate forms. The narrow dark males have the general facies of a *Cis*. The type of *Xamerpus*, *X. vageguttatus* Fairm., from Madagascar, is said to have the five terminal joints of the antennae broad, dentate, and forming a club. *X. perforatus* Pic (1917), from Ceylon, has immaculate elytra, and the prothoracic puncturing stronger and less dense.

PROCERALLUS, n. gen.

Antennae 11-jointed, short, joints 7-11 thickened, 7-10 strongly transverse, serrate; terminal joint of maxillary palpi slender, fusiform; elytra coarsely punctured, with complete epipleura and raised suture; tibiae asperate externally; tarsi short, joints 1-4 subequal, 5 long, stout; tarsal claws equal, armed with a strong curved tooth; the other characters as in *Cerallus* Duval and *Haplocnemus* Steph.

Type, *Dasytes aplocnemiformis* Pic.

This Indian insect is so like the type of *Cerallus* Duv., *C. rubidus* Gyll., in its general structure, that, till the antennae are examined, it would appear to belong to that genus, in which these organs are 10-jointed. The tarsal claws (not noticed by Pic) are similarly toothed in the two genera.

1. *Procerallus aplocnemiformis*.

Dasytes aplocnemiformis Pic, Bull. Soc. Zool. Fr. p. 97 (1915).

Hab. India (*Mus. Brit.*), Khasia Hills (*type of Pic*), W. and Central Almora Divisions of Kumaon, Nainital (*H. G. C.*: xi.1916, x.1917, ix.1918), Mussoorie (*coll. Andrewes*).

A very hairy, brassy-black, convex, elongate insect, with the antennae and legs partly testaceous; the antennal joints 1 and 2 stout, 3 narrow, much longer than 2, 4-6 short, 7-10 broad, short, 11 ovate; the head and prothorax alutaceous, and rather closely, shallowly, umbilicate-punctate; the elytra long, coarsely, closely punctured; the legs rather stout, the tooth of the tarsal claws black and conspicuous. The ♀ has the elytra a little widened posteriorly. The ♂ has the terminal ventral segment glabrous and almost smooth, hollowed on each side, and

feebly emarginate at the apex, the aedeagus stout, pointed at the tip. The length varies from $3\frac{3}{4}$ –5 mm.

Found in numbers in Almora and at Mussoorie.

AMAURONIA Westwood.

Amauronia westwoodi, n. sp.

Elongate, narrow, shining, clothed with rather coarse, long, decumbent, greyish pubescence, which in fresh specimens of the ♂ is pure white on the anterior half of the head and condensed into a small patch on each side along the inner margin of the eyes; brassy-black, the head (a large transverse space on the vertex excepted), palpi, antennae, prothorax (a broad median vitta excepted), and legs testaceous, the eyes black; the head and prothorax finely, the elytra closely, rather strongly, roughly punctate. Head (with the large eyes) broader than the prothorax in ♂, of about the same width in ♀; antennae moderately long, slender, thickened towards the tip, joint 11 oval, stout, nearly as long as 9 and 10 united; terminal joint of maxillary palpi very large, securiform, that of the labial pair oblong, subsecuriform. Prothorax transversely subquadrate, narrowed anteriorly in ♀, and slightly so towards the base. Elytra much wider than the prothorax, moderately long, subparallel to beyond the middle in ♂. Tarsal joints 1–4 equal in width and gradually decreasing in length, the claws with a narrow, free membranous lobe at the base.

Length $2\frac{1}{2}$ –3 mm.

Hab. W. Almora and Ranikhet Divisions of Kumaon (H. G. C. iii.1919, etc.).

Twelve specimens. Differs from the type of the genus, *A. subaenea* Westw., from Corfu, in the testaceous front of the head and sides of the prothorax, the much broader securiform apical joint of the maxillary palpi, the more slender, testaceous antennae, and the less rounded sides of the prothorax. The structural details of the genus were figured by Westwood in 1839. The Himalayan *Dasytes discretus*, queried by Gorham as belonging to *Amauronia*, has a small fourth joint to the tarsi and a narrow fusiform apical joint to the maxillary palpi; it is here included under *Dasytes*.

DANACAEOMIMUS, n. gen.

Labrum short; joint 4 of maxillary palpi narrow, long, subfusiform; antennae 11-jointed, 9–11 wider than those preceding; head short, the broad intra-ocular space parallel-sided; eyes oval, not prominent, lateral; prothorax oblong; elytra parallel, without definite epipleura; abdomen with five segments exposed; tibiae slender; tarsi with joints 1–4 short, subequal in width, the claws equal, short, widened at the base; body as in *Danacaea*, elongate, closely pubescent.

Type, *D. nigropectus*.

This genus is a Himalayan representative of *Danacaea* Kies., many species of which are known from the Palaearctic region. The equal tarsal claws separate it at once from *Danacaea*, and the form of the tarsi themselves excludes it from *Dasytes*. The pallid coloration of the upper surface and the fine adpressed pubescence give the present insect the facies of an elongate narrow Cryptophagid. *Indiodasytes* Pic (1916) also wants definite epipleura to the elytra.

1. *Danacacomimus nigropectus*, n. sp.

Shining, rufo-testaceous, the eyes, meso- and metasternum, and the ventral segments 1-3 or 2 and 3 black, the antennae (the infusate outer joints excepted), palpi (the partly or wholly black apical joint excepted), legs, and the rest of the abdomen testaceous, the elytra usually slightly infusate, with the humeri and apex paler, in one specimen entirely testaceous; thickly clothed with fine, pallid or whitish, adpressed pubescence; the entire upper surface densely, very finely punctate. Head (with eyes) nearly as wide as the prothorax in ♂, slightly narrower in ♀, the eyes moderately large; antennae rather short, the joints submoniliform, 5 and 7 distinctly wider than 6 or 8, 9-11 slightly stouter, 9 and 10 transverse. Prothorax moderately convex, longer than broad, sinuously narrowed from the middle forward and obliquely narrowed posteriorly. Elytra parallel, long, much wider than the prothorax, bluntly rounded or subtruncate at the tip. Beneath more shining, very finely punctured, the metasternum almost smooth in the middle.

Length 2-2½ mm.

Hab. Ranikhet Division of Kumaon (H. G. C.).

Eight specimens.

(To be continued.)

CRITICAL NOTES ON THE HON. H. ONSLOW'S PAPER, "MELANISM IN
ABRAXAS GROSSULARIATA var. *VARLEYATA*."

BY G. T. PORRITT, F.L.S.

The Hon. H. Onslow has very kindly sent me a copy of his paper under the above heading, which appeared in the "Journal of Genetics," vol. xi. No. 2, September 1921, and which paper was discussed at the last meeting of the British Association at Edinburgh. The paper is a most interesting and valuable contribution to the literature on the subject, for, although so far as the breeding results are concerned, it contains nothing that has not for many years been known to those specially interested in *Abraxas grossulariata*, the facts have never previously been

published which show in detail, and with diagrams, the biological facts, as has been done here, thus bringing the account of the variety *varleyata* into line with other melanic and other varieties, which have been worked out by the same author, by the late Professor Doncaster, and others, and which will be of so much use to future students. But as several of the minor details of the paper are misleading, comment upon them seems necessary. Taking them in rotation, in the footnote on p. 124 it is stated "it is possible that the variety *albovarleyata* is *exquisita*," whereas if the two names did represent the same form, the reverse would be the case, *albovarleyata* having been named and described in the Ent. Mo. Mag. of April 1917, whilst the description of *exquisita* (or *varleyata-exquisita* as it should be called, for it is a *varleyata*), did not appear until a year later (Ent. Record, 1918, p. 189), so that *exquisita* would become *albovarleyata*.

Since sending me the paper, however, Mr. Onslow has very generously given me a specimen (along with several other interesting varieties of the species bred in the course of his experiments) of what he evidently regards as the variety *exquisita*, and which undoubtedly is the same form as my *albovarleyata*. Mr. Onslow's specimens were obtained by crossing the var. *varleyata* with var. *lacticolor* (*flavo-fuscivaria*), and it is evidently much easier to breed the form from such crossing than it is from pairings of pure *varleyata*, from a pairing of which mine was bred. But this specimen of Mr. Onslow's does *not* agree with Mr. Raynor's original description of var. *exquisita*, which reads: "Fore-wing with black shoulder-knot at base; then a broad white median band containing a black discal spot; then a broad black band extending to outer margin, except that it is bordered outwardly with a band of large white cuneate blotches edged with black towards the fringes. Hind wing without black shoulder-knot, with base therefore white, *the rest of the wing to the outer margin similar to the fore wing.*" The italics are mine. Neither in Mr. Onslow's specimen nor my own is there any trace whatever of a black band on the hind wing, which to agree with the description there should be. Mr. Raynor's description of the upper side, indeed, agrees well with the most pronounced form (as to the white cuneate marks) of the male *varleyata* as it occurs wild here, though it appears to have considerably more white on the under side.

Then on p. 127 Mr. Onslow is certainly in error in stating that the males of *varleyata* are considerably in excess of the females, for when an

entire brood is reared through, the sexes are equal in number, almost to a moth. This I have proved over and over again. The number of moths reared from Mr. Onslow's broods seems to have been small, and I can only suppose that there was considerable mortality among his larvae. Disease often attacks the broods when the larvae are well grown, and as the larvae of the females are so much bigger than those of the males, and are longer in feeding up, the mortality is naturally much greater among them. On p. 128 it is stated that "many of the families coming from the strains obtained from Mr. Newman and Mr. Porritt showed an increased development of black pigment, which is not apparent in the families obtained from Mr. Raynor's strain." This is easily accounted for in my case by the fact that in the strain from which I sent Mr. Onslow the eggs, and which was from the first very dark, I had for several years been trying to obtain moths entirely black, and so had selected each year the blackest moths in both sexes for pairing. Eventually I did eliminate the white rays from practically all of the male specimens, and also the white band from the fore wings of some of them. Possibly Mr. Newman had been trying to do the same thing with his. On p. 134 a section of the paper is headed "Vars. *Actinota* and *Leucosticta*." *There are no vars. actinota and leucosticta of varleyata!* Mr. Raynor, from having no knowledge of *varleyata* in a wild state, or for some other reason, applied these names to two of the most ordinary forms of the male *varleyata*, and, as a matter of fact, Mr. Onslow's figures 8 and 9 on the plate accompanying his paper, labelled *leucosticta* and *actinota* respectively, exactly represent two of the most ordinary forms of the male *varleyata*, as it occurs wild in the gardens here. The original description of *varleyata* (in Trans. Yorks. Nats. Union, and not in Ent. Mo. Mag. as inferred by Mr. Onslow) was made from the female only, as I did not then know the male, and of course had no suspicion that the variety would be sexually dimorphic, as it afterwards proved to be. But to apply other names to the males of a moth of which the female had already been named transgresses all the accepted laws of entomological nomenclature. One might just as reasonably give different names to all the males of the vast number of moths in which the sexes differ in colour or markings. These names of Raynor's are totally invalid, as are also those he has applied to the different forms of the female of *varleyata* (including a new name for the type form!). These names of the female Mr. Onslow has very properly ignored, though he gives good figures of several of the forms on his plate. The confusion caused by such naming as this is well

exemplified in this case. The short abstract of the paper printed by the British Association, concludes by stating that no female *varleyata* showing the white radii had been bred. Yet in the very next sentence in Mr. Onslow's paper, from which this observation was taken, we read: "Recently, however, this observer" (myself) "has bred from radiated stock a *leucosticta* ♀." As a point of fact, two seasons ago I bred several females with the male white radiate markings as strongly developed as Mr. Onslow's figure 9 labelled *actinota*. Of course, if these ordinary forms of the male are not to be regarded as *varleyata*, a radiated female *varleyata* never could be bred! I have also bred a number of specimens of *varleyata* having broad black rings around the body, and one or two with the body almost completely black, which Mr. Onslow states has never been done. Lastly, there must be some mistake about the figures 11 and 12 on Mr. Onslow's plate, which are referred to as var. *hazeleighensis*. They certainly do not represent that well-known form, nor have they the least resemblance to it. They come near to being good representations of two of the Aberdeen forms of *grossulariata*, but have nothing whatever to do with *hazeleighensis*.

Elm Lea, Dalton, Huddersfield.

May 6th, 1922.

SOME NOTES ON *PONERA PUNCTATISSIMA* ROGER.

BY HORACE DONISTHORPE, F.Z.S., F.E.S., ETC.

In 1921, Dr. F. Santschi redescribed and figured the worker of *Ponera punctatissima* Roger, for which he gave the following explanation:—

In August 1920 he captured some 17 ♂♂ of a *Ponera* at Hammamet, Tunisia, at the bottom of an old well, which was damp but without water. These were identical with a specimen taken by Théry at Rabat in Morocco, and an example in his collection from Jyväskylä (Sahlberg) received from Mons. Forel. On referring to the descriptions and figures of *P. punctatissima* given by Emery and Bonhoit, he found that they appeared to have a much shorter scape to the antennae than that of his examples, and he therefore came to the conclusion that he had discovered a new species. He sent a specimen to Mons. Emery, who identified it with *P. punctatissima* Rog. He next sent an example to Mons. L. Berland, of the Paris Museum, and asked

him to compare it with Roger's type in the André collection. M. Berland sent him a sketch of the head of the type and told him that: (1) The scape reaches the posterior border of the head; (2) the frontal furrow is broad to nearly the middle of the head, and then continues in a fine line which reaches the posterior border. Being fresher, his example was somewhat lighter in colour than the type, but otherwise agreed with it in all particulars. Mons. Santschi therefore considered it was necessary to correct the figures and descriptions of *P. punctatissima*, which give it too short a scape and do not mention the frontal furrow. This last character easily separates it from both *P. coarctata* Latr. and *P. edouardi* Forel. In his figure he shows the thorax and petiole in profile; the thorax and abdomen from above; the head from above; and the labial and maxillary palpi. Mons. C. Emery, in his ants of the Palaearctic region (1919), figures the head of the ♂ with the scape not reaching the posterior border of the head. In his table he distinguishes *coarctata*, *japonica*, *edouardi*, and *punctatissima* from *abeillei* and *ragusai*, by the mesonotum being separated from the pleura by a suture (Santschi does not show this suture in his profile figure of *punctatissima*, though he does for *coarctata* v. *atlantis*); and *punctatissima* from *edouardi* by the scape not reaching the posterior border of the head.

In "British Ants" (1915) I did not use these characters, as there are many which serve to separate *punctatissima* from *coarctata*, our only other British species. Recently, however, when my friend Mr. Harwood sent me ♂ ♂ and winged ♀ ♀ of a *Ponera* from Westerham (Donisthorpe, 1922), which I at once saw were not *coarctata*, I used Emery's table to make sure they were not some species other than *punctatissima*, and I found that the mesonotum was separated from the pleura by a faint but perceptible suture, and the scape did not reach the posterior border of the head!

After I had seen Dr. Santschi's paper, I proceeded to overhaul all the specimens of *P. punctatissima* I could get hold of in Britain. These were from Edinburgh; Oxford; Old Ford, London; Bromley; Westerham; Chatham; Queenborough; Southsea; Gibraltar; and St. Helena.

The specimens from Oxford included the type of *P. tarda* Charsley (for the loan of which I have to thank my friend Prof. E. B. Poulton), about which species Er. André wrote (1881):—"M. Charsley d'Oxford a décrit, sous le nom *P. tarda*, une espèce trouvée en Angleterre et qui n'est autre que la *P. punctatissima* ainsi que j'ai pu m'en assurer par

l'examen d'exemplaires typiques ♂, ♀ et ♂/♀ qu'a bien voulu me communiquer l'auteur."

To ascertain whether the scape reached the posterior border of the head, I did not trust to measurements, but in every case I bent the scape back right over the head. This can be done without any danger to the specimen if the antenna be first damped with a paint-brush dipped in water or, better still, in wood-naphtha. In one specimen, taken by me at Queenborough in 1912, the scape almost reaches the posterior border; but in the case of all the others, I should say it distinctly did not, and in some this was very evident. I asked my friend Mr. Bedwell, who has taken the species at Old Ford, and also at Queenborough, to examine his series in this way. He tells me that in the former specimens the scape does not reach the posterior border, but "the scape of the Queenborough specimen however does appear to just about reach the posterior border of the head."

I have therefore come to the conclusion, from the examination of the above material, that the length of the scape varies considerably in this species, as does also the presence, distinctness, or absence of the suture which divides the mesonotum from the pleura. The frontal furrow appears, however, to be a good and constant character.

Mons. Emery tells me that he has 2 ♂ ♀ from Switzerland and 1 ♀ from Paris which show the suture separating the disc of the mesonotum from the pleura; and 1 ♂ from Switzerland (from the same colony as the other two) and 2 ♂ ♀ from Africa which do not show the suture. The ♂ ♀ which show the suture are a little more robust and have the thorax more developed. They are somewhat gynaeceoid. The scapes, however, do not reach the posterior border of the head. Roger's type of the ♂ of *P. punctatissima* is in the Museum at Berlin. *Ponera punctatissima* is a very interesting and rare species, of obscure habits; occurring in hot-houses and buildings, but also at large in nature. A full account of its life-history, as far as is known, can be found in "British Ants."

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"Durandesthorpe," 19 Hazlewell Road,
Putney Hill, S.W. 15.

AN APHID GENUS AND SPECIES NEW TO BRITAIN
(*TRILOBAPHIS CARICIS*).

BY FRED. V. THEOBALD, M.A.

TRILOBAPHIS, gen. nov.

Head with three large lobes in front; the median one almost globular and slightly dorsal. Antennae very short, reaching to about the middle legs, of six segments; the basal segment large, and with an inwardly projecting blunt process. Proboscis short and thick. Cornicles long, thick, cylindrical, constricted at apex, slightly swollen on the inner side towards the apex; with marked imbrication; about two-thirds the length of the antennae. Cauda small, but prominent, about one-third the length of the cornicles, and about the same width to slightly narrower. Anal plate bluntly triangulate. Legs short, the hind pair not projecting beyond the apex of the body. Eyes large, with prominent ocular process.

Type in the writer's collection.

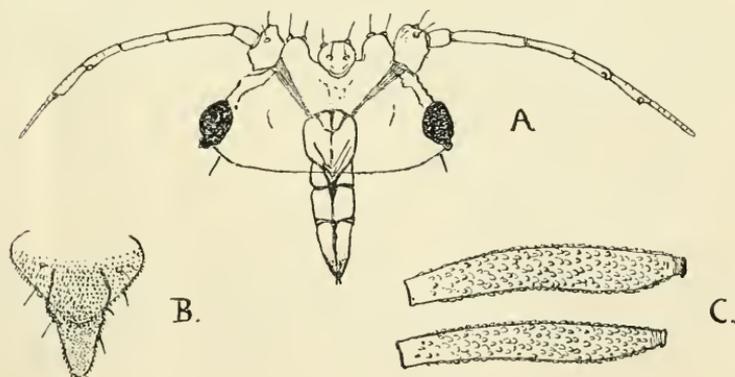


Fig. 1.—*Trilobaphis caricis*, sp. nov.

'A. Head of apterous viviparous ♀; B. Cauda and anal plate; C. Cornicles.

The apterous female stage only is known and is very marked, owing to the peculiar structure of the head and the very marked large cornicles.

Trilobaphis caricis, sp. nov.

Apterous viviparous female.—Green to dull yellowish-green. Eyes deep red and large. Apex of antennae slightly dusky, also the tarsi and apices of



Fig. 2.—*Trilobaphis caricis*, sp. nov.
apterous viviparous ♀. (×33.)

the tibiae. Elongated oval. Head with three large frontal processes, the median one more or less globular, the lateral ones with two hairs each, arising from marked mammae: the median with four hairs. The short antennae do not quite reach the 2nd coxae; of six segments; basal segment much larger than 2nd, with a blunt apical projection on the inner side, with two hairs: 3rd segment longer than 4th, not quite so long as the 6th; 4th and 5th about equal, the latter with a round sub-apical sensorium: 6th with basal area about as long as 5th; the flagellum a little longer than the base; a few faint imbrications on the 6th. Proboscis very short, reaching midway between the 1st and 2nd coxae; apex black. Thoracic segments distinct. Cornicles thick, cylindrical, more than half the length

of the antennae, constricted at apex, and in some slightly swelling towards the apex on the inner side, with marked imbrication of peculiar form and with crenulated edges. Cauda prominent, about one-third the length and scarcely as wide, to as wide, as the cornicles: finely spinose, with two hairs one side, one the other. Anal plate bluntly triangulate, spinose, with a few hairs. Legs short; the hind pair not reaching to the end of the body; tibiae and apices of femora with fine hairs. The thick cornicles project inwards and only just extend beyond the tip of the cauda.

Length 1.5 to 2 mm.

FOOD-PLANT. *Carex remota*.

LOCALITY. Near Bangor, N. Wales (*C. L. Walton*).

OBSERVATIONS. Described from a number of apterous viviparous females and young, found by Mr. C. L. Walton on *Carex remota* growing on the banks of the Ogwen, near Bangor. It is a very strange looking Aphid. and bears a general resemblance to *Atheroides* and *Thripsaphis*, but the processes on the head clearly place it, in conjunction with the large cornicles, in the Macrosiphinae. It is one of the most marked of our British Aphides that I have seen.*

Wye, Kent.

* Another new British Aphid genus and species, *Laingia psammae*, from Littlestone, Kent, has recently been described by Mr. Theobald (Bull. Ent. Res. xii, pp. 429 & 430, Feb. 1922.—Eds.)

ORCHAMUS BELLAMII, SP. N., A NEW PAMPHAGID GRASSHOPPER
FROM THE CANARY ISLANDS.

BY B. P. UVAROV, F.E.S.

♀. Antennae 10-jointed, with the base dilated and triangular in transverse section, longer than the head and pronotum together. Frontal ridge strongly prominent and very deeply furrowed between the antennae, suddenly lowered, feebly widened and shallowly impressed below them. Fastigium of the vertex distinctly sloping, longer than broad, with the margins distinctly raised, sharp and granulose, continuous with the margins of the frontal ridge; its surface somewhat impressed, punctured; a linear longitudinal carinula runs from the occiput over the whole vertex, forming a narrow bifurcation at the apex of the fastigium. Eyes strongly prominent, obliquely placed, somewhat higher than the subocular distance; the distance between the eyes is more than the vertical diameter of an eye. Pronotum short, moderately compressed, rugulose; median keel tectiform, in profile obtusangularly arcuate, the highest point being just before the middle of the prozona, while the keel is very low in metazona and does not reach its hind margin; typical sulcus well expressed, but cutting the median keel not very deeply; prozona about five times as long as the metazona; lateral lobes very uneven, with deep transverse sulci; their lower margin straight, the fore angle 90° , the hind one slightly more. Prosternal tubercle rotundate-quadrangular, low, with the fore margin scarcely raised, its surface rugulose, but not tuberculate. Elytra very short, extending scarcely beyond the middle of the mesonotum, and almost linear. Tympanum open, small. Hind femora very narrow, their externo-median area being less than twice as broad in its middle as the supero-externa; the upper carina low, densely granulose; both lower and upper carinae of the externo-median area granuloso-denticulate. Hind tibiae with 8-9 spines on each side. The whole underside, sides and legs clothed with dense grey hairs.

General coloration reddish-brown, with some parts creamy-white. Antennae brownish-grey, with large punctures and margins black. Face and cheeks creamy-white, with dense and coarse red-brown puncturation, which disappears in the upper part of the cheeks (*i. e.* at the lower margin of the eyes), which is smooth, creamy-white; occiput and vertex red-brown, with a creamy-white honeycombed net of carinulae, disappearing at the sides of the occiput; margins of the fastigium, as well as the median carina of the head and two short lateral occipital carinulae, black or blackish; the occiput margined with black behind. Pronotum reddish-brown; sides of the lateral keel creamy-white, with dense and coarse red-brown punctures; lower half of the lateral lobes also creamy-white, with scattered coarse blackish punctures; the crest of the median keel and series of small round spots along all the margins, as well as some indefinite spots in the upper part of the lateral lobes, black. Mesopleura and metapleura with dirty-white honeycombed sculpture. Mesonotum, metanotum and abdomen from above red-brown; mesonotum indistinctly rugulose, with the fore lower angles smooth; metanotum and abdomen rugulose throughout, with a low granulose median keel, which is blackish up to the end of the first tergite; both mesonotum and metanotum with a few small blackish marginal spots. Fore and middle legs creamy-white

with brownish and blackish puncturation. Hind femora reddish-brown; the externo-median area creamy-white, almost smooth, with deep blackish punctures scattered along the middle, and with black granulated marginal carinae; the knees blackened laterally. Hind tibiae blackish on the underside, and creamy-white, punctured with reddish-brown on the rest of their surface; their spines black-tipped. The underside paler and redder than the upperside.

Length of body (somewhat extended) 72 mm.; pronotum 8.5 mm.; elytra 1.5 mm.; hind femora 23 mm.

Two females (type and paratype) from Hermigua, Gomera, Canary Islands, captured 21.ii.1922 by Mr. C. E. Bellamy, to whom the species is dedicated. Both are in the British Museum collection.

I have included this striking insect in the genus *Orchamus*, though it does not agree very closely with all the generic characters; thus, the presence of a median carinula on the vertex and occiput, the extreme reduction of the elytra, and the peculiar shape of the hind femora, may be considered as characters of generic value. I, however, refrain from describing a new genus until the male of the present species is known.

The genus *Orchamus* includes five species, and is restricted in its distribution to the East of the Mediterranean—to Syria, Palestine, Crete, and Cyprus, and that also speaks in favour of the new species being generically distinct from the Eastern forms; but there is no doubt that it is much more closely related to them than to any genus of *Pamphaginae* of N.W. Africa and Spain.

It is very interesting to note that examples of the same kind are known in the affinities of Canarian flora. Thus, J. Pitard and L. Proust* pointed out that the following endemic Canarian plants have Eastern affinities: *Ranunculus cortusaefolius* Willd. to *R. creticus* L. from Crete, and *Parolina ornata* W. to *Diccratella floccosa* Boiss. from Persia and to *D. canescens* from Sokotra; and that some of the Canarian *Convolvuli* are nearly allied to species of Asia Minor, Persia and Sokotra.

The fact that two odd specimens of Orthoptera, picked up by Mr. Bellamy quite accidentally, proved to belong to a new and extremely interesting species, indicates that our knowledge of the Orthopterous fauna of the Canarian Islands is very unsatisfactory; indeed, the latest list of Canarian Orthoptera, by H. Krauss †, includes 64 species only, while more than 200 are known from Morocco, the fauna of which is scarcely richer than the Canarian one. A thorough investigation of the latter is, therefore, badly wanted, the more so,

* "Les Îles Canaries. Flore de l'Archipel." Paris, 1908.

† "Systematischer Verzeichniss der canarischen Dermapteren und Orthopteren mit Diagnosen der neuen Gattungen und Arten." Zoolog. Anzeiger, xv. 1892, pp. 163-171.

as it should give many important clues to the past history of the Mediterranean fauna. In fact, Mr. Bellamy's discovery is highly important in this respect, since it speaks most decidedly against the generally adopted theory of the volcanic origin of the Canaries, and in favour of their (or, at least, of some of them, like Gomera) being remnants of a sunken continent, as the possibility of a recent introduction in the islands of such a sluggish insect as a member of the *Pamphaginae* is quite out of the question.

May 1922.

The Life-History of the Pelobius tardus Herbst, by F. Balfour-Browne, M.A.—The attention of Coleopterists is called to Mr. Balfour-Browne's valuable paper on this well-known water-beetle (P. Z. S. 1922, part i, pp. 79-97, pls. i-iii, April 1922). He divides the subject under five headings: 1. The family Pelobiidae; 2. Britannic distribution of *P. tardus* (with a typo-map); 3. The Imago (habitat and habits, longevity in artificial environment, stridulation, sexual differences); 4. The Life-history (oviposition, incubation, vital staining of embryo, the larva, food of the larva, stomodaeum of the larva, habits of the full-grown larva); 5. The Life-cycle. On plate i the variation of the larva is shown (figs. 1-6), also the egg (figs. 7-10), and on plate iii (fig. 6) an elytron showing the stridulatory-file upon which the apex of the abdomen rubs, this being present on each of them in both sexes. The paper is too lengthy to quote in detail, and must be consulted for further particulars.—Eds.

Rhinocola eucalypti Mask. in England.—In 1916, Mr. H. Britten, while at the Hope Museum, Oxford, reared this species of *Psyllidae* through all its stages from material which he found on a *Eucalyptus* at Headington Hill House. Recently I have received examples of the same species from Dr. Hugh Scott. They were found by a nurseryman at Felixstowe, Suffolk, who says: "We have some [*Eucalyptus*] planted out in a border, some 20 feet high, and this fly was first noticed by the down or woolly substance falling on the plants underneath. It lives outdoors during the summer on plants used for bedding purposes. We keep it under by fumigation." The host-plant is *Eucalyptus globulus* (Blue Gum), the species upon which Maskell originally found the Psyllid in New Zealand, and this is the only recorded food-plant for it. *Rhinocola eucalypti* has been recorded from New Zealand, Australia, and S. Africa. Maskell's description and figures (Trans. New Zeal. Instit. vol. xxii, 1890, p. 100) make the species readily recognizable. The wing venation of many of the specimens I have seen is abnormal in that the median is unbranched.—F. LAING, Natural History Museum: May 14th, 1921.

Variation in the genus Psithyrus Lep. in the neighbourhood of Leeds.—In Dr. R. C. L. Perkins' clear summary of the principal variations known to occur in Britain (Ent. Mo. Mag. April 1921, p. 82) he opens with the remark that the many variations have been insufficiently studied and "their distribution especially is very imperfectly known." This fact is my excuse for offering the following list of varieties which fell to my net in 1920 and 1921 in the northern outskirts of Leeds, chiefly in the suburb of Roundhay. All six British species

were taken, five of them in goodly numbers, but of *P. vestalis* Fourcr. only a single example, a male. The scarcity of this inquiline in view of the abundance here of its host-species, *Bombus virginalis* K., seems remarkable. Possibly the altitude (about 560 feet) in a northern county may be unfavourable to the parasite but not to the host. The varieties are indicated below by the lettering used in Dr. Perkins' article.

Psithyrus campestris Panz. ♂♂:—var. β , 2 spns.; var. γ (*rossiellus* K.), common; var. δ (*leanus* K.), 1 spn.; var. ϵ (*franciscanus* K.), 6 spns.; var. ξ (*subterraneus* K.), 2 spns. (1 spn. of var. β has so few black hairs that it seems to be almost referable to var. α ; the yellow "collar" is less bright in the spn. of var. δ than in those of var. γ .) ♀♀:—var. β , several seen.

P. distinctus Pérez. ♂♂:—var. α , 2 spns.; var. β , in great numbers; var. γ , 2 spns. (Dr. Perkins records var. α from Perthshire only.) ♀♀:—var. α , common; var. β , 1 spn.; var. with dull yellow fringe on scutellum and basal abd. segment, 1 spn. (This last resembles *P. barbutellus*.)

P. barbutellus K. ♂♂:—No marked variation noticeable, 10 spns. ♀♀:—1 spn. with basal abd. segment entirely black; 6 have it distinctly yellow-banded.

P. quadricolor Lep. ♂♂:—var. β , very common; var. γ , 10 spns.; var. with abd. segments after the 2nd clothed with yellow hairs, black subapical band absent, 3 spns.; var. with yellow hairs absent or obscured, white band on abd. obscured and sooty, 2 spns.; var. like the last, except that the band on the abd. is obscure sooty yellow, 2 spns. (The two last appear to be melanic forms of var. β and var. γ respectively.) ♀♀:—var. α , 3 spns.

P. rupestris Fabr. ♂♂:—var. α , 4 spns.; var. β (*albinellus* K.), common; var. γ , 8 spns.; var. δ , 1 spn. (Transitional forms were frequent in this species, but very rare in the others.) ♀♀:—typical.

—A. E. BRADLEY, 8, Shaftesbury Avenue, Roundhay, Leeds: Dec. 19th, 1921.

Vanessa c-album L. in Hertfordshire.—A rather worn specimen of this butterfly was taken on Norton Common, Letchworth, on May 7th, visiting blackthorn blossom. This seems to be the first record of its appearance in North Hertfordshire, and the only notice of its occurrence in the County for many years. The records given in the Victoria County History are as follows:—Hertford, abundant prior to 1833 (*Stevens*); Broxbourne, 3 or 4 (*Stockley*); St. Alban's (*Field*). The last two records are probably at least fifty years old, but no dates are given.—RAY PALMER, Ingleholme, Norton Way South, Letchworth, Herts.: May 25th, 1922.

Obituary.—Henry Rowland-Brown, M.A., F.E.S., died, after a long and distressing illness, on May 3rd, at his residence at Harrow Weald. We hope to give a more extended notice of the life and work of this well-known and highly esteemed Entomologist in the next forthcoming number of this Magazine.

Review.

"THE ODONATA OR DRAGONFLIES OF SOUTH AFRICA." By Dr. F. RIS. Annals of the South African Museum, vol. xviii, part 3, pp. 245-452, pls. v-xii, text-figs. 1-77 (1921).

In 1908 Dr. F. Ris published in a German periodical an annotated catalogue of the Odonata of South Africa, which remained for many years the

standard authority on this particular geographical group. The present fine work, which is primarily addressed to English readers, originated in the desire of the Director of the South African Museum for "a descriptive and fully illustrated paper" "which would help the resident entomologist to get a reliable knowledge of the South African dragonflies." Much fresh material has been examined, and considerable progress has been made in our knowledge of the regional fauna. While the catalogue of 1908 enumerated 83 species, some of which have since proved to be merely nominal, in the work under notice no fewer than 111 species are dealt with, including 13 which are new to science. By means of helpful keys, lucid descriptions, and illuminating figures, the study of South African Odonata has now been made so easy and attractive that further collecting should follow as an immediate consequence, and it is to be hoped that, if *Argia concinna* and *Anax georgius* really occur in South Africa, as they are reputed to do, the fact may soon be established by fresh and well-authenticated captures.

Indications are not wanting that the work before us finally left its author's hands several years ago. *Notiothemis jonesi* and *Crocothemis saricolor*, for instance, continue to be designated as gen. et sp. nov. and sp. nov., respectively, notwithstanding the fact that both of them were fully described in the final instalment of Ris's monograph of the Libellulinae, issued in 1919. An unfortunate misprint, too, occurs twice on page 437, and again on page 442, where the generic name *Aethriamanta* each time appears as *Tethriamanta*, and fig. 3 on Plate VI. is placed upside down. All such blemishes, of course, are directly due to the abnormal conditions which have hindered production and communication for such a long period of time.

Particular interest attaches to the genus *Chlorolestes*, of which a sixth species is now described, not merely because it appears to be restricted to South Africa, but chiefly because its wing-venation presents an important character always found in the Lestidae and never in the Agrionidae, in which family *Chlorolestes* has hitherto been placed. Moreover, in an appendix by Mr. K. H. Barnard, the life-history of *Chlorolestes* is made known for the first time. The nymph shows undoubted relationship with that of the Australian *Synlestes*, a relationship which had been already inferred from the venational character to which allusion has been made. Furthermore, the adult female deposits its eggs, not in the stream in which the nymphs will afterwards pass their existence, but in punctures made in the young green shoots of the overhanging *Ilex* trees. Here, again, are Lestid affinities disclosed, for a similar habit has been observed in Europe in the case of *Lestes viridis*.—HERBERT CAMPION.

Society.

ENTOMOLOGICAL SOCIETY OF LONDON: *Wednesday, March 15th, 1922.*—Professor E. P. POULTON, M.A., F.R.S., etc., Vice-President, in the Chair.

The following were elected Fellows of the Society:—Messrs. Reginald Charles Treherne, Entomological Branch, Department of Agriculture, Ottawa, Canada; T. G. Sloane, Moorilla, Young, New South Wales, Australia; William Monod Crawford, B.A., Orissa, Marlborough Park, Belfast; Leonard

Charles Bushby, 11 Park Grove, Bromley, Kent; Arthur Morel Masee, "Park Place," The Common, Sevenoaks, Kent; Linnaeus Greening, "Fairlight," Grappenhall, Cheshire; John Wilson Moore, 151 Middleton Hall Rd., Kings Norton, Birmingham; John Edmund Eastwood, Wade Court, Havant, Hants.; Dr. Francis Arthur, M.R.C.S., L.R.C.P., 395 Bethnal Green Road, E. 2; and Dr. H. Silvester Evans, M.R.C.S., L.R.C.P., Lautoka, Fiji.

Mr. W. H. Tams exhibited a selection of insects, chiefly *Lepidoptera*, taken on the Mount Everest Expedition. Mr. O. E. Janson, a new species of *Euchroa*, and a female of the rare Saturniid moth *Argema millrei*, from Madagascar. Dr. C. J. Gahan, an example of the Indian Phasmid *Carausius morosus*, in which homoeotic regeneration had taken place, an amputated antenna having been replaced by a tarsus. Professor E. B. Poulton, F.R.S., who illustrated his remarks with lantern-slides, read some notes by Mr. A. H. Hamm on the occurrence of *Syntomaspis druparum* in hawthorn seeds in birds' droppings, and some notes by Dr. R. C. L. Perkins on the procryptic resting attitude of *Polygonia c-album*. He also exhibited some Chalcids, bred by Mr. J. Collins, from beetles in dog-biscuits and plum-branches. Dr. S. A. Neave read a letter from Mr. W. J. Harding recording the capture of *Polygonia c-album* at Holcombe in Devonshire, and some discussion took place as to the distribution and recent spread of this butterfly in the South of England.

Wednesday, April 5th, 1922.—The Rt. Hon. LORD ROTHSCHILD, M.A., F.R.S., etc., President, in the Chair.

The following were elected Fellows of the Society:—Messrs. William George Clutton, 136 Coal Clough Lane, Burnley; Edmund James Pearce, The Lodge, Corpus Christi College, Cambridge; George Evelyn Hutchinson, Aysthorpe, Newton Rd., Cambridge; Charles Herbert Lankester, Cartago, Costa Rica; Arthur D. R. Bacchus, 29 Abbotsford Rd., Redland, Bristol; and Captain Douglas S. Wilkinson, Kennington Vicarage, Ashford, Kent.

Lord Rothschild exhibited a group of mimetic *Lepidoptera* and *Hymenoptera* from South America. Mr. W. G. Sheldon, on behalf of Mr. T. Greer, series of *Epinephile jurtina* and *Pieris nupi*, from Co. Tyrone. Mr. A. W. Pickard-Cambridge, Zeller's types of a number of moths, mainly Crambids, from Egypt and Palestine. Mr. W. F. H. Rosenberg, an example of *Colaenites telesiphe tithraustes*, from Ecuador, in which the band of the hind wing is white as in the typical form. Mr. G. T. Bethune-Baker, series of *Heodes phlaeas*, and a specimen of *Zyguena transalpina* ab. *elongata* from Florence. Dr. G. A. K. Marshall, on behalf of Mr. B. P. Uvarov, some remarkable mimetic long-horned grasshoppers with their Cicindelid models. Dr. K. Jordan, F.R.S., a pair of the Agaristid moth, *Aegocera mahdi*, the male of which has a stridulatory organ; also a series of *Liphya brassolis*. Dr. S. A. Neave gave an account of the fauna of Mt. Mlanje, Nyasaland, and illustrated his remarks with lantern-slides, and with an exhibition of some typical insects from that locality.—S. A. NEAVE, Hon. Secretary.

G. A. BENTALL,

NATURALIST,

392 STRAND, LONDON, W.C. 2.

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THE NATURALIST:

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EDITED BY

T. SHEPPARD, M.Sc., F.G.S., F.R.G.S., F.S.A.Scot.,

THE MUSEUM, HULL;

AND

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WITH THE ASSISTANCE AS REFEREES IN SPECIAL DEPARTMENTS OF

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

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

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MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 41 Queen's Gate, S.W.7 (nearest stations: South Kensington and Gloucester Road).—Oct. 4th, 1922, at 8 p.m.

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

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 7 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

THE LONDON NATURAL HISTORY SOCIETY, now meets in Hall 40, Winchester House, Old Broad Street, E.C. 2, on 1st and 3rd Tuesdays in the month at 6.30 p.m. General meetings 1st Tuesdays, Sectional meetings 3rd Tuesdays. (No meetings in July or August indoors, but field excursions instead.)

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

ENTOMOLOGICAL SOCIETY OF HAMPSHIRE AND THE ISLE OF WIGHT.—This Society has developed from the Southampton and District Entomological Society. Meetings are held on the First Saturday afternoon of each month at Southampton, and other meetings will be arranged in important centres in the county from time to time. Activities being undertaken at the present time include the formation of a library, of collections of insects, and the compilation of a county insect fauna list. Will keen entomologists in the county who are interested please communicate with the

Hon. Sec., F. J. KILLINGTON, 1 St. Catherine's Road, Eastleigh, Hants.

SOME INDIAN COLEOPTERA (8).

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

(Continued from p. 131.)

DASYTES Paykull.

This genus, as might be expected, is well represented in the Himalaya; twelve species are contained in the collections before me, two of these having been found in abundance on flowers in Kumaon. One species, *D. aurescens*, in the absence of the ♂, is provisionally included in *Dasytes*; the others have a small fourth tarsal joint, as in *Dasytiscus*.

- 1 (10) Tarsal joints 1-3 broader than 4, the latter small; elytral margins not explanate.
- 2 (9) Antennal joints 5-8 equal or subequal in width; elytra longer.
- 3 (4) Prothorax longer, sometimes canaliculate; body elongate, metallic green, the legs and antennae black..... Species 1.
- 4 (3) Prothorax shorter, not canaliculate; body less elongate, aeneous, nigro-aeneous, or aeneo-piceous, the elytra wholly or in part testaceous in No. 2.
- 5 (8) Elytra without intermixed smooth raised points.
- 6 (7) Legs in great part testaceous Species 2-6.
- 7 (6) Legs black Species 7, 8.
- 8 (5) Elytra with intermixed smooth raised points; legs testaceous
..... Species 9.
- 9 (2) Antennal joints 5-8 unequal in width; elytra shorter; legs infuscate: species very small..... Species 10, 11.
- 10 (1) Tarsal joints 1-4 slender; elytral margins explanate, body less elongate, legs testaceous Species 12.

1. *Dasytes cambiensis*.

Dasytes cambiensis Gorb. Ann. Soc. Ent. Belg. xxxix, p. 323 (1895)¹.

Dasytes himalayanus Pic, L'Echange, xxvii, p. 133 (1911)

Hab. N. W. Provinces (*ex coll. Andrewes*), Chamba¹ (*C. Somers-Smith*), Simla (*H. Chippendale*: vi, vii.1909), N. W. Himalaya² (*E. P. Stebbing*), Sunderdhunga and W. Almora in Kumaon (*H. G. C.*: vi.1917, v, vi.1919).

Eighteen specimens of this species are before me, varying in the intensity of the puncturing of the prothorax and elytra and in the development of the median channel on the prothorax, which in some examples is complete and well-defined and in others nearly or quite obsolete. An elongate, metallic-green insect, with the legs and antennae black; the prothorax longer than broad, narrowed and somewhat constricted anteriorly, and very sparsely punctured on the disc in ♂; the

elytra strongly punctate: the tarsi with a small fourth joint and the claws slightly widened in their basal half; the antennae of the ♂ elongate and rather stout, that of the ♀ much shorter. The puncturing of the prothorax is very coarse and rather close in some of the ♀ ♀ from Kumaon. The Simla specimens were found on the flowers of *Castanea vesca*. Length $4\frac{1}{2}$ –6 mm.

2. *Dasytes mutabilis*, n. sp.

Moderately elongate, very shining, aeneous or nigro-aeneous, the palpi and antennae (except at their apices), legs (tarsal claws excepted), elytra wholly or in part (usually with a triangular brassy scutellar patch extending down the suture), and sometimes the entire abdomen in ♀, testaceous; clothed with fine, adpressed, pallid pubescence, the head and prothorax with intermixed long, soft, erect hairs, the elytra with scattered, semierect, flavous setae, the margins flavo-ciliate. Head closely punctulate, nearly as wide as the prothorax in ♂; antennae rather stout and moderately long in ♂, shorter in ♀, thickening towards the tip, joints 5–10 subserrate, 11 acuminate-ovate. Prothorax convex, a little broader than long, rounded and crenulate at the sides, more narrowed anteriorly in ♀; densely, rugulosely punctured at the sides, sparsely punctate or almost smooth down the middle of the disc. Elytra wider than the prothorax, parallel to near the apex, the latter rounded; closely, rather strongly punctate, the interspaces flattened and feebly rugulose; epipleura very narrow.

Var. The brassy coloration on the elytra extending nearly or quite to the tip; the femora and the outer joints of the antennae slightly infusate. (♂.)

Length $2\frac{1}{10}$ –4 mm. (♂ ♀.)

Hab. Upper Gumti Valley, W. Almora, and Kosi River, Ranikhet Division of Kumaon (*H. G. C.*: iii–vi.1917, iv.1919, iii.1920).

A long and variable series, ♀ ♀ preponderating. The colour of the elytra and of the ♀ abdomen is inconstant, as in the somewhat similar S. European and N. African *Dasytes flavescens* Gén e, an insect I have seen in plenty in Tunis and Algeria. *D. mutabilis* is nearly allied to *D. discretus* Goh., from Chamba, differing from it in the testaceous legs and antennae, the latter not so stout, the elytra usually in part or entirely testaceous.

3. *Dasytes aeneonitens*, n. sp.

♀. Moderately elongate, rather broad, very shining, aeneous, the antennae and legs (the black tarsal claws excepted) testaceous; clothed with brownish pubescence intermixed with scattered bristly hairs, which are semierect on the elytra and erect on the head and prothorax; the head and sides of the prothorax densely, rugulosely, the disc of the latter in one specimen more finely, punctate, the elytra densely, rather strongly punctured. Head, antennae, and prothorax much as in *D. mutabilis*, ♀; the elytra broader than in the latter, more densely punctured throughout, and each with a tumid space at the base near the suture.

Var. ? ♂. Narrower, greenish-aeneous, the antennae (joints 2-4 in part excepted) and femora black; antennae elongate, rather stout, joints 7-10 much longer than broad.

♀. Antennae short, testaceous, joint 1, tips of palpi, and femora in part, black.

Length $3\frac{1}{4}$ - $3\frac{1}{2}$ mm.

Hab. Siuni Gad, Garhwal, alt. 4000 ft. [type, ♀] (*M. G. C.*: vi.1920), N. W. Provinces (*ex coll. Andrewes*: ♀), Tangra Valley, Punjab, alt. 4500 ft. (*Dudgeon*: iv.1899: ♂ ♀, var.).

Four examples. A close ally of the variable *D. mutabilis*. The ♂ and ♀ from the Punjab seem to belong to one and the same species: the ♂ is very like *D. discretus*, but has much longer antennae, the ♀ is narrower than the type and has the femora to near the tip and the basal joint of the antennae infusate.

4. *Dasytes discretus*.

♂. *Dasytes* (? *Amauronia*) *discretus* Gorb. Ann. Soc. Ent. Belg. xxxix, p. 323 (1895).

Hab. Chamba, Himalaya.

There are two specimens of this species in the Andrewes collection, one of them marked type, both males. A small, parallel-sided, brassy or brassy-green insect, with rather long, stout, black antennae (joints 2 and 3 only obscure-testaceous), infusate femora, testaceous tibiae and tarsi, and black claws. The tarsal joints 1-3 are stouter than 4, which is very small (as in *Dasytiscus* Kies.), and the claws are without membranous appendages. The apical joint of the maxillary palpi is fusiform, not truncate at the tip as stated by Gorham. The antennal joints 8-10 are as broad as long.

5. *Dasytes scabricollis*, n. sp.

Moderately elongate, shining, clothed with pale brownish pubescence intermixed with long erect or semierect hairs; brassy-green or brassy, the labrum, palpi (except at the tip), antennal joints 2-5 or 6 in part or entirely (the others black), and legs (the black tarsal claws excepted), testaceous; the head and prothorax densely, rugosely (except a narrow smooth space down the disc of the latter in some specimens), the elytra more strongly and uniformly, punctured. Head narrower than the prothorax in both sexes; antennae rather stout, thickened outwards, in ♀ barely reaching the base of the prothorax, a little longer in ♂, joints 5-10 triangular. Prothorax convex, slightly broader than long, rounded and crenulate at the sides, more narrowed anteriorly in ♀ than in ♂. Elytra comparatively broad, parallel to beyond the middle.

Length 3-4 mm.

Hab. Simla [type] (*H. Chippendale*: v, vii.1909), N. W. Provinces (*coll. Andrewes*), Sunderdhunga, W. Almora, alt. 8000 ft. (*H. G. C.*).

Two ♂♂, four ♀♀. This species has the prothorax even more rugose than in *D. danacaeoides*; the legs and the basal joints of the antennae (joint 1 excepted) are testaceous; and the elytra, which are broader in ♀, are more strongly punctured.

6. *Dasytes kashmirensis*, n. sp.

Moderately elongate, shining, aeneo-piceous or reddish-brown, the antennae, palpi, and legs obscure-testaceous; clothed with pallid pubescence intermixed with long bristly hairs, which are curled on the head and prothorax and semierect on the elytra; the head and prothorax densely, rugulose (a narrow smooth space down the disc of the latter excepted), the elytra closely, finely, punctate. Head a little narrower than the prothorax in ♂, the eyes prominent; antennae moderately long, not very stout. Prothorax convex, broader than long, rounded and crenulate at the sides. Elytra much wider than the prothorax, parallel to near the apex in ♂, a little widened posteriorly in ♀.

Length $2\frac{2}{3}$ – $3\frac{1}{2}$ mm.

Hab. Kashmir (*ex coll. Andrewes*).

Two ♂♂, one ♀. A reddish brown or aeneo-piceous insect allied to *D. scabricollis*; the antennae and legs obscure-testaceous; the antennae more slender; the prothorax shorter, smooth down the middle in both sexes, and with curled hairs; the elytra a little more finely punctured. Broader than *D. discretus* Gorb., the legs and antennae paler, the prothorax more densely and the elytra not so strongly punctate.

7. *Dasytes danacaeoides*, n. sp.

Danacaea sp.?, Gorb. Ann. Soc. Ent. Belg. xxxix, pp. 293, 322 (1895)¹.

Moderately elongate, shining, thickly clothed with pallid pubescence intermixed with scattered bristly hairs, which are very long and erect on the head and prothorax, and semierect and shorter on the elytra; black with a brassy-green lustre above and beneath, the tibiae obscure-testaceous towards the apex; the entire upper surface densely, rugulose punctate, the puncturing on the elytra rather coarse. Head nearly as wide as the prothorax in ♂, the eyes large; antennae (♂) moderately long, thickened towards the apex, joints 5–10 serrate, transverse, (♀) shorter and more slender. Prothorax about as long as broad, narrowed anteriorly and also at the base. Elytra much broader than the prothorax, parallel to beyond the middle in ♂, a little widened posteriorly in ♀. Tarsal claws equal, slightly widened at the base.

Length 3 – $3\frac{1}{2}$ mm.

Hab. Dalhousie¹, Himalaya (*C. Somers-Smith*).

One ♀, two ♂♂. A brassy-green form, with black legs and antennae, the entire upper surface densely, rugulose punctured. The tarsal claws are equal in the present insect, while in *Danacaea*, one of them is shorter and differently shaped from the other, a character shown in the figures given by Kiesenwetter and Duval.

8. *Dasytes kumaonensis*, n. sp.

Moderately elongate, shining, brassy-black, the antennae, palpi, and legs black; clothed with brownish pubescence abundantly intermixed with long, erect, darker, bristly hairs; the head and sides of the prothorax densely, rugulose, the disc of the latter sparsely, finely, punctate, the elytra closely, rather strongly punctured. Head narrower than the prothorax; antennae moderately elongate, joints 8-10 about as broad as long. Prothorax transverse, obliquely narrowed from the middle forward and also narrowed at the base, the margins obsoletely crenulate. Elytra parallel in ♂, a little widened towards the apex in ♀. Tarsal claws rather long, slightly widened at the base.

Length $2\frac{2}{3}$ - $3\frac{1}{2}$ mm.

Hab. Nainital and W. Almora Divisions of Kumaon, Chakrata, Jaunsar (*H. G. C.*).

One ♂, three ♀♀. The abundant erect pilosity, the sparsely finely punctate disc of the prothorax (which is in consequence much more shining), and the stronger elytral puncturing separate *D. kumaonensis* from the black-legged *D. danacaeoides*.

9. *Dasytes speculifer*, n. sp.

Moderately elongate, shining, brassy-black, clothed with rather long greyish pubescence intermixed with many very long erect or semierect hairs, the antennae (except the outer joints in some specimens), the palpi (except at the tip), and legs (the black tarsal claws excepted) testaceous. Head much narrower than the prothorax in both sexes, closely punctulate; antennae rather slender, moderately long, shorter in ♀. Prothorax convex, transverse, rounded at the sides, much narrowed anteriorly in ♀; closely, rugulose punctate laterally, very sparsely and finely so on the disc. Elytra parallel, much wider than the prothorax; closely, finely punctate, and with numerous, subseriately-arranged, smooth, raised points. Legs long; tarsal joints 1-3 much stouter than 4 in ♂, narrower in ♀, 3 excavate at the apex above for the reception of 4, the latter small.

Length 3-3½ mm.

Hab. W. Almora and Ranikhet Divisions of Kumaon [iv.1916, v, vi.1917], Sunderdhunga (*H. G. C.*).

Found in abundance on *Quercus dilatata*, etc., in Kumaon, up to

an elevation of about 10,000 ft. Separable from its Himalayan allies by the conspicuous, subseriatly-arranged, smooth, raised points on the elytra, the almost entirely testaceous antennae and legs, and the closely intermixed long bristly hairs on the upper surface.

10. *Dasytes monilicornis*, n. sp.

♂. Comparatively short, shining, brassy-black, the antennal joints 2-4 testaceous, the others infuscate or black, the tibiae (except at their apices) and tarsi (the black claws excepted) also testaceous; clothed with pallid pubescence intermixed with longer bristly hairs, which are erect on the head and prothorax and semierect on the elytra; the head and prothorax densely, rugulosely, the disc of the latter a little more sparsely, punctate, the elytra closely and rather strongly punctured. Head a little narrower than the prothorax; antennae long, rather stout, thickening outwards, joints 5-10 submoniliform, 5, 7, and 9 wider than 4, 6, and 8, transverse. Prothorax broader than long, rounded and crenulate at the sides, obliquely narrowed anteriorly. Elytra rather short, parallel, much wider than the prothorax. Legs long, not very slender.

Length $2\frac{1}{10}$ mm.

Hab. Ranikhet Division of Kumaon (*H. G. C.*).

One specimen. Distinguished from its Indian allies by its very small size, short elytra, and rather elongate, stout antennae, joints 6-10 of which are submoniliform and 5, 7, and 9 widened. The antennal structure is very like that of the Mediterranean *Dasytiscus graminicola* Kies., as figured by the author in 1859, the present insect having a narrower prothorax than in the *Dasytiscus*.

11. *Dasytes breviusculus*, n. sp.

♀. Comparatively short, subopaque, the elytra shining, obscure nigro-caeruleous, the antennal joints 2-6 testaceous, the other joints and the legs infuscate or piceous; clothed with fine pallid pubescence intermixed with bristly hairs, which are erect on the head and prothorax and semierect on the elytra: the head and prothorax densely rugulosely, the elytra more strongly, punctate. Antennae short, rather slender, thickened outwards, joints 5-10 transverse, 5, 7, and 9 wider than 4, 6, and 8. Prothorax convex, transverse, sinuously narrowed anteriorly and also narrowed at the base. Elytra much broader than the prothorax, short, widened posteriorly. Legs slender.

Length 2 mm.

Hab. W. Almora Division of Kumaon (*H. G. C.*).

One example. This little bluish insect has the elytra as short as in *D. monilicornis*, but they are more finely punctured; the antennae are short, slender, and differently formed, though there is the same disparity in the width of the intermediate joints; and the legs are quite slender.

12. *Dasytes aurescens*, n. sp.

♀. Elongate, widened posteriorly, shining, brilliant aeneous or aeneopiceous, the antennae (the infusate joints 6-11 excepted), palpi, and legs testaceous; sparsely clothed with rather long, fine, decumbent, pallid hairs, a few of those on the head and prothorax erect; the head and prothorax very sparsely, finely punctate, the punctures on the latter becoming coarser towards the sides, the elytra alutaceous, finely, shallowly, and not very closely punctate. Head short, rather small, feebly bifoveate anteriorly; antennae moderately long, joints 5-10 triangular, about as long as broad. Prothorax transverse, convex, rounded at the sides. Elytra broader than the prothorax, widening to near the apex, the apices conjointly rounded, the lateral margins explanate and conspicuous as seen from above. Legs long; tarsi slender, the claws equal, rather long, widened in their basal half.

Length $3\frac{1}{2}$ - $3\frac{3}{4}$ mm.

Hab. Ranikhet and W. Almora Divisions of Kumaon (*H. G. C.*).

Two specimens. The slender tarsi and explanate elytral margins separate *D. aurescens* from the other species of the genus here noticed. It may have to be removed from *Dasytes* when the ♂ is found. The apical joint of the maxillary palpi is fusiform. *D. gorhami* Pic (1911), from Pegu, seems to have similarly expanded lateral margins to the elytra.

Cis Latreille.

Cis fasciculosus, n. sp.

Elongate, robust, convex, subcylindrical, moderately shining; blackish-brown, the labrum, palpi, antennae (the slightly infusate 3-jointed club excepted), and tarsi testaceous; thickly clothed with short, stiff, brownish, erect hairs, which (as seen under the microscope) arise in small groups or clusters from the punctures on the upper surface; the entire upper surface very closely, rather finely punctured, the narrow interspaces alutaceous. Head rather small, in one specimen (? ♂) with a raised transverse line between the antennae, behind which is a transverse groove. Prothorax broader than long, parallel-sided at the base, arcuately narrowed anteriorly. Elytra elongate, parallel to beyond the middle.

Length $3\frac{1}{4}$ - $4\frac{1}{2}$, breadth $1\frac{1}{4}$ - $1\frac{3}{4}$ mm.

Hab. W. Almora Division of Kumaon (*H. G. C.*: iii, iv.1917, iii.1919).

Seven specimens, the sexes not certainly identified. An unusually large, convex, elongate form, with the general facies of an Anobiid and the rough appearance of a *Hendecatomus*, this being due to the abundant erect, chaffy, fasciculate pubescence partly hiding the sculpture. *Cis indicus* and *madurensis* Pic (1916) are also rather large

insects, but very different from the present species. Various other Indian representatives of the genus, not yet studied, have been sent me from Almora.

April 1922.

A CONTRIBUTION TO THE LIFE-HISTORY OF
PENTATOMA RUFIPES L.

BY E. A. BUTLER, B.A., B.SC., F.E.S.

This is one of the commonest of the little company of *Pentatomidae*, between 30 and 40 in number, which inhabit the British Isles, and as its area extends far beyond, from Ireland as the western limit, right across the Palaearctic Region north of the Mediterranean, to Japan as the eastern, some account of its bionomics may perhaps be of general interest. It is, moreover, one of the species that are of sufficiently vagrant habit to force themselves on the notice of the most unobservant, not infrequently appearing amongst the abodes of men, in our gardens, and also even in the busiest streets of our largest towns and cities—a tribute, if not to its sagacity, yet to its vigour of flight, which is capable of carrying it so far from its birth-place amongst woodland scenes.

The *Pentatomidae* are not provided with the saw-like ovipositor which is usual amongst the Hemiptera, and hence the eggs are attached externally to leaves, etc., being fixed in position by a minute amount of adhesive secretion. On August 24th, 1917, I found in the New Forest a batch of 14 eggs attached to an oak-leaf. They hatched early in September, and turned out to be this species. The egg is spheroidal, of a yellowish colour, with a single red mark at the upper extremity, near to which is a black mark somewhat T-shaped (this probably appears only a short time before hatching, and is the egg-opener showing through); the surface is quite smooth, save for a circle of white points which bound the rim where the cap is attached. After hatching the chorion appears hyaline, shining and iridescent, while the red spot has disappeared, and the black T-shaped mark shows itself as the trifurcate instrument with very short stem, which has been used to open the lid or cap. The cap remains attached at one side, and falls back into position after the emergence of the embryo, and so the hatched egg is left in as perfect a form as the unhatched. These 14 eggs were arranged in four rows, the two outer ones containing three each, the inner ones four; the eggs in each row were in contact with one another and with those of the

preceding row, being placed alternately to these. My friend, Mr. Hugh Main, has since sent me an exactly similar batch on a hazel-leaf.

The larva exists in five instars, and can be recognised by its ochreous colour marked with bronzy black, and especially by the narrow black arches that appear in the connexivum. The ochreous ground-colour appears most distinctly at the anterior angles of the prothorax; in other parts it is very much obscured by black punctures, or by large patches of bronze-black or greenish-bronze. The black punctures and the metallic patches preserve their colour in the cast skin, but the ochreous ground-colour becomes in the slough much paler. This is due to a difference in the position of the pigments, which seems to be pretty general in the family, viz. that shining and metallic colours are quite superficial, whereas dull colours belong to the deeper layers of the skin, and are not shed at the ecdysis. It is curious also that the metallic reflexions become more intense with each successive instar, but entirely disappear at the last moult, leaving the imago of a plain brown colour with a bright red tip to the scutellum. In the younger instars, again, a very distinct ochreous ring is seen in the middle of the black tibiae; but by the time the last stage is reached, the ground-colour of the tibiae has become largely tinged with reddish, and the ring has disappeared, while the adult insect has entirely red tibiae. This same presence of a pale ring in the younger stages, followed by its entire disappearance in the adult, is seen even more markedly in *Picromerus bidens* L. Another curious feature that is revealed in the course of development is that the lateral pronotal angles, which are so prominent a characteristic in the fully-grown insect, do not appear till the last larval instar, and there is nothing in the early stages to suggest the possibility of such an outgrowth.

While we are on the subject of the prothorax, it may be as well to point out the curious way in which in the imago that part of the insect's anatomy is, in the majority of the Hemiptera, constructed, especially as *P. rufipes* well exemplifies the peculiarity. The dorsal and sternal parts of the segment are very unequal, the sternum being shortened as much as possible, so that there is only just room for the attachment of the small pair of coxae, while the dorsal tergite forms a large plate extending backwards and covering nearly a third of the whole body's length. This chitinous plate is almost the whole of the segment that exists above, and it immediately overlaps the next segment without being attached thereto, so that the greater part of its area simply lies quite freely on the very solid mass beneath, which constitutes the mesonotum and

encloses the muscles of flight, etc., appertaining to that division of the thorax. There is, therefore, a free passage for air between the pronotal plate and the mesonotum.

Reverting to the larvae, there are three other points that should be noted. First, there are no ocelli in any of the larval instars, but these appear at the last moult, giving, one must suppose, some additional perceptive power to the imago, to which it has been till then a stranger. Secondly and thirdly, at the same moult occurs a multiplication in segmentation in both antennae and tarsi. Throughout larval life the antennae are four-jointed, but at the last moult, the second joint becomes divided into two, so that the imago has five joints, an arrangement which must at least increase the flexibility of the organ, and so possibly augment its sensitiveness, and the tarsi, which throughout the immature life have had but two joints, get an additional one by the subdivision of the terminal, thereby gaining a more workmanlike instrument for its use.

The life-cycle of this insect seems to be rather different from that of the rest of our *Pentatomidae*. The majority certainly pass the winter in the adult condition, but that does not seem to be the case with this species. As above mentioned, eggs found in late August hatched in September, and this would hardly leave time for the maturation of the insect before the change of weather and the state of vegetation rendered undesirable a life in the open. The only records I have been able to gather for the capture of the imago lie between the beginning of June and the end of October; there is but one outside the limit of those months, and that is May 30th, 1917 (*Edmonds*). The absence of records for all the rest of the year seems to imply that the insect retires into obscurity as a larva towards the end of October, passes the winter months in a state of inactivity, and emerges again in spring-time to complete its larval life before midsummer. This is confirmed by the occurrence of numbers of fully-grown larvae in June; Commander Walker, speaking of the New Forest in June, says:—"The abundance of the nymphs of *Tropicoris (Pentatoma) rufipes* was quite a feature of the collecting, twenty or thirty of these at a time coming down into the umbrella when an oak was beaten" (*Ent. Mo. Mag.*, Aug. 1917). Probably the perfect insects are most numerous in August; I have found recently matured specimens *in cop.* in August on birch-trees; but on opening the body of the ♀, I could find no trace of ova. If the course sketched above is correct, it gives a shorter imaginal life to this large Pentatomid than is found in any other of our species in the family, a life of not more than five months.

P. rufipes is an inhabitant of various trees, such as *Quercus*, *Alnus*, *Crataegus*, *Fraxinus*, *Betula*, *Fagus*, *Populus*, *Salix*, *Ulmus*, *Sorbus aucuparia*, but perhaps most commonly of oaks; J. Sahlberg adds *Ribes*, and Prof. Carr reports it from flowers of *Senecio jacobaea*. Morley records it from a seeding *Angelica* flower-head, and he also found one on a dead hawk. Whittaker speaks of taking it by beating chestnuts, and Collins by beating *Corylus*. If all these mean diet, the *ménu* is certainly a very varied one. But as an imago this species has for the last century and a half been credited with carnivorous tastes. De Geer says it wanders on the foliage of trees seeking caterpillars to suck, and several observers since his time have confirmed this statement. Dalla Torre speaks of the imago as a destroyer of aphides, and Gorski as pursuing and destroying the caterpillars of the gipsy-moth. On the other hand, Schunacher says he has often bred it, and has always found it to be phytophagous. I have seen larvae in the second instar sucking a sycamore leaf; while doing this, the rostrum, which is very long, is thrust far forward, and the body is inclined at an angle of about 30° to the surface on which it is resting. Of course the diet may be different at different stages of its life; it may be vegetarian as a larva and carnivorous as an imago, or it may be absolutely indifferent, ready to accept whatever turns up. The rostrum is long and slender, very unlike the short and stout weapon of the admittedly carnivorous species *Pieromerus bidens*, and much better fitted to deal with unresisting vegetation than with a struggling victim. At the same time it can, as McGregor says, "inflict a painful probe with its powerful beak." On the whole, therefore, we may say that the question of its food needs further investigation.

The odour from the scent glands is very powerful, and to the human nostril, most disagreeable; Frey Gessner compares it to that of rotten apples, with a little muskiness. When the insect is weakened by fasting, the smell is scarcely perceptible, and I have seen a larva in that condition eaten by a carnivorous lepidopterous caterpillar, though one would suppose it would have been safeguarded had it retained its odour.

There is a certain malformation of antennae, to which the name "oligomery" has been given, and this insect is one of those that occasionally exhibit it. It is a defect which occurs most frequently and characteristically amongst the *Lygaeidae*, and it is not at all common in the *Pentatomidae*. In one instance the normal fourth joint was suppressed but the third elongated; hence the antenna, being 4- instead of 5-jointed, preserved something of the larval structure, though with a

lengthened segment. Another example had the terminal joint missing, the third short and thickened, and the fourth much elongated and slightly thickened (*Douglas*). The foundation for these defects must, of course, have been laid during larval life. Now, as oligomery is most common amongst the *Lygaeidae*, most of which spend their life upon the ground, it seems as though there may be some connection between this kind of teratology and the habit of living on the ground, amongst the roots of plants, where the risks of damage to the antennæ must be considerable; and the question naturally suggests itself whether the winter retirement of larval *P. rufipes*, presumably on the ground, under plants, stones, etc., may be similarly responsible for the appearance of oligomery in a Pentatomid.

P. rufipes shows no hesitation in the use of its wings, and readily takes flight, and this may have something to do with the wide area it has covered. In the British Isles it is probably quite general in distribution: it has been definitely recorded from 30 English and 3 Welsh counties, and it occurs in both Scotland and Ireland. Seven other Palaearctic species of the same genus have been described, and these are almost all Asiatic in distribution, and still others are found in other parts of the world.

35 Kyrle Road,
Clapham Common,
May 20th, 1922.

OBSERVATIONS ON THE PHYLLODROMINE COCKROACH,
BLATTELLA SUPELLECTILIUM SERV., IN KHARTOUM.

BY R. COTTAM,

Entomological Laboratory Assistant, Wellcome Tropical Research Laboratories,
Khartoum, Sudan.

In this paper certain habits of this cockroach are described, and an account is given of its breeding habits, oviposition, and development as observed in a series of experiments carried out at Khartoum in 1915.

This small cockroach is one of the commonest species in Khartoum, and is found in nearly all buildings and in native huts (tukls). It is nocturnal, but may sometimes be seen moving about during the daytime. Whilst searching for other insects, I have often disturbed it from holes both on the river bank and in gardens. The wings are well developed in both sexes; but, though I have frequently seen this insect flying round

artificial light in houses, I have only once seen it on the wing out of doors.

In the Sudan, *Blattella supellectilium* apparently breeds throughout the year, and every stage of development may be seen at all seasons. A male fertilizes several females. A female produces many broods, each of which is not necessarily dependent on a fresh mating. The prolific increase of this cockroach is checked by a hymenopterous parasite which develops in the egg-capsule.

In order to trace the life-history of this insect, a number of experiments were carried out in 1915. Cockroaches are not difficult to keep alive in confinement, if kept clean and fed and watered regularly. Those used in the following experiments were kept in large glass basins covered with glass lids, and were fed on table scraps. The food was supplied daily and the remains of the previous day's supply carefully removed. If the old food was not removed it became mouldy and the insects died.

A young freshly matured male was caught and used to fertilize the females until a male had been bred out. Afterwards specimens which had been bred were used.

Index of the specimens used in Experiment 1.

- | | |
|--|-----------------|
| No. 1. Female matured on May 2nd | Died June 13th. |
| 2. Female matured on May 2nd | Died July 18th. |
| 3. Male caught May 4th. | |
| 4. Male matured on May 15th. | Died July 16th. |

The females, Nos. 1 and 2, were kept with a male, No. 3, from May 4th until May 15th; on that date he was released and male No. 4 added.

Index of the specimens used in Experiment 2.

- | | |
|--|-----------------|
| No. 5. Male matured on August 20th | Died Oct. 19th. |
| 6. Female matured on August 29th. | Died Oct. 12th. |
| 7. Female matured on August 30th. | Died Oct. 30th. |

These cockroaches were reared from one brood and kept together. The male was eventually killed by accident. No eggs were developed after the male was absent, although No. 7 female lived approximately 21 days later.

From these experiments it was found that these cockroaches laid their eggs in an average period of 13.75 days after attaining maturity, the maximum being 17 and the minimum 10 days. The average period

between each oviposition was 6.13 days, with a maximum of 14 and a minimum of 4 days.

The female deposited on the day following the carrying of the egg-capsule, that is when it appears quite clear of the abdomen and is held by the anal claspers. Cockroach No. 1 made five deposits in 25 days, and probably her death was premature. No. 2 made twelve deposits in 59 days. Nos. 6 and 7 made five deposits each in 32 and 25 days respectively, but ceased to lay after the death of male No. 5.

The young emerge from the egg-capsule in 33-37 days, or in an average period of 35 days. Each egg-capsule contained about 16 young, but the average number that emerged was 12; the undeveloped specimens could be seen in their respective cells in the egg-capsule.

On January 19th, a brood of young cockroaches emerged from an egg-capsule. These were reared but no full record of the moults was kept. On May 2nd to the 4th these insects matured, and on the 18th and 19th respectively two females deposited. The period from emergence to maturity was 103 days approximately. Another brood was hatched on June 6th, and reached maturity in 66 to 85 days. The brood was fed very regularly and with great care. It is quite obvious the growth of these insects can be retarded or quickened by feeding. During development only one empty skin was noticed, so it is indicated that they devour the cast skin after each moult.

Though males were often seen attentive to females, the cockroaches were never seen in copula; probably their mating takes place at night.

To ascertain whether a separate mating was necessary for the procreation of each particular brood, four newly matured females were confined with a corresponding number of males, and were not separated until each female was seen to be carrying her first egg-capsule; from that time the males were deprived of further access to the females.

The first cockroach lived 48 days after the male was taken away, and during that time deposited 9 egg-capsules; the second lived 46 days and deposited 8 egg-capsules; the third lived 31 days and deposited 5 egg-capsules; the fourth deposited 8 egg-capsules and lived 52 days. With the exception of 5 which dried up, the above egg-capsules were fertile and young cockroaches emerged therefrom.

A NEW GENUS OF *ISCHNOCERA* (MALLOPHAGA).

BY JAMES WATERSTON, B.D., D.SC., F.Z.S.

Assistant Keeper in the Department of Entomology, British Museum (Nat. Hist.).

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For some time past the writer has been engaged in a critical study of the *Ischnocera* occurring on Palaearctic grouse, in the course of which it has become evident that one small group of these parasites, whose members have been variously referred to *Lipeurus*, *Nirmus*, and *Gonicotes*, really deserves separate treatment.

This new genus, which is diagnosed below, is perhaps the most characteristic of the grouse *Mallophaga* and, in the writer's opinion, its included species will, when more perfectly known, afford important clues to the phylogeny of their host genera.

LAGOPOECUS, gen. nov.

Head (σ , ♀) broad; in front of the trabeculae parabolic and continuously circumfasciate, *i. e.* without indication of a clear linear antero-median longitudinal interruption; enlarged characteristically immediately behind the eye with the sides thereafter reclined towards the rounded temples; occiput distinctly but rather shallowly concave; upper surface (in fully adult examples) uniformly chitinated except (*a*) a clear straight transverse suture about one-sixth from the anterior margin and (*b*) a second, parabolic clear band or suture (often indistinct) running back from the antennal fossae, not reaching the occipital edge but flattened out and parallel with the middle third of that line. Ventral surface—the oral fossa anteriorly nearly parallel with the outline of the head. Antennae without appendages, the first joint in the σ larger and stouter. Abdomen short and broad—sometimes as broad as long, sides of first segment divergent posteriorly, bands on tergites 1-7 divided broadly (♀) or more narrowly (σ) into oblong blotches. Pleurites, heads not deeply inserted into the preceding segments, thickened but not complicated except for a more or less developed upper branch. Genitalia, σ , basal plate slightly constricted distally. Paramers not articulated basally but quite capable of being flexed upwards and backwards, the apical and ventral hairs approximated. Mesosome flat, solid, with three ventral hairs at each side. The elongate tubular penis is free, with two hairs on each side basally. When not exerted the paramers enfold the sides of the mesosome with the penis closely appressed beneath; ♀ vulva simple, transverse medianly, a little concave.

Genotype, *Nirmus cameratus* Lyonet (1830). Type host, *Lyrurus tetrix*.

This genus has affinities both with *Lipeurus* Nitzsch (sens. str.) and *Degeeriella* Neum. (sens. str.). It does not, however, include forms like *Lipeurus docophoroides* Piag., from which a careful examination of the head should secure its separation.

A THIRD NEW BRITISH *PLASTOSCIARA* (DIPTERA, SCIARIDAE.)

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

The species described below has been received for identification by Mr. Edward R. Speyer, Research Entomologist to the Nursery and Market Garden Industries Development Society. The specimens were obtained from the West End Nurseries, West Worthing, 25.v.1922, being reared in very large numbers from larvae attacking cucumber roots and stems.

On a previous occasion Mr. Speyer had obtained quantities of *Pnyxia scabiei* (Hopkins), damaging cucumber seedlings at Cheshunt. He suggested that the Worthing species might be the same, with a winged form of the female corresponding to the long-winged males of *P. scabiei*. An examination of the material, however, showed that this could not be the case, the species differing in very many respects from *P. scabiei* and being referable apparently to the genus *Plastosciara*. From the two known British species of this genus the Worthing insect differs in its much smaller size as well as in venational and other details. Although it may possibly have been described previously as a *Sciara*, it will be easier and more satisfactory to treat it as a new species, than to attempt to apply to it any one of the old incomplete descriptions. The spirit material sent by Mr. Speyer comprised some hundreds of females and about a dozen males.

Plastosciara perniciosa, sp. n.

Head black. Eyes bare, rather large, forming a distinct though narrow dorsal bridge, the portion from each eye being narrowed almost to a point, the points touching. Labium very small and short, not so large as one palp. Palpi pale, 2-segmented, apart from the very small and hardly distinguishable palpiger; first segment nearly globular, considerably enlarged in the ♀, much less so in the ♂; second segment very minute, each with a few short hairs. Antennae black, the flagellar segments with rather dense, uniform hair which is about as long as the diameter of the segments. First and last flagellar segments each a little longer than any of the others, the remaining segments in the ♂ each a little over half as long again as broad, and provided with a distinct neck, which is fully one-third as long as the remaining portion of the segment; in the ♀ these segments are very little longer than broad, and have shorter necks. *Thorax* blackish-brown, somewhat shining. Pleurae with rather extensive pale membranous areas. Scutellum with two distinct marginal bristles and some finer hairs; mesonotal hair short, dark and inconspicuous. *Abdomen* with the membranous parts whitish, the chitinised parts dark brown. In the ♂ all the tergites are uniformly chitinised; in the ♀ tergites 1 and 2 are membranous at the base, 3 and 4 uniformly chitinised, 5 with a tendency to weakening of the chitin in the middle, 6 and 7 chitinised only on the apical

and lateral margins. Sternites 3-5 in ♀ broad, 6-8 very narrow, all slightly but uniformly chitinised. Hypopygium of ♂ rather small; claspers not enlarged, slightly curved and tapering, a little over twice as long as their breadth at the base, with a single subterminal spine mixed with some hair; side pieces without patch of bristles at their ventral junction. Lamellae of ♀ 2-segmented, first segment roundish, second narrower and rather elongate-oval. Legs dark brownish, coxae and femora rather lighter. Hind coxae short, together with the trochanters less than two-thirds as long as the femora. Front and middle femora somewhat thickened. Tibiae without definite combs; spurs very short, considerably shorter than the diameter of the tibia. On the hind legs the proportions of the tibia and tarsal segments are roughly 48 : 22 : 10 : 7 : 6 : 7. Empodia minute; pulvilli not distinguishable; claws simple. Wings alike in the two sexes, slightly greyish-tinged; costal and radial veins dark and strong; media and cubitus devoid of macrotrichia, rather thin and faint, especially the stem of *M*. *R*₁ ending in costa far before the base of cell *M*₁; *R*₁ shorter than *R*; costa extending about three-fourths of the distance between the tips of *R*s and *M*₁; the horizontal *r-m* a little longer than the vertical portion of *R*s; median fork shorter than its stem, its branches slightly divergent apically; tip of *M*₂ considerably nearer the wing-tip than is the tip of *R*s. Cubital fork with a very short stem, which is rather difficult to detect owing to the fact that the base of *Cu*₂ is fainter than *An*, which latter vein approximates to *Cu*₂ and actually seems to unite with it distally, so that at first sight it appears to be the base of *Cu*₂, and suggests the condition which occurs in *Pnyria*, where *Cu*₂ is quite separate from *Cu*₁. Anal angle of wing only slightly indicated. Halteres with the knobs dark.

Length of wing, 1.2-1.5 mm.; length of body, ♂, 1-1.3 mm.; ♀, 1.5-1.8 mm.

British Museum (Natural History).

May 30th, 1922.

The synonymy and distribution of Pantomorus godmani Crotch, a cosmopolitan weevil attacking roses, greenhouse plants, etc.—Mons. A. Hustache (Bull. Soc. Ent. Fr. 1922, pp. 100, 101) has recently called attention to this destructive Otiorrhynchid-beetle, and correctly uses the name *Pantomorus godmani* Crotch for it. The Fayal types agree perfectly with N. American examples of *P. (Aramigus) fulleri* Horn. Like *Otiorrhynchus sulcatus* F. and *O. scabrosus* Marsh., both of which have also been introduced into the Azores, it seems to be gradually spreading into widely distant regions, but is certainly of American origin, the allied species being numerous in Tropical America. *P. godmani* appears to have been first described by Crotch, from specimens captured in the Azores in 1866, unless the Chilean *Naupactus subvittatus* Fairm. et Germain (1861) is synonymous with it. The localities given by Hustache are as follows:—California, Mexico, Brazil, Chile, Hawaiian Islands, Azores, Portugal, and Sicily. Mr. T. D. A. Cockerell met with it in Madeira during the past winter. The species is widely distributed in the United States, and is known there as "Fuller's rose-beetle." It is stated to attack roses,

geraniums, fruit-trees, etc. The larva gnaws the roots of the plants, and the imago eats the leaves, flowers, and shoots. Crotch's types were beaten from brambles at Horta, Fayal. Dr. Dugès sent examples of it to the British Museum in 1901, from Guanajuato, Mexico. The insect is not included as an introduced species in Reitter's last Catalogue, and it has probably found its way into Europe since 1906. The principal synonymy is as follows:—

Asynonychus (n. gen.) *godmani* Crotch, P.Z.S. 1867, pp. 388, 389, pl. 23, fig. 9:
and in Godman's "Azores," p. 81 (1870).

Pantomorus godmani Hustache, Bull. Soc. Ent. Fr. 1922, p. 100.

Araniguis fulleri Horn, Proc. Am. Phil. Soc. xv, p. 94 (1876).*

Pantomorus fulleri Champ. Biol. Centr.-Am., Coleopt. iv. 3, p. 333, pl. 15,
fig. 19 (1911).

Pantomorus olindae Perk. Fauna Hawaiiensis, Coleopt. i, p. 130 (1900).

Papers on its habits and life-history have been written by various American authors—Chittenden, Pierce, Koebele, and Schwarz. Commander Walker sent me specimens of *P. godmani* Crotch and *Laparocerus azoricus* Dronet from Horta, Fayal, in the "seventies."—G. C. CHAMPION, Horsell: *May 30th*, 1922.

An American Scarabaeid in dried fruit.—A few days ago I found in some dried apricots a bright-looking minute Lamellicorn beetle, which made an excellent specimen, despite the fact that it had been subjected to the culinary process. Mr. G. C. Champion has kindly determined it for me as *Psammbobius batesi* Arrow (= *parvulus* Bates, nec Chevr.) described, or rather recorded, in the "Biologia Centrali-Americana" from Mexico and Guatemala, and renamed by Arrow in Trans. Ent. Soc. Lond. 1903, p. 514. The insect is very much smaller and narrower than either of our two British species of the genus, of a clear yellowish-testaceous colour, rather shining, and with very strong diffuse puncturation on the prothorax. Its presence in dried apricots is no doubt accidental, but may not be devoid of interest, especially as *P. batesi* has not been recorded from California, from whence the fruit probably came. *P. parvulus* Chevr., a somewhat larger and more robust insect, is recorded from the West Indies.—JAMES J. WALKER, Oxford: *June* 1922.

Terrifying and Protective Coloration of Insects at the Time of Emergence.
—During the last ten days I have had the pleasure of witnessing the emergence of two insects, *Saturnia pavonia* and *Odontotia carmelita*, in both cases from the actual moment of dehiscence. In the case of *S. pavonia* the central area of the primaries, on which the large orbicular "eye" appears, was already well developed when the insect emerged in comparison with the rest of the wing, which was relatively very small and baggy. Consequently the ocelli stood out with the most startling effect, and as the scales were closely packed, the general coloration of that particular area was much more vivid than when the wing was completely distended. I was much interested therefore, to see two large eyes, ringed vividly with white, staring fixedly at me from the moment that the insect had freed itself from the cocoon, and I could well imagine that any small bird, encountering such an object, would hesitate to investigate it

* The date is misprinted "1846" in Hustache's paper.

further. The insect appeared to be quite conscious of its ability to terrify intruders; instead of dropping to the ground when I touched it with a piece of stick, it clung firmly to the twig on to which it had climbed, and not until it was thoroughly satisfied with its position did it swing itself over and let its wings hang down backwards in the usual attitude of expansion. As soon as it had achieved that position, the dull brownish colour of the underside of the expanding wings merged effectively with the colours of the surrounding dry earth and leaves and afforded complete invisibility. It would appear as if the ocelli constituted a real protection to the insect during the few anxious minutes between the moment of dehiscence and the time when it had comfortably arranged itself for expansion. In the case of *O. carmelita* it was the central area of the primaries, close to the costal margin, that was the most conspicuous portion of the wings immediately after emergence, and on it the creamy-white dash which starts from the margin into the body of the wing was particularly apparent. As in the case of *S. paronia*, this dash of colour was much more vivid than when the wings were fully expanded, and I suppose for the same reason that the scales on the unexpanded wing were very closely packed. But the general effect was to break up the outline of the insect by a very effective piece of "dazzle painting," and thus to secure immunity from attack during the few minutes when the insect was crawling about to search for a proper situation in which to expand. I wonder if other observers have noticed similar instances of protective coloration in other freshly-emerged insects. I obtained *O. carmelita* by pupa-digging in a wood three or four miles from Carlisle. I believe it to be a new record for this district.—H. D. FORD, Thursby Vicarage, Carlisle: *May 10th, 1922.*

Celerio lineata F. (*Deilephila livornica* Esp.) at Oxford.—On the afternoon of May 13th, a neighbour called my son's attention to a "pretty butterfly" at rest among stems of *Clematis* near his front door. On seeing it my son at once came and informed me that it was a "Hawk Moth" of some kind; and my surprise and delight may be imagined when, on going to look at the insect, it proved to be a ♂ *Celerio lineata* in condition equal to bred.—A. H. HAMM, 22 Southfield Road, Oxford: *May 18th, 1922.*

A Chalcid parasite of Lecanopsis formicarum Newstead.—Writing under date, 16.vi.1922, Mr. E. E. Green remarks:—"I enclose some apterous Chalcids that have just emerged from specimens of *L. formicarum* Newst., collected at Camberley three weeks ago. . . . There was also one larger winged example but this escaped. . . ." The parasites in question (6 ♂, 8 ♀) are referable to *Choreia inepta* Dalman (1820) (*Encyrtidae-Chalcidoidea*) of whose biology apparently nothing has hitherto been ascertained, though the insect itself has been known for a century and reported by reliable workers from various localities ranging from Sweden to Austria and thence westwards into Spain. In Britain *Choreia inepta* has been known since 1833, when Westwood described it (as *C. nigroaenea* Westw.) from Dorking (G. R. Waterhouse Coll.). Mr. Green's examples are all of the usual form with inconspicuous rudimentary wings. The ♀ of the macropterous form (to which the specimen which escaped may have belonged) has been recorded by Mayr (1876) from Förster's collection.—JAMES WATERSTON, Brit. Mus. Nat. Hist.: *June 1922.*

Three Species of Aphids new to Britain.—In August 1920 Master A. Rodger Waterston, while on holiday at Catacol, Arran, found *Amphorophora rhinanthi* Schout. (Zool. Anz. xxvi, 1903, p. 687) on *Rhinanthus crista-galli*. In the corresponding month of the following year I found it generally distributed throughout the North-East of Scotland. The presence of this species is difficult to detect on account of its habitat—it is found inside the seed-capsules of its host-plant, and no doubt this explains why it has not been recorded since it was described by Schouteden from specimens he obtained in Belgium. *Rhinanthus major*, though frequently found growing side by side with *R. crista-galli*, was not found to be affected. Nothing is known regarding the life-history of *A. rhinanthi* prior to the formation of the seed capsules of the food-plant. In May 1921 I found on birch-trees in Richmond Park *Hamamelistes betulæ* Mordw.*, and this year the species has turned up on Wimbledon Common. The aphids cluster together on the under surface of the leaf which becomes slightly concave and white from the excretions of the insects. Tullgren, in his monograph of the *Pemphiginae* (Ark. f. Zool. 1909), has dealt fully with this very interesting species, and English students may be referred to that work for further information. Towards the end of March of this year, Mr. C. L. Withycombe brought me specimens of *Pentalonia nigro-nervosa* Coq., which he found on *Alpinia rafflesiana* in one of the glass-houses in Kew Gardens. Originally described from Bourbon Island, it was reported as being present in the United States in 1909 when Wilson (Journ. Econ. Ent. ii, 1909, p. 346) re-described and figured the species.—F. LAING, British Museum (Nat. Hist.): *June 9th, 1922.*

Review.

“A REDESCRIPTION OF THE TYPE SPECIES OF THE GENERA OF COCCIDAE BASED ON SPECIES ORIGINALLY DESCRIBED BY MASKELL.” By HAROLD & EMILY MORRISON. Proc. U.S. Nat. Mus. 60, pp. 1-20, 1922.

This is one of the most important papers on *Coccidae* which has appeared for a long time. Maskell, an occasional contributor to this Magazine, began the study of the *Coccidae* when very little was known regarding the family, and as he was a prolific writer over a long number of years a proper conception of the genera based on his species is of fundamental importance in the proper classification of the family. The U.S. Nat. Museum authorities recognised this fact and obtained the loan of the Maskell Collection from New Zealand. The present paper is the first result of the examination of that Collection. The types of 36 genera and one subgenus are redescribed and very fully illustrated; for reasons of space the adult ♀ and first-stage larva are alone dealt with. Coccidologists have been misled in many cases by Maskell, who had made errors in his descriptions or misidentified material sent to him by other entomologists. This work will now correct these misconceptions, and we are under a debt of gratitude to Mr. and Mrs. Morrison for the able and thorough way in which they have carried out the task. They have confined themselves mainly to the work in hand, but occasionally they express opinions as to the proper systematic position of a particular genus, and also regarding other species subsequently included in a genus.

* Unfortunately when I wrote this, I overlooked the fact that Rhymer Roberts (Mem. & Proc. Manchester Lit. & Phil. Soc. lix, No. 9, 1915) had recorded this species for Britain under the name of *Hamamelistes tullgreni* de Meij.

Obituary.

Henry Rowland-Brown, M.A., F.E.S., whose decease was briefly announced in the last number of this Magazine, was born at Pinner, Middlesex, on May 19th, 1865. In a very charming little book, "Myself when Young," by his sister, the well-known novelist writing under the pseudonym of "Rowland Grey," we find many allusions to the keen interest in Nature taken by herself and her brother when both were quite young children, and as a boy of twelve years Rowland-Brown was already a keen collector of *Lepidoptera*. He was educated at Rugby, where he came under the influence of the eminent Entomologist the Rev. F. D. Morice, at that time a master in that famous school; from Rugby he proceeded to University College, Oxford, afterwards studying for the Bar, and becoming in due course a member of his father's profession.

As an Entomologist, his attention was for the most part directed to the *Lepidoptera* of the Western Palaearctic Region, including those of our own islands; and in his knowledge of the butterflies of Central and Western Europe, and especially those of France, he was certainly without an equal in our country. For many years together, up to the outbreak of the Great War, a portion of every summer was devoted by him to an excursion to some favoured Continental locality, on one occasion even to North Sweden and Lapland; and the detailed and brightly written narratives of these expeditions form quite a leading feature in the pages of one of our contemporaries, for as far as we are aware, he made no direct contribution to this Magazine. His monograph of *Coenonympha typhon* in M. Oberthur's "Lépidoptérologie Comparée" is an Entomological classic, as is also the exhaustive study of the races of that most interesting butterfly *Colias croceus (edusa)*, his last piece of serious work, which appeared quite recently in the "Entomologist." It was also his intention, a few years ago, to revise thoroughly and bring up to date that excellent and most useful little book "European Butterflies," by the late Mr. W. F. Kane, which has gone out of print, and considerable progress was made with this task, as well as with an entirely original work on the subject, but unfortunately the outbreak of war prevented the completion of these undertakings.

It is probable, however, that to the majority of Entomologists Rowland-Brown's name is best known in connection with his greatly appreciated services to the Entomological Society of London. He was elected a Fellow in 1887, and twelve years later, when the present writer was compelled by an appointment abroad to resign the Secretaryship at very short notice and a successor was urgently needed, Rowland-Brown stepped into the breach and held the office without intermission until 1910. His eminent qualifications for this responsible duty were at once obvious, and few, if any, Secretaries of the Society have enjoyed so large an amount of confidence and general popularity. The writer of this notice, who once more shared the office with him from 1905 onwards, recalls with the utmost pleasure his unfailing geniality, resource, and readiness in dealing with the many complications which inevitably arise in the conduct of the affairs of a Society of this kind. Truly he was the beau-ideal of a colleague.

In 1921, after the resignation of the Rev. G. Wheeler, he resumed the office of Secretary, but increasing ill-health compelled his final resignation after a few months. Besides serving on the Council in 1914-16, he was a Vice-President of the Society in 1908 and 1910. He will also be greatly missed by his associates of the Entomological Club, of which he was an active and hospitable member.

Rowland-Brown was a man of wide outlook and sympathies, an able journalist and essay-writer, and the author of more than one volume of light and graceful verse under the pen-name of "Oliver Grey." Among his innumerable friends his immediate neighbour at Harrow Weald, the late Sir W. S. Gilbert of musical fame, held a very high place, and the reminiscences of their friendship, which appeared recently in the "Cornhill Magazine," was probably the last of his writings.

Up to about a year ago he was a man of vigorous physique and active habits, and in his youth an athlete of distinction; but recently heart-trouble, no doubt aggravated by strenuous public work during the war, was the cause of great though patiently endured suffering. Although a temporary rally a few months ago enabled him partially to resume work, the end came on May 3rd at Oxhey Grove, Harrow Weald, his residence for many years past. We understand that his extensive collections of *Lepidoptera* and his entomological library are bequeathed to the Entomological Society of London, with remainder to the Oxford University Museum. We tender our most sincere and heartfelt sympathy to his bereaved mother and sister.—J. J. W.

Society.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
February 23rd.—Mr. A. J. BUNNETT, M.A., President, in the Chair.

Mr. Cheeseman, 30 Clayton Road, S.E., was elected a member.

An Exhibition of Lantern-slides by members. Mr. Hugh Main, slides illustrating the latest results of colour-photography; a series of slides illustrating the life-history of the field-cricket and the wolf-spider *Lycosa*. The President, slides of "fairy flies," and of the tracheae of a beetle. Mr. Syms, slides of the ova of the more local species of British Butterflies. Mr. Tonge, slides of the ova of a number of British Geometers. Mr. Staniland, slides of the galling of the wild crab by the woolly aphid *Eriosoma lanigerum*, and of the Syrphid (*Syrphus vitripennis*). Mr. Withycombe, a curious fungus growth on a dead ant, a nest of *Osmia rufa* in a door-lock, the egg-mass of *Empusa pauperata*, the life-history of a *Coniopteryx*, etc.

March 9th, 1922.—The President in the Chair.

Mr. G. C. Champion, A.L.S., F.Z.S., was elected an honorary member. Mr. L. C. Bushby, of Bromley, and Mr. A. M. Masee, of Sevenoaks, were elected members.

Captain J. Ransbottom, F.L.S., gave a Lecture on "Symbiosis of Fungi with the Fertilization of Orchids," illustrated with lantern-slides and diagrams.

March 23rd, 1922.—The President in the Chair.

The death of Mr. Lachlan Gibb, F.E.S., a life-member, was announced.

Mr. Goodman exhibited an aberration of *Argynnis aglaia* with the discal blotches much increased in area and united to form an irregular band. Mr. Grosvenor, Dr. Chapman's bred series of *Callophrys avis*. Mr. Turner, the remarkable silver Satyrid *Argyrophorus argenteus* from Chile.

April 13th, 1922.—The President in the Chair.

Mr. A. A. W. Buckstone exhibited series of *Brenthis euphrosyne*, all strongly marked, taken on high ground at Horsley, compared with others taken at a much lower elevation in the valley. Also one from Oxshott, with xanthic markings, and ab. *obscura* of *Cleoceris viminalis* from Yorks. Mr. Enefer, beetles attacking lentils from Egypt. Mr. Withycombe, the results of pine-beating at Bagshot, including *Panolis piniperda*, larvae of *Ellopia prosapiaria*, *Chrysopa vulgaris* and *C. prasina* with its prey *Chermes laricis*.

April 27th, 1922.—Mr. K. G. BLAIR, B.Sc., F.E.S., Vice-President, in the Chair.

Mr. A. D. Hobson, of Highgate, Mr. W. Rait Smith, F.E.S., of Bickley, and Mr. A. G. West, of W. Dulwich, were elected members.

Mr. E. E. Green, F.E.S., gave a Lecture on "British Coccidae," with blackboard sketches and numerous coloured figures of species and their depredations. Mr. Grosvenor exhibited a collection of the species and forms of the genus *Endrosa (Setina)*.—HY. J. TURNER, Hon. Editor of *Proceedings*.

THE BRITISH SPECIES OF *HALICTUS* AND *SPHECODES*.

BY R. C. L. PERKINS, M.A., D.SC., F.R.S.

(Continued from p. 101.)

SPHECODES.

♂♂.

- 1 (10) Antennae on their hind surface with the flagellar joints strongly compressed from the sides so as to be cariniform, and the sculpture excessively minute, so that its nature is not distinguishable even under the strongest lens.
- 2 (3) Punctures of the mesonotum so dense that practically no surface is left between them, and they are divided merely by sharp edges
 *scabricollis* Wesm.
- 3 (2) Mesonotal surface to a greater or less extent evident between the punctures.
- 4 (5) Second ventral segment very deeply grooved at the base, in ventral aspect strongly raised from the sulcature, so as to form there a very strongly inclined plane with the general surface; hind tibiae spinose on the upper edge; a very large species
 *spinulosus* v. Hag.

5 (4) Second ventral segment at most gently inclined from the base; hind tibiae not spinose.

6 (7) Head viewed from in front with the vertex behind the posterior ocelli generally distinctly punctured, sometimes subrugose, but the individual punctures for the most part clearly distinguishable; basal pubescent * bands of the flagellum of antennae very strongly dilated at one end.

(Basal abdominal segment conspicuously punctured, the larger punctures not very fine and generally deep, the smaller ones between these excessively minute under a strong lens, so that the contrast between the two kinds is very great)

.... *gibbus* L.

7 (6) Head immediately behind the ocelli generally rugose, with few or no distinct punctures; basal pubescent bands of flagellum not thus strongly dilated.

(Punctures of basal abdominal segment finer and less conspicuous, the larger ones usually less distinct, and the contrast between those of different size less striking.)

8 (9) When the insect is viewed from beneath and from the front, the hair-fringe of the hind trochanters is less conspicuous than that on the adjoining part of the femora, the hair being evidently shorter on the former; head when the vertex is viewed from above wider and thinner, the sides behind the eyes being much more rounded away to the occipital angles (the head of *gibbus* is of much the same form and this common species can be used for comparison)

.... *reticulatus* Th.

9 (8) Hind trochanters, viewed as above, with the white hair-fringe similar to that on the femora at the part where the fringes adjoin one another; head with the vertex comparatively subquadrate, not nearly so much rounded away at the sides (and in this respect distinct from either *gibbus* or *reticulatus*)

.... *monilicornis* K. (*subquadratus* Sm.).

10 (1) Hind surface of the antennae with evident sculpture under a strong lens, often appearing reticulated or with very close, fine punctures (due really to reticulation), the antennae themselves in most species much shorter than in any of the preceding, and no area of dense short pubescence is found on either the hind trochanters or femora beneath.

11 (12) A large species, robust, with strongly, closely punctured mesothorax and scutellum, the basal abdominal segment with irregular and remote, but conspicuous puncturation, the second with a very conspicuous band of close and not very fine punctures, occupying at least the basal third *rufiventris* Panz. (*rubicundus* v. Hag.).

12 (11) The large species have the basal abdominal segment with at most very feeble and few punctures.

13 (28) Hair-band of 10th antennal joint not covering nearly the whole of the joint, at most occupying about half the face of this.

* For the sake of uniformity the 10th antennal joint is used in comparing the bands, these becoming less developed on the more basal joints.

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MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 41 Queen's Gate, S.W. 7 (nearest stations: South Kensington and Gloucester Road).— Oct. 4th, 1922, at 8 p.m.

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

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 7 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

THE LONDON NATURAL HISTORY SOCIETY, now meets in Hall 40, Winchester House, Old Broad Street, E.C. 2, on 1st and 3rd Tuesdays in the month at 6.30 p.m. General meetings 1st Tuesdays, Sectional meetings 3rd Tuesdays. (No meetings in July or August indoors, but field excursions instead.)

Hon. Sec.: W. E. GLEGG, The House, Albion Brewery, Whitechapel Road, E. 1.

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

ENTOMOLOGICAL SOCIETY OF HAMPSHIRE AND THE ISLE OF WIGHT.—This Society has developed from the Southampton and District Entomological Society. Meetings are held on the First Saturday afternoon of each month at Southampton, and other meetings will be arranged in important centres in the county from time to time. Activities being undertaken at the present time include the formation of a library, of collections of insects, and the compilation of a county insect fauna list. Will keen entomologists in the county who are interested please communicate with the

Hon. Sec., F. J. KILLINGTON, 1 St. Catherine's Road, Eastleigh, Hants.

- 14 (15) Hair-band of 10th joint wide throughout, very distinct and definite, occupying half the whole area of the face of this joint, or sometimes more; mesonotum deeply, closely punctured, clothed with unusually long whitish pubescence; basal abdominal segment nearly impunctate; species large or rather large
 *pellucidus* Sm. (*pilifrons* Th.).
- 15 (14) Hair-band of 10th antennal joint less large, its apical margin in some species conspicuously curved and sometimes not clearly defined; some species are quite small, and some have shallow or fine mesonotal puncturation.
- 16 (17) A small species, with black or piceous-black abdomen, only the apices of some of the segments more or less obscurely reddish; propodeum viewed from in front shining, with distinct, well-separated, longitudinal wrinkles, which either end simply or are sometimes more or less connected at their apices, before reaching the brow; scutellum shining, with sparse (or very sparse) feeble punctures; abdomen smooth, shining, and almost impunctate; front tibiae black or brown-black in front *niger* v. Hag.
- 17 (16) Small black-bodied species have the propodeum densely rugose, often strongly reticulated, to the brow; scutellum often strongly punctured; front tibiae often pale in front.
- 18 (23) Mesonotal punctures more or less dense and strong—in *longulus* which is one of the smallest species, they are strong for the size of the insect,—the scutellum in normal examples strongly, and often densely, punctured; these punctures sometimes even coarser than those of the mesonotum.
- 19 (20) Sixth ventral segment nearly always with a shallow depression which is often very vague and feeble, varying in shape and extent and sometimes only to be seen by inclining the insect this way or that *divisus* K. (*similis* Wesm.).
- 20 (19) Sixth ventral segment without a depression, sometimes with a feeble indication of a median raised line.
- 21 (22) Abdomen often coloured as in *niger*, the second abdominal segment with at most extremely fine, feeble punctures basally, just visible under a strong lens. Mesonotal punctures finer than in *divisus* or *puncticeps*.
 (A small narrow species; larger examples with the 2nd segment of the abdomen largely red are referable to var. *epidus* v. Hag.)
 *longulus* v. Hag.
- 22 (21) Second abdominal segment with quite distinct puncturation basally; mesonotum strongly punctured, the scutellum even more coarsely.
 (Conspicuously red-banded forms are common, but melanic ones are not at all infrequent.) *puncticeps* Th.
- 23 (19) Mesonotal punctures in some species dense, but conspicuously shallow and not coarse; in other species the mesonotal punctures are to a large extent remote (or sometimes very remote) and fine.
- 24 (27) Mesonotal punctures, for the most part at least, dense; abdomen ovate, unless unnaturally extended, much like that of a ♀ in shape.

- 25 (26) Hind metatarsus on the outer surface nearly always dark or infuscate, hair-band of 10th antennal joint narrow
 *ferruginatus* v. Hag.
- 26 (25) Hind metatarsus in most specimens clear yellowish; hair-band of 10th joint of the antennae wider, extending usually, where longest, to a point between $\frac{1}{3}$ and $\frac{1}{2}$ the length of the joint
 *hyalinatus* v. Hag.
- 27 (24) Mesonotal punctures at least to a large extent remote—in some examples very remote; abdomen narrow and elongate, more cylindrical..... *variegatus* v. Hag.
- 28 (13) Hair-band of 10th antennal joint very wide, covering the whole face of the joint except a narrow apical portion.
- 29 (30) Mesonotal punctures stronger and coarser, base of hind tibiae above notably pale, yellowish *dimidiatus* v. Hag.
- 30 (29) Mesonotal punctures finer, and the base of the hind tibiae above as a rule dark *affinis* v. Hag.

Owing to their very great variability and the fact that highly aberrant examples occur in the species that follow after *niger*, a brief table of genital characters is here added for these species, so that these doubtful examples may be rightly placed.

- 1 (6) Stipites of the genital armature not grooved.
- 2 (3) Armature very wide, transverse, the lacinia in some aspects bifid
 *divisus* K.
- 3 (2) Armature slender, yellowish or orange in colour, the lacinia not bifid.
- 4 (5) Lacinia produced back along the inner edge of the stipes for a distance about as great as that to which it is produced beyond their apex
 *puncticeps* Th.
- 5 (4) Lacinia not thus produced back
 *longulus* v. Hag.
- 6 (1) Stipites with a great longitudinal groove.
- 7 (8) Lacinia well chitinized, brown or yellowish brown, without a large, thin membranous portion, extending about to the tip
 *hyalinatus* v. Hag.
- 8 (7) Lacinia with a large inner membranous portion, to a considerable extent quite pallid, and extending to, or almost to, the tip.
- 9 (10) Form slender and elongate, mesonotum more or less remotely punctured; three first abdominal segments usually with black or dark bands, rarely the 2nd and 3rd with only fuscous markings in the middle *variegatus* v. Hag.
- 10 (9) Form not slender; mesonotum densely punctured; abdomen sometimes with three entirely red segments, and most often with at least one red one, but sometimes all are black-banded
 *ferruginatus* v. Hag.

S. dimidiatus is easily separated from *affinis* by the much longer lacinia, and neither can be confused with any other of our species.

♀ ♀.

- 1 (2) Second ventral segment very deeply, transversely sulcate at the base, the segment very strongly raised from the sulcature, as viewed beneath.

(Basal abdominal segment with clear, fine, and remote punctures, which become still finer, but denser, a little before the hind margin; a very large species, the vertex of the head rugose behind the ocelli, the pygidial area very narrow, as in *gibbus*.)

.... *spinulosus* v. Hag.

- 2 (1) Second ventral segment of abdomen at most rising gently from the base, and therefore without a deep sulcature.
- 3 (8) Vertex of head on the part behind the ocelli evidently punctured, the punctures often all distinct, and though sometimes more or less rugose the sculpture evidently consists of puncturation.
- 4 (7) Spines on the upper edge of hind tibiae black or pitchy black, rarely rufescent, the hairs amongst which they are placed and those that fringe the metatarsus outwardly, dark or sordid: vertex of head viewed from above not at all subquadrate, but greatly narrowed behind the eyes, the sides being very strongly rounded off.

(Pygidial area narrow.)

- 5 (6) Fourth abdominal segment shining black, with by no means close nor very fine punctures, these being generally irregular in outline; mesonotal punctures very remote, but strong

.... *gibbus* L.

- 6 (5) Fourth dorsal segment greyish from the very numerous, minute, pale hairs clothing it, very finely and densely punctured over almost the whole surface, the punctures at most a little less dense along the border of the apical impunctate part

.... *reticulatus* Th.

- 7 (4) Vertex of head subquadrate, the temples large; the spines of the hind tibiae red or testaceous, the hairs amongst which they lie, and those of the metatarsus, pale.

(Pygidial area flat and not very narrow.)

.... *monilicornis* K. (*subquadratus* Sm.).

- 8 (3) Vertex of head behind the ocelli rugose, rugulose, or roughly sculptured, practically without definite puncturation.

- 9 (10) A large or very large species, robust, the mesonotum strongly, densely, evenly punctured; 2nd abdominal segment with a band of dense and not very fine puncturation, usually occupying about the basal third of the segment; the hairs on the upper edge of the hind tibiae more or less sordid, sooty-grey, or blackish.

(In typical examples three whole segments and a considerable part at least of the 4th are red; the spines of the hind tibiae sometimes black, sometimes red.)

.... *rufiventris* Panz. (*rubicundus* v. Hag.).

- 10 (9) Large species are without this very dense and conspicuous band of punctures, the punctures, when present, being much finer; fringe of the hind tibiae above generally quite pale, whitish or silvery.

- 10a(10b) A small or very small species, with very finely punctured mesonotum and red labrum; 3rd abdominal segment black, in no part conspicuously red; wrinkles of the propodeum longitudinal and remote, at most about four on either side of the strong median one, and these ending simply before reaching the brow, the anterior area being undefined *niger* v. Hag.
- 10b(10a) Some or all of these characters wanting.
- 11 (14) Mesonotal punctures strong, deep, not fine, dense, or at least not evidently remote, the mandibles always with a lateral tooth before the apex.
(Species medium-sized to large, but *divisus* is very variable, and examples of quite small size are frequent.)
- 12 (13) Lateral angles of the pronotum, in dorsal aspect of the insect, more or less obtuse or indistinct; head, viewed from above, wider; pygidial area extremely wide; hairs of the scape of the antennae longer.
. *pellucidus* Sm. (*pilifrons* Th.).
- 13 (12) Lateral angles of pronotum always distinct and very often decidedly prominent; head less wide; the pygidial area narrower
. *divisus* K. (*similis* Wesm.).
- 14 (11) Mesonotal punctures in most species fine, often shallow, and sometimes quite remote; if deep, and not fine, the mandibles are simple, without an anteapical tooth, or the size of the insect is very small.
- 15 (18) Mandibles simple.
- 16 (17) Species larger and not very narrow in form, the face transverse; the mesonotum with very distinct impressed median line, generally reaching at least to its centre. *puncticeps* Th.
- 17 (16) A very small narrow species with subcircular face, the impressed line of the mesonotum generally wanting or little developed, the legs usually much paler than in the preceding
. *longulus* v. Hag.
- 18 (15) Mandibles with a tooth before the apex.
- 19 (20) A moderately large and robust species, the expanse usually about 12 mm. or more, the sculpture of the front part of the head along the middle line from the antennae for half the way or more to the anterior ocellus is rough and very obscure without definite punctures, or almost so.
(Mesonotal punctures never very remote.)
. *ferruginatus* v. Hag.
- 20 (19) Species, except in very large examples of some, smaller than the preceding, often quite small, and the sculpture of the front of the head, in the region above mentioned, consists largely of quite distinct punctures, though these are sometimes very close on the lower part and to some extent confused.
- 21 (22) Second abdominal segment almost impunctate, or with hardly visible punctures, on its basal portion; the third also hardly punctured; posterior (vertical) surface of the propodeum unusually smooth, viewed somewhat from the side its upper part at least has little or no upstanding rugosity, but appears rather to bear some shallow punctures or impressions; towards the petiole rugosities are often distinct *hyalinatus* v. Hag.

- 22 (21) Second abdominal segment at the base generally, the third always with evident puncturation, which is often dense, though very fine; propodeum on its posterior face generally with evident raised wrinkles, and altogether less smooth than that of the preceding.
- 23 (24) Mesonotum somewhat coarsely and deeply punctured for the small size of the insect, the punctures hardly remote; the propodeum with the anterior area always very coarsely rugose, and on each side adjoining the area (*i. e.*, between this and the dorso-lateral angles) equally coarsely rugose *dimidiatus* v. Hag.
- 24 (23) Mesonotum finely punctured, the punctures often shallow and sometimes very remote; propodeum very variable in sculpture *variegatus* and *affinis* v. Hag.

The males of the species of *Sphécodes* can nearly always be separated without exposure of the genital armature; but in the case of some very aberrant example it is safer to do this, though the natural form of the insect may be somewhat altered in the process. *S. dimidiatus* and *affinis* are perhaps not always to be determined with certainty without examination of the armature, though I have not now a sufficient number of the former to be sure on this point, not knowing the extent of its variation. I am unable to find any good characters to separate the ♀ of *variegatus* from that of *affinis*, both species being excessively variable in size and points of sculpture. In a recent work Dr. Reinhold Meyer distinguishes them thus:—

Head, seen from above, broad *variegatus*.
 Head, seen from above, narrow *affinis*.

In my paper* on the Kirby collection I suggested that *S. scabricollis* might be parasitic on *Halictus 4-cinctus*. The *Halictus* meant was the *4-cinctus* of Kirby and British authors, not the species so called on the Continent.

In conclusion, it should be stated that our British species may be looked upon as forming three very distinct groups, which, no doubt, will at some future time be considered as genera, or will be still further divided up in all probability. To some extent these groups probably correspond to the genera that Cockerell and Robertson have already proposed for the American species.

The group of *gibbus* contains five of our largest species, remarkable generally for the long antennae of the ♂ and especially for the peculiar sculpture of these organs, as compared with the other groups. The females are generally easily distinguished by the greater number of alar hooks, and in most of our species by the peculiarly narrow pygidial area.

* Ent. Mo. Mag. 1917, p. 18.

The group of *divisus* has the ♂ armature very wide, the stipites not grooved, and the mandibles toothed in the ♀ in the typical form, with a sub-group in which the mandibles are simple and the armature of the ♂ slender. The third group comprises the species with the stipites of the ♂ genital armature having a large groove longitudinally, the pygidial area of the ♀ narrow and more or less raised in the middle.

Newton Abbot.

January 1922.

NOTES ON ORIENTAL CARABIDAE.—III.*

BY H. E. ANDREWES, F.E.S.

Some new Species of BEMBIDIUM from the Himalayas.

So far as I am aware, nine species of the genus *Bembidium* have hitherto been described from the Indian region, and of these, three only are found in the plains of India. Numerous forms, however, occur in the Himalaya at higher elevations, and six new ones are described in this paper, all of which will, I think, fit into the subgenus *Peryphus*. The characters presented by the Himalayan species generally are such, however, as will render it difficult to place all of them with accuracy in the various subgenera which are in common use for palaeartic members of the genus, and, as an aid to identification, I propose to indicate as far as possible the relationship of the new ones to well-known palaeartic species. More remain to be described, and no doubt many more will be discovered as time goes on. I shall hope to tabulate the Indian species at a later date.

Bembidium regale, sp. nov.

Length 8.0 mm. ; width 3.0 mm.

Head and prothorax blue with some greenish reflections, elytra bright blue, with some faint irregular greenish-black patches, underside black, head and metepisterna with bluish reflections, joint I of antennae and apex of II reddish, apical joint of palpi testaceous, rest of antennae and palpi, with tibiae and tarsi, piceous-black. Surface very shiny.

Head rather small, moderately convex, frontal furrows simple, short, wide, uneven and not very deep, extending to sides of clypeus, which is convex and transversely depressed in front, a small depression on vertex and a few minute punctures at sides, eyes not prominent, antennae reaching quite to basal fourth of elytra. *Prothorax* small, cordate, moderately convex, very little wider than head and not much wider than long, sides rounded, sinuate near hind angles, which are sharp and project a little laterally, though slightly obtuse, owing to

* Part I was issued in vol. lvi, pp. 235-240 (Oct. 1920), and Part II in vol. lvii, pp. 248-252 (Nov. 1921).

the oblique sides of base, a small carina close to angle; median line rather fine, not reaching extremities, basal transverse sulcus not very deep, the foveae small but deep, with a short oblique impressed line at bottom; base rather finely punctate, a few small punctures near marginal channels and apex, surface smooth, with some very faint cross-striation. *Elytra* rather flat, with square shoulders, twice as wide as prothorax and two-thirds as long again as wide, sides very slightly dilated behind, side border reaching very nearly to stria 4; the striae moderately deep, with fairly large and closely-placed punctures, stria 1 only deep to apex, the other striae, though visible throughout, are faint near apex, 6-7 from about two-thirds, apical stria, which is fairly long and deep, joining stria 5, intervals fairly convex on disk, flat at sides and behind, 3 with two large pores on stria 3, placed rather before middle and at apical fourth, surface smooth.

Larger than *B. dalmatinum* Dej. and quite otherwise coloured. The frontal furrows are wider and shallower, the eyes rather more prominent, prothorax a little longer, sides of base oblique close to angles, the elytra actually and relatively much larger, the striae becoming obsolescent nearer to apex. *B. dardum* Bates is smaller, with red legs, and without carina in the basal angle of prothorax.

UNITED PROVINCES: Kumaon, Tanakpur, and R. Sarda Gorge (*H. G. Champion*). The type is in the British Museum.

Bembidium notatum, sp. nov.

Length 4.0-4.5 mm.; width 1.5-1.7 mm.

Head and prothorax dark metallic green, elytra testaceous, with a more or less rhomboidal, crimson-black patch in the middle, underside black, the head and base of venter piceous; joints 1-3 of antennae and base of 4 (rest fuscous), palpi, and legs testaceous yellow. Surface shiny.

Head moderately convex, rather short and wide, the furrows fairly deep, wide, a little uneven, converging slightly in front and reaching nearly to front of clypeus, eyes prominent, antennae slender, reaching basal fourth of elytra. *Prothorax* convex, transverse, very little wider than head, extremities truncate, sides moderately rounded in front, sinuate at basal fourth, hind angles right, with a well-marked carina; the median line, hind transverse impression, and basal foveae are all strongly marked, base coarsely punctate, one or two punctures near front margin, surface smooth with some very faint cross-striation. *Elytra* only moderately convex, half as wide again as prothorax and two-thirds as long again as wide, side border reaching stria 5; striae fairly deep, with large well-marked punctures, stria 1 deep to apex, 5-7 deep only on basal half, all visible throughout, but faint towards apex, apical stria shallow, running from a point where 5-7 join to apex, intervals convex in front, nearly flat towards apex, 3 with two deep pores at about a third and two-thirds, adjoining stria 3. The common dark spot is irregular in outline, but usually extends on each side to stria 5, the front margin somewhat indented, hind margin produced and truncate. Underside smooth.

Allied to *B. rupestre* L., though otherwise coloured; head, prothorax, and elytra all rather wider, so that the form is less elongate. Frontal furrows deeper, antennae more slender, median line of prothorax deeper, elytral striae deeper, the punctures larger, the pores on interval 3 similarly placed. The testaceous elytra, with median dark patch, will at once distinguish this from all other Indian species.

UNITED PROVINCES: Kumaon, Upper Gunti Valley, W. Almora (*H. G. Champion*), and Binsar, 7700 ft. (*Dr. A. D. Imms*—For. Res. Inst.). BIHAR: Pusa (*Dr. M. Cameron*—For. Res. Inst., and Agric. Res. Inst.). Type in British Museum.

Bembidium xanthochiton, sp. nov.

Length 5.0-6.0 mm.; width 2.0-2.25 mm.

Head and prothorax dark metallic green or blue, elytra (including epipleurae) testaceous; palpi, joints 1-4 of antennae (apex of 4 and 5-11 fuscous), and legs flavous; underside black, greater part of ventral surface brown. Head and prothorax shiny, elytra only moderately so.

Head convex, wide, frontal furrows rather deep, parallel, extending on to clypeus, eyes prominent, antennae slender. *Prothorax* convex, transverse, a little wider than head, sides gently rounded in front, sinuate at basal fourth, hind angles right, with well-marked carina; median line fairly deep, front transverse impression fine but evident, hind one and basal foveae deep, base coarsely punctate, the surface smooth and polished, but with some very fine cross-striation. *Elytra* moderately convex, half as wide again as prothorax and rather more than half as long again as wide, side border reaching stria 5; striae moderately impressed and rather finely punctate, stria 1 only deep to apex, the others obsolescent behind, but visible to near apex, the outer striae less deeply impressed than the inner ones, apical stria very slightly developed, intervals slightly convex on disk, flat at sides and behind, 3 with two rather small pores at about a third and two-thirds, adjoining stria 3. Underside smooth.

The uniformly testaceous elytra will distinguish this species from any other Indian one known at present. It is closely allied to *B. notatum*, just described, but larger and without any black spot on the elytra. The head and prothorax are very similar, though a little wider, the elytra less shiny, less deeply striate, and with finer punctures.

UNITED PROVINCES: Kumaon, Upper Gunti Valley and Ranikhet, W. Almora (*H. G. Champion*); Mussoorie, Mossy Falls, and Kemti Falls (*Dr. M. Cameron*—For. Res. Inst.). PUNJAB: Simla Hills, Theog, 7600 ft. (*S. N. Chatterjee*—For. Res. Inst.). SIKKIM: Rangit Valley and Gopaldhara (*H. Stevens*). The type (Gopaldhara) is in my collection,

An example in my collection from Yunnan-fou differs only in its slightly larger size, less prominent eyes, and rather deeper striae.

Bembidium cameroni, sp. nov.

Length 5.0-5.75 mm.; width 1.60-1.90 mm.

Upper surface brassy, underside dark red-brown; joints 1-2 of antennæ and base of 3-4 (rest fuscous), palpi (penultimate joint fuscous at apex), and legs testaceous. Surface shiny.

Head with simple, deep, elongate furrows, uneven at bottom, curving back behind eyes, which are prominent, antennæ thick, reaching basal third of elytra, surface smooth, middle of front punctate. *Prothorax* convex, cordate, very little wider than head and barely a third as wide again as long, extremities truncate, front angles strongly declivous, sides gently rounded, sinuate near base, hind angles right, with distinct carina; median line deep, very deep and wide over basal third, and bounded here by a distinct ridge on each side, foveae deep, close to angles, base transversely depressed, very coarsely and confluent punctate, surface smooth, one or two fine punctures along site of front transverse impression. *Elytra* convex, elongate-ovate, rather pointed behind, not quite twice as wide as prothorax and also not quite twice as long as wide, shoulders small but quite distinct, side border terminating opposite stria 5; punctate-striate, outer striae rather faint, stria 1 deep to apex, the others obsolete from apical fourth, scutellary striole short, meeting 1-2, which join at base, in a deep angular depression on each side of the scutellum, apical stria effaced, though its pore is large and conspicuous; intervals hardly convex, even on disk, but 1 is a little raised, 3 with two well-marked pores at a little before a third and two-thirds, the area surrounding the front one depressed. Underside smooth, proepisterna with a few coarse punctures.

Much narrower than *B. nitidulum* Marsh. and a little longer, coloration similar, except for the wholly testaceous femora. Head relatively wider, with deeper, wider, and longer frontal furrows, middle of front punctate; prothorax with median line much deeper behind, the base far more coarsely punctate; elytra more elongate, base deeply depressed on each side of scutellum, interval 3 with front pore larger and more conspicuous, striae, including apical stria, more effaced behind.

PUNJAB: Simla Hills, Gahan, 7000 ft. (*Dr. M. Cameron* and *S. N. Chatterjee*), 6 ex. The type is in the British Museum.

Bembidium radians, sp. nov.

Length 3.6-4.0 mm.; width 1.5-1.6 mm.

Upper surface dark bronze (sometimes greenish), underside black with brassy reflections; joints 1-2 of antennæ, also base of 3-4 (rest fuscous), apical joint of palpi, and legs dark red, tibiae a little lighter, surface very shiny.

Head with simple, parallel furrows, extending to clypeus, bounded outwardly by very distinct ridges, the space between them convex, a few small punctures on each side behind, eyes not prominent, neck rather wide, antennæ hardly reaching basal fourth of elytra. *Prothorax* convex, cordate, rather wider than broad and half as wide again as long, base truncate, apex emarginate, with a

distinct border, narrower and more clearly marked at sides, the sides gently rounded, sinuate at about a fourth from base, hind angles sharply rectangular, with well-developed carina; median line usually impressed in middle only, basal foveae deep, contiguous to hind angles, the base moderately depressed and coarsely but not very closely punctate, one or two punctures generally extending forwards along sides and median line, surface smooth. *Elytra* convex, ovate, a little more than a third as wide again as prothorax, and about half as long again as wide, shoulders much rounded, extremity a little pointed, side border barely reaching stria 5, above which it ends in a minute tooth, there being no basal border; punctate-striate, both striae and punctures moderately deep on disk, but very faintly impressed behind and at sides, especially stria 7, though the punctures on the inner striae are visible to near apex, stria 1 deep throughout, curving sharply round at apex and generally joining 2, which is a little deeper than the others and sometimes interrupted before extremity, scutellary striole short, apical stria fairly deep, joining 5; intervals moderately convex on disk, flat at sides and behind, 3 with two large pores adjoining stria 3, placed a little before a third (where the elytra are slightly depressed) and two-thirds respectively, surface smooth and polished. Underside smooth.

Not unlike *B. lampros* Herbst, but less brightly coloured. Head with shorter and narrower furrows, eyes smaller; prothorax narrower, the sides much less strongly rounded; elytra without basal border, more convex, sides more strongly rounded, shoulders nearly effaced, striae deeper and reaching nearer apex, stria 1 joining 2 at apex, a well-marked apical stria.

SIKKIM: Lachung, Gopaldhara, Karponang, and Tonglu, 10,000 ft. many examples (*H. Stevens*). UNITED PROVINCES: Kumaon, West Almora, Sunderdhunga, 8000 to 12,000 ft.; Pindar Valley, 8000 to 11,000 ft.; Nainital, Ranikhet, Bhatkot, many examples (*H. G. Champion*). PUNJAB: Simla Hills, Baghi, 8500 ft., above Kufri, 8500 ft.; Narkanda, 9000 ft. (all *Dr. S. W. Kemp*—Ind. Mus.). The type (Gopaldhara) is in my collection.

In the Simla examples the legs are lighter in colour, and the upper surface has a distinct greenish tinge.

Bembidium kempii, sp. nov.

Length 3.5–4.0 mm. : width 1.4–1.75 mm.

Upper surface dark aeneous, apex of elytra sometimes faintly red, beneath piceous black; joint 1 of antennae and base of 2–4 (rest fuscous), and palpi (penultimate joint fuscous) testaceous, legs flavous (sometimes a little darker). Surface shiny.

Head with simple, short, wide, parallel but comparatively deep furrows, eyes moderately convex, antennae barely reaching basal third of elytra, surface smooth. *Prothorax* convex, cordate, distinctly wider than head and about a

third as wide again as long, extremities truncate, sides rounded and sinuate rather before base, hind angles right and very sharp, with a clearly-marked carina; median line not very deep, generally foveiform behind, but not as a rule reaching base, front transverse impression distinct, base depressed, foveae rounded and fairly deep, surface smooth, basal area coarsely punctate, a few punctures near front margin. *Elytra* moderately convex, slightly dilated behind, about half as wide again as prothorax, and as much longer than wide, shoulders distinct, side border extending to stria 5; punctate-striate, outer striae well marked on basal half, stria 1 deep to apex, the others obsolete behind, 2 visible close to apex, where it joins 1, a slight ridge at this point between it and the very short apical stria. scutellary striole rather short, strongly impressed at base, where it joins 1-2; intervals slightly convex on disk, 3 with two small but distinct pores at a third and two-thirds. Underside smooth.

Resembling *B. nitidulum* Marsh., but a little smaller, the legs paler. Head with deeper furrows; prothorax a little narrower, the base more coarsely punctate, the carina at hind angles finer; elytra less rounded in front, apical stria much shorter.

PUNJAB: Simla Hills, near Matiana, 8000 ft. (*Dr. S. W. Kemp*—Ind. Mus.) 6 ex.; 7000 ft. (*Dr. N. Annandale*—Ind. Mus.) 1 ex.; Theog, 7600 ft. and Kotgarh, 7000 ft. (*S. N. Chatterjee*—For. Res. Inst.) 2 ex. UNITED PROVINCES: Dehra Dun, 1 ex.; Mussoorie, Mossy Falls and W. S. Falls, 2 ex.; Chakrata, Mohna, 5000 ft., 3 ex. (all *Dr. M. Cameron*—For. Res. Inst.). The type is in the British Museum.

A CONTRIBUTION TOWARDS THE LIFE-HISTORY OF
DICTYONOTA STRICNOCERA FIEB.

BY E. A. BUTLER, B.A., B.SC., F.E.S.

Of the Tingid genus *Dictyonota* Curt. twenty Palaearctic species have been catalogued, but the British representatives of this particular genus of lace-bugs amount to no more than three. Of these three, in my experience, the species which forms the subject of the present paper is the commonest and the most widely distributed; in fact, as one's familiarity with natural associations and inter-relations increases, one is more and more inclined to think that no old-established furze-bush can properly be considered complete unless it has its due complement of *D. strichnocera* Fieb.

I have not yet been able to find the eggs in the open, and my knowledge of them is derived from such as I have taken from the body of the pregnant ♀. From some specimens captured in August, I have obtained in this way eggs which seemed to be quite mature and ready

for laying. In comparison with the size of the insect, the egg is certainly large, being about $\frac{3}{4}$ mm. long; five were enough to fill all available space in the abdomen of the mother-bug. The egg is tubular, rounded posteriorly, slightly curved towards the anterior end, which is terminated by a distinct rounded rim, beneath which the egg is constricted. The colour is brownish-yellow, with the rim and about a quarter of the length of the egg behind it, pitch-black. The eggs are probably laid within the stems of the furze-bushes, as that is the food-plant, and the ♀ is provided with a saw-like ovipositor, a structure which in other instances implies the insertion of the eggs in vegetable tissues. If this is so, they should probably be looked for in the younger and more tender shoots of the plant, for although the saws are set in a strong framework which presumably serves as an attachment for relatively powerful muscles, and have a very distinct serration, yet the whole apparatus is so small that it would probably not be able to pierce the hard wood of the *Ulex*.

I have not yet been able by actual observation to determine the number of larval instars, nor have I seen the very youngest of them, the newly-hatched bug, but from the two instances that I have seen, I should judge that, as with the rest of the *Tingidae*, very little external change beyond the development of wings and hemielytra takes place in their progress through larval life, and it may with every probability be concluded that the younger stages in this case very closely resemble the nymph or last larval instar. This presents several structural features of considerable interest, and may be described as follows from examples taken in Epping Forest on July 13th, 1912:—Length just over 2 mm.; oval, dull black above, covered with minute white stellate, sessile, spine-like hairs; abdomen beneath slightly tinged with red; hinder part of head and angles of pronotum pinkish; the hairs (or perhaps one should call them spines) either tri- or quadri-radiate, the triradiate ones bearing a close resemblance on a smaller scale to the spicules of the sponge *Grantia*; occasional examples of quinque-radiate hairs may be seen; similar hairs, though less numerous, are found beneath, on the head, sternum, and sides of abdomen, but not on the central part of the latter; a marginal series of pale spots at the junctions of the abdominal segments; pronotum pentagonal and centrally carinated, the carina rising behind into a kind of tubercle; on the head four forward-directed spines, two close to the eyes and between them, and the other two on the front margin; the latter yellowish with dark base; legs black, except for a broad, pale, ill-defined ring near the apex; tarsi two-jointed, basal joint exceedingly

small; area of scent-glands, in centre of abdomen, distinguishable by being darker and less dull, and having no stellate hairs; eyes very prominent, facets large and granular; antennae very stout, third and fourth joints tuberculate, each tubercle provided with a very short, adpressed seta, only to be seen with a high magnifying power; wing-pads narrow, extending to fourth abdominal segment; each segment of abdomen, except the two carrying the scent-glands, bearing a conical tubercle in the middle of its hind margin.

An earlier instar, measuring only $1\frac{1}{4}$ mm. in length, is as above, except that the wing-pads are quite rudimentary, overlapping one segment only.

The very curious stellate hairs absolutely disappear in the adult, leaving no representative; the abdominal tubercles also disappear, and one can only speculate as to the significance and use of these structures. Whatever it may be, it must have something to do with the fact that the dorsal surface of the abdomen is always exposed during larval life, whereas it is always covered by wings and hemielytra in adult life, except when these are opened for flight. In the adult, the upper surface of the abdomen is perfectly smooth throughout, the regularity of its surface being broken by neither hairs, tubercles, nor any other sort of excrescences. The disappearance of the hairs from the ventral surface would apparently depend upon some other consideration. The presence of stellate hairs would seem to be a specific rather than a generic character, as no such structure is to be seen in the larva of the allied species, *D. tricornis* Schrk. The spines on the head, on the other hand, do not disappear, but become more pronounced. The cast skin remains black, and is therefore not to be thought of as a colourless and transparent film, allowing a deeper layer of colour to show through, but, as itself contributing very largely to the colour of the insect.

The imago may be found from June to October, but the majority of specimens appear to mature in July. I have found the sexes mated in August, and it seems probable that oviposition takes place in the autumn, the eggs not hatching, however, till late in the spring of the following year.

I have always found this insect on furze, of which it sucks the juices; to this Saunders adds broom; where it occurs it is usually common, being, unlike *D. tricornis*, gregarious; occasionally it appears in great profusion, as, for example, in Aug. 1882, when the furze-bushes at Hurst Green, Sussex, swarmed with it. It has also been found in moss (Linnell). Douglas & Scott (Brit. Hem.) also give "under moss

in dry places"; this may perhaps be a hibernating resort for such few specimens as may survive the winter, but I do not think such an event is at all common. Morley swept a specimen from Mullein, and this may have been merely a fortuitous occurrence; but it must be remembered that the broad leaves of *Verbascum*, and especially the dead ones, are well known to shelter other species of *Tingidae*.

D. strichnocera is distributed throughout Central and Southern Europe. In Britain it is more widely spread than *D. tricornis*, and has been recorded from all the coast counties from Norfolk to Cornwall inclusive, as well as from Cumberland, Yorks, Notts, Leicester, Warwick, Hereford, Gloucester, Monmouth, Oxon, Bucks, Herts, Middlesex, Surrey, Berks, and Wilts—24 English counties in all. The only Welsh records are from Carmarthen and Glamorgan, and it occurs in Scotland, but is not recorded from Ireland.

35 Kyrle Road, Clapham Common.

June 30th, 1922.

TWO ADDITIONS TO THE LIST OF BRITISH TACHINIDAE (DIPTERA)

BY MAJOR E. E. AUSTEN, D.S.O.

Since the publication of the late Mr. G. H. Verrall's "List of British Diptera" in 1901, the exertions of Mr. C. J. Wainwright and others have contributed a number of additions to the names of the *Tachinidae* therein recorded, but, so far as the present writer has been able to discover, the occurrence in Great Britain of the two species mentioned below has hitherto escaped notice.

Billaea irrorata Mg.—In the case of this fly, which is of interest in being one of the small minority of *Tachinidae* that are parasitic upon Coleoptera, the host is *Saperda populnea* L., a common and widely distributed Longicorn, the larvae of which attack the smaller branches of the poplar, aspen, and other trees. The first specimen of *B. irrorata* to be recognized in this country was a female, bred at Kew, in April 1921, from material obtained at Bagshot, by Dr. J. W. Munro, and subsequently presented by him to the British Museum (Natural History); while in June of the present year a series of examples of the species was similarly obtained at Abbey Wood, Kent, by Mr. St. John Marriott, who has generously added two females to the National Collection. An interesting point in connection with the life-history of *B. irrorata* is that pupation takes place inside the branch attacked by the larva of *S. populnea*, in the tunnel left by the latter. This is well

seen in portions of two small branches of aspen (presented to the Museum by Mr. Marriott), both excavated by *S. populnea*; these have been pared away on one side to show the borings, and in each specimen there is an empty puparium of *B. irrorata* blocking the tunnel. The writer is informed by his colleague Mr. F. Laing that, in the summer of 1921, he found *B. irrorata* puparia in numbers in the neighbourhood of Oxshott and Leatherhead, Surrey, in aspen branches attacked by *Saperda*, but that a whole afternoon's investigation of aspen trees on Stanmore Common, Middlesex, where *S. populnea* is abundant, failed to yield any evidence of the presence of the fly. It would therefore seem that the latter may be somewhat local in its distribution, and that it does not necessarily occur wherever its host is met with.

As regards the appearance of *B. irrorata*, it may be noted that, in the female sex at any rate, the fly shows a certain general resemblance to a smallish *Sarcophaga*, and that, though the face exhibits little or no trace of a keel, the arista is conspicuously plumose.

Onesia germanorum Villen.—Of this species, which in its general *facies* presents a deceptive resemblance to a *Calliphora*, and was described fifteen years ago [*cf.* Villeneuve, Ann. Soc. Ent. France, lxxvi, p. 398 (1907)] from specimens from Prussia, the British Museum (Natural History) possesses one male and four females, taken at Nethy Bridge, Inverness-shire, 29–30.vii.1911, by Lt.-Colonel J. W. Yerbury, by whom they were presented.

British Museum (Natural History),
Cromwell Road, London, S.W. 7.
July 17th, 1922.

A CECIDOMYID, *PERRISIA HARRISONI*, NOM. NOV.

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

In 1914, Riihsaamen ("Marellia," xiv, p. 107) described a species of Cecidomyid under the name *Dasyneura jaapiana*, the yellow larvae of which are to be found in a "leaf-pod" gall on *Medicago lupulina* (Houard, No. 3509, and Bagnall & Harrison, No. 158).

Overlooking this, he later described another species of the same genus under the same name, this latter having a red larva affecting *Spiraea ulmaria* (*Ulmaria pentapetala*), and, in changing the name,

I have pleasure in dedicating it to my friend and colleague Dr. J. W. H. Harrison.

Perrisia harrisoni, nom. nov.

for *Dasyneura jaapiana* Rübs. (pre-occupied), 1917, Sitz. Ges. Naturforsch. Fr., Berlin, 1917, p. 50.

This species is probably referable to the *Cecidomyiidae* sp. recently recorded (Bagnall & Harrison, Ent. Rec. xxxiv, p. 61) as an inquiline in galls of *Perrisia ulmariae*, and not B. & H. 119 as suggested (*l. c.* xxxiii, p. 154), but further investigation is necessary before the point can be decided.

15 Grey Street, Newcastle-on-Tyne.

June 16th, 1922.

EMPIDIDAE FROM THE SEYCHELLES.

BY JAMES E. COLLIN, F.E.S.

[The following article forms part of the results of the Percy Sladen Trust Expedition to the western Indian Ocean under Professor J. Stanley Gardiner, F.R.S., in 1905 and 1908-9. Most of these reports are published in a special series of volumes, Trans. Linn. Soc. London, ser. 2 (Zool.), xii-xviii (from 1907 onwards). But it has not been possible to include them all in those volumes, and I am indebted to the Editors of the Ent. Mo. Mag. for allowing this account of the *Empididae* to appear here.

The material of this family belongs to 5 species representing 4 genera. The specimens were all collected in the Seychelles, and, with one exception, at high elevations in or near the endemic forests of the islands of Mahé and Silhouette. The one exception is *Drapetis angustata*, sp. n., all the examples of which were taken near sea-level, some on a cultivated islet, the rest on marshy ground in Mahé. Of the 5 species, the first two are referred (with some reservation) respectively to a South African and to a New Guinea species: the other three are described as new.

The other reports on the Diptera of this Expedition will be found as follows:—*Cecidomyiidae*, by J. J. Kieffer, Tr. Linn. Soc. xiv, pp. 315-330 (1911); *Chironomidae*, id., *t. c.* pp. 331-366, pl. 21 (1911); *Mycetophilidae*, G. Enderlein, *t. c.* pp. 59-81 (1910); *Sciaridae*, id., *op. cit.* xv, pp. 181-194, pl. 9 (1912); *Psychodidae*, A. E. Eaton, *t. c.* pp. 423-432, pl. 26 (1913); *Scatopsidae*, *Simuliidae*, G. Enderlein, *op. cit.* xvi, pp. 373-375 (1914); *Tipulidae*, F. W. Edwards, *op. cit.* xv, pp. 195-214, pls. 10, 11 (1912); *Culicidae*, F. V. Theobald, *t. c.* pp. 81-94, pl. 4 (1912); *Stratiomyiidae*, K. Kertész, *t. c.* pp. 95-99 (1912); *Tabanidae*, E. E. Austen, Bull. Ent. Research.

xi, pp. 43-45 (1920); *Bombyliidae*, M. Bezzi, still to be published (with *Muscinae*, etc.); *Asilidae*, *Scenopinidae*, *Dolichopodidae*, *Pipunculidae*, *Syrphidae*, C. G. Lamb, Tr. Linn. Soc. xviii, pp. 361-416, pls. 27-30 (1922); *Phoridae*, J. E. Collin, *op. cit.* xv, pp. 105-118, pl. 5 (1912); *Borboridae*, id., *t. c.* pp. 101-104 (1912); *Lonchaeidae*, *Sapromyzidae*, *Ephydriidae*, *Chloropidae*, *Agromyzidae*, C. G. Lamb, *op. cit.* xv, pp. 303-348, pls. 15, 16 (1912); *Heteroneuridae*, *Ortalidae*, *Trypetidae*, *Sepsidae*, *Micropezidae*, *Drosophilidae*, *Geomyzidae*, *Milichiidae*, id., *op. cit.* xvi, pp. 307-372, pls. 19-21 (1914); *Anthomyiidae* (exclusive of *Muscinae*), P. Stein, *op. cit.* xiv, pp. 149-163 (1910); *Muscinae*, *Sarcophaginae*, *Deviinae*, *Tachininae*, M. Bezzi, still to be published (in same report with *Bombyliidae*)*; *Hippoboscidae*, *Nycteribiidae*, H. Scott, Tr. Linn. Soc. xvii, pp. 161-167 (1914).—HUGH SCOTT.]

HYBOTINAE.

1. *Syndyas nitida* Loew.

Resembling the European *S. nigripes* but larger, thorax shorter haired, and legs darker and more strongly bristled.

♀. Eyes touching for a long distance above, but very narrowly separated below, the antennae; upper facets enlarged. Thorax shining black but pleurae and margin of disc (humeri, notopleural and prescutellar depressions, postalar calli and margin of scutellum) slightly brownish pollinose. Abdomen black with a violet tinge, very elongate, slender, widest about middle. Pubescence conspicuous on basal half, shorter towards tip, the hairs on first one or two segments pale. Legs shining black, pubescent and strongly bristled. Front tibiae with only apical bristles and these short; mid tibiae with three widely spaced antero-dorsal spinose bristles besides the apical ones of which one beneath is very long; hind femora and tibiae slender at base, much dilated towards tip, the femora with a complete antero-ventral row of about twelve strong spines and two strong antero-dorsal spines on apical half; tibiae with three antero-dorsal bristles, one near base, another at middle, the third at tip. Basal joint of front tarsi with a pair of bristles above at tip, and a finer antero-dorsal bristly hair at middle, clothed behind with fine pubescence like that behind tibiae, antero-ventrally with shorter hairs mixed with short bristles of which one at tip is more distinct; second joint with a similar but shorter and finer pair of bristly hairs at tip, otherwise much shorter haired; middle tarsi very similar but basal joint with the antero-dorsal bristle at middle stronger, the antero-ventral bristles and hairs less numerous, the pubescence behind less dense, while postero-ventrally about base there are 2-3 distinct bristles; basal joint of hind tarsi considerably dilated with a pair of bristles at tip above and a double row of distinct spines antero-ventrally, otherwise short-haired. Wings faintly yellowish-brown, the stigma slightly more so; discal vein after leaving discal cell slightly bowed downwards, then curved up towards cubital, and only parallel with it for a very short distance at tip; this last section of discal vein one-third longer than penultimate section, and the last section of next (fifth) vein about three-quarters the length of its penultimate section.

Length about 3.75 mm.

* This work will appear in "Parasitology" (Cambridge), vol. xiv, No. 3 or No. 4.

Loc. Seychelles, Silhouette: near Mont Pot-à-eau, ca. 1500 ft., viii. 1908, 1 ♀.

Loew described *S. nitida* from a female taken in Caffraria by Wahlberg. His description is too brief to enable one to recognise the species with any degree of certainty, therefore it has been considered advisable to give in some detail the characters of the Seychelles specimen.

In addition to the species mentioned in Kértesz's "Katalog," Meijere described in 1910 two species from Krakatau and Java, both of which appear to differ from the Seychelles specimen, and a third species in 1913 from Ceram the description of which it has not been possible to collate.

2. *Parahybos iridipennis* Kertesz.

♀. Upper facets of eyes very conspicuously enlarged. Occiput dulled by brownish dust except for a brightly shining stripe from ocelli to neck. Face short and retreating. Antennae hardly more than translucently brownish. Arista quite bare. Thorax remarkably arched, the vertical height in profile from base of wing being equal to the length from prothorax to base of scutellum. The brownish tomentum very conspicuous in some lights, but when thorax is viewed from above does not hide the somewhat shining black ground-colour. Scutellum with about twelve brownish-black hairs round margin, of which a pair are rather longer and stronger. Abdomen broadest about middle, conspicuously dusted brownish, the brownish-black hairs rather long and conspicuous on first 2-3 segments, becoming shorter towards tip of abdomen. Legs shining and pubescent, brownish-black (or translucently brownish) on coxae, trochanters, and femora, and to a greater or less extent about middle of tibiae. The tip of femora, the base and tip of tibiae (to greatest extent on middle tibiae), the anterior tarsi (except last joint), and hind tarsi on middle joints, yellow. Middle tibiae with a conspicuous antero-dorsal dark bristle at rather less than basal third, and a long yellow apical bristle beneath. Hind femora slender, pubescent, with 3-4 widely spaced, more conspicuous, antero-ventral bristly hairs. Hind tibiae antero-dorsally with a long dark bristle at basal third and a shorter finer bristle just before tip, in addition to a long yellow preapical bristle above. Wings faintly brownish and strongly iridescent. Subcostal cell narrow, the elongate yellowish stigma occupying the whole of end of cell. Discal cell much longer than broad. Halteres with large dark knobs and brownish-yellow stems.

Length 2.5 to 3 mm.

Loc. Seychelles, Silhouette: Mare aux Cochons plateau and forest above, 1000-2000 ft., ix.1908, 2 ♀.

The identity of the Seychelles specimens with the type species of *Parahybos* from New Guinea, described by Kertesz as *iridipennis*, may be open to some doubt, but their small size, extraordinarily arched thorax and extensively yellowish legs, makes it very probably correct.

A number of other species of *Parahybos* have been described by Bezzi and Meijere from Formosa and Java, and the first author has expressed a doubt as to the genus being really distinct from *Syneches*. In the Seychelles specimens, however, the hind femora are particularly slender and the arista certainly supra-terminal.

TACHYDROMINAE.

The two apparently undescribed species of *Drapetis* included in the collection both belong to the group with distinct jowls between lower eye-margin and palpi, a bristle beneath second antennal joint, the four anterior tibiae with a pair of bristles at tip, and hind tibiae with a strong apical projection behind.

3. *Drapetis basalis*, sp. n.

♀. Frons dull brownish-black, rather wide—almost as wide opposite front ocellus as third antennal joint is deep—narrowing to half this width in front. Face linear. A single pair of ocellar and a single pair of vertical bristles, the latter wide apart (nearly half the width of head). Occiput dusted greyish. Antennae short, basal joint very short and inconspicuous, second about as long as deep and with a single black bristle beneath at tip, both joints yellowish, third joint brownish-black, ovate (almost circular) with a very long practically bare arista. Palpi ovate, yellowish, with a single dusky hair at tip. Thorax (including pleurae) mainly shining black, the disc clothed with short yellowish hairs; two noto-pleural, one supra-alar, one postalar, a single pair of prescutellar dorso-central, and a pair of scutellar, bristles. Scutellum with, in addition, a pair of basal, and a still shorter pair of apical, hairs. The bristles all black. Abdomen black, brightly shining throughout, third segment the longest, fourth short, all very sparsely haired. Legs yellowish-brown, somewhat variable, usually rather darker on hind tarsi. All femora with a small black preapical bristle in front. Hind tibiae with two short apical bristles in front, and 2-3 long curved fine hairs beneath towards tip. Basal joint of hind tarsi with a small antero-ventral bristle at middle and another at tip. Wings faintly yellowish with yellowish-brown veins, and a distinct bristle at base of costa. Radial, cubital, and discal veins almost parallel and slightly and evenly upcurved (only the cubital vein faintly recurved just before tip). Distance between cross-veins equal to about three-fifths length of last section of postical vein. Halteres yellow.

Length about 2 mm.

Loc. Seychelles, Mahé: Cascade Estate, 800-1000 ft., x.1908-i.1909, 3 ♀.

4. *Drapetis angustata*, sp. n.

♂. Ocellar triangle and frons much narrower than in *basalis*; the single pair of ocellar and vertical bristles yellowish, the latter closer together (less

than one-quarter the width of head). Antennae longer, basal joint distinct, almost as long as second, the second rather longer than deep with a distinct bristle beneath at tip, these two joints having a tendency to be yellowish. Third joint about half as long again as deep at base, and hardly deeper than second joint; the long arista distinctly pubescent. Palpi dusted greyish but of a dark ground-colour, the apical bristle yellowish. Thorax as in *basalis*, but pleurae extensively dusted greyish with a large polished spot on the sternopleura and a smaller one on the hypopleura; no black bristly hairs mixed with the pale pubescence on disc of thorax. The large metathorax, which in *Drapetis* may often easily be mistaken for the first abdominal segment, is also dusted greyish. Abdomen shining black, occasionally somewhat brownish especially towards tip; the pale upcurved fine pubescence conspicuous at sides. Legs yellow, but tibiae and tarsi often somewhat yellowish-brown. Chaetotaxy as in *basalis* but the preapical bristles to hind femora hairlike and very inconspicuous; a few hairs of the pale pubescence beneath hind tibiae towards tip are somewhat long but not so distinct or bristly as in *basalis*; no distinct bristle at middle of basal joint of hind tarsi behind. Wings long and narrow, very faintly brownish; cubital vein slightly downcurved towards tip; discal vein somewhat undulated; distance between cross-veins about two-fifths the length of last section of postical vein. Halteres pale yellow.

♀. Resembling the male but abdomen more pointed and ending in a pair of slender hairy papillae.

Length about 2 mm.

Loc. Seychelles, Long Island (a small cultivated islet off the coast of Mahé), vii.1908, 4 ♂, 2 ♀. Mahé: marsh near coast at Port Glaud, 5.xi.1908, 1 ♂, 1 ♀; marshes on coastal plain at Anse aux Pins and Anse Royale, i.1909, 1 ♂.

All the other species were found at high elevations, in or near the endemic forests. In this species alone all the examples were taken at places near the coast and almost at sea-level.

5. *Tachydromia lacteiseta*, sp. n.

Allied to *albiseta*, *albocapillata*, etc., having similar antennae, thorax with humeri only slightly differentiated, and front femora with a few bristly hairs beneath.

♀. Frons and face equally very narrow (about width of front ocellus), dusted greyish. Occiput all dusted greyish. Ocellar bristles very minute and the single pair of vertical bristles wide apart (two and a half times width of ocellar triangle). Antennae black, elongate, third joint slender, quite five times as long as deep at base and pubescent; arista not quite so long as third joint, milk-white and pubescent. Palpi small, dark yellowish, but clothed with greyish pile and bearing a few pale hairs. Proboscis short, not much more than one-third the height of head. Thorax with a distinct tendency to be reddish-brown, the disc blacker and more sparsely dusted brownish-grey; pleurae usually more distinctly reddish, sparsely dusted greyish and without a

polished patch on sternopleura. Acrostichals and dorso-centrals very difficult to trace, apparently the few very short hairs present are arranged as two rows of widely separated acrostichals and uniserial dorso-centrals, the last 1-2 pairs of the latter before scutellum longer. One notopleural, one supra-alar, and a pair of apical scutellar, bristles; the latter with a pair of outer short hairs near by. Abdomen apparently very extensively membranous, reddish-brown, dulled with brownish-grey dust, and terminating in two short, slender, hairy, papillae. Any pubescence present very short and inconspicuous. Legs yellow, front tibiae and tarsi and tips of posterior tarsi brownish. Front femora not very stout, spindle-shaped, bearing 2-3 distinct yellowish bristly hairs on basal half postero-ventrally. Front tibiae quite slender. Middle femora stout and quite one-third longer than middle tibiae, the double row of minute black spines extend only as far as the tibiae reach when bent up beneath, and on the basal third beneath there are some longer yellowish bristly hairs, and postero-ventrally a row of longer yellow bristles the whole length of femur. Middle tibiae much stouter at base than at tip, laterally somewhat compressed, incurved and terminating beneath in a short trowel-shaped projection. Hind femora and tibiae quite slender. Wings with cubital vein almost straight and discal vein only slightly bowed at middle, for the rest practically parallel with cubital. Cross-veins superimposed, the lower one only slightly oblique. Halteres dusky.

Length 2.25-2.5 mm.

Loc. Seychelles, Silhouette: forest above Mare aux Cochons, 1000-2000 ft., ix.1908, 3 ♀; near Mont Pot-à-eau, highest forest, over 2000 ft., viii.1908, 5 ♀.

Newmarket.

June 1922.

Asemum striatum, etc., in the New Forest.—This Longicorn, until comparatively recent years, was generally regarded as a somewhat uncommon species of strictly northern distribution in Britain, confined to pine woods in Scotland and not being found south of the Border; and the announcement of the capture of a specimen in the New Forest by Messrs. B. G. Rye and P. F. Skinner, in the early summer of 1893, created no small sensation among Coleopterists. Further records of the occurrence of single specimens of the beetle in the South appeared at intervals in subsequent years, and in 1902 it was found in abundance in the New Forest by Mr. F. G. Smith. This gentleman, in *Trans. Ent. Soc.*, 1905, pp. 165-176, gives a detailed and highly interesting account of the life-history of the insect, wherein he expressed the opinion (*l. c.* p. 165) that "it has been abundant in the New Forest for a long period of years, and has only failed to be detected because of its habits." The beetle has since been taken pretty regularly, but sparingly as a rule, by Coleopterist visitors to the Forest, myself included; it is certainly of most retiring habits, and nearly all my captures have been made in the same way as the late Mr. E. C. Rye found it long ago at Rannoch (*Ent. Mo. Mag.*, vol. iii, p. 64) "lurking in the deep layers and

cracks of fir bark," on comparatively fresh stumps; I have also found it under fresh pine logs, and have once or twice seen it on newly-barked felled pines in the open, in company with *Tetropium gabrieli*.

These captures, however, certainly bear but a very small proportion to the numbers of the insect actually existing in the Forest, where, for the last two or three years at any rate, it must have been by far the most abundant Longicorn, if not one of the commonest beetles there. The general felling of the pine plantations during the Great War provided ideal conditions for its multiplication in the vast number of stumps left in the ground, and in the enclosures, more particularly those between Ramnor and Denny. It is difficult at present to find a stump which does not bear evidence of the former presence of *Aseum* in the greater or the lesser number of the unmistakable oval emergence-holes of the beetle. In one stump near Bank, not more than eight inches in diameter, I counted no fewer than 97 of these holes, all apparently of the same date. Probably with the cessation of felling in 1918, the beetle is now less abundant than was the case a year or two previously, but it may still be taken with certainty early in June wherever a sufficiently fresh pine stump can be found.

Aseum has also reached the Oxford district, as the stumps of some well-grown Scots firs near Tubney, cut down in 1917, now present abundance of exit-holes, though the perfect insect was missed at the time of emergence, and has not as yet been captured here.

Another beetle of northern distribution which now appears to be well established in the New Forest is *Rhinomacer attelaboides*. I beat the first specimen off an isolated Scots pine on Butt's Lawn on May 26th, 1915, Dr. Sharp at the time remarking that "it was new to the Forest." Old examples were found in subsequent seasons, but in June of the present year it occurred to me in numbers near Bank, on the needles of some pines which had been slightly scorched by a recent fire. This species has, however, been found in recent years in a good many southern localities, including the Oxford district, where it has occurred at intervals very sparingly at Tubney since 1907. These Oxford specimens are all of a warm yellowish-brown tint, contrasting strongly with the greenish-grey form taken in the New Forest (*cf.* E. A. Waterhouse, Ent. Mo. Mag., vol. viii. p. 38).

Hylastes attenuatus is now one of the commonest of the Forest *Scolytidae*; I found it in great numbers in and about some piles of newly-sawn fir timber near the famous "Knightwood Oak." It has even reached Oxford, as I took a specimen by sweeping close to my house on May 26th, and two more at Wood Eaton on the 29th; no pine-trees of any kind being near at hand in either case.—JAMES J. WALKER, Oxford: July 17th, 1922.

Deliphium crenatum Grav. in *Midlothian*.—Referring to Mr. James Black's note in the Ent. Mo. Mag. for December 1917, recording the occurrence of this beetle in Peebles-shire, I am now able to state that it occurs also in the adjoining county of Midlothian. On April 12th last, I found several under the bark of a dead beech lying on the ground in a wood close to Penicnik in the south-western section of the county. It turned up again on April 18th,

this time under the bark of an oak-stump in the glen below Penicuik House. The two localities are within a mile of each other.—WILLIAM EVANS, 38 Morningside Park, Edinburgh: *June 22nd*, 1922.

Chaetocnema sp. *injuring Wheat*.—Last month I received from Mr. E. W. Fenton, Seale-Hayne Agric. College, Devon, some young wheat-plants which were said to be attacked by an insect other than the Hessian Fly. At the base of the stem just above the soil-level was a small, oval, gall-like swelling, which on being opened was found to contain the larva of a *Chaetocnema* (sp. incert.). The injury to the wheat does not seem to have been extensive, a small area only being affected. So far as I know, no record of a species of the Halticid-genus *Chaetocnema* causing such damage has appeared in Britain, though in France (cf. Bull. Soc. Ent. France, 1895, p. xlviii) *Chaetocnema aridula* Gyll. is stated to attack cultivated oats, and in Russia there are various records of *C. aridula* Gyll. and *C. hortensis* Geoffr. behaving in a similar way in cereals.—F. LAING, British Museum (Nat. Hist.): *July 11th*, 1922.

An Eastern Species of Galleriadae imported into Britain.—I am indebted to Mr. Raymond Wadsworth, Bournville, for some specimens of a Galleriad, *Aphomia gularis* Zell., which seems likely to assume some economic importance. They were bred about a year ago from a consignment of infested walnuts, imported direct from Marseilles. The larvae are said to behave much in the same way as those of *Ephestia kühniella*, and to resemble that species in appearance. The wood of the boxes in which the nuts were packed was bored by the larvae, and the cocoons built in the holes so formed. The range of the species seems to be gradually extending. Originally described (Herae Soc. Ent. Ross. xiii, p. 74, pl. 1, fig. 26, pl. 2, fig. 27, 1877) from Japan, it has been recorded from China, Vladivostock, India, and recently (1919) from U.S.A., where it had done a certain amount of damage to stored peanuts.—F. LAING: *July 19th*, 1922.

Phylloxera salicis Licht., a species of Aphid new to Britain.—Specimens of this insect have been brought me by Mr. H. Donisthorpe, who found them under the bark of a willow at Acle, Norfolk. Originally described by Lichtenstein in 1884 (Ann. Soc. Ent. France (6), iv, p. cxxii), it has been recorded from France, Italy, and Germany. The species has been exceedingly well described and illustrated in the monumental monograph "*Contributo alla Conoscenza della Fillosserine*," edited by Grassi (Rome, 1912).—F. LAING: *July 11th*, 1922.

A Drama on a Rose-leaf.—One day last week I was witness of a little drama which was enacted on a leaf of a rose-bush in a garden, but whether it was tragedy, or comedy, or merely a practical joke, I could not decide. The *dramatis personae* were two—a plump-bodied but not very large green aphid, and a small slender-bodied but ample-winged hymenopteron with rather long antennae. The aphid had its rostrum firmly implanted in the tissues of the leaf and was evidently busy feeding; the hymenopteron had placed itself at the side, at right angles to the hemipteron, and was stroking, or rather tickling, the body of the latter with the tips of its antennae. The aphid evidently resented such treatment, and every now and then it raised its

globular body and swayed it backwards and forwards in the air, still adhering firmly to its leaf by the rostrum, which it used as a kind of pivot. When these gestures of annoyance were exhibited, the hymenopteron quickly drew back so as to be out of harm's way, and then, when they ceased, it cautiously advanced and renewed operations. On the cornicles of the aphid there were two small light-coloured masses of what looked like some solid matter, but the hymenopteron took not the slightest notice of these. I watched the pair for about a quarter of an hour, but was then called away, so that I did not see the *dénouement*; but all the time I watched, the above series of actions went on time after time *ad lib.*—the tickling, the sudden motion of the body like the flourishing of a cudgel, and the withdrawal of the assailant. Now what was the purpose of all this? Was the hymenopteron trying to hypnotise the aphid so as to make it calm enough for the insertion of an egg in its body, or was it trying to stimulate the flow of nectar from the cornicles, or was it merely practising a practical joke, like tickling the ears of an occupied person with a straw? Perhaps someone who is more familiar than I am with the habits and customs of aphides and of the smaller hymenoptera will be able to throw some light on the matter.—E. A. BUTLER, 35 Kyrle Road, Clapham Common: July 19th, 1922.

Review.

“INSTITUTO BIOLOGICO DE DEFESA AGRICOLA.” Boletim N. 1. Entomologia Agricola Brasileira. Por CARLOS MOREIRA. Pp. v and 182, with 60 uncoloured plates and numerous text-figures. Rio de Janeiro, 1921.

The first Boletim of this new work forms a complete volume, with full index. It contains illustrated life-histories of various destructive Brazilian insects, written by the Director of the Institution, Senhor Carlos Moreira, and an account of the methods used to deal with them. The species studied, apart from Coccids, as arranged by the author under the particular trees or crops attacked, are as follows:—ORANGE-TREES, etc.—*Acrocynus accentifer* Oliv. and *Diploschema rotundicollis* Serv. (Longicorn-beetles), and *Papilio idaeus*, F.; FIG-TREES—*Azochis gripusalis* Walk. (Pyralidae); ANONAS—*Stenoma anonella* Sepp (Tineina); SUGAR-CANE—*Ligyrrus fossator* Burm., *L. fossor* Latr., *Podulcus humilis* Burm., and *Stenocrates laborator* F. (Dynastidae), and *Tomaspis parana* Dist. (Cercopidae); CACAO—*Myelois duplipunctella* Ragonot (Pyralidae); PALMS—*Strategus aloeus* L. (Dynastidae), *Rhina barbirostris* Oliv., *Rhynchophorus palmarum* L., and *Homaionotus calvescens* Dohrn (Rhynchophora), *Mecistomela (Aturnus) coralina* Vigors and *M. (A.) marginata* Guér. (Hispididae); MAIZE, BEANS, etc.—*Bruchius obtectus* Say; TOBACCO—*Protoparce paphus* Cram. (Sphingidae); RICE—*Dyscinetus genuinatus* F. (Dynastidae) and *Mormidea poecila* Dallas (Pentatomidae); COTTON—*Platyedra (Pectinophora) gossypiella* Saund. (Tineina); MYRTACEAE—*Stenoma albella* Zell. (Tineina); CRUCIFERAE—*Pieris momuste* L.; ORNAMENTAL AND OTHER TREES—*Coelomera lanio* Sahlb. (a Galerucid-beetle attacking *Cecropia cinerea*) and *Dryoctenes scrupulosus* Germ. (a Longicorn boring the trunks of *Pachira aquatica*). Under other headings the ravages etc. of the insects are described: ORTHOPTERA—*Schistocerca parvanensis* Burm.; FRUIT-FLIES—*Ceratitis capitata* Wiedem.; ANTS—*Cumponotus rufipes* Forel and *Atta serdens* L.

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THE MUSEUM, HULL;

AND

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MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 41 Queen's Gate, S.W.7 (nearest stations: South Kensington and Gloucester Road).—Oct. 4th, 1922, at 8 p.m.

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

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 7 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

THE LONDON NATURAL HISTORY SOCIETY, now meets in Hall 40, Winchester House, Old Broad Street, E.C. 2, on 1st and 3rd Tuesdays in the month at 6.30 p.m. General meetings 1st Tuesdays, Sectional meetings 3rd Tuesdays. (No meetings in July or August indoors, but field excursions instead.)

Hon. Sec.: W. E. GLEGG, The House, Albion Brewery, Whitechapel Road, E. 1.

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

ENTOMOLOGICAL SOCIETY OF HAMPSHIRE AND THE ISLE OF WIGHT.—This Society has developed from the Southampton and District Entomological Society. Meetings are held on the First Saturday afternoon of each month at Southampton, and other meetings will be arranged in important centres in the county from time to time. Activities being undertaken at the present time include the formation of a library, of collections of insects, and the compilation of a county insect fauna list. Will keen entomologists in the county who are interested please communicate with the

Hon. Sec., F. J. KILLINGTON, 1 St. Catherine's Road, Eastleigh, Hants.

AULONIUM RUFICORNE OL. AND *HYPOPHLOEUS FRAXINI* KUG., TWO SPECIES OF COLEOPTERA NEW TO THE BRITISH LIST.

BY T. HUDSON BEARE, B.SC., F.E.S., D.L., AND
HORACE DONISTHORPE, F.Z.S., F.E.S.

Aulonium ruficorne Ol., Entom. ii, 18, 13, pl. 3, f. 18=*bicolor* Hbst., Käf. vii, 285, t. 113, f. 2. Three specimens of this rare and interesting species (one of which, however, was dead and broken) were observed under bark of felled Scots pine in the Dean Forest in the burrows of *Tomicus laricis* F. It is a very distinct insect, the border of the head, the antennae and legs, and the basal half of the elytra are red, the rest of the insect being black; it is smaller than *trisulcum* Geoffr., the only other European and British species of the genus; that insect is also uniformly reddish in colour.

Ganglbauer records it as rare under oak bark in Central Europe and in the Mediterranean area*.

Perris has described the larva (Ann. Soc. Ent. France, ser. 3, i, 610 (1853)), and he stated that it occurs in the burrows of *Tomicus laricis* F., and that larvae which hatch in May emerge as perfect insects in October. We took a number of the larvae, which we hope to breed out later on.

Hypophloeus fraxini Kugel., Schnd. Mag. v, 1794, 527. From under the bark of the same logs of Scots pine we took about 12 specimens of this fine addition to our fauna; they were found exclusively in the burrows of *Tomicus sexdentatus* Boerner, on which this insect is parasitic. It is rather bright reddish in colour, and is about the same size as *bicolor* Oliv.; it is closely allied to *pini* Pz., but is larger, the thorax is not so elongate, and the anterior angles of the thorax are slightly excised.

The Continental records, central and boreal, show that this insect is always found as a parasite in the burrows of *T. sexdentatus* Boerner; we found the larvae and are endeavouring to rear the insect.

* At Besika Bay, on the Asiatic side of the entrance of the Dardanelles, I met with *Aulonium ruficorne* in some numbers in the autumnal months of 1876 and 1877. It occurred under bark of small felled pines, in company with two species of *Tomicus*, *Faromatus*, *Platysoma*, *Plegaderus*, etc., etc. Mr. Champion has recorded it as having been found by himself in abundance in Corsica in 1904, in burrows of Scolytids in pines, and he has recently received specimens of it from the Landes, also from pines.—J. J. W.

August 14th, 1922.

A FEW DAYS' HUNT FOR COLEOPTERA IN THE FOREST OF DEAN.

BY T. HUDSON BEARE, B.SC., F.E.S., D.L.; AND
HORACE DONISTHORPE, F.Z.S., F.E.S.

We decided last spring, in view of Mr. Atkinson's capture of *Tomicus sexdentatus* Boerner and *T. erosus* Woll., under bark of felled Scots pine in Dean Forest in August 1921 (Ent. Mo. Mag. 1921, p. 253), to spend a few days in the Forest in August and to explore its possibilities as a collecting ground from the point of view of the Coleopterist.

We left London on August 2nd, and on the following morning were joined by Mr. R. N. Chrystal, who is engaged on entomological research work in connection with the Forestry Commission; Mr. Chrystal knew the place where Mr. Atkinson had found these two species, but on proceeding to this spot, we found that all the logs had been removed. The greater part of the day was then spent in scouring the Forest in order to find felled timber, and after much ground had been traversed, we eventually discovered a pile of felled Scots pine, oak, etc., and at once saw that the Scots pine-logs harboured *T. sexdentatus*, the large entry and emergence holes being very conspicuous. This insect occurred in abundance in all its stages in thick bark, its parasite *Hypophloeus fraxini* Kugel., new to the British List, being also found sparingly in the burrows of the Scolytid.

During the two days we eventually spent in stripping off the bark of these pine-logs the following other species were taken:—*Tomicus erosus* Woll., which was by no means common; *Myelophilus piniperda* L., very abundant; *Hylastes ater* Payk., *H. opacus* Er., *H. palliatus* Gyll., all more or less common; *Pityogenes bidentatus* Hbst., *Hylastinus obscurus* Marsh., rare; *Tomicus laricis* F., very abundant, its parasite *Aulonium ruficorne* Ol., new to the British List, was found very rarely in the burrows of this Scolytid.

In addition to these Scolytids we took, under the bark, *Monotoma picipes* Hbst., *Epuraea pusilla* Er., *E. thoracica* Tourn., *Laemophloeus ferrugineus* Steph., *Enicmus minutus* L., *Rhizophagus dispar* Gyll., *R. depressus* F. (some very large specimens), *Corticaria elongata* Gyll., *Cryptophagus cylindrus* Kies., *Homalota cuspidata* Er., *Typhaea fumata* Curtis (a strange place for this species), and *Ernobius mollis* L.

The time spent on this pile of logs left little leisure for general collecting, but the following additional captures were made:—*Thymalus*

limbatus F., in the usual fungus on birch; *Triplax aenea* Schall., and its larvae in abundance in fungus growing on old holly; *Pterostichus oblongo-punctatus* F., more metallic in colour than New Forest specimens, in fallen boughs; *Taphria nivalis* Panz., *Stomis pumicatus* Panz., and *Liophloeus nubilus* F., crawling on roads. By evening sweeping in one of the numerous beautiful glades, we captured *Bradycellus harpalinus* Dej. in great numbers, *Anisotoma calcarata* Er., *Exomias araneiformis* Schrank, *Malthodes marginatus* L., *Malthinus punctatus* Fourcr., and *Aphodius zenkeri* Germ. Under the bark of dead standing oaks, the larvae of *Rhagium inquisitor* F., *R. bifasciatum* F., and *Pyrochroa coccinea* L., were very abundant.

The Saw-fly *Sirex cyaneus* Pz. occurred in a felled beech.

We were evidently visiting the forest at a time somewhat between the seasons for most insects.

With regard to *T. erosus*, it is desirable to draw attention to what appears to be a mistake made by Reitter and other continental writers in regard to an important character connected with the antennae of this species. Mr. D. J. Atkinson in introducing this species (*Ent. Mo. Mag.* 1921, p. 253) stated that the sutures of the club of the antennae were curved, while in *laricis* they were straight. A careful examination of our specimens of *erosus* and of the specimens of *laricis* we took and mounted showed that this was so; on the other hand, Reitter (*Fauna Germanica*, vol. v, p. 303) divided the genus *Ips*=*Tomicus* into two sub-genera, the one *Ips* s.s., having curved sutures on the antennal club, the other, *Orthotomicus*, having straight sutures on the club, and he places *erosus* in his second sub-genus along with *laricis*, *suturalis*, *proximus*, and *longicollis*; this is evidently an error. That our insect is true *erosus* is proved by the fact that Mr. Atkinson (*l. c.*) compared his specimens with Wollaston's types from Madeira, now in the Natural History Museum. We have looked up Wollaston's original description (*Catalogue of Madeiran Coleoptera*, 1857, p. 95), and the characters given by him to separate *erosus* and *laricis* are those we find in our specimens, although Wollaston says nothing about the antennal club sutures.

The insect was first taken under bark of chestnuts in Madeira; Reitter says it occurs under bark of *Pinus maritima* in South Europe, North Africa, Syria, Armenia, and the Caucasus; it is evidently not confined to any one species of tree, as will be seen from the above records, and the fact that it occurs in Scots pine in Great Britain.

August 14th, 1922.

DESCRIPTIONS OF TWO NEW SPECIES OF LEPIDOPTERA FROM
NEW ZEALAND.

BY G. V. HUDSON, F.E.S., F.N.Z.INST.

Ichneutica nervosa, sp. n.

This very striking insect was discovered by Mr. F. S. Oliver on Bold Peak, Lake Wakatipu, in December 1910.

The expansion of the wings of the male is almost $1\frac{1}{4}$ inches. The forewings have the costa almost straight, the apex rather acute and the termen obliquely rounded; *bright ochreous with the veins heavily marked in clear white and with black markings between the veins*; a small black spot at the base; an elongate blotch between vein 1 and the dorsum; two elongate marks between veins 1 and 2; wedge-shaped marks at the origins of veins 2, 3, 4, and 5; a large blotch between veins 5 and 6; a much smaller blotch between veins 6 and 7; two obscure elongate marks in disc immediately below middle of costa and two obscure blackish lines between the costal and subcostal veins; a curved series of subterminal spots and a series of elongate terminal marks. The hind-wings are greyish-brown. The cilia of all the wings are whitish-ochreous. The head is pale brownish-ochreous. The thorax is densely clothed with brownish-ochreous hair with a brown horseshoe-like mark in the middle. The abdomen is pale ochreous. The antennae, which are heavily bipectinated throughout, are reddish-ochreous.

Mr. Oliver very kindly submitted his unique specimen to me for description. It was captured on the mountain, *at night*.

Tatosoma nigra, sp. n.

A single specimen of this insect was captured in forest at Whakapapa, on the lower slopes of Mount Ruapehu, at an elevation of about 4000 feet above the sea-level.

The expansion of the wings of the female is $1\frac{1}{8}$ inches. The palpi are blackish, *scarcely longer than the width of the head*. The antennae are blackish with the apical portions dull ochreous. The head and thorax are dull greenish-ochreous. The forewings are rather broad with the termen oblique, bowed outwards near the middle; there is a small dull greenish-ochreous basal patch, bisected by a broken black transverse line; the sub-basal area is black with a very few scattered white and dull reddish scales; the inner edge of the median band is bounded by a strongly dentate white line with a very deep indentation just before the dorsum; its outer edge by a less dentate white line with a decided projection below the costa; within the median band there are three distinct wavy black transverse lines, the intervening spaces being dark grey, the costal, discal, and dorsal portions of the median band have a few scattered dull green and reddish scales; *the terminal and subterminal areas are almost black* with scattered dull green, whitish, and dull reddish scales, these are thickest on the terminal area; there is a series of black terminal dots arranged in pairs; on the dorsum the spaces between all the black transverse lines are strongly marked in white and the main veins are more or less strongly

marked in black; the cilia are pale rusty-ochreous barred with blackish. The hind-wings are greyish-ochreous with a cloudy median line; the cilia are greyish-ochreous.

This species may be immediately recognised by its very short palpi and predominant black coloration.

The moth appears in January.

Hillview, Karori, N.Z.

May 1922.

TWO SAWFLIES NEW TO BRITAIN—

SCOLIONEURA TENELLA KLUG AND *PRISTIPHORA GENICULATA* HARTIG.

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

1. *Scolioneura tenella* Klug (= *tiliae* Kaltenbach).

Both sexes of this little Blennocampid appeared in some numbers in my garden at Woking on May 21st last and for several days following. They were flying about a Lime-tree which had been topped during the winter and was just beginning to put out a few young leaves. The ♂♂ and ♀♀ differed so remarkably in colour—the former having the abdomen for the most part bright testaceous-red, while that of the ♀ was entirely black—that at first I could hardly believe them to be conspecific, and in fact felt almost sure that the red-bodied insects could only be specimens of *Blennocampa affinis* Fall. (= *assimilis* Cam.), and the black-bodied ones probably of *Blennocampa pusilla* Kl., though I should not have expected either of those species to visit Lime-trees.

However, after taking four or five specimens of each and examining them with a hand-lens, I noticed (1) that all the red-bodied specimens were ♂♂* and all the black-bodied ones ♀♀, and (2) that neither the ♂♂ nor the ♀♀ had the wing-venation of the genus *Blennocampa* as at present defined, the basal nerve in their fore wing being not almost straight but *sharply and almost angularly bent*, not received on the subcosta close to the origin of the cubitus but *at some little distance before it*, and not parallel to the 1st recurrent but *converging with it in the direction of the stigma*. These characters, together with the absence of a "closed cell" in the hind wing, showed that all the specimens, ♂♂ and ♀♀ alike, were to be looked for in one or other of Konow's genera *Scolioneura* and *Entodecta*. And, after consulting Enslin's and Konow's descriptions of

* This alone would have made it unlikely that they could be specimens of *affinis*, for, though the ♀♀ of that species are fairly common, its ♂♂ are extremely rare!

the few species yet discovered in these two genera, I was soon able to determine my captures for certain as the sexes of *tenella* Kl. (= *tiliae* Kalt.),—the only *Blennocampid* in which the ♂♂ and ♀♀ differ as above described in the colour of the abdomen, and the only one known to be attached to the Lime! Its larvae were found mining the leaves of that tree by Kaltenbach, who gave in his "Pflanzenfeinde" (1874, p. 78) a full account of their characters and habits, and was also the first author to describe *together* both sexes of the imago pointing out the difference in their coloration, so that it seems rather a pity that his well-chosen name for the species, viz. *tiliae*, should have to yield precedence to Klug's 60-years-earlier *tenella*, the description of which only suits the ♂ and was founded on a single specimen. The ♀ imago seems to have been first described by Lepeletier, who called it (in 1823 and again in 1830) *hylotomoiles*, but did not know the ♂ nor the larva. Thomson in 1872 describes both sexes correctly, but calls them "*tenuicornis* Hartig," and he does not seem to have known the larva nor its food-plant. He speaks of the insect as rare, and it is probably not common anywhere, though pretty widely distributed, since it has occurred in Germany, France, Scandinavia, and now in Britain.

Although my specimens are, I believe, the first actually taken in this country it seems to have existed here for at least 40 years, since Cameron (Mon. vol. i, p. 256) notes that he "received from Stainton a mined leaf of *Tilia europaea*" which was "very probably" the work of "*Blennocampa tiliae* Kaltenbach, a species closely related, if not identical with, if one might judge from the description, *B. assimilis*." It is evident, however, from this, and from his further remarks on the subject, that he did not rear the species, and did not thoroughly understand Kaltenbach's description. He corrects, indeed, a mistranslation by André of certain words in that description; but he follows André in failing to note that Kaltenbach had described the ♂♂ and ♀♀ as coloured differently, and in consequently treating the red abdomen of the ♂ as a character belonging to both sexes of the species.

Tilia europaea is not, I believe, a really native British tree, and it is one to which even elsewhere very few Sawflies of any kind are attached. In fact, Enslin only mentions three such as occurring on it in "Middle Europe," namely *Caliroa annulipes*, *Pristiphora ruficornis*, and *Scolioneura tenella*, and of these (which all occur in Britain) the last only seems to be attached to it exclusively.

Lastly, it may be noted that such a difference of coloration as exists between the sexes of this species is very unusual in Sawflies. Nearly always either the ♂♂ and ♀♀ are coloured alike, or, if they

differ, the ♂ is the darker sex. There are, however, a few other exceptions to this rule in certain genera, but I know of none such in the *Blennocampini* or in any of the tribes most nearly allied to them.

2 *Pristiphora geniculata* Hartig (= *cheilon* Zadd.).

Miss E. Chawner, F.E.S., has reared both sexes of this species from larvae which she found on June 21st feeding gregariously on Mountain Ash (*Sorbus aucuparia*) in the neighbourhood of Lyndhurst. She describes these larvae, which were nearly full-fed, as "half an inch long, stout and rather flat; head honey-yellow; body greenish-yellow with black dots along the sides. They left off feeding the next day, and cleared to bright yellow with black dots; then they went into earth." About the end of July the imagines began to emerge, mostly ♀♀, but two, which were smaller than the others and were the first to go down, developed into ♂♂. One of the ♀♀ laid parthenogenetic eggs (which, Miss Chawner tells me, have not yet hatched) "in the edges of Mountain Ash leaves, going all round the leaves between the serrations."

I have seen one of these ♂♂ and several of the ♀♀, and they undoubtedly belong to the species of which Zaddach has figured the larvae, and described both sexes of the imago, as *Nematus cheilon*. His specimens were reared (by Brischke) from *Sorbus aucuparia*. The insect, according to our present nomenclature, is a *Pristiphora*, the largest form known to me of that genus (5-7³/₈ mm. long), and the only one that has been found on Mountain Ash. Continental authors (Konow, v. Dalla Torre, and Enslin) identify this species with the *Nematus geniculatus* tabulated by Hartig in Stettin. Ent. Zeit. 1840; and, assuming them to be correct in this, Hartig's name has priority over *cheilon*, of which the larva was figured in 1882 and the imagines described in 1883. Hartig tabulates *geniculatus* without mentioning its food-plant, and separates it from the spp. which he considers its nearest congeners by a character of which Zaddach says nothing, namely "ventre apice rufo ♀ natibus rufis." One would gather from Zaddach's diagnosis that the abdomen of his *cheilon* was black in both sexes, and I find that in the ♂ sent to me by Miss Chawner it is entirely so, but that in all her ♀♀ there are traces of a little very obscure rufescence in the neighbourhood of the saw-sheath—so little and so obscure that it might easily be overlooked! No doubt in some specimens the rufescence may be more extensive and conspicuous, and I see that Enslin enumerates *geniculata* (= *cheilon*) both among the species with entirely black abdomen and among those in which the abdomen is "more or less pale at least on the venter or the apex."

Of our other *Pristiphora* spp., *P. geniculata* (= *cheilon*) most resembles *P. melanocarpa*, having, like that species, entirely black antennae (not rufescent beneath!), a black stigma and black and white legs with white trochanters; but it is larger and more robust, the labrum and also the apex of the clypeus seem to be always pale in both sexes, the head is more strongly sculptured (its upper areas more sharply defined than is usual in *Pristiphora*!), the vertex is very much longer (in *melanocephala* its length does not exceed the diameter of an ocellus!), and in the ♀ the saw-sheath (viewed from above) is much wider and more distinctly emarginate at its apex.

It is the only *Pristiphora* (and almost the only normal "Nematid") that is known to be attached to Mountain Ash.

Hitherto, according to Enslin, it has been known only from Germany and Holland. I can find no mention at all of it (either as *geniculatus* or as *cheilon*) in vol. i of André's "Species," nor in the works of any authors other than those mentioned above. Hartig was not yet acquainted with it when he published his great work on the *Families of Blatt- u. Holzwespen* (1837), and in the "Neue Ausgabe" of that work (dated Berlin, 1860) it is still left unnoticed.

Woking.

August 16th, 1922.

A CONTRIBUTION TO THE LIFE-HISTORY OF *DERÆOCORIS RUBER* L.

BY E. A. BUTLER, B.A., B.SC., F.E.S.

This is the insect which stands in the latest British catalogue (1908) as *Capsus ruber* L. In British text-books it has appeared at different times under several aliases, *Capsus capillaris* F., *C. lanianus* L., *C. ruber* L., and in Reuter's great work "Hem. Gymn. Europae" it is called *Deræocoris segusinus* Müll., but after all these changes the name seems now to have settled down, so far as anything human can be said to do so, into *D. ruber* L., under which it is entered in Osbanin's "Katalog" (1912) with no fewer than 26 synonyms appended. Almost all these names were given during the last half of the 18th century, and while therefore the insect was recognised only as an inhabitant of Europe. At the present day it is known to include in its area also both the Nearctic and the Neotropical Provinces. Though one of our common species, it has been recorded in the British Isles only from central and southern England and South Wales. I have not seen any records from

either Scotland or Ireland, nor for England north of Nottinghamshire. Where it does occur, however, it is usually common and its varieties are sufficiently striking and handsome to attract general notice, especially when, as often takes place, it appears in our gardens.

The egg, as taken from the body of a ♀ is a reddish yellow body, about $1\frac{3}{4}$ mm. in length, cylindrical, curved, especially at the anterior end, rounded posteriorly and truncate anteriorly, thus quite well adapted for insertion in the tissues of some plant. As with the *Capsidae* generally, this must undoubtedly be the method of its deposition, for the ♀ is furnished with the usual saw remarkably well-developed. But, although the eggs are no doubt so disposed of, it by no means follows that the plant in question is at all in the nature of a food-plant. The majority of the *Capsidae* seem, in these latitudes at least, to spend the winter in the egg stage, and the insertion of the eggs in the stems of plants need not necessarily have any other purpose than the protection of such small objects during so many of the most inclement months of the year.

The larvae that issue from these eggs show great similarity of form and colour throughout the whole of their five instars, although I very much doubt whether any one who had not actually reared them would guess what they would ultimately become. They are of a deep purplish or reddish fuscous colour, entirely dull and with scarcely any trace, except in the head, of the shining integument possessed by the adult, and with none of the deep puncturation which is acquired only at the last moult. The width of the body is greatest in the middle of the abdomen, and the sides of this are supplied with very strong black setae springing from prominent tubercles. Similar setae are found on other parts of the body as well, especially in the earlier instars. Such setae are, I think, generally indicative of predatory habits. The antennae have a long, stout, and setose basal joint concolorous with the body; the second joint is ochreous with a dark reddish-brown clavate apex; the third joint is much thinner, entirely ochreous at first, but darkening ultimately; and the fourth joint, always dark, is at first thicker than the third, but narrows in the later instars; the legs are rather powerful, with dark femora, variegated tibiae, and rather short two-jointed fuscous tarsi. The strong black setae above referred to entirely disappear in the adult, being discarded at the last moult, when the abdomen becomes more than covered by the hemielytra. It would thus appear that these setae may be protective in function while the insect is soft-bodied and unable to fly, and that therefore they disappear when no longer needed,

because the integument has become harder and the insect has the power of flight, giving it a ready means of escaping from enemies less active or not similarly endowed.

The imago is found from June to September, but the majority of specimens appear to mature during July. There are no records whatever of its occurrence in the winter or spring, and it may safely be concluded that the insects perish in the autumn, after having made provision for the next generation by laying eggs which will not hatch till the next spring or early summer. Such a course seems to hold good for the majority of our Palaearctic *Capsidae*, though not for quite all of them, for some few species get through the winter as adults and appear in the open again in the following spring.

This insect occurs most commonly by sweeping amongst nettles and other luxuriant low herbage, and it has only occasionally been found upon trees. Besides nettles, Reuter gives the following list of plants as affording it shelter:—*Carduus crispus*, *Lamium*, *Ballota*, *Senecio*, *Verbascum*, *Rosa*, *Prunus*, *Carpinus*, *Corylus*, *Larix*, and *Pinus sylvestris*: Douglas and Scott add bramble flowers, and it is often found in gardens upon fruit bushes. This is certainly a curious mixture, and can hardly in all cases mean diet; in fact, it lends further countenance to the idea of predatory habits. But there are other records which make this more than a mere idea. Douglas speaks of a brood as having taken possession of a clump of raspberry plants in his garden; they were born and bred there and mostly remained, and he adds, "Like all other *Capsidae*, it is credited with being a feeder on the juices of leaves, and I was, therefore, somewhat surprised yesterday to see one individual that was not a vegetarian. On the flower-umbels of a *Heracleum*, the stems of which were literally covered with larvae of a pale green Aphid, the *Capsus* stood motionless, rostrum exerted and arched, the tip in the body of one of the Aphids, and so gently inserted (after the manner in which Izaak Walton advises a hook to be passed into a worm), that there was no resistance by the victim. If this was the beginning of a feast, there was an abundant supply of the delicacy to continue the revel, which, in the nature of things, could not last long." The next day the same observer records, "To-day I witnessed the assault of a *Capsus laniarius* [*ruber*] on one of the aforesaid Aphids which, however, did not take it quietly, but at first resisted vehemently, but ineffectually, the rapidly exhausting effect of the insertion of the rostral lancet into its body. There were three others of the *Capsus* on the leaves of the plant, resting, presumably after an aphidian banquet."

This observation as to the relation between *D. ruber* and Aphides has been confirmed by Verhoeff, the Aphis in this case being *A. rosae*. I have also myself reared one specimen through its last larval instar by feeding it with the black aphides which infest the Broad Bean. Hamm found in his garden at Oxford a specimen of this bug which was attacking the butterfly *Pieris rapae* L. after it had been caught and killed by a web-building spider (Proc. Ent. Soc. Lond. 1915, cxxx.). According to Morley, this insect can inflict a painful puncture with its rostrum, which may mean an attack by way of self-defence, or, perhaps, an attempt to extract nourishment from the flesh of human kind.

Pierret asks the question: "Is it possible that a bug can develop an ether which, under certain conditions, will cause anaesthesia to itself?" and answers it in the following way: "Last week I collected on some nettles, four examples of *Capsus capillaris* [*ruber*] and two *Heterotoma*, all of which I put into a small tube 50 mm. long and 8 mm. diameter; some time after, not one of them moved, although they did not appear to be dead. The odour exhaled appeared to me to be the same as that of the compound ethers known and employed in commerce under the name of fruit-essences; and corroborating this impression by observing the complete insensibility of the insects, I considered whether they themselves, after having discharged their (supposed) ethereal emanations within a restricted and enclosed space, had not succumbed to their anaesthetic action; actually, when they had been for some minutes under the influence of a fresh atmosphere which was charged with a little ammonia, the *Capsidae* came back to life. The experiment was then tried under a small bell-glass in which I had put a drop of acetic ether to be volatilized, and I obtained a result identical with the former, viz., the same insensibility, the same appearance of anaesthesia, and the same time for recovery. It seems to me, after these facts, that it may be possible to establish that the emanation from certain Hemiptera is a true ether, having the power of effecting even the producers themselves."

This insect is a most variable one in its coloration, the differences resulting from the varying degree of development of the two main colours, reddish-ochreous and black. Reuter describes six such variations, but they run into one another more or less, so that perhaps they hardly deserve the names that have been conferred upon them, but they serve to explain what was mentioned above about the 26 synonyms. There seems to be a tendency for the dark ones to be ♂♂ and the light ones ♀♀.

As already indicated, this insect is an inhabitant of midland and southern England and S. Wales. I have records of its occurrence in 23 English counties and in Carmarthen and Glamorgan. But strangely enough, though so conspicuous an insect, it is omitted from Dale's list for Glanvilles Wootton, and though I have myself collected for some time in Dorsetshire I have not taken it in that county, though it occurs in Hampshire on the one side and in Devon on the other. It is, no doubt, unsafe to argue from negative evidence like this that the insect is really not present in the county, especially as its life in the perfect state is such a very brief one, and visiting collectors might miss it by being present at the wrong time of the year; but such an argument will not explain its absence from the Glanvilles Wootton list, which represents Mr. Dale's work for many years and for all the year round. In the Alps this species may be found up to the height of 3000 feet.

35 Kyrle Road,
Clapham Common, S.W. 11.
August 9th, 1922.

A GENERIC ARRANGEMENT OF BRITISH JASSINA.

BY JAMES EDWARDS, F.E.S.

The subject-matter of this paper forms part of a long over-due revision of the systematics of the British Cicadina, which is now nearing completion. It is published in advance in order that it may be available for use in a re-arrangement of British Cicadina now in progress in a Government Museum. For this purpose a statement of index-characters and a list of the species dealt with has been considered sufficient to indicate the categories intended, leaving extended definitions and discussion of the characters employed for another occasion. It is believed that the genera used, with the possible exception of *Stictocoris* J. Sahlb., of which only the two British species, *preyssleri* and *flaveola*, were available for study, represent homogeneous natural categories; which is hardly the case with such terms as *Athysanus*, *Thamnotettix*, and *Deltocephalus* as commonly applied.

Hardya bears considerable superficial resemblance to *Deltocephali* of the *pulicaris*-group, but a different line of descent is indicated not only by the want of the cross-vein intermediate m-cu in the elytra, but also by the form and direction of the male genital plates. In the majority of our Jassina the male genital plates lie in approximately the same plane as the valve and form the two halves of a common, usually

- 13 (12) Elytra without supernumerary white cross-veins.
- 14 (17) R_1 in elytra directed obliquely cephalad.
- 15 (16) Termen obliquely truncate. Ocelli not standing in a black-edged pale band.....*Scaphoideus* Uhl.
- 16 (15) Termen rounded. Ocelli at each end of a black-edged pale band which runs from eye to eye.....*Paralimnus* Mats.
- 17 (14) R_1 in elytra erect.
- 18 (19) Crown broadly rounded in front.....*Paramesus* Fieb.
- 19 (18) Crown pointed in front.....*Deltocephalus* Burm.
- 20 (11) Intermediate m-cu wanting.
- 21 (32) Elytra with the dorsum straight or nearly straight throughout: their apices therefore not or but slightly overlapping in repose.
- 22 (31) Ocelli evidently free from the eyes.
- 23 (24) Frons as long as, or but little longer than, the distance between the ocelli; frontal sutures converging rapidly from the base of the antennae to the clypeus, or at least convex throughout
..*Athybanus* Burm.
- 24 (23) Frons much longer than the distance between the ocelli.
- 25 (30) Elytra rounded at the apex.
- 26 (29) Pronotum with a lateral carina. Elytra normally having all the cells edged with black.
- 27 (28) Pronotum with three or five pale stripes. Genital plates separately triangular, their inner edges widely divergent
..*Hardya*, gen. nov.
- 28 (27) Pronotum marbled transversely with black. Inner edges of genital plates close together.....*Ophiola*, gen. nov.
- 29 (26) Pronotum laterally ecarinate. Cells of elytra not edged with black
..*Stictocoris* J. Sahlb.
- 30 (25) Elytra narrowly pointed at apex.....*Mocydia*, gen. nov.
- 31 (22) Ocelli nearly or quite touching the eyes. Front edge of crown with a black band bearing five pale spots.....*Recilia*, gen. nov.
- 32 (21) Elytra with the dorsum very distinctly angulated at the apex of the clavus; their apices therefore much overlapping in repose.
- 33 (40) R_{2+3} and R_{4+5} separating before the latter receives M_{1+2} , which therefore runs into R_{4+5} ; elytra with five apical cells.
- 34 (35) Pronotum separated from the prosternum by a distinct keel; sides of thorax of moderate length.....*Thamnotettix* Zett.
- 35 (34) No keel dividing the pronotum from the prosternum; sides of thorax very short.
- 36 (39) Crown broadly rounded, not evidently longer in the middle than at the sides.
- 37 (38) Crown without markings. Elytra opaque with concolorous veins
..*Opsius* Fieb.
- 38 (37) Crown with a wide black band in front. Elytra transparent, the veins discolorous.....*Drylix*, gen. nov.
- 39 (36) Crown obtusely pointed, considerably longer in the middle than at the sides.....*Limotettix* J. Sahlb.
- 40 (33) R_{2+3} and R_{4+5} separating much beyond the apex of M_{1+2} , the latter therefore running into R_3 ; elytra with four apical cells.

41 (42) Less than one-half of the dorsum beyond the apex of the clavus.
Wings: R_{4+5} and M_{1+2} anastomosing in the apical third, or
connected only by a cross-vein *Cicadula* Fieb.

42 (41) One-half of the dorsum beyond the apex of the clavus. Wings
 R_{4+5} and M_{1+2} confluent in the apical third

. . *Baleclutha* Kirk.

GRYPOTES Fieb.
pinetellus Zett.
PLATYMETOPIUS Burm.
undatus De G.

GRAPHOCRAERUS
Thoms.
ventralis Fall.

DORATURA J. Sahlb.
stylata Boh.
impudica Horv.

RHYTISTYLUS Fieb.
proceps Kbm.

JASSUS Fab.
commutatus Fieb.
modestus Fieb.
mixtus Fab.

SCAPHOIDEUS Uhler.
formosus Boh.

PARALIMNUS Mats.
phragmitis Boh.

PARAMESUS Fieb.
nervosus Fall.

DELTOCEPHALUS Burm.
multinotatus Boh.
ocellaris Fall.
linnei Fieb.
repletus Fieb.
picturatus Fieb.
falleni Fieb.
flori Fieb.
sursumflexus Then.
distinguendus Flor.
socialis Flor.
punctum Flor.
striatus L., Then.
thenii Edw.
sabulicola Curt.
normani Scott.
halophilus Edw.

abdominalis Fab.
striifrons Kbm.
pascuellus Fall.
minki Fieb.
cephalotes H.-S.
collinus Boh.
maculiceps Boh.
pulicaris Fall.
panzeri Flor.
argus Marsh.
costalis Fall.

ATHYSANUS Burm.
brevipeennis Kbm.
griseescens Zett.
sordidus Zett.
sahlbergi Reut.
russeolus Fall.
obsoletus Kbm.
sejungendus Kbm.
plebejus Fall.
lineolatus Brullé.
variegatus Kbm.
schenki Kbm.
distinguendus Kbm.

HARDYA, gen. nov.
melanopsis Hardy.

OPHIOLA, gen. nov.
striatula Fall.
striatulella Edw.

STICTOCORIS J. Sahlb.
preyssleri H.-S.
flaveola Bon.

MOCYDIA, gen. nov.
crocea H.-S.
attenuata Germ.

RECILIA, gen. nov.
coronifer Marsh.
coroniceps Kbm.

THAMNOTETTIX Zett
prasimus Fall.
dilutior Kbm.
subfuscus Fall.
cruentatus Panz.
torneellus Zett.
splendidulus Fab.

OPSIUS Fieb.
stactogalus Am.

DRYLIX, gen. nov.
striola Fall.
atricapilla Boh.

LIMOTETTIX J. Sahlb.
4-notata Fab.
persimilis Edw.
aurantipes Edw.
saturata Edw.
5-notata Boh.
intermedia Boh.
lunulifrons J. Sahlb.
frontalis H.-S.
sulphurella Zett.

CICADULA Fieb.
6-notata Fall.
lirida Edw.
frontalis Scott.
viridi-grisea Edw.
feiberi Edw.
fasciifrons Stål.
variata Fall.
7-notata Fall.
punctifrons Fall.
cyanae Boh.
dahlbomi Zett.
metria Flor.
opacipennis Leth.

BALCLUTHA Kirk.
punctata Thunb.

Colesborne.

July 1922.

Pogonochaerus bidentatus Thoms. in Perthshire.—On his return from a few days at Rannoch last month, Mr. K. J. Morton kindly gave me some beetles he and Mr. M. E. Moseley had collected there. Among these I was pleased to see a *Pogonochaerus*, which on examination proved to be *P. bidentatus* Thoms. It was taken on June 22nd near Kinloch, Rannoch, but Mr. Morton cannot be sure what tree or bush it was on, though he thinks it probably came off birch or alder. In Sharp's "Coleoptera of Scotland," published in the *Scottish Naturalist* over forty years ago, this pretty little Longicorn is given as having occurred in the Forth and Moray areas only, with the remark, "very rare, if indigenous." I am not aware of any more recent occurrence in Scotland. The Forth record is no doubt the Roslin one given in Murray's 1853 Catalogue. The species may, I think, safely be regarded as indigenous, though certainly rare, in Scotland.—WILLIAM EVANS, Edinburgh: July 13th, 1922.

Rhonomacer attelaboides in Dorset.—Referring to Commander Walker's notice of this species in the New Forest (*ante*, p. 190), it may be of interest to add that it is now to be found in Dorset, as I have come across isolated specimens in Cranborne Chase, by sweeping, during the last two years. The colouring of the specimens agrees better with those recorded from the Oxford district, than with those from the New Forest.—E. R. SYKES, West Lodge, Iwerne Minster, Blandford: August 3rd, 1922.

Asemum striatum, etc., at Hindhead.—*Asemum striatum* occurred in some numbers at Hindhead during the last week in May and the first in June, after which they were scarce. They were among pine logs in that part of the heath which has been purchased by Government for afforestation, and from which all the standing timber had to be removed before planting could be begun. *Thanasimus fornicarius* was also fairly common in the same situation. *Rhagium bifuscium* was common, and remarkable for the great variation in the markings. One specimen of *Molorchus minor* was taken on the blossom of a small mountain-ash.—ERNEST A. ELLIOTT, 41 Chapel Park Road, St. Leonards-on-Sea: August 5th, 1922.

Leptura sanguinolenta at Nethy Bridge, N.B.—Mr. T. G. Bishop has sent me a record of the breeding of two fine female specimens of *L. sanguinolenta* from larvae taken last year at Nethy Bridge by Mr. F. Gilbert Smith, who has done and is still doing much good work at the life-history of the British Longicorns; the species, which has of late years almost come to be considered as doubtfully British, is apparently well established in the locality, as Mr. Bishop had previously received two or three other specimens, one of which he kindly gave me. Mr. Bishop also records a fine specimen of *L. revestita* taken in June 1917 by Mr. C. Gulliver in the New Forest; a specimen of this insect was taken some years ago in Harewood Forest, Hants, by Mr. P. Harwood. I am not sure whether this was recorded at the time, but it is worth mentioning again, as showing that several of the old records on which doubt has at times been thrown, are correct. *Leptura rubra* has been again taken this year by Mr. H. J. Thouless near Norwich; the dissimilarity of the sexes is very remarkable in this fine species; we are very glad to hear that it is still in its old locality, as Mr. Thouless was afraid that it was being

almost exterminated by the removal of the logs and stumps in which it occurred. When first I began collecting *Molorchus minor* was regarded as a great rarity; it has now become quite common in the London and Reading districts; *M. umbellatarum*, however, which used to be considered the commoner of the two species, appears now to be very rare. Is anything known of the history of *Clytus (Plagionotus) arcuatus* as British? In old collections it is fairly numerous, and I have a good series from these in my collection; I have never, however, heard of a recent capture, since I began collecting.—W. W. FOWLER, Earley Vicarage, Reading: August 1922.

Dermestes lardarius L. feeding on wood.—Some time last May I was asked to investigate an attack by some insect on the woodwork in a large skin warehouse in Carlisle. Quite expecting the depredator to be *Anobium domesticum*, I was not a little surprised on visiting the place to find no trace of this or other similar wood-boring pest, the cause of the trouble turning out to be *Dermestes lardarius*, a beetle which, of course, was present in numbers in such an establishment among the various kinds of skin (hare, rabbit, etc.) stored there. It appears that from time to time the skins are sent away from the warehouse, and in the process of removal many larvae drop out on to the floors and creep into any available crannies they can find, such places harbouring fragments of skin and hair; this limited food supply becoming exhausted, the larvae had bored into the boards of the partitions which rest on end on the floors of the warehouse. These boards appear to be of English Spruce, very old and dry, almost of a corky consistence, in fact, and are strongly impregnated with the odour of skins, and doubtless the larvae would be able to extract sufficient nutriment from the wood to complete their life-cycle. Some of the burrows were a foot or more long, and both larvae and mature beetles were present in them. I might add that entrance to the wood had always been effected at the end of a board where it was much softer than on the sides.—F. H. DAY, Carlisle: August 10th, 1922.

[Cf. Ent. Mo. Mag. vol. xxi, p. 161, for an account of similar damage to woodwork caused by larvae of *Dermestes vulpinus* at Queenborough.—J. J. W.]

A classification of the Cucujidae based on larval characters.—Dr. A. Böving's valuable paper on the larvae and pupae of certain social beetles of the Family *Cucujidae* ("Zoologica," iii, No. 7, pp. 197–213, pls. vii–x, New York, Dec. 1921) will interest British Coleopterists. He suggests that this Family, according to their larval characters, may have to be divided into four: *Silvanidae*, *Cucujidae*, *Laemophloeidae*, and *Scalidiidae*. Of these the first three are represented in Britain, and the characters taken from the larvae of each of them, as tabulated by him, may be abridged thus:

A. Maxillary mala (possibly lacinia) falciform, with terminal uncus; externally to uncus a more or less sharply defined, small setose region (possibly reduced galea). Maxillary articulating area distinct.

1. Cerci wanting Fam. SILVANIDAE.

a. Antenna with second joint large and clavate, third joint very small or wanting; ocelli in two distinct groups

. Subfam. SILVANINAE.

- b.* Antenna with three well-developed joints; ocelli not in two distinct groups Subfam. TELEPHANINAE.
2. Cerci present Fam. CUCUJIDAE.
- a.* Tenth abdominal segment long, conical, extending far behind ninth segment Subfam. HYLIIOTINAE.
- b.* Tenth abdominal segment short, wart-shaped, not extending behind ninth segment Subfam. CUCUJINAE.
- B. Maxillary mala (possibly galea) obtuse, with or without well-defined uncus, which when present is laterally placed on inside of mala (possibly terminating a reduced lacinia) Fam. LAEMOPHLOEINAE.

The genera of *Silvaninae* are defined by their larval characters thus:

1. Second antennal joint as long as head CATHARTUS Reiche.
2. " " " half the length of head.
- a.* Mandible apically quadrifid; individual ocelli in each group well separated; body well chitinized, with dark brown chitinous shields NAUSIBIUS Redt.
- b.* Mandible apically trifid; individual ocelli in each group almost confluent; body thinly chitinized, with pale yellowish shields.
- a'* Maxillary palp with length of basal, second and apical joints as 1:1:2 SILVANUS Latr.
- b'* Maxillary palp with length of basal, second and apical joints as 1:2:2 ORYZAEPHILUS Ganglb.
- [type *Silvanus surinamensis* L.]

The *Cucujidae* include HYLIIOTA [ULEIOTA] Latr. = BRONTES F., DENDROPHAGUS Schönh., PEDIACUS Shuck., and PSAMMOECUS Latr.—G. C. CHAMPION, Horsell: *July* 1922.

Notes on Pentatoma (Tropicoris) rufipes L.—The accompanying notes were commenced during, and continued on my return from, a holiday in Hampshire, and I had not yet seen the current number of "Entomologist's Monthly Magazine," and in view of Mr. A. E. Butler's article, I thought they might be of interest:—

July 7th, 1922. Eight immature full-sized specimens of *P. rufipes* were swept from birch at Hengistbury Head, Hants, and put into a glass bottle with some leaves. For some time they lay one on top of the other, or walked over each other quite unconcernedly. When, however, a small green weevil walked over one, it strongly resented it, jerking quickly from side to side to try and dislodge the weevil.

July 10th. They are constantly on the move. At no time during the last three days have I seen their rostrum elsewhere than lying flat against their abdomen. Two of them have turned much paler in colour and have lost the iridescent sheen that all of them formerly had.

July 14th. Noted that the rostrum of one bug was inserted into stem of birch-leaf continuously for over an hour.

July 15th. On my arrival home, examined bugs and found that one had cast its final skin and had complete elytra, but had incurred some damage to the scutellum, which was wet. One leg of the middle pair was also absent.

On examining the skin, I found that the same leg was missing. The extra joint of the antennae in the imago seems to be produced by the second joint in the nymph (which is nearly twice the length of the other joints) dividing into two equal parts, thus giving the five joints common to the Pentatomids.

July 17th. Another imago has hatched out. In the evening, I introduced into the same bottle two small, shining purple-black larvae of a Pentatomid (?), as they also were found on birch.

July 18th. I noticed in the morning that one of the small larvae had imbedded its rostrum in the abdomen of the uninjured *P. rufipes* imago, which was dead. This I removed, as it was otherwise unspoilt as a specimen. I then removed larvae and gave them the deformed imago. Almost immediately the smaller larva of the two attacked the imago, and very shortly afterwards I found the *P. rufipes* on its back, the larva having stuck its rostrum into a fold of the abdomen. The imago then remained on its back, its legs and antennae jerking spasmodically. On being disturbed, the larva walked backwards, pulling the imago, still attached to its rostrum, as though it feared being deprived of its feast.—H. R. P. COLLETT, Hale, Cheshire: *July 19th, 1922.*

A Grasshopper new to Britain.—When looking through the collection of British Orthoptera in the Natural History Museum, I came across a ♀ of *Stauroderus vagans* (Eversm.) put in amongst series of *St. bicolor*. It agrees perfectly well with the description in Brunner's "Prodromus der europäischen Orthopteren" (p. 118), and seems to belong to the form (subspecies?) with incrassate head mentioned by that author as occurring in the more southern localities. Unfortunately, no more specimens could be found in the collection, which makes it impossible to state that this particular form is constant in Britain. *St. vagans* is very much like *St. bicolor*, which is, perhaps, the commonest grasshopper in Britain, but it is easily separated from that insect by the lateral keels of the pronotum being not angulated, but rotundato-inflexed in the prozona; by the transverse furrow of the pronotum placed distinctly behind the middle; by the shorter elytra, in the ♀ scarcely extending beyond the tip of the abdomen; and by the underside and the legs not being covered with dense hairs, as they are in *St. bicolor*. The species was originally described from S.E. Russia, but is known to occur sporadically all over Europe. W. J. Lucas (Monogr. Brit. Orth., p. 257) records it from Jersey, Channel Islands; but it has been never noticed from Britain, and our specimen, labelled New Forest (*F. P. Puscoe*), enriches the British fauna by one more short-horned grasshopper. It is not unlikely that *St. vagans* has been taken by collectors before and confused with *St. bicolor*; at any rate, further records of its occurrence in Britain are very desirable.—B. P. UVAROV, F.E.S., Natural History Museum, Cromwell Road, S.W. 7: *August 1922.*

Obituary.

Hamilton H. Druce, a son of the late *Herbert Druce*, died on June 21st, aged 54. He no doubt inherited his love of Exotic Lepidoptera from his father, who for many years was a voluminous writer on the same subject. Numerous papers on these insects, mainly on *Lycanidae* and *Hesperiidae*, were

also written by the son, and published in the "Proceedings of the Zoological Society of London," the "Transactions of the Entomological Society," the "Annals and Magazine of Natural History," and elsewhere. The first of this series appeared in 1887 and the last in 1913. Some of his contributions were issued in this Magazine, in 1887, 1888, 1890, 1894, and 1912. His most important papers are a "Monograph of Bornean *Lycaenidae*," P. Z. S. 1895, and one on "Neotropical *Lycaenidae*," P. Z. S. 1907, pp. 566-632, pls. 31-36.

H. H. Druce was elected a Fellow of the Entomological Society in 1884 and of the Zoological Society in 1893. His collection of *Lycaenidae*, etc. has, we believe, passed into the hands of Mr. Joicey, who also purchased the Herbert Druce collection.

Societies.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY :
 May 11th, 1922.—Mr. E. J. BUNNETT, M.A., President, in the Chair.

Mr. C. B. Leechman, of Purley, was elected a member.

Mr. H. Main exhibited *Thais polyxena*, bred, from Hyères; and some wingless sand-beetles, *Pimelia angulata*, from Egypt. Mr. E. Step, a large gall on *Populus alba* from France, with small Diptera (*Cecidomyia* sp.) which had emerged, and much smaller hymenopterous inquilines; he also showed larvae of the lichen-feeding Geometer, *Cleora lichenaria*. Mr. H. Moore, Lepidoptera from New Zealand, including *Vanessa gonerilla*, *Chrysophanus salustius*, etc. Mr. R. Adkin, the "Brown-tail" and "Gold-tail" moths and discussed their names, pointing out that the former should be called *Nygmia phaeorrhoea* and the latter *Leucoma chrysoorrhoea*. Mr. Staniland, the beetle *Melanophila acuminata* from Suffolk. Mr. Blair, for Mr. Dods, the "stick-insect," *Curansius morosus*, of an unusual red-brown colour. Mr. Turner, the Brazilian Longicorn, *Phoenicocerus dejeanii*, which has the antennae furnished with extraordinary long lamellae.

May 25th, 1922.—The President in the Chair.

Mr. Step exhibited the beetles *Necrophorus vespillo* and *Silpha thoracica* from a dead toad at Ockham. Mr. Withycombe, the asparagus beetle *Crioceris asparagi*, now common at Enfield. Mr. R. Adkin read a paper, "The Lepidopterous Enemies of Man."

June 8th, 1922.—The President in the Chair.

Mr. Step, a *Vespa germanica* ♀, which had hibernated in a chimney and was misleadingly black to suggest the imposition of the name *Vespa carbonaria*, sp. nov. Mr. Enefer, an *Acronieta albi*, of which he had found three larvae at Penzance in August 1921. Mr. Withycombe, the rare *Chrysope dorsalis*, bred from a pine-feeding larva at Oxshott in 1921. Mr. Step said that the *Cleora lichenaria* larvae he had shown at a previous meeting had extended their feeding two or three weeks beyond the normal time and were found to be ichneumonid except one, which had developed to an imago in the normal period. Mr. Coulson reported the capture of *Phryxus livornica* at Merton,

Surrey, on May 16th. Mr. Preston exhibited butterflies from Macedonia. Mr. Bunnett, ova, larvae, and imagines of *Melasoma populi* (Coleopt.) from Oxshott, where it was very common just now. Various reports were made of the occurrence of *Colias croceus* (*edusa*) on the N. Downs, etc.

June 22nd.—The President in the Chair.

Mr. Staniland exhibited *Petrognatha gigas* and *Archon centaurus* (Coleopt.) from the Gold Coast. Mr. Withycombe, the Neuroptera: 1. *Osmylus chrysops*, alive with its larva; 2. *Sialis lutaria* and a living larva; 3. *Ithone fusca* from Australia and a preserved larva; 4. *Psychopsis leonina* from Africa and a preserved larva from Australia; 5. *Stenosmylus excisus* from New Zealand. and gave notes on their life-histories. Mr. Buckhurst, *Hesperia malvae*, ab. *taras*, from Effingham. Mr. Enefer, a shoot of sycamore and a root of ash deformed by the attacks of gall-flies. Mr. Goodman, aberrations of: 1. *Parnassius apollo*, much approaching *P. delius*, from St. Martin Vesubie; 2. *P. delius* with sparser markings than usual; 3. a *Parnassius* with characters intermediate between *delius* and *apollo* suggestive of a natural hybrid. Mr. Syms, a larva of *Ruralis betulae* and a larva of *Onthophagus vacca* (Coleopt.) in its cell for pupation.—HY. J. TURNER, *Hon. Editor of Proceedings*.

ENTOMOLOGICAL SOCIETY OF LONDON: *Wednesday, May 3rd, 1922.*—The Rt. Hon. LORD ROTHSCHILD, F.R.S., President, in the Chair.

The President announced the death of Mr. A. W. Bacot, of York Cottages, York Hill, Loughton, Essex, and of Mr. Gilbert Storey, of the Department of Agriculture, Cairo, Egypt, and a vote of condolence was passed to their relatives.

The following were elected Fellows of the Society:—Mr. C. L. Collenette, c/o Messrs. Barker & Co., Singapore; and Mr. Michael G. L. Perkins, 4 Dean's Yard, Westminster Abbey, S.W. 1, and Trinity College, Cambridge.

The Treasurer called attention to additions to the collection of portraits in the meeting-room, and especially to a beautiful pencil drawing from a photograph of the late Dr. Longstaff.

Mr. W. G. Sheldon exhibited a series of *Pararge roxelana* from Herculesbad, and *P. climene* from Sarepta. Professor E. B. Poulton, F.R.S., illustrated some of his remarks with lantern-slides, and read some notes on the life-history of *Catochrysops phasma*, and on the life-history of a Bethyloid of the genus *Cephalonomia* Westw., observed at Oxford by Mr. A. H. Hamm; he also read some interesting notes on the habits of the Driver-ant *Dorylus nigricans* Illig., in Tanganyika Territory. Mr. C. L. Withycombe exhibited larvae of an adult of *Osmylus chrysops*, with enlarged figures, also some larvae of the mosquito *Taeniorhynchus richiardi*, taken in Epping Forest.

The following papers were read: "The Mallophaga of the Oxford University Expedition to Spitsbergen," by Dr. J. Waterston, B.D., D.Sc.; "The *Dasytinae* of South Africa," by Mr. G. C. Champion, F.Z.S., A.L.S.; "A Monograph of the Genus *Catochrysops*," by Mr. G. T. Bethune-Baker, F.L.S.; and "The Species of the Genus *Larinopoda*," by Dr. H. Eltringham, M.A., D.Sc. F.Z.S.

Wednesday, June 7th, 1922.—The President in the Chair.

The President announced the death of Mr. H. Rowland-Brown, M.A., formerly Secretary of the Society, and a vote of condolence was passed with his relatives. He also announced that Mr. H. Willoughby Ellis, F.Z.S., had been co-opted on the Council in the place of the late Mr. Rowland-Brown.

The following were elected Fellows of the Society:—Messrs. B. A. R. Gater, B.A., F.R.M.S., 13 Arundel Mansions, Kelvedon Road, S.W. 6; Lionel Lacey, Churchfield, Rodborough, Stroud, Gloucester; Herbert Mace, Faircotes, Harlow, Essex; William H. Jackson, 14 Woodcote Valley Road, Purley; and Miss A. B. Flower, Eastbury, Surrey Road, Bournemouth West.

Professor Poulton made some remarks on transformational deceptive resemblance in insects arising out of the exhibits of long-horned grasshoppers made by Dr. Marshall on behalf of Mr. Uvarov at the previous meeting. Professor Poulton also exhibited an example of *Coccinella septempunctata* as the prey of an Asilid, *Laphria flava*; he called attention to some recent observations on the "false head" of *Lycanidæ* in relation to the attacks of enemies; he also gave numerous interesting particulars of the binomics, geographical races, and affinities of the remarkable African butterfly, *Pseudopontia paradoxa*. Dr. Dixey, who illustrated his remarks with a lantern-slide, discussed the venation of this butterfly; he expressed the opinion that it is more closely associated to the *Pierinae* than any other subfamily, and that there are probably two geographical races of it distinguished by the venation. Dr. Neave made some remarks on the habits and distribution of this species, and of *Leptosia medusa* and *Leuceronia pharis*, butterflies that are associated with it in some parts of Africa. Mr. G. Talbot, on behalf of Mr. J. J. Joicey, brought for exhibition some new and rare Lepidoptera from Africa, New Guinea, and the Dutch East Indies.

The following papers were read: "Transformative Deceptive Resemblance in Long-horned Grasshoppers," by Mr. B. P. Uvarov; "*Elateridæ* of the Seychelles Expedition," by M. Plentiaux, communicated by Dr. H. Scott.—S. A. NEAVE, *Hon. Sec.*

SOME INDIAN COLEOPTERA (9).*

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

The ninth contribution of this series includes descriptions of several new Malachiids recently brought me by my eldest son from the United Provinces, and of others from various Indian localities contained in the collections of Mr. Andrewes and the British Museum. Numerous species from the same sources belonging to the genera *Laius*, *Colotes*, *Attalus*, *Incisomalachius*, *Hedybius*, *Hypebaeus*, *Malachius*, *Hapalochrus*, etc., have already been enumerated by me in this Magazine or in the "Annals and Magazine of Natural History." Amongst the *Attali*

* The names of two of the five new species of *Corticaria* described in the seventh contribution of this series (*Anten.* pp. 31, 70, 71) are preoccupied, and the following are now substituted: "*infatigabilis*" for *infata* and "*parvithorax*" for *parvicollis*.—G. C. C.

are two remarkable insects, one having extremely elongate, bristly antennae in the ♂ and the other with peculiarly-formed anterior legs in the same sex. Three additional species are referred to *Hedybius* Er.

Sixteen Indian Malachiids (excluding *Carphurus*) named by Pic and other writers have not been identified in the collections examined: *Malachius caeruleoscutatus* Fairm.; *Attalus fruhstorferi*, *diversipennis*, *discomaculatus*, *apicipennis*, *annulifer*, *bunghausi*, *donceeli*, *kuluensis*, and *impressifrons*, *Ebaeus carinatipennis* and *madrassensis*, *Lobatoniæis curvifrons*, and *Apalochrus depressicornis* Pic; *Zelotypus horni* Bourg.; *Colotes contaminatus* Ab.; and *Zelotypus (Collops) violaceipennis* Motsch. Specimens of *Myrmecophasma (Myrmecodes) nietneri* Motsch., ♂ and ♀ (the ♀ of which was redescribed by Abeille de Perrin in Rev. d'Ent. xix, p. 179, 1900), were captured by Mr. G. Bryant at Kandy, Ceylon, in 1908; Motschulsky's figure of the ♂ of this insect is unsatisfactory, the clytra apparently having been drawn from a ♀ and the antennae from a ♂! *Zelotypus* Ab., from the same island, has equally remarkable antennae.

Species enumerated in the present contribution.

| | |
|-------------------------------------|---|
| <i>Laius boysi</i> Champ., ♂. | <i>Hedybius bipenicillatus</i> , n. sp. |
| ,, <i>balleatus</i> Er., ♂. | ,, (?) <i>nigroplagiatus</i> , n. sp. |
| <i>Colotes scapularis</i> , n. sp. | ,, (?) <i>chitralensis</i> , n. sp. |
| ,, <i>atrofemoratus</i> , n. sp. | <i>Ebaeus squamifer</i> , n. sp. |
| ,, <i>piriformis</i> , n. sp. | ,, <i>tenuicornis</i> , n. sp. |
| ,, <i>halticooides</i> , n. sp. | <i>Hypebaeus cavernosus</i> , n. sp. |
| <i>Attalus andrevesi</i> , n. sp. | ,, <i>carinatifer</i> Pic |
| ,, <i>calcarifer</i> , n. sp. | (= <i>auritus</i> Champ.). |
| ,, <i>triformis</i> , n. sp. | ,, <i>albicinctus</i> , n. sp. |
| ,, <i>cuspidatus</i> , n. sp. | ,, <i>clavatus</i> , n. sp. |
| ,, <i>erythrocephalus</i> , n. sp. | ,, <i>uncatus</i> Champ., var. ? |
| ,, <i>flavoguttatus</i> , n. sp. | ,, <i>triangularis</i> , n. sp. |
| ,, <i>alutaceus</i> , n. sp. | ,, <i>nainiensis</i> , n. sp. |
| ,, <i>verticillatus</i> , n. sp. | ,, <i>stevensi</i> , n. sp. |
| ,, <i>hamatilis</i> , n. sp. | ,, <i>suffusus</i> , n. sp. |
| <i>Pseudoceraphes superbus</i> Pic. | ,, <i>flexuosus</i> , n. sp. |
| ,, <i>rostri</i> Pic. | ,, <i>lenis</i> , n. sp. |
| ,, <i>longipennis</i> , n. sp. | <i>Malachius sikkimensis</i> Pic, ♂. |

LAIUS Er.

Laius boysi.

Laius boysi Champ. Ann. and Mag. Nat. Hist. (9) vii, p. 330 (♀) (1921).

♂. Antennal joints 1 and 2 testaceous; 1 curved, stout, much widened outward, deeply emarginate on the outer edge (appearing biangulate externally)

the basal angulation produced into a long, slender, curved, blunt appendage; 2 very large, subhemispherical, deeply excavate near the apex within and also towards the inner margin, the distal edge of the inner cavity angulate and furnished with a short, curved, dentiform appendage.

Hab. Ranikhet Division of Kumaon (*H. G. C.* : iv.1920).

One specimen. The type, ♀, was from an unknown Indian locality

Laius balteatus.

Laius balteatus Er. Entomographien, p. 64 (♀) (1840).

"Niger, elytris cyaneis, fascia testacea" [*Erichson*].

♂. Antennal joints 1 and 2 testaceous; 1 strongly curved, moderately stout, simple; 2 very large, transverse, sublunate, concave at the base and convex at the apex, the basal cavity furnished with a short, slender, ciliate appendage on its inner edge.

♀. Antennal joints 1-3 or 4 testaceous, 1 and 2 elongate, simply thickened.

Hab. Nandhaur Valley, Kumaon, U.P., alt. 2000 ft. (*H. G. C.* : v.1921).

A small narrow *Laius* (length $2\frac{1}{5}$ - $3\frac{1}{5}$ mm.) from the Haldwani Forest Division agrees with *Erichson's* description of *L. balteatus*, type ♀, from Siam, except in having the head and prothorax metallic, instead of black. The specimens before me have the prothorax punctulate at the sides and the elytra deeply, closely, rather coarsely punctured to near the tip; the vestiture abundant, long, and whitish; the elytral fascia placed at a little before the middle, and slightly variable in width; and the abdomen testaceous. The second antennal joint in ♂ is shaped like that of *L. lunatus* Champ., except that it is not so large. Bourgeois mentions *L. balteatus* under his description of *L. fasciatus* (1890), but he says nothing about the ♂ of it. *L. taprobannus* Champ. (1921), from Ceylon, type ♀, is a larger and broader insect. *L. balteatus* and *L. nodifrons* Champ. were found in abundance on *Polygonum* on the banks of the Nandhaur River.

COLOTES ER.

Colotes scapularis, n. sp.

♀. Oblong, moderately shining, finely pubescent; testaceous, the eyes, joints 9-11 of the antennae, elytra (a humeral spot and a common triangular apical patch excepted), and metasternum black; the entire upper surface very finely punctured. Head (with the rather prominent eyes) wider than the prothorax; antennae moderately long, slender, subserrate, joints 5-10 longer than broad, 11 elongate; apical joint of maxillary palpi subconical. Prothorax

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THE NATURALIST:

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EDITED BY

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THE MUSEUM, HULL;

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

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

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

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MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 41 Queen's Gate, S.W. 7 (nearest stations: South Kensington and Gloucester Road).—Oct. 4th, 18th, Nov. 1st, 13th, Dec. 6th, 1922, at 8 p.m.

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

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 7 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

THE LONDON NATURAL HISTORY SOCIETY, now meets in Hall 40, Winchester House, Old Broad Street, E.C. 2, on 1st and 3rd Tuesdays in the month at 6.30 p.m. General meetings 1st Tuesdays. Sectional meetings 3rd Tuesdays. (No meetings in July or August indoors, but field excursions instead.)

Hon. Sec.: W. E. GLEGG, The House, Albion Brewery, Whitechapel Road, E. 1. Chingford Branch. The Chingford Local Branch meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the 2nd Monday in each month.

ENTOMOLOGICAL SOCIETY OF HAMPSHIRE AND THE ISLE OF WIGHT.—This Society has developed from the Southampton and District Entomological Society. Meetings are held on the First Saturday afternoon of each month at Southampton, and other meetings will be arranged in important centres in the county from time to time. Activities being undertaken at the present time include the formation of a library, of collections of insects, and the compilation of a county insect fauna list. Will keen entomologists in the county who are interested please communicate with the

Hon. Sec., F. J. KILLINGTON, 1 St. Catherine's Road, Eastleigh, Hants.

convex, transverse, rounded at the sides. Elytra wider than the prothorax, somewhat rounded and dilated from below the humeri to the tip. Legs slender; posterior tibiae slightly curved. Wings fully developed.

Length 2 mm.

Hab. Nilgiri Hills (*H. L. Andrewes*).

One specimen. A small form allied to *C. (Ebaeus) dorsalis* Gorb., from Belgaum, and *C. contaminatus* Ab., from Ceylon; the elytra black, a humeral spot and a common triangular patch at the apex excepted, the rest of the upper surface and legs testaceous. *C. scapularis* has the general facies of a *Xylophilus*.

Colotes atrofemoratus, n. sp.

♀. Oboval, convex, shining, finely cinereo-pubescent; black, the antennal joints 1-4, tibiae, and tarsi (the terminal joint excepted) testaceous; the head and prothorax minutely, the elytra closely, rather strongly punctate. Head broad; antennae long, rather slender, joint 1 thickened, elongate; apical joint of maxillary palpi broad, stout, subtriangular. Prothorax convex, strongly transverse, rounded at the sides. Elytra oval, somewhat gibbous beyond the middle, incompletely covering the abdomen, the humeri distinct. Legs elongate. Wings wanting.

Length 2 mm.

Hab. Naivital, Kumaon, alt. 8000 ft. (*H. G. C.*: ix.1918).

One specimen. Very like the Palearctic *C. punctatus* Er., but a little larger; the legs and antennae longer; the apical joint of the maxillary palpi broad and stout; the elytra more convex.

Colotes piriformis, n. sp.

♀. Piriform, rather convex, moderately shining, finely cinereo-pubescent; black, head rufescent (a transverse patch on the basal portion excepted), the antennal joints 1-4, the bases of the palpi, prothorax, and legs (the intermediate and posterior femora excepted) testaceous; the head and prothorax minutely, the elytra closely, finely punctate. Head rather small, rhomboidal, much narrowed behind; antennae long, joint 1 thickened, elongate; terminal joint of palpi stout. Prothorax transverse, rounded at the sides. Elytra piriform, much widened posteriorly, at the base narrower than the prothorax, covering the abdomen, the humeri distinct. Wings wanting.

Length 2 mm.

Hab. Belgaum, S. India (*H. E. Andrewes*).

One ♀. Less convex than *C. atrofemoratus*, the head and prothorax narrower, wholly or in part testaceous or reddish; the elytra longer, more widened posteriorly, piriform, and less convex; the femora not so black. *C. javeti* Duv. is an allied smaller form.

Colotes halticoides, n. sp.

♀. Obovate, convex, shining, finely cinereo-pubescent; black, the antennal joints 1-4 (the base of 1 excepted), knees, and tarsi in part, testaceous; the entire upper surface extremely finely punctured, the elytra somewhat rugulose. Head much narrower than the prothorax; antennae slender, short, joints 7-10 about as long as broad. Prothorax transverse, rounded at the sides. Elytra widening posteriorly, at the base not wider than the prothorax, covering the abdomen. Legs very slender. Wings wanting.

Length $1\frac{1}{8}$ mm.

Hab. Belgaum, S. India (*H. E. Andrewes*).

Two ♀ ♀. Smaller than *C. punctatus* Er., the elytra very finely, rugulose punctured. This insect is so like a minute black Halticid (*Aphthona* or *Longitarsus*) that it might easily be mistaken for such, till the legs were examined. Allied insects are also found in S. Africa.

ATTALUS Er.

Attalus andrewesi, n. sp.

♂. Elongate-subtriangular, shining, thickly clothed with fine pubescence intermixed with long, erect, blackish hairs; black, the prothorax with the lateral portions broadly rufo-testaceous, the basal joints of the antennae testaceous beneath, the abdomen at the sides and beneath rufous, the elytra with a bluish lustre, the apical margin very narrowly white; the head and prothorax sparsely, finely, the elytra rugulose, punctate. Head (as seen extended) long, narrower than the prothorax, transversely depressed anteriorly, rounded at the sides posteriorly, the eyes rather prominent; antennae long, stout, slightly tapering towards the tip. Prothorax a little broader than long, narrowed anteriorly, feebly margined. Elytra long, at the base broader than the prothorax, much widened posteriorly, incompletely covering the abdomen, the apices obliquely truncate. Terminal dorsal abdominal segment conical, emarginate at tip. Anterior tarsal joint 2 extending over the base of 3 above.

♀. Antennae shorter, joints 4-10 subequal in width; prothorax rufo-testaceous, sometimes with an oblong dark patch on the disc; elytra with apical margin rarely whitish; pygidium broader, more feebly emarginate.

Length (exclud. head and pygidium) $2\frac{1}{2}$ - $2\frac{3}{4}$ mm.

Hab. Nilgiri Hills (*H. L. Andrewes*).

Eleven specimens, one only of which is a ♂, the ♀ ♀ varying in the length of the head and in the colour of the prothorax. This insect is very like the Mexican *A. nitidiceps* Champ. (figured in Trans. Ent. Soc. Lond. 1914, pl. 2, fig. 8), both sexes having the head long and narrow and the elytra much widened distally.

Attalus calcarifer, n. sp.

♀. Moderately elongate, shining, finely pubescent; black, the antennal joints 1-5, palpi, prothorax, anterior coxae and legs in great part, intermediate knees, and apices of posterior tibiae, testaceous or rufo-testaceous, the rest of the antennae more or less infuscate, the elytra bluish-black; the head and prothorax almost smooth, the elytra closely, minutely punctured. Head much narrower than the prothorax; antennae moderately long, slender, feebly serrate. Prothorax convex, small, broader than long, rounded at the sides. Elytra moderately long, much broader than the prothorax, widened posteriorly conjointly rounded at the apex, depressed on the disc below the base. Posterior tibiae bowed inward, produced at the apex into a rather long spur.

Length $2\frac{1}{4}$ - $2\frac{1}{2}$ mm.

Hab. Gopaldhara, Rungong Valley, Sikkim (*H. Stevens*).

Two ♀♀. Smaller than *A. dalmatinus* Er., the antennae and legs more slender; the posterior tibiae of the ♀ bowed and produced into a rather long spur at the apex, as in the same sex of the American *A. varicus* Champ., various *Hypebaeus*, etc.

Attalus triformis, n. sp.

♂. Narrow, elongate, parallel-sided, shining, clothed with fine pubescence intermixed with semierect longer hairs; brassy-black, the head on each side before the eyes, clypeus, the basal joints of the antennae beneath, basal margin of prothorax, trochanters, bases and apices of tibiae, bases of tarsi, and base and apex of abdomen, testaceous, the apical margin of elytra whitish; the head and prothorax sparsely, minutely, the elytra densely, transversely, rugulose punctured. Head about as wide as prothorax, foveate in the middle between the eyes; antennae filiform, very long, joints 5-11 elongate. Prothorax transverse, convex, rounded at the sides, narrowly margined. Elytra long, wider than the prothorax, parallel, truncate and transversely plicate at the tip. Anterior tarsal joints 1 and 2 thickened, 2 elongate, nigro-pectinate and rounded at the apex, extending over 3; anterior and intermediate tibiae feebly sinuate within, the posterior pair curved.

♀. Antennae short, joints 3-10 subequal in length; prothorax wholly, or with the sides broadly, testaceous; elytra widened posteriorly; pygidium black; posterior tibiae slightly sinuate.

Length $2\frac{1}{2}$ mm.

Hab. Nilgiri Hills (*H. L. Andrewes*).

Three specimens of each sex, the ♀♀ certainly belonging to the same species, these having the prothorax laterally or wholly testaceous. The pygidium is testaceous in ♂ and infuscate in ♀. The apical margin of the elytra (as seen from behind) is whitish and transversely plicate in ♂; but there is no definite cavity such as is to be found in the same sex of *Ebaeus*.

Attalus cuspidatus, n. sp.

♀. Moderately elongate, rather convex, a little widened posteriorly, shining, very finely pubescent; black, the prothorax and the antennal joints 1 and 2 beneath testaceous, the elytra cyaneous; the head and prothorax extremely finely punctulate, the elytra closely, conspicuously punctate. Head narrower than the prothorax, longitudinally sulcate on the middle of the vertex; antennae moderately long, comparatively stout, feebly serrate, joints 5-10 broader than long. Prothorax transverse, convex, rounded at the sides. Elytra a little wider than the prothorax, rather long, depressed below the base, acuminate at the apex, the apices strongly compressed and cuspidate at the sutural angle. Legs slender; anterior tarsi simple; posterior tibiae curved, slightly produced at the apex.

Length 2 mm.

Hab. Pindar Valley, Almora District, alt. between 8000 and 11,000 ft. (*H. G. C.*: vii.1920).

One specimen, probably ♀, the compressed, cuspidate apices of the elytra notwithstanding. A small shining form coloured like the Palaearctic *Ebaeus thoracicus* Fourer. and *Attalus lusitanicus* Er., with rather stout antennae and slender legs. In the absence of one of the sexes, the insect is best placed under *Attalus*. The apices of the elytra are formed somewhat as in various species of *Blaps*, *Lixus*, etc. The ♀ of the E. African *Hapalochrus caudatus* (♂ unknown) also has the tips of the elytra produced.

Attalus erythrocephalus, n. sp.

♀. Moderately elongate, much widened posteriorly, shining, finely pubescent, without longer hairs intermixed; black, the antennal joints 1-3, head (except eyes), prothorax, anterior and intermediate coxae and trochanters, and anterior femora to near apex, testaceous, the elytra nigro-caeruleous; the head and prothorax sparsely, minutely, the elytra closely, finely punctured, the puncturing on the elytra becoming more diffuse towards the tip. Head narrower than the prothorax; antennae moderately long, rather slender, joints 4-10 oblong-subtriangular. Prothorax transverse, convex, small, rounded at the sides, narrowly margined. Elytra much wider than the prothorax, oblong-subtriangular, broadly, conjointly rounded at the apex, strongly depressed on the disc below the base. Legs very long; posterior tibiae feebly curved simple at tip.

Length 2½ mm.

Hab. Nilgiri Hills (*H. L. Andrewes*).

One specimen. A small form not unlike the very much larger *A. bengalensis* Pic in general coloration. *A. fruhstorferi* Pic (1905), from Darjeeling, is perhaps related to the present species; it has the head black and the antennae flabellate in ♂, and the length is given as 4 mm.

(To be continued.)

A NEW GENUS AND SOME NEW SPECIES OF MORDELLIDÆ.

BY K. G. BLAIR, B.S.C., F.E.S.

CALYCE Champ.

This genus was characterised by Champion in the "Biologia Centrali-Americana," Coleopt., vol. iv, pt. ii, p. 307 (1891), on a defective specimen. Though the type yet remains unique in the British Museum, additional species now to be described enable the generic diagnosis to be amplified, particularly with regard to the palpi, which are missing from the type-specimen. These organs exhibit remarkable sexual dimorphism, the terminal joint in the male (*C. bicolor*, sp. n., of which alone this sex is yet known) being transverse, lamellate, with each end produced into a long process; in the ♀ (*C. cardinalis*, sp. n.) the last joint is rather shortly cultriform.

The genus was regarded by Champion as being very closely allied to *Mordellistena*, evidently on account of the oblique comb-ridges on the posterior tibiae and tarsi, but it seems likely that this character has been independently developed. In the form of the head, with its peculiar palpi, of the thorax and the pygidium, this genus is obviously very closely related to the new genus described below, which appears to be best placed near *Glipa*.

Calyce cardinalis, sp. n.

♀. Rufo-fulvous, clothed throughout with pubescence of the same colour. Last joint of maxillary palpi rather large, cultriform, the outer and apical margins almost equal, nearly twice as long as the internal. Penultimate joint of anterior and intermediate tarsi bilobed; posterior tibiae with eight oblique combs on outer face, first seven (from the apex) successively longer and more oblique, 8th very small, close to 7th; first joint of hind tarsi with two short combs (the rest wanting); outer apical spur much shorter than inner. Tarsal claws of two anterior pairs of legs toothed in basal half. Pygidium short, triangular, scarcely surpassing hypopygium.

Length 9 mm.

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

Two defective specimens, one of which (not the type) is that from the Bates collection, without locality, mentioned by Champion. Very similar to *C. fulva* Champ., but with different tibial combs, and the penultimate tarsal joints more dilated and more deeply excavate at apex. The antennae of both examples are wanting.

Calyce bicolor, sp. n.

♂. Fulvous, the antennae, except the three basal joints, mandibles, and elytra, except near base, black. Antennae stout, serrate, joints 5-10 as wide as long, produced on inner side. Last joint of maxillary palpi transversely elongate, the inner lobe much more developed than the outer, each lobe with a long flat process, the inner one more or less enwrapping the joint itself and the outer one closing over the whole (when these lobes are enwrapped and the palp extended it becomes almost as long as an antenna) (fig. 1). Posterior tibiae with five black oblique comb-like ridges on outer face, each longer and more oblique than the preceding; first tarsal joint with three short ridges, 2nd with one. Tarsal claws toothed. Pygidium long and pointed, about twice as long as hypopygium.

Length $6\frac{1}{2}$ mm.

Hab. E. AFRICA, NYASALAND, Mt. Mlanje, alt. 3000-4000 ft. (Dr. S. A. Neave).

Two examples, both ♂. This species differs from the Central and S. American forms in its longer, more pointed pygidium.

CALYCELLA, gen. nov.

Head widest behind the eyes, which do not reach its posterior margin. Antennae serrate from 4th or 5th joint, not reaching base of thorax; maxillary palpi exhibiting strong sexual dimorphism, the last joint branched in ♂, triangular in ♀, with one face much less developed than the other, so that the apex is strongly oblique and exposed on the weakly developed face. Thorax strongly transverse, with a broad projecting median lobe both at apex and base, so that its lateral margin is only about half its median length; scutellum triangular. Pygidium short and conical, scarcely prolonged beyond hypopygium. Posterior tibiae without oblique comb-ridges on outer face (except at apex as in *Mordella*): penultimate joint of anterior and intermediate tarsi more or less widened, bilobed at apex; joints of posterior tarsi carinate beneath and spiniform at apex; tarsal claws pectinate beneath. (Type, *C. palpalis*, sp. n.)

The structure of the head and thorax in this genus closely resembles that of *Calyce* Champion, but the oblique comb-ridges on the outer face of the posterior tibiae and tarsi are wanting. In its stout build, form of thorax, and tarsal structure it closely approaches *Glipa*, from which it differs, *inter alia*, in the smaller eyes, which do not nearly reach the posterior border of the head, the peculiar palpi, and the very short pygidium.

Palpi of very similar form are found in the American genus *Glipodes* Lec. (figured in the "Biologia"), in which, however, the eyes are practically contiguous with the pronotum, and the posterior tibiae and tarsi bear oblique ridges.

The geographical distribution, as is frequently the case with the genera of this family, is very widely tropical, four species being known from the Malay region (one of these occurring also in New Guinea), one from West Africa, and one from Brazil.

Mordella sericeobrunnea Blair (Trans. Zool. Soc. Lond. xx, 1915, p. 589), from New Guinea, though the ♂ remains unknown, must be included in this genus.

Calycella palpalis, sp. n.

Dark castaneous-brown, sericeous and pubescent. Antennae with joints 5-10 triangular, serrate within. Thorax widest near front, thence gradually narrowed to base; all the angles obtuse; anterior median lobe rounded, more prominent and narrower than posterior lobe, which is broadly truncate. Elytra finely and moderately densely asperately punctate, the punctures, especially on the anterior half, forming transverse lines or ridges; these are particularly strong upon the humeral callus. Scutellar area broadly depressed. Pygidium of ♂ acute, half as long again as the hypopygium (these segments in the only ♀ specimen are wanting). Penultimate joint of anterior and intermediate tarsi a little longer than broad, slightly expanded and excavate at apex.

♂. 4th joint of maxillary palpi somewhat U-shaped, with one arm much longer and stouter than the other; from beneath the bend arises a branched appendage which emits first a branch that subdivides into three arms of different lengths, then one that forks into two arms of equal length; and finally one long curled branch emitting a short arm from near its point of origin (fig. 2)

Length 12 mm.

♀. 4th joint of maxillary palpi securiform, the inner side short, not one-third as long as the outer, the apical face oblique, oval, excavate.

Length 15 mm.

Hab. BRAZIL, Bahia (*Fry*).

Closely resembles *C. (Mordella) sericeobrunnea* Blair, but the latter is more slender, has the vertex of the head, viewed laterally, more convex (in the present species the profile is almost evenly rounded from clypeus to vertex), the 4th joint of the maxillary palpi more spoon-shaped, *i. e.* the inner side and upper face extremely short and the apical face widely oval and exposed from above. A figure of the palpus of *C. sericeobrunnea*, ♀, is here given (fig. 5) to show the difference between the two species in that sex.

Calycella tarsalis, sp. n.

♂. Piceous, antennae and two anterior pairs of legs testaceous. Antennae serrate, joints 5-10 triangular. Thorax with all the angles rounded, the base

with a large triangular depression on each side. Elytra strongly narrowed from behind the shoulders to a little beyond the middle, thence subparallel to apex: scutellar area broadly depressed. Pygidium short, obtusely rounded. Anterior tarsi strongly expanded, 1st joint twice as wide as long, 2nd and 3rd larger, 4th very short and wide, 5th almost as broad as long.

Maxillary palpi highly modified, 2nd joint long, flat, expanded towards apex, closely united to the short broad 3rd joint; 4th joint lying against the 2nd and 3rd, combined with a long, rather clavate arm and three long hairy finger-like processes arising from its base (fig. 3).

Length 4 mm.

Hab. BORNEO, Sandakan (*C. F. Baker*).

A single specimen, but very distinct, apart from the peculiar tarsi and palpi of the ♂, in the bi-impressed base of the thorax and the strongly narrowed elytra.

Calycella nigriceps, sp. n.

♀. Fulvous, with the head, except labrum, tops of elytra and tarsi of first two pairs of legs black; the antennae, except the two basal joints, and the anterior and intermediate tibiae are also fuscous. Antennae serrate, joints 3-10 triangular, 3rd as long as 4th and 5th together. Last joint of maxillary palpi somewhat spoon-shaped, the inner side and superior face very short, so that the apex, which is to some extent excavate, is very oblique and exposed to view from above. Pygidium short, triangular, but little longer than hypopygium. Third and fourth joints of first two pairs of legs expanded, the latter divided almost to the base. The whole surface finely, but, except on the elytra, not densely punctate and pubescent, the pubescence of the same colour as the derm, except that of the tibiae which is golden.

Length 10 mm.

Hab. MALAY PENINSULA, Negri Sembilan (*H. N. Ridley*).

Very distinct on account of its size and colour, as well as the greater convexity, both longitudinally and transversely, of its dorsal surface, which give it more the appearance of a *Calyce*. The posterior angles of the head are acute, and project laterally to considerably beyond the eyes.

Calycella borneensis, sp. n.

Rufous-brown, clothed with a golden pubescence. Eyes large, separated by a space less than the width of one of them, more nearly approaching the back of the head than in the other species of the genus, but separated from it by a narrow strip which projects laterally behind the eye. Anterior and posterior angles of the thorax completely rounded. Elytra convex, not depressed along the suture. Pygidium short, triangular, scarcely longer than

hypopygium. Penultimate joint of tarsi of first two pairs of legs deeply bilobed.

♂. Smaller than ♀, eyes more nearly approximate in front, last joint of maxillary palpi transversely elongate internally, with two long curling processes arising from the short external arm (fig. 4).

Length 6-8 mm.

Hab. BORNEO, Matang Rd. (*J. E. A. Lewis*).

Differs from most of its congeners in its larger eyes leaving a comparatively narrow strip of head behind them, but agreeing with them in the short pygidium and the remarkable development of the palpi in the ♂.

Calycella guineensis, sp. n.

Black, except for the labrum, the two basal joints of the antennae, the underside of the head, and the palpi, and the anterior and intermediate femora and tibiae, which are flavous. Pubescence cinereous or brownish, forming by its density and by the direction and the degree in which it is depressed a somewhat irregular and varying pattern, the most obvious feature of which is a post-median pale bar across the elytra, which is thrown into relief by a bar of sparser dark pubescence in front of it and a broad dark apical patch.

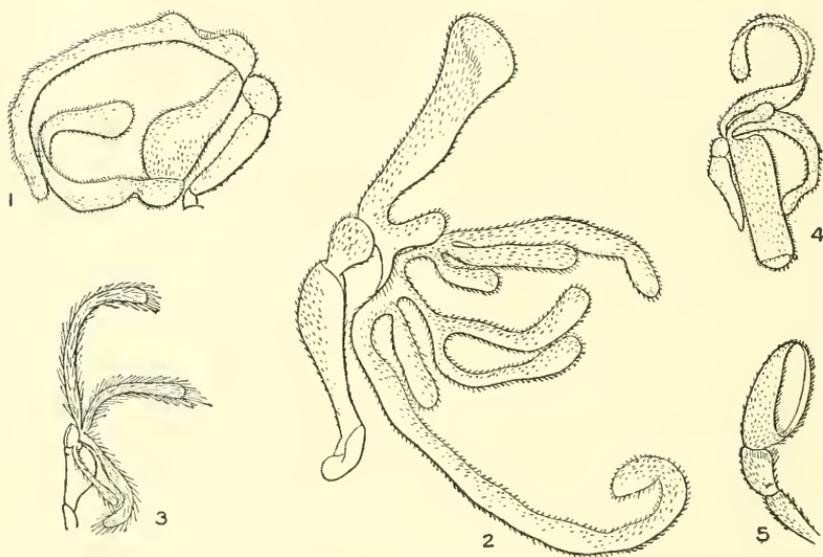
Head subtriangular, *i. e.* the sides almost straight from the tip of the jaws to the posterior angles, the line broken by a small rectangular projection between the eye and the base of the mandible, and by the slight convexity of the eye itself; the vertex, forming the base of the triangle, strongly arcuate. Antennae short, only the last three joints extending beyond the posterior angles of the head, 2nd joint elongate, cylindrical, 3rd about as long as 2nd, but obconic, 4th a little longer than 3rd, 5th to 10th subequal, strongly serrate. Last joint of maxillary palpi very large, the inner side short, the outer long, and the inferior face much wider than the superior face, so that the apical face, which is excavate, is oval and strongly oblique, giving the joint a shovel-shaped appearance. Thorax strongly transverse, anterior angles completely rounded, posterior angles more obtuse; disc with a few feeble depressions, with a much larger and stronger depression each side of the basal median lobe; surface rather densely and finely punctate and pubescent. Scutellum small, rounded at apex, partly concealed by basal lobe of thorax. Elytra widest at base, thence slightly narrowed posteriorly, each separately and somewhat acutely rounded at apex; the humeri are rather strongly elevated, and the scutellar and sutural areas depressed; surface densely and finely punctate, the punctures on the anterior half forming transverse or oblique ridges, strongest behind the shoulders. Pygidium nearly flat, very short, scarcely projecting beyond the hypopygium, and rounded at apex.

♂ unknown.

Length 9 mm.

Hab. WEST AFRICA, Gold Coast (*G. S. Cotterill*).

Judging by its congeners the unique specimen before me is a ♀.



Explanation of the Figures of the maxillary palpi:—1. *Calyce bicolor*, sp. n., ♂; 2. *Calycella palpalis*, gen. et sp. n., ♂; 3. *Calycella tarsalis*, sp. n., ♂; 4. *Calycella borneensis*, sp. n., ♂; 5. *Calycella (Mordella) sericeobrunnea*, Blair, ♀.

British Museum (Natural History).

August 14th, 1922.

NOTES ON SOME PARASITES OF BEETLES.

BY C. T. GIMINGHAM, F.I.C., F.E.S.

1. *Sigalphus luteipes* Thoms.

In 1921, a small area of Field Beans grown at the Research Department of the Olympia Agricultural Company at Offchurch in Warwickshire was infested to an unusual degree by *Bruchus rufimanus*. Shortly after harvesting the beans and before the majority of the beetles emerged, a Hymenopteron, evidently parasitic on the *Bruchus*, also appeared in great numbers. The insect was afterwards identified by Mr. Claude Morley as *Sigalphus luteipes* Thoms. (*Braconidae*). The main period of emergence of the Braconid was from July 24th to August 7th, whilst the beetles began to appear in numbers about the end of July and continued emerging for a month or more. Both insects

were frequently observed during the actual process of emergence, and it was noted that the tough skin of the bean presented a very serious obstacle to the Braconid, so much so that many failed to get clear and died without obtaining their freedom. Each parasitised *Bruchus* larva produced only a single parasite. Occasionally beans were found which had contained two *Bruchus* larvae (sometimes one or both parasitised), but each made a separate exit hole. The exit holes of the *Sigalphus* are about 1 mm. in diameter, whilst the *Bruchus* makes a much larger hole with a diameter of 2-2.5 mm. It was therefore easy to distinguish between the two, and advantage was taken of this to make some counts which give an idea of the percentage of beetles which had been destroyed by the parasite. The beans were harvested in a number of small lots, usually from single rows, for certain experimental purposes; and in three of these lots, which appeared to be fairly typical of the whole as regards attack by *Bruchus*, the beans were divided into (1) those unattacked, (2) those with a small hole made by *Sigalphus*, and (3) those with a large hole made by *Bruchus*. The number of beans in each division were then counted with the following results:—

| | Lot I. | Lot II. | Lot III. |
|---|--------|---------|----------|
| Number of beans unattacked | 722 | 872 | 120 |
| „ from which <i>Bruchus</i> emerged | 204 | 201 | 25 |
| „ „ „ <i>Sigalphus</i> „ | 213 | 325 | 66 |
| Percentage of beetles parasitised | 51.1 | 61.8 | 72.5 |

The percentage of parasitisation is high, and the Braconid must have reduced the numbers of beetles reaching the adult stage by more than half. In all the lots of beans examined, the great majority of those unattacked were of younger growth, as indicated by the lighter colour and general appearance; very few of the earlier formed beans can have escaped. Of the infested beans, those in which the *Bruchus* completed its transformations tended on the whole to be smaller and more shrunken than those in which the *Bruchus* was parasitised. So far, however, as was observed, the plants resulting this year from beans which had been attacked by the beetle in 1921 did not show any signs of having suffered, and were no less vigorous than those grown from whole seed. The embryo is apparently never, or very rarely, eaten or damaged by the *Bruchus* larva. There are very few of the beetles to be found in the crop grown this year.

Sigalphus luteipes is, I understand, a known *Bruchus* parasite. I have not, however, seen any record as regards this particular species. Elliott and Morley (Trans. Ent. Soc. Lond. 1907, 33, and 1911, 492) give records of various other species of *Sigalphus* which are parasitic on

several of the *Bruchi*; and Morley (Ent. 1907, 183) mentions the capture of *S. luteipes* by sweeping in Suffolk.

2. *Thersilochus orchesiae* Morl.

Numbers of this insect were bred from larvae of *Orchesia micans* in fungus (*Polyporus* spp.) taken from dead trees at Offchurch in 1921. On one occasion, on October 10th, 1921, I was fortunate enough to observe the oviposition of the parasite. On breaking a piece of the fungus across, a portion of the side of one of the pink *Orchesia* larvae was exposed. Whilst I still held the fungus in my hand, a Hymenopteron (afterwards kindly identified by Mr. Morley as *Thersilochus orchesiae*) alighted upon it, quickly approached the exposed larva and, standing over it, inserted its ovipositor just above one of the posterior pair of legs. The larva remained perfectly quiescent for about two minutes, then moved, finally wriggled out on to the surface and began to walk away. The fly held its ground firmly, its abdomen, curved round underneath, being drawn more and more forward until it looked as though the ovipositor would be torn away; at last, however, it was withdrawn and both fly and larva were captured. Presumably, under normal conditions the parasite must be able to locate the beetle larva from the surface of the fungus in which it is embedded, when it would hardly be in a position to move very readily.

Thersilochus orchesiae (*Ophionidae*) is one of the many hymenopterous parasites which can frequently be bred from *Orchesia micans*.

3. *Sarcophaga nigriventris* Mg.

This Dipteron, kindly identified for me by Mr. J. E. Collin, was bred from a single specimen of *Necrophorus humator*, found on the sand-dunes at Holkham, Norfolk, on July 8th, 1922. The beetle was picked up in a moribund condition, and a few days afterwards four larvae emerged from it, pupated, and about August 5th produced one male and three female *Sarcophaga nigriventris*. Mr. Collin tells me that he has not been able to trace any record of this fly as parasitic on beetles, though a few other species of the genus are known to be so.

I have on several previous occasions seen dead, but externally uninjured, specimens of *Necrophorus humator*, and it is not unlikely that these had also been parasitised. It would be interesting to know whether other entomologists have had the same experience.

Offchurch, near Leamington Spa.

August 21st, 1922.

A NEW MYMARID FROM BROCKENHURST.*

BY B. N. BLOOD, M.D., AND J. P. KRYGER.

PLATE II.

Whilst hunting for *Mymarinae* and *Trichogrammatinae* last year in the New Forest, we captured many interesting insects, some of which we have never seen described, and among these was one male Mymarid which at once attracted our attention. The following is a description of this insect.

PETIOLARIA, gen. nov.

Tarsi 5-jointed; abdomen petiolate; antennae of male 13-jointed, joints 3-13 fusiform, with a few strong hairs around the thickest part of each. Head quadrangular, excavated behind, broader than the thorax. Eyes small, no visible ocelli. Thorax ovate, a little more than twice as long as the head, the prothorax wider, and semicircular in outline. Front wings battledore-shaped, the "stem" about a quarter of the total length of the wing. The surface of the wing with a few rows of strong hairs; the outer half of the wing with very long and powerful marginal cilia. Hind wings short and almost rudimentary, about half as long as the stem of the anterior wings. Petiole nearly as long as the thorax, consisting of two distinct joints. Abdomen a little longer than the thorax.

The genus is easily recognised by the 5-jointed tarsi, the battledore-shaped front wings, the rudimentary hind wings, and the double-jointed petiole.

Petiolaria anomala, sp. n.

♂. Head brown, the eyes black; antennae brown; thorax brown, with dark brown tegulae; abdomen brown; petiole and legs light yellow, at each tarsal articulation is a narrow darker ring, and the last tarsal joint is lighter in colour than the other four.

The head, thorax, and surface of the wings reticulated; in the wings the reticulations are large, like crocodile-skin, and do not follow any lines of neurulation. Antennae: scape long and slender; pedicel turbinate, one-third as long as the scape; third joint very small, shorter than the pedicel or any other joint; last joint of antenna pointed.

Wings: anterior border, from the end of the stem to the first long cilium, with very short cilia; posterior border, from the end of the stem to the first long cilium, with shorter cilia than those of the anterior border. On the posterior border, about half-way between the thorax and the first long cilium, springs a solitary long spine. The rest of the wing-border with cilia which are nearly all longer than the greatest width of the wing. The surface of the wing has four rows of discal hairs above and two rows underneath.

Legs: fore legs shorter, middle and hind legs longer and slender.

Fore and middle tarsi longer than their tibiae; hind tarsi shorter than their tibiae; the tarsi taper towards the apex.

* Plate II. will be issued in the November No.

Length .63 mm.

Length of head .1 mm., of thorax .19 mm., of petiole .16 mm., of abdomen .18 mm.; length of anterior wing .6 mm, its width .2 mm., the longest cilia about .25 mm.

The antennal joints are in the following ratio in millimetres (from the scape outward):—.067-.033-.017-.03-.04-.04-.05-.06-.05-.04-.04-.033-.05.

Hab. ENGLAND, New Forest, Brockenhurst (*J. P. Kryger*).

Season, July 24th, 1921.

Type (one male) in the British Museum.

5 Brynland Avenue,
Bishopston, Bristol.
September 1922.

Leptura sanguinolenta at Nethy Bridge, N.B.—I was interested in the Rev. Canon Fowler's note regarding *Leptura sanguinolenta*, as in 1911 I captured a nice series of this species, of which three are females, on flower-heads at a bank on the River Nethy, some distance up the river. I visited the place this year but found that owing to floods the bank has considerably altered, and I did not see any evidence of the beetle.—J. J. F. X. KING, Glasgow: September 14th, 1922.

[Dr. Sharp also found this common Alpine insect in some numbers at Nethy Bridge. It was recorded by myself from Aviemore in 1876 and again in 1892.—G. C. C.]

The distribution of Aseum striatum.—In the light of recent notes on this beetle, it may be of interest to know I had a specimen brought to me in 1917 from a sawmill in Coventry.—J. W. SAUNT, 53 Enfield Road, Stoke, Coventry: August 21st, 1922.

Caenocara bovistae in Carnarvonshire.—I was fortunate enough to observe this beetle depositing its eggs in a puff-ball (*Bovista plumbea*?) and possibly a description of this operation may be of interest. The beetle, of which two were working on the same puff-ball, eats a small conical hole, 2 mm. wide by 1 mm. deep, through the outer skin; some of this may be swallowed, but much was merely bitten off. This operation takes three-quarters of an hour or probably longer, as the hole was begun when I found the specimen; the beetle then reverses its position and rests, with its tarsi folded in the pit, for from two to three minutes, another excavation is then begun. I could not find the eggs, but the hole made by the ovipositor was quite clear. This operation was on fresh puff-balls, and the greatest number of pits observed was seventeen; other beetles were emerging or had emerged from dry puff-balls a few feet away. The eggs are laid about half-way up the side of the fungus, and as the marks are clearly visible as dots in the dry specimens, they may be useful guides to collectors searching for the larvae of the beetle.—G. H. ASHE, Portmadoc: August 17th, 1922.

Colias croceus (elusa) in Hertfordshire.—This insect has occurred in several localities during August in this county, more especially on the chalk-hills around Dunstable. I have also seen two examples at Harpenden, and others have been noted near Sandridge.—A. D. IMMS, Rothamsted Experimental Station, Harpenden: September 9th, 1922.

A fortnight's Hemiptera collecting in Hampshire.—With the object of trying pastures new, both from an entomological and a health point of view, I stayed at Southbourne in Hampshire for the first half of July, and, as opportunity and the weather permitted, tried my luck with my sweeping-net. On several occasions, however, owing to the soaked vegetation, I had to give up, as my net was wet through. At Hengistbury Head, off honeysuckle, I swept six *Neottiglossa pusilla* Gmel. on the 12th, and although I tried again several times, I did not see any more. In the garden of the hotel at Southbourne I took a green ♀ *Piezodorus lituratus* F., and bred from larvae three *Pentatoma rufipes* found on birch at Hengistbury Head. Other captures included one ♀ *Acanthosoma haemorrhoidale* L. at Tiptoe on willow, and *Myrmus nairiformis* Fall. was taken occasionally. *Cymus glandicolor* Hahn, one, and *Ischnorhynchus geminatus*, fairly common, at Hengistbury Head. One *Lasiosomus enervis*, H.-S., near sea-shore at Mudeford; *Scolopostethus thomsoni* Reut. and *S. decoratus* Hahn, a few of each at Hengistbury Head. Two *Monanthia cardui* L. were taken, one at Mudeford and the other at Barton-on-Sea. I captured four *Hydrometra stagnorum* L. on a backwater of the Stour near Tuckton Bridge, and a solitary *Corixa falleni* Fieb. among hosts of immature *Corixus*. Several *Gerris* were seen on this occasion, but they were all immature. One *Nabis ericetorum* Scholtz at Hengistbury Head was the only species of this genus that I took. *Acomporis pygmaeus* Fall. was met with on every Scotch Fir that I could beat in the district, and one *Triphleps nigra* Wolff was captured at Mudeford. A ♂ and ♀ *Microphysa elegantula* Baer. were swept up together in the hotel garden at Southbourne, with large numbers of *Asciodema obsoletum* D. & S. and *Plagiognathus chrysanthemii*. A few *Pithunus maerkeli* H.-S. were taken in Southbourne, and several *Miris holzatus* F., while *Megaloceraea erratica* L. and *M. ruficornis* were common there. One *Megaloceraea psammaecolor* Reut., Mudeford; *Leptopterna ferrugata* Fall. and *L. dolabrata* L., a few; *Phytocoris ulmi* L., one at Mudeford; *Calocoris bipunctatus* F. was common at Southbourne, while *Stenotus binotatus* F. was taken occasionally at Hengistbury Head. Two *Dichroscytus rufipennis* Fall. were found at Southbourne—one on the trunk of a Scotch Fir, the other beaten out of a small cypress; *Plesiocoris rugicollis* Fall., two or three at Mudeford; *Lygus viridis* Fall., common at Hengistbury Head; a solitary *L. pratensis* L. and a pair of *Rhopalotomus ater* L. at Mudeford, where I also captured two ♀ *Dicyphus errans* W. Christchurch further gave me *Orthotylus marginalis* Reut., *O. viridiervis* Kb., a soft *O. ochrotrichus* D. & S., and *O. ericetorum* Fall. A single *Amblytylus affinis* Fieb. at Barton; *Phylus palliceps* Fieb., *P. melanocephalus*, *Psallus obscurellus* Fall., *P. alnicola* D. & S., *P. roseus* F., *Plagiognathus roseri* H.-S. Many common Hemiptera are, I know, included in this list, but some of the captures may be of interest to other hemipterists, so I have included everything taken. I am greatly indebted to Mr. E. A. Butler and Mr. H. Britten for their kindness in naming the above captures for me.—H. R. P. COLLETT, 2 Wyngate Road, Hale, Cheshire: August 15th, 1922.

Notes on two larvae of Picromerus bidens L.—July 20th.—Two larval *Pentatomidae* were swept into the net about ten days ago with some *Ischnorhynchus geminatus* Fieb. off heath, and when the larger one was discovered sucking a mature *Pentatoma rufipes*, it was separated from the smaller one and given some lepidopterous larvae to feed on. To-day the larger bug (which measures about 5 mm. in length) changed its skin and is almost black in colour with a purple sheen, with the bases of the 3rd and 4th joints of the antennae pale brown and a pale band across the central portions of the intermediate and posterior tibiae. July 24th.—No change. Between them the bugs have accounted for a full-fed *Euchelia jacobaeae* larva, a small sawfly larva, and, to-night, a Tineid larva $\frac{3}{4}$ -inch long was given them. Within a minute the larger bug had stabbed it with its rostrum, and despite the caterpillar's struggles the bug maintained its hold. In five minutes the larva was limp and dead, and the bug appeared greatly excited, walking backwards and shaking the larva, which was still firmly attached to its rostrum. The rostrum reaches to the middle pair of coxae and is flat and very broad in proportion to its length, and also is deeply grooved on the outer surface of the second segment only. The larger bug shows distinct wing-pads. On looking at it four hours later the Tineid larva was found to be sucked almost dry and the bug very much distended in consequence. July 29th.—This morning the smaller bug has changed its skin and was pale pink all over, rapidly darkening until it resembles the larger one. In the last four days the smaller bug has eaten practically nothing, while the larger one has eaten two Tineid and two sawfly larvae, and partially sucked an *E. jacobaeae* larva. August 1st.—No apparent change save that the larger bug is paler and appears mottled on its abdomen. In the last three days it has eaten three small *Pieris rapae* larvae and two sawfly larvae. August 7th.—Less voracious, though the smaller bug is almost as large as the bigger one. August 8th.—Have just managed to get the smaller bug under the microscope in the act of sucking a small larva. Under the transparent skin of the larva can be seen an extraordinarily active filament coming from the terminal segment of the bug's rostrum, and it moves rhythmically as the bug sucks. This filament passes through the terminal (4th) and 3rd segments of the rostrum, and leaves the 3rd segment where the latter joins the 2nd, and passes thence immediately into a fine sheath which has its origin on the anterior border of the face. The rostrum and filament are, in action, exactly like the canular and trochar respectively that a surgeon uses, for, as far as I can see, the rostrum acts as a guide for the filament or tongue. Once an entrance into the prey has been effected, the rostrum is *retracted without being withdrawn*. This action brings forward the head and thus a greater length of filament protrudes into the prey, allowing almost the whole body to be sucked dry from one puncture. On being disturbed the bug was so quick in leaving its prey that I was unable to focus the microscope in time to see the retraction of the filament. I then turned my attention to the larger bug, which has eaten nothing for two or three days, and found it waving itself about as though in pain. Under a glass it was seen that a split was rapidly widening along the sides of the pronotum, followed by a transverse split across the base of the latter, and in a moment by a vertical one to the head. Then the bright pink of the new skin could be seen, and the bug gradually bent down its head and arched its back, laying its antennae straight backwards under its abdomen. A series of painful rhythmical

heaves then began, and within twenty minutes from the commencement the whole insect was free save for the last two segments of its abdomen, which were eventually cleared by the posterior tarsi forcing the skin off. Since hardening the bug has proved to be *Pieromerus bidens* L.—H. R. P. COLLETT: *August 8th, 1922.*

How the Honey-dew of Plant-lice is excreted.—In the August number of the Ent. Mo. Mag., Mr. E. A. Butler records that he saw a small slender-bodied but ample-winged Hymenopteron stroking and tickling the body of a plump-bodied but not very large green aphid on a rose-bush; and he asks if anyone can throw some light on the matter. I should say without any hesitation that the Hymenopteron was endeavouring to milk the Aphid in the same manner as that used by ants when they wish to obtain the sweet secretion which is excreted by plant-lice. This, after all, would not be very surprising—certain beetles and their larvae (*Coccidiotrophus socialis*) milk coccids; gnats (*Harpagomyia* spp.) solicit food from, and are fed by, ants; and even Lepidoptera have been seen to milk aphids and coccids. Mr. Butler's aphid would, no doubt, be the common rose aphid, and his Hymenopteron a Braconid, or perhaps a Proctotrypid. The reason which probably prevented him from understanding what was in progress was his evident belief in the old error perpetuated by some of the earlier writers—Réaumur, Linnaeus, etc., and also by some of the more recent ones, such as McCook, Buckton, and even Comstock—that the sweet secretion or honey-dew obtained by ants from aphids comes from the cornicles; as he writes: "On the cornicles of the aphid there were two small light-coloured masses of what looked like some solid matter, but the Hymenopteron took not the slightest notice of these." It has been proved, and anyone can satisfy himself by watching ants, with a low-pocket lens, milking aphids, that the sweet secretion is excreted from the anus and not from the cornicles. Moreover, many of the true myrmecophilous aphids, which pass nearly the whole of their lives in ants' nests and supply the bulk of the food of their hosts, do not possess cornicles at all; and as we shall see later on, they would not require them in the safety of an ant's nest. Büsgen, Donisthorpe, Forel, Kolbe, Wheeler, and others have all disproved the statement that the honey-dew is a secretion of the cornicles, and have shown that it is simply the excrement of the plant-lice. Darwin, in the "Origin of Species," well describes how aphids voluntarily yield their sweet excretion to ants. He writes: "I removed all the ants from a group of about a dozen aphides on a dock-plant, and prevented their attendance during several hours. After this interval, I felt sure that the aphides would want to excrete. I watched them for some time through a lens, but not one excreted. I then tickled and stroked them with a hair in the same manner, as well as I could as the ants do with their antennae; but not one excreted. Afterwards I allowed an ant to visit them, and it immediately seemed, by its eager way of running about, to be well aware what a rich flock it had discovered; it then began to play with its antennae on the abdomen first of one aphid and then of another; and each, as soon as it felt the antennae, immediately lifted up its abdomen and excreted a limpid drop of sweet juice, which was eagerly devoured by the ant." The liquid secreted by the cornicles is of a sticky and wax-like nature, and is of a yellower colour than that excreted by the anus.

Büsgen has shown that an aphid will discharge this liquid from the cornicles and smear the face and forceps of the larva of the lace-wing fly, and also the whole fore parts of a lady-bird, when these enemies attack it. The secretion hardens at once and at least temporarily inconveniences and disturbs the foe, causing it to desist from the chase.—HORACE DONISTHORPE, 19 Hazlewell Road, Putney: August 12th, 1922.

Diptera from the Bristol District.—*Chironomus rufipes* L., abundant at Hanham, Som., 15.vii.22; also taken a week previously by Mr. H. Audcutt. *Tipula irrorata* Mg.—One ♂, confirmed by Dr. Goetghebuer, and distinguished from our other species of marmoiated "Daddies" by distinct bluish wing reflections. Verrall, in Ent. Mo. Mag. vol. xxiii, p. 121, gives it in his list of reputed British *Tipulas*, referring to "Suites à Buffon, i. 84, Curt., B.E., 493," but omits it from his 1901 list. Herewith it is returned to list. Taken at Blaise Castle, Bristol, Glouc., 27.v.2. *Haematopota crassicornis* Wlhlbg.—♂, Nailsea, Som., 23.vii.22; ♀, Shapwick, Som., 10.vi.21. New to Somerset list. *Oxyera formosa* Mg.—Nailsea, Som., 27.vii.22. *Nemotelus notatus* Ztt.—♂, 12.vii.22, two ♀♀, 17.vii.22, Shirehampton, Glouc. New to Somerset. *Volucella inflata* F.—Dursley, Glouc., 17.vi.22; Blaise, Glouc., 25.vi.22. *Mallota cimbiciformis* Flh.—One, Blaise, Glouc., 25.vi.22. *Tropidia scita* Harr.—Two, Ashcott, Som., 3.vi.22. *Xylota lenta* Mg.—One, Blaise, Glouc., 25.vi.22. During June 1921 at Burnham, Som., *Phthiria pulicaria* Mik was plentiful on the sand-hills, evidently associated with a species of *Pompilus*.—H. WOMERSLEY, 17 Devonshire Road, Westbury Park, Bristol: July 31st, 1922.

Obituary.

David Sharp, M.A., M.B., F.R.S., the doyen of British Coleopterists, one of the most distinguished Entomologists of our time, and whose name is a household word wherever our Science is pursued, passed away peacefully at his residence, Lawnside, Brockenhurst, on the morning of Sunday, August 27th, and was laid to rest in the beautiful churchyard of that New Forest village on the following Thursday.

He was born on October 15th, 1840, at Towcester, Northants, and his early years were passed at Stony Stratford, Buckinghamshire, his parents afterwards removing to St. John's Wood, in the north of London. Here Herbert Spencer was for some considerable time an inmate of his father's house, and there can be no doubt that the keen and logical quality of Dr. Sharp's mind was in large measure due to his early association with the eminent philosopher, who gave him much encouragement and assistance in his first efforts in the study of Natural History, and of whom he was wont to speak with respect and affection to the end of his life.

Not finding his father's business congenial after a short trial, Sharp decided to enter the profession of medicine, and to that end studied, first at St. Bartholomew's Hospital, London, and subsequently at Edinburgh, where in 1866 he graduated as M.B. and C.M. In 1867 he received an appointment to the Crichton Institution at Dumfries, and some years subsequently he was entrusted with the medical care of a wealthy patient, who died in 1883; he



Yours very truly
D. Sharp.

was then enabled to discontinue active medical practice and to devote himself entirely to scientific work. For several years he resided at Shirley Warren, Southampton, and afterwards at Wilmington, near Dartford, Kent; and in 1890 he accepted an invitation to undertake the charge of the insect collections of the University Museum of Zoology at Cambridge. He retained the Curatorship of this collection until 1909, when, having built for himself a house at Brockenhurst overlooking one of the most beautiful parts of the New Forest, he retired thither for the remainder of his days.

As is so often the case, his attention was first given to the *Lepidoptera*, and he used to relate that one of his earliest recollections was that of the surpassing beauty of a newly-emerged "tiger-moth." But his energies were soon transferred to the *Coleoptera*, the object of his life-long study, and the Order with which his name will be inseparably associated in the future. Already, in the short-lived "Weekly Entomologist" (1862-3), we find, besides lists of numerous captures, a series of directions for the mounting and preservation of beetles which thus early mark him as an excellent practical Coleopterist.

The magnitude of Dr. Sharp's entomological work during his long life may be estimated by the fact that no fewer than 257 entries stand under his name in the Royal Society's Catalogue of Scientific Papers, and the "Zoological Record" to date, besides a multitude of minor articles in our own and other Magazines. It is obviously impossible to give here an exhaustive account of this great contribution to the literature of our Science, but a few of its principal items may be briefly alluded to.

In the Transactions of the Entomological Society for 1869 appeared his earliest paper of first-rate importance, "A Revision of the British Species of *Homalota*," which to this day remains the foundation of our knowledge of the extensive and most difficult group of beetles included under this generic name. It may be added that during the last few years he accumulated a very large amount of material, including many beautiful dissections and drawings by his accomplished daughter Anne (now Mrs. F. Muir), for a contemplated further revision of the group. This, we venture to hope, may at some time in the near future be made available for students of *Coleoptera*. The *Staphylinidae* of Japan (1874) and of the Amazon Valley (1876) formed the subject of exhaustive papers in subsequent volumes of the Transactions, but his most important contribution to the Society's publications is without doubt the masterly treatise (in conjunction with Mr. F. Muir) "On the Comparative Anatomy of the Male Genital Tube in Coleoptera," which appeared in 1912.

"On Aquatic Carnivorous Coleoptera or Dytiscidae," published in the Scientific Transactions of the Royal Dublin Society in 1880-2, is an exhaustive monograph of this great series of beetles which still remains the principal authority on the subject. In the same Journal (1885) appeared the papers on the Coleoptera of the Hawaiian Islands (with the Rev. T. Blackburn) and of New Zealand, in which Dr. Sharp was the first to elucidate the surpassing interest and importance of these isolated beetle-faunae; and many years afterwards, when he was editor of the sumptuous "Fauna Hawaiiensis," he contributed the memoirs on the *Caraboidea* and some other groups indigenous to the first-named islands. In the "Biologia Centrali-Americana," he was

responsible for the water-beetles, the *Staphylinidae*, most of the Clavicornes, certain *Rhynchophora*, and the important families *Brentidae* and *Bruchidae*.

His connection with the "Zoological Record" commenced in 1885, when he undertook the editing of the section Insecta; and in 1891 he became the responsible editor of the entire work. His influence was immediately apparent in the greatly improved arrangement and increased facilities for reference, and this strenuous and exacting task was to him a labour of love. Up to the very last, although confined to his room, he continued to devote two or three hours a day to the reading and correction of the proofs as they arrived from the printer.

As regards the *Coleoptera* of our own country, we owe to him two excellent catalogues of our species, issued in 1871 and 1893, the latter in conjunction with the Rev. Canon Fowler. His long residence in Scotland, and his intimate acquaintance with its beetles, resulted in the publication, in the quarterly "Scottish Naturalist" (1871-9), of the "Coleoptera of Scotland," an exhaustive annotated list of the members of that Order occurring north of the Border. His energy and discernment in the field, which he retained up to quite recent years, and his unrivalled knowledge of the insects themselves, enabled him to add to our country's list of *Coleoptera* a greater number of species than perhaps any other worker of our time has done. By his death the last link with the active and successful band of Coleopterists of the "fifties" and "sixties" of the last century is finally severed. Of his colleagues of that period he was full of interesting memories and quaint anecdotes, and it is a source of much regret to his many friends of the present generation of beetle-hunters that he could never be induced to publish his reminiscences of those bygone times.

Unquestionably Dr. Sharp's *magnum opus* is the treatise on "Insects" forming the greater part of two volumes of the "Cambridge Natural History." Of this work it is unnecessary to speak further, as the volumes were adequately reviewed in our Magazine on their appearance in 1895 and 1899, but it is safe to say that no work of equal value on general Entomology has been produced in this country since Westwood's "Introduction to the Modern Classification of Insects" appeared more than half-a-century previously.

To our own Magazine he was one of the most valued contributors from its commencement, and a brief note by him narrowly missed inclusion in our very first number, having in fact been printed on its cover. There is scarcely one of our volumes in which one or more of his communications may not be found, and many of these rank among the most important memoirs that have appeared in our pages.

Dr. Sharp formed an extensive collection of *Coleoptera* from all parts of the world, which was acquired by the nation some few years ago, and more recently his fine entomological library was transferred *en bloc* to the Cawthron Institute at Nelson, New Zealand. His collection of British beetles, one of the finest and most complete in existence, remains at present with the family.

Besides the *Coleoptera*, some other orders of Insects, and especially the *Hemiptera*, received a considerable share of his attention; and when at Cambridge, and subsequently in the New Forest, he studied and collected *Diptera* with great success, and added several species to our Fauna.

He joined the Entomological Society of London in 1862, and at the time of his death was the senior surviving Fellow. He served as Secretary in 1867, was Vice-President on four separate occasions, and in 1887 and 1888 was President of the Society. He was a Fellow of the Linnean and Zoological Societies, but resigned some years ago from the former; and in 1890 he was elected a Fellow of the Royal Society. Most of the chief Entomological Societies throughout the world numbered him as an honorary or corresponding member, and among these he specially valued his connection with the New Zealand Institute. During his residence at Cambridge the University conferred on him the degree of M.A., *honoris causâ*.

In the field he was a delightful companion, with an inexhaustible fund of dry humour under all circumstances. A man of varied and extensive reading, of strong personality, and a keen debater on controversial subjects, his attitude towards the many vexed questions of modern biology was that of a sane and open-minded conservatism. His bodily health failed greatly during the past winter, and when the writer of this notice last saw him in July, though his mind was unclouded and strong as ever, it was only too evident that the end was not far off.

He is survived by his widow, one son (at present, we believe, in New Zealand), and five daughters; a second son, who had also emigrated to the Antipodes, joined the Army and died in England during the war. We join our own heartfelt sympathy to that of his many friends, with each and every member of the bereaved family, as well as with his only surviving sister, Mrs. S. E. Lamb.

The very characteristic portrait which we present with this Memoir is reproduced from a photograph, taken in the New Forest in 1909 by Mr. W. J. Lucas.—J. J. W.

We have just heard of the decease of *Thomas G. Bishop*, another veteran British Coleopterist, and hope to give further details of his life and work in a forthcoming Number.

Society.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
July 13th, 1922.—Mr. E. J. BUNNETT, M.A., President, in the Chair.

Major Stuart Maples, Monkswood, Huntingdon, and Messrs. H. Candler, Broad Eves, Ashstead, and E. B. Watson, Winthorpe Grange, Newark, were elected members.

Mr. R. Adkin exhibited two specimens of a dark grey form of *Grammesia trigrammica (trilinea)* from Abbots Wood, where the species had been unusually common at sugar. Mr. Buckstone, living larvae and pupae of *Pyrameis cardui*, the ground-colour of the pupae varying from pale grey to blackish. Miss A. K. Loch, a uniformly pale yellow aberration of *Brenthis euphrosyne* with quite normal spotting, from Worth, Sussex. Mr. H. Main, several items brought by him from the S. of France: 1. Larvae of the ant-lion, *Palpares libelluloides*;

2. the Tenebrionid beetle, *Pimelia gallica*; 3. cases of the large Psychid, *Acanthopsyche atra* (*opacella*) with young larvae; 4. the spider *Lycosa narbonneensis*, discussed by Fabre; 5. the spider *Clotho durandi*, found under stones; 6. the Myriapod, *Scutigera araneoides*, said to be poisonous; larvae of the butterfly *Thais runina*. Mr. Cheeseman, living larvae of *Attacus cythia* and *Samia cecropia*, two silk-spinning moths. Mr. Enefer, the weevil *Molytes germanus* from Farningham, Kent.

July 27th, 1922.—The President in the Chair.

Mr. Step exhibited the insects he took at the Field Meeting at Netley Heath, July 15th, including *Strangalia armata* (Coleopt.), *Volucella pellucens* (Dipt.), etc. Mr. R. Adkin, a short series of *Cupido minimus* from Eastbourne, where it was abundant and generally large in size with blue dusting, in May last. Mr. T. H. L. Grosvenor, *Zygauena anthyllidis*, *Z. transalpina*, and *Z. scabiosae* sent from the Pyrenees by Mr. O. R. Goodman. Mr. F. B. Carr, larvae of *Nemoria viridata* from Witherslack, and of *Bapta temerata* from Horsley. Mr. Barnett, a series of *Breuthis euphrosyne* from S. Devon, and *Ematurya atomaria* taken as late as June 22nd. Mr. Hy. J. Turner, the race *alexandrina* of *Melitaea aurinia* with other races for comparison; it had abundance of light yellow markings on the fore wings. Mr. Bell, larvae of *Cerura bifida* and *C. furcula*, and stated that the ova were laid on the under sides of the leaves and not, as stated, on the upper; also, he showed larvae of *Notolonta ziczac*; all were from ova found near Hatfield in June.—HY. J. TURNER, Hon. Editor of *Proceedings*.

NOTES ON ORIENTAL CARABIDAE.—IV.

BY H. E. ANDREWES, F.E.S.

Some new Species of BEMBIDIUM from the Himalayas (cont.).

Bembidium cimmerium, sp. nov.

Length 5.5-6.0 mm.; width 2.0-2.2 mm.

Dark blue-black, upper surface generally with a faint greenish tinge, joint I of antennae and legs more or less piceous, apical joint of palpi testaceous. Surface shiny.

Head with simple, deep, nearly parallel, uneven furrows, extending to clypeus, the space between them smooth and convex, some faint striation behind them, close to eye, genae oblique, eyes not prominent, antennae nearly reaching middle of elytra. *Prothorax* cordate, moderately convex, distinctly wider than head, and a third as wide again as long, base truncate, sides moderately rounded and gently sinuate near hind angles, which are sharply rectangular, with a fine but distinct carina; median line impressed in middle, not reaching extremities, transverse impressions rather slight, basal foveae small, deep, and rounded, one or two punctures only in or near them, surface smooth, here and there faintly striate, uneven along base. *Elytra* ovate, rather convex, shoulders square, the side border extending to opposite stria 5, where it ends in a small tooth, marginal channel rather wide, striae entire,

deep, finely punctate, the outer ones a little less deeply impressed, striae 1-2 deep to apex and joining at base, 3-4 join and disappear, as do 6-7, at some distance from apex, 5 joined to apex by the deep apical stria and joining marginal channel at base, scutellary striole very short but deeply impressed, intervals convex on disk, rather flatter towards sides and apex, two large pores on stria 3, at or just before middle and at a fourth from apex, surface smooth; there is generally a small raised knob between the end of striae 3-4 and apex.

The species seems most nearly allied to *B. virens* Gyllh., though not very much like it, size larger, and colour blue-black instead of green. Head wider, the ridges between frontal furrows and eyes much more developed, antennae thicker and with longer joints; prothorax wider, sides much more rounded, basal area more uneven and a little rugose, both the carina and the foveae less clearly marked; elytra wider, sides more rounded, extremity more pointed, striae deeper and with larger punctures, 3-4 joining at some distance from apex, with a smooth area behind them, on which is a small prominence.

PUNJAB: Simla Hills, Matiana, 8000 ft. (*Dr. S. W. Kemp*—Ind. Mus.), 6 ex.; Gahan, 7000 ft. (*S. N. Chatterjee*—For. Res. Inst.), 5 ex. Type in British Museum.

Bembidium cinmerium, var. *orinum* nov.

Numerous specimens taken by Mr. Champion at a high elevation in Kumaon differ uniformly from the typical form, but they do not seem to constitute more than a local variety. The size and shape are about the same, though on average they seem to be a shade smaller. The elytra have a bluish instead of a greenish tinge. The head is slightly narrower and the eyes a little flatter. The shoulders of the elytra are more rounded, the striae hardly as deep on the disk, but deeper towards apex, the outer ones on basal half quite as deep as the inner ones, 3-4 continued to nearer apex and without any raised knob behind their termination.

UNITED PROVINCES: Kumaon, West Almora, Sunderdhunga, 8000-12,000 ft., many examples (*H. G. Champion*). The type is in the British Museum.

Bembidium loricatum, sp. nov.

Length 5.0 mm.; width 1.5 mm.

Upper surface bright bronze, shagreened and not very shiny, underside piceous-black with slight greenish reflections; joints 1-2 of antennae and base of 3-4 (rest dark brownish), palpi (penultimate joint fuscous), tibiae and tarsi testaceous, femora piceous-bronze.

Head with shallow furrows, striate near eyes, which are moderately

prominent, antennae barely reaching basal fourth of elytra, surface smooth, except for a few minute punctures on vertex. *Prothorax* moderately convex, a little wider than head, and about a third as wide again as long, sides gently rounded and very slightly sinuate before hind angles, which are right, with well-marked carina; median line fine, base depressed, with deep rounded foveae, basal area (except along margin) finely rugose-punctate with traces of short longitudinal striae, surface smooth with some faint cross-striation. *Elytra* moderately convex, parallel, shoulders square, barely a third wider again than prothorax, but very nearly twice as long as wide, basal border reaching stria 4 and forming with side border a distinct angle above stria 6; finely striate-punctate, the striae nearly effaced behind, stria 1 only deep to apex, scutellary striole fairly long, apical stria faint, joining stria 5; intervals flat, 3 with two very large and conspicuous pores at a third and two-thirds, occupying the whole interval, the area surrounding the front one slightly transversely depressed, surface smooth. Underside smooth.

Closely allied to *B. splendidum* Sturm, but the shagreened surface makes it less shiny. The frontal foveae are shallower and vaguer, sides of front striate; prothorax narrower, with more rounded front angles, more contracted behind, base rugose, the foveae not so sharply defined; elytra narrower, the punctures of the striae more evident. interval 3 with much more conspicuous pores, the angle at shoulder less acute. The apex of the femora is testaceous.

UNITED PROVINCES: Kumaon, Ranikhet, West Bhatkot, 4000 ft., and West Almora (*H. G. Champion*), 6 ex. BIHAR: Pusa (Agric. Res. Inst.), 2 ex. Type in the British Museum.

Bembidium compactum, sp. nov.

Length 4.25-4.75 mm.; width 1.70-1.90 mm.

Upper surface cupreous, sometimes brassy and occasionally with purplish blotches, underside black; joints 1-2 of antennae and base of 3-4 (rest fuscous), palpi (penultimate joint fuscous), and legs (knees slightly infuscate) testaceous. Surface shiny.

Head with rather shallow, but distinct furrows, extending to clypeus, which is bordered in front, eyes rather flat, antennae not reaching beyond basal fourth of elytra, surface moderately punctate, sparsely on vertex, middle of front and neck smooth. *Prothorax* cordate, very convex, very little wider than head, and barely a third wider again than long, extremities truncate, sides of base slightly oblique, sides moderately rounded and sinuate close to hind angles, which are right, though they project a little, without trace of carina; median line fairly deep, confined to disk, base strongly depressed, almost constricted, foveae hardly distinguishable, the whole basal area coarsely rugose-punctate, occasionally with some punctures along front margin, surface otherwise smooth, with some vague cross-striation. *Elytra* convex, nearly parallel, with very square shoulders, side border reaching stria 4, nearly twice as wide as prothorax and about half as long again as wide; striae

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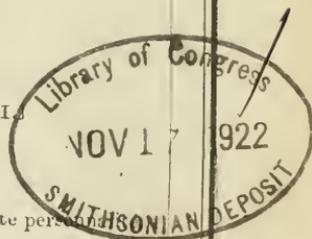
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MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 41 Queen's Gate, S.W.7 (nearest stations: South Kensington and Gloucester Road).—Nov. 1st, 13th, Dec. 6th, 1922, Jan. 17th, 1923 (Annual Meeting), at 8 p.m.

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

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, Hibernia Chambers, London Bridge. The Second & Fourth Thursdays in each month, at 7 p.m. The lantern will be at the disposal of Members for the exhibition of slides.

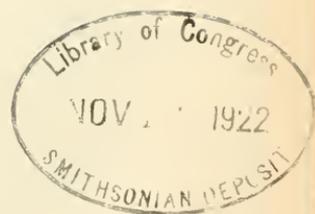
THE LONDON NATURAL HISTORY SOCIETY, now meets in Hall 40, Winchester House, Old Broad Street. E.C. 2, on 1st and 3rd Tuesdays in the month at 6.30 p.m. General meetings 1st Tuesdays, Sectional meetings 3rd Tuesdays. (No meetings in July or August indoors, but field excursions instead.)

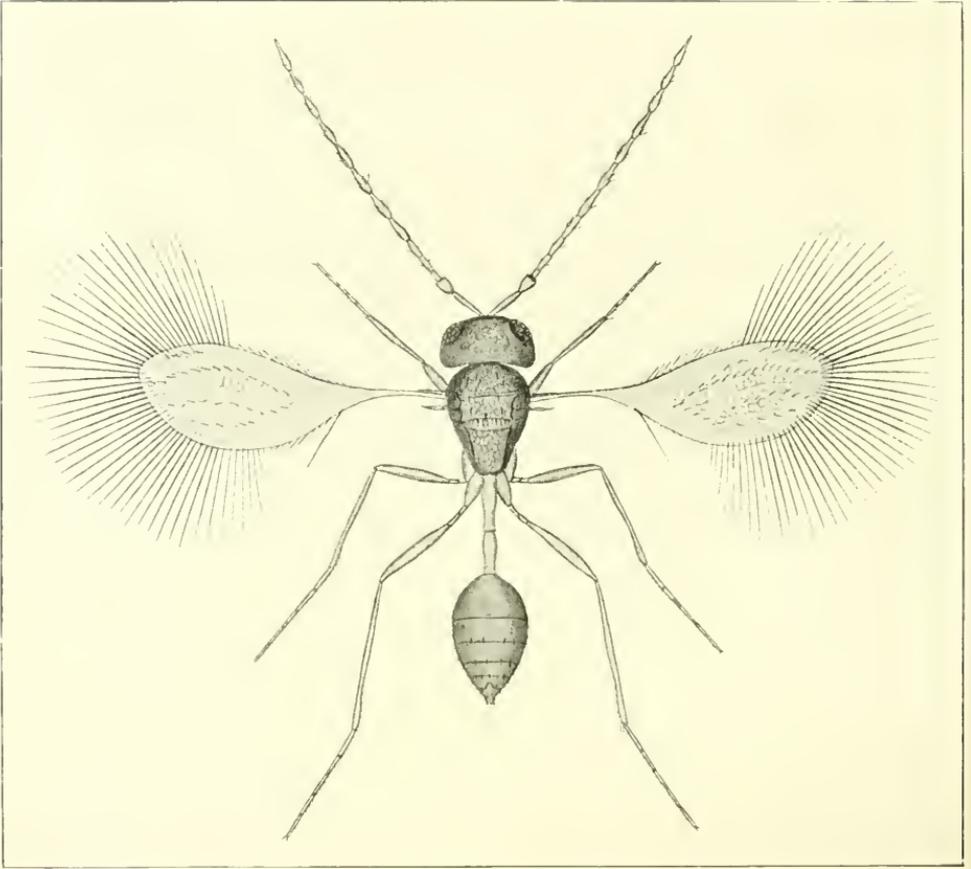
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Chingford Branch. The Chingford Local Branch meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the 2nd Monday in each month.

ENTOMOLOGICAL SOCIETY OF HAMPSHIRE AND THE ISLE OF WIGHT.—This Society has developed from the Southampton and District Entomological Society. Meetings are held on the First Saturday afternoon of each month at Southampton, and other meetings will be arranged in important centres in the county from time to time. Activities being undertaken at the present time include the formation of a library, of collections of insects, and the compilation of a county insect fauna list. Will keen entomologists in the county who are interested please communicate with the

Hon. Sec., F. J. KILLINGTON, 1 St. Catherine's Road, Eastleigh, Hants.





PETIOLARIA ANOMALA, n. gen. et sp., ♂.

closely and moderately punctate, all deep to apex, though 4-6 are a little fainter behind, scutellary striole very long, reaching to quite a third from base, apical stria joining 7; intervals convex at sides, 3 with two large pores at about a third and two-thirds, the surrounding area depressed near the front one, surface shagreened but nevertheless smooth and shining. Beneath, the sterna are coarsely punctate at sides, metasternum with a few punctures at base and apex, ventral surface smooth.

Allied to *B. punctulatum* Drap., but rather differently coloured, prothorax a little narrower. Elytra shorter and more compact. Head much less punctate, frontal foveae deeper, base of antennae testaceous; prothorax much less punctate, median line shallower, base more constricted and more rugose; elytra more shiny, the striation and puncturation similar.

UNITED PROVINCES: Kumaon, West Almora, Ranikhet, Bhatkot, Swal R. basin, and R. Sarda gorge, many examples (*H. G. Champion*), Dehra Dun (*Dr. M. Cameron*--For. Res. Inst.). Type in British Museum.

Bembidium psuchrum, sp. nov.

Length 4.0 mm.; width 1.4 mm.

Very dark metallic green, extremely shiny; tibiae (more or less), apical joint of palpi, and claws reddish.

Head with deep, simple furrows, diverging slightly behind, the space between them very convex, eyes rather flat, antennae stout, reaching middle of elytra, surface smooth. *Prothorax* convex, cordate, not much wider than head, about a fourth wider than long, sides well rounded in front, strongly contracted and sinuate behind, base distinctly narrower than apex, marginal channel very narrow, hind angles right, with a slight though distinct carina; median line clearly marked, reaching base, which is strongly depressed, foveae fairly deep, adjoining angles, surface smooth, base subrugose, with a few punctures in the foveae. *Elytra* moderately convex, elongate-oval, not quite half as wide again as prothorax, two-thirds as long again as wide, shoulders almost obliterated, border reaching stria 5; punctate-striate, both striae and punctures clearly marked at base of disk, obsolescent at sides and behind, though fine punctures are visible almost to apex, stria 1 deep to apex, where it curves round in the direction of 2, scutellary striole very short (in one example fused with stria 1), apical stria short, but fairly deep, joining 5, intervals moderately convex on disk only, flat elsewhere, sutural interval raised, 3 with two well-marked pores, surface smooth, transversely depressed near base, especially at sides.

In the form of the elytra this species resembles *B. nigricorne* Gyllh., but it is more nearly allied to *B. glaciale* Heer and *B. pyrenaicum* Dej. The colour is about the same as that of the last-named species, with the surface much more shiny. Head with much deeper furrows, eyes flatter, genae very oblique, so that the greatest width (across eyes)

is hardly greater than that of neck; prothorax narrow, contracted behind both more and further from base; elytra more convex, more narrowed towards base, shoulders more rounded and behind them the surface rather strongly depressed, striae deeper on disk and with larger punctures.

UNITED PROVINCES: Kumaon, West Almora Division, Sunderdhunga, 8000-12,000 ft. (*H. G. Champion*), 3 ex. Type in the British Museum.

Bembidium leptaleum, sp. nov.

Length 3.5 mm.; width 1.3 mm.

Aeneous, shiny, underside piceous; joints 1-3 of antennae, with basal half of 4, palpi (except apex), legs, apical margin of elytra, and a very small, indistinct spot at apical third of each elytron, covering intervals 6-7, rufous; rest of antennae, and penultimate joint of palpi fuscous.

Head with simple shallow furrows, curving outwards to the hind supra-orbital pore, a few transverse striae on their inner margins, neck thick, eyes not prominent, antennae short, reaching very little beyond base of elytra, surface smooth. *Prothorax* convex, transverse, a third as wide again as head, and half as wide again as long, sides of base bordered and only very slightly oblique, sides moderately rounded and faintly sinuate close to hind angles, which are in the form of a minute rectangular tooth and have a short but very distinct carina; median line fine, but strongly impressed just in front of base, foveae deep, the outer part, close to the carina, separated from the inner part by a small raised area, base a little depressed, with a few moderate punctures, one or two punctures along front transverse impression, surface smooth. *Elytra* convex, oval, half as wide again as prothorax, and two-thirds as long again as wide, side border ending in a slight tooth between striae 5 and 6; punctate-striate, the striae rather shallow and evanescent behind, stria 1 deep to apex, where it joins 2, which is deep close to apex only, interval 2 at that point being very wide, apical stria fairly deep and rather long, scutellary striole short, but very deep at base; intervals slightly convex on disk, 3 with two pores at basal fourth and apical third respectively, surface a little less shiny than that of head and prothorax.

Not unlike *B. nigricorne* Gyllh., but narrower, the legs and antennae otherwise coloured. Head with deeper furrows and wider side ridges, the front supraorbital pore much larger; prothorax much narrower, median line deeper behind, the foveae each divided into two by a slight raised area; elytra less brilliant, the striae deeper and intervals not quite flat, the basal border altogether wanting.

SIKKIM: Lachung, 9000 ft. (*H. Stevens*), 1 ex. My collection.

August, 1922.

OBSERVATIONS ON THE LIFE-HISTORY OF A LIOTHEID (*MALLOPHAGA*)
PARASITE OF THE CURLEW (*NUMENIUS ARQUATA* LINN.).

BY JAMES WATERSTON, B.D., D.SC.

On 10.x.1910 I shot a common Curlew at Collafirth, Northmaive, Shetland, and examined it for Mallophaga. It was then my custom in dealing with host species to search the plumage of any specimens passing through my hands feather by feather, and to this was due the discovery of a Mallophagan habitat and mode of life which at the time were new to me, and which now, with a wider knowledge of the literature of the group, I find to be apparently almost unnoticed. I had pulled out an old primary when something unusual in the appearance of the barrel or calamus caught my eye. Normally the quill in this region shows, when seen by transmitted light, a few more or less oblique septa, the divisions, *i. e.*, between the internal horny caps which together form a structure (called by German writers "die seele"—the soul of the feather), for which there exists no exact term in English.

In the present case, however, the lumen was continuous from the superior down to the inferior umbilicus where, on looking carefully, I noticed one or two small dark masses. As I watched, one of these masses detached itself from the others, and travelled shadow-like up the barrel. That it was an animal of some sort seemed certain, but how it had got inside the feather was puzzling, since no aperture was at first discernible. Later, however, a very small hole was detected—too small, as events proved, for the exit of the creature whose movement I had just watched. On splitting the feather open several examples of a rather large *Colpocephalum*, at various stages of development, were disclosed. Two more feathers in a similar condition were found in the same wing of this bird.

Since discovering this peculiar habit I have never missed an opportunity of examining the plumage of Curlews for the parasite. The percentage of infested birds has not been high, but I have no note of the exact figure. With one exception, when two ♀♀ were taken at large, between the webs of two adjacent flight-feathers, the *Colpocephalum* has occurred in its original habitat within the quill, from half a dozen up to a hundred specimens being present. In the latter case, though there was a small clear space distally, the parasites were tightly packed proximally, and tumbled out in a struggling mass when part of the shaft was excised. Either primary or secondary feathers may be attacked. I have found up to five feathers in one bird tenanted. The effect of this occupation may be noted.

(a) Apertures.—The inhabited quill (fig. 1 a) is pierced by one or more apertures. Commonly one is present which may be too small to permit the egress of the largest of the enclosed parasites. This aperture is regular and approximately circular (fig. 1 b) in outline, but may be irregular and large. It is placed at some point on the proximal third of the rachis, as a rule on the ventral aspect, and pierces the pith. A second aperture, generally larger, is sometimes seen either near the first on the rachis or on the barrel. I have seen at least a third tiny hole in one case, and even more may be expected to occur. Such extra holes are possibly to be explained as of accidental occurrence during the working of the parasite.

(b) Internally the calamus is smooth and “die seele” has been devoured, while distally the pith is consumed for some distance. In an

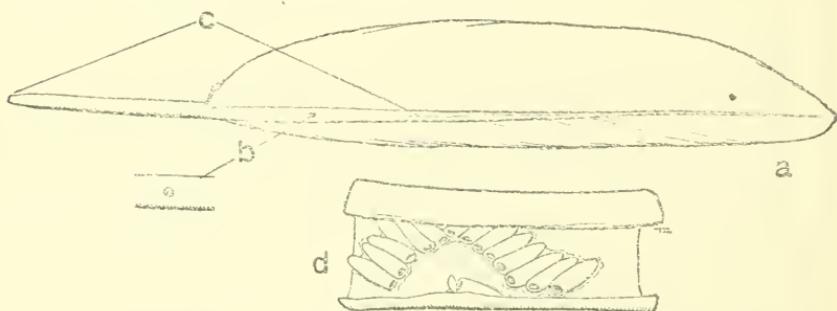


Fig. 1.—a, Flight-feather of Curlew (*Numenius arquata*); b, Aperture made by *Colpocephalum*; c, Calamus and proximal part of rachis; d, Eggs of *Colpocephalum* in situ.

extreme case there may be a continuous passage between the points indicated by the lines from c. in the figure. Sometimes, however, the pith is incompletely removed and merely tunnelled for some distance.

(c) One effect of the occupation of the shaft by the *Colpocephalum* is possibly a retarding of the normal moulting time. The point is put forward more as a suggestion than as an ascertained fact, but occupied feathers sometimes appear conspicuously weathered and pale in a set which has been recently renewed. My knowledge of the moult of the flight-feathers of *Numenius* is, however, quite insufficient to determine whether, in the case referred to, the feathers had persisted beyond their due time, but if future observations should establish what is here tentatively put forward, the importance of the fact in ensuring the survival of the species is considerable.

Turning now to the contents of this unusual habitat one finds:—

(a) Every stage of the *Colpocephalum* may be represented from the egg to fully coloured adults. The eggs for the most part lie side by

side in rows which may be either straight or in short spirals. If one of the eggs at the end of a row is freed by a needle-point from the surface of the calamus the others lift with it, and by the exercise of a little care the whole row can be detached, the eggs being glued together so that when turned over the row appears to be a glistening band. The cement extends as a narrow margin beyond the edge of the band (fig. 1 *d*). I have not observed oviposition by this species, but apparently what happens is that the cement (whose emission takes place at the beginning of the process) runs between the egg-shell and the smooth surface of the barrel, and is not gathered at the posterior (*i. e.*, that remote from the operculum) end of the egg into an anchoring mass. I have, however, seen single eggs, attached like the others by their side to the supporting surface, which showed a distinct knob or amorphous tail posteriorly. I have no note now by me of there being in such cases any reduction in the amount of cement at the margin, though one would expect this to follow.

(*b*) With the eggs are found numerous empty shells from which the operculum is generally pushed completely off. The operculum frequently is seen persistent in recently hatched examples, so that its removal in other cases may be due to the movement of the insects crowded into a narrow space. With the egg-shells are to be found cast-off skins of all stages, and both are frequently devoured—presumably by the parasites themselves, though mites may also be responsible for this.

(*e*) There are also large accumulations of faecal matter in the form of a fine grey sand which may fill the proximal third or more of the calamus.

Putting these observations together one may hypothetically reconstruct in outline the life-history of the parasite. Access to the quill is gained by the *Colpocephalum* boring into the rachis, several specimens using the same hole. Once inside the quill the parasites feed on the pith and "seele," attain maturity and breed freely. Either through failure of their food supply, or through overcrowding, an exodus is initiated, the original entrance being enlarged or a new hole formed. It is possible, of course, that before any general exodus takes place the adult parasites may have left and returned to their strange habitat many times. The very thorough examination of the plumage of several hosts made, renders this highly improbable. I think it likely, also, that new colonies are initiated, not by adult females, but by immature examples. I have recorded these observations, incomplete as they are, partly because of their—to the possibly prejudiced eye of a student of the

group—intrinsic interest and partly because species with so defined a habitat may, with suitable manipulation, be made to yield further valuable information as to the bionomics of the Mallophaga. One point on which light might be shed may be mentioned. Very extraordinary indeed must be the changes by which the meal of a biting louse becomes physiologically available for its ingester. But ordinarily that meal may, to begin with, be exceedingly complex. A louse in the course of a day may feed on feather fibre, epidermal scales and powder, and even the skin itself if roughened, while blood extravasated in any casual way is greedily devoured. Within the quill, on the other hand, the food supply, once “die seele” has disappeared, is of uniform quality, and I should suggest that comparative analyses of the pith of the rhachis and of the grey faecal sand would yield results of interest. The difficulty of course would be to get the material in analysable quantities, but it is not an insurmountable one.

I believe the name of this *Colpocephalum* to be *C. patellatum* Piag.³ (p. 254, pl. x, fig. 8). So far as I am aware, the species has not been recorded since its description by the French author, and this in view of the notes already given is hardly astonishing.

Henry Denny² (p. 207) has recorded the same or similar phenomena in the case of *Colpocephalum flavescens*. His remarks are worth quoting in full: “To the Earl of Derby I am indebted for several examples from the Harpy Eagle (*Harpya destructor*). On the 14th of November, 1837, Mr. Yarrell¹ (p. 127) exhibited, at a meeting of the Zoological Society of London, a quill from the wing of the above bird, which had died while in the menagerie of his lordship at Knowsley, and which was found upon examination to be infested with a great number of a species of *Colpocephalum*. It appeared that these minute creatures had chosen for their place of retreat the hollow of the large quill feathers, which were filled with their exuviae; two circular apertures situated near the base of the quill afforded the animals access to its interior. Another quill, infested with the above, his lordship obligingly forwarded to me, with the following remarks: ‘My superintendent lately found in a young Harpy Eagle, who was not moulting kindly, two feathers, of which the quills when extracted were filled with a substance he could not make out, he opened one and found the whole base of the quill filled with lice, at that time alive, but they soon died; there was at first no apparent opening, but on a close microscopic examination two small holes were observed at the base of the web, since then he has found and extracted four more; in one, besides the lice, observing something to move, he opened it and found a large white maggot.’ From the hundreds

of skins accumulated in one quill, and to whose interior there had been no access but through the small orifices mentioned, it would appear that this species of *Colpocephalum* at least seeks a place of shelter when about to undergo so important a change as the shedding of its entire skin, similar to what we know takes place with Crustaceans." It is evident that in Denny's quill the infestation had been long established—witness the two apertures. The hundreds of skins are easily understood when one remembers that the Harpy Eagle quills are larger than those of the Curlew, while *C. flavescens* is a much smaller species than that of which I have been speaking. The fact that both parasites are at present placed in *Colpocephalum* should not be over stressed, for that genus needs subdividing, and when that is done the two will certainly be apart.

The note that the Harpy Eagle had been moulting badly, should be compared with what has been said above. As to what portion of the life-history of the parasite is passed in its retreat Denny is cautious. He thinks it is used at least for the ecydses (*cf. supra*), but does not discuss the possibility of a longer part of the life-cycle being spent in this curious habitat. I am not aware of any subsequently published paper bearing on Denny's observations nor, after drawing the attention of various students of the Mallophaga to the passage quoted, have more recent instances of similar phenomena, been brought to my notice. During the past twelve years I have only once or twice found flight feathers of raptorial hosts tenanted by *Colpocephalum*. The habitat is not confined to parasites of Old World forms, for Mr. G. E. Bodkin, 17.v.1915, sent to the Imperial Bureau of Entomology, London, a feather of *Rostrhamus sociabilis*—a small Kite—from Turkeyen, British Guiana, affected in this way. Such cases are probably much commoner than the paucity of records might lead one to suppose, and it is much to be desired that the phenomena outlined above should have more attention given to them, in order that their precise rôle in the life-history of the species may be properly understood.

References.

- ¹ YARRELL (W.). Proc. Zool. Soc. Lond., 14th Nov. 1837.
- ² DENNY (H.). Monographia Anoplurorum Britanniae, London, 1842.
- ³ PIAGET (E.). Tidj. v. Ent. xxxiii. 1888.

British Museum, Cromwell Road,
South Kensington, London, S.W. 7.

September 1922.

DREPANOTHRIPS REUTERI UZEL, AN ADDITION TO THE BRITISH
FAUNA.

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

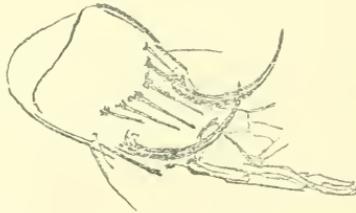
I recently had a microscopic slide submitted to me with a mounted specimen of *Orythrips ericae* (Hal.) and another species, very minute, transparent and difficult to see, which proved to be a male *Drepanothrips*. These were taken in oak leaf-rollings collected by Mr. E. E. Green at Camberley, Surrey, 3.vi.1920.

Drepanothrips reuteri Uzel.

1895 Mon. der Ordnung Thysanoptera, pp. 213-214, pl. vii, figs. 113-114.

The length of the ♂ (which is readily recognised by the pair of sickle-shaped prolongations of the ninth abdominal segment) is less than 0.5 mm. The chief characteristics of the genus are the 6-jointed antenna, which is without style, and the sickle-shaped chitinous prolongations of the ninth abdominal segment in the ♂ mentioned above.

Uzel does not describe the specialised chaetotaxy of the ninth abdominal tergite, which is an important structure in the ♂ Thysanopteron of the sub-order Terebrantia. It consists of a dorsal series of



D. reuteri Uz.—End of abdomen in ♂ showing chaetotaxy of tergite 9.

six bristles arranged in an irregular arc and set on tubercles, the innermost pair being the longest and the outermost the shortest, being but 0.6 the length of the innermost. Fulmek and Karny (Zeitschr. f. Pflanzenkrankheiten, xxv (1915), pp. 393-398) describe the ♀ in detail, and show that the *D. viticola* of Mokrzecki is synonymous. It has been taken on vines in the Caucasus and Italy.

39, Eslington Terrace,
Newcastle-on-Tyne,
September 13th, 1922.

Hypera meles F. and other Coleoptera in a lucerne field at Wicken.—After the close of the meeting of the British Association at Hull, I spent six days with my friend, Mr. J. E. Black, at Wicken, from September 14th to 20th. The weather, however, was unsatisfactory, and we had only one really fine day, September 18th. On the way to the Fen from the village was a small patch of lucerne in full flower, which was being mown; a casual sweep by Mr. Black on the 16th produced a specimen of *Hypera variabilis* Hbst., so on the afternoon of the 18th, while my friend was busy setting some of his captures, I decided to try my luck in this lucerne patch, and was much pleased with the result. I secured, with plenty of *H. variabilis*, three (later in the day Mr. Black captured another) specimens of a second species of the genus, which turned out to be the rare *H. meles* F. I provisionally determined these specimens to be this species with the help of the description given by Canon Fowler in Vol. 5 of "Coleoptera of the British Islands"—we had the volume with us—and, on my return home, I confirmed this determination by comparing my specimens with the description given by Reitter in Vol. V of the "Fauna Germanica," p. 104, and also by comparing them with a specimen of this species sent to me by Reitter some years ago; the agreement was complete in all respects. Other species brought to light by my net were *Aphthona euphorbiae* Schr. = *virescens* Foudr., of which I secured a series by constant sweeping—Canon Fowler records this species from Wicken Fen; *Phyllotreta atra* Payk; *Psylliodes cuprea* Koch; *Balaninus glandium* Marsh., in numbers, evidently blown off a row of oaks which bounded one edge of the lucerne patch; and several common species of *Sitones* in swarms—they filled the net after every sweep and made it difficult to pick out the desirable captures. The thoracic and elytral scales of *H. meles* are quite distinctive; Reitter considers it synonymous with *trifolii* Hbst., and he states that it is very common in Germany, the larvae feeding on *Trifolium pratense*.—T. HUDSON BEARE, 10 Regent Terrace, Edinburgh: October 11th, 1922.

Pterostichus angustatus Duft., and *Anchomenus quadripunctatus* DeG., etc., in Kent.—When searching for Coleoptera under the bark of a fallen beech near Westerham on Sept. 26th, I was surprised to find several specimens of *Anchomenus 4-punctatus*. As the light was already failing, I did not investigate farther than the beech, but on a subsequent occasion I made a thorough search of the adjacent ground, and found both *A. 4-punctatus* and *Pterostichus angustatus* in some numbers. A good many pine-trees had been felled, and the tops piled in heaps and burnt; the beetles were found among the charred remains and under stones and chips in the vicinity. A large tract of fir-wood was felled during the war, and the ground still shows signs of having been burnt, thus affording a good breeding-ground for these beetles. The pine stumps are riddled with the holes of *Aseanum striatum*, and a single specimen of *Crioccephalus polonicus* occurred on August 17th last. Another interesting species, *Henoticus serratus*, has also turned up this year, principally under the bark of partially burnt beeches, but I have also beaten several from young oaks, and taken one on the wing in my garden. *Homalota (Aleuonota) egregia* (the third British example—the first was captured at Caterham, Surrey, in 1873, and the second at Sheringham, Norfolk, in 1919), and *H. elegantula*, and *Hylastes attenuatus* (in plenty), have also been taken on the wing here.—P. HARWOOD, Westerham, Kent: October 1st, 1922.

[The two Carabidae mentioned by Mr. Harwood must be gradually spreading in our Southern Counties and finding their way in some mysterious manner to the charred pine-woods. The *Anchomenus* disappeared for many years from the Woking district, but it again put in an appearance for a time when the conditions were once more favourable. It is almost certain that this will prove to be the case at Crowthorne, Berks. The *Anchomenus*, unlike the *Pterostichus*, is extremely active and readily takes to wing, and is usually abundant where it occurs. Specimens of the latter are often broken or have one or more of the elytral striae abnormally formed.—G. C. C.]

Leistus montanus Steph. in Arran.—When collecting with Master Roger Waterston during the month of August last at the mouth of a stream at Catacol in the Island of Arran, we were fortunate enough to discover a few specimens of *Leistus montanus*. The beetles occurred under stones on a bank of shingle, which was only a few feet above sea-level and about 30 yards from high-tide mark—not a place where one would naturally expect to find this beautiful mountain species. As the bank of shingle had obviously been formed by repeated floods of the stream, I could only come to the conclusion that, at some time or other, the insects had been carried down from the mountains which rise to a height of over 2000 feet in the area drained by the stream. When in Arran again during the month of September, I made a more thorough investigation of the shingle banks at the mouth of the stream and for a short distance up its course, and I then found that the beetle was present in small numbers in most of the banks.—A. FERGUSSON, 22 Polwarth Gardens, Glasgow: October 11th, 1922.

[Mr. Fergusson (Scottish Naturalist, 1919, p. 64) has recorded *Ochthebius lejolisi* Muls. et Rey from the same locality. He tells me that Mr. Balfour Browne has found it in several of the Western Islands, and that the insect also occurs on the Ayrshire Coast. Specimens of this species were captured by myself at Looe, S. Cornwall, in Sept. last.—G. C. C.]

The Generic Name Calycella Blair (Coleoptera).—My attention has been drawn to the fact that the name *Calycella*, proposed by me for a genus of the Coleopterous family *Mordellidae* (*ante*, p. 222), has already been used in zoological nomenclature by Allman for a genus of Hydrozoa Hydroidea (*Ann. & Mag. Nat. Hist.* (3) xiii, 1864, p. 375). In this case, however, it was a misspelling (there is nothing to suggest an intentional correction!) of the generic name *Calicella* used by Hincks in 1861 for the same Hydroid, and the name does not appear in Scudder's "Nomenclator Zoologicus," and was consequently overlooked by me. That I should have overlooked the name in its original form is a much more heinous offence on my part, for I need hardly say that had I been aware of the existence of *Calicella* I would never have perpetrated such an homophonous misdemeanour as *Calycella*. According to the rules of nomenclature such a name, though greatly to be deprecated, does not become absolutely invalid. We have, therefore, double grounds of objection to the name *Calycella (mihi)*, and it appears to me best to propose the alternative name *Calycina* for it, which will either sink at once into synonymy or be available as the major name by those who are unable to accept the validity of its predecessor.—K. G. BLAIR, British Museum (Natural History): October 16th, 1922.

Butterfly notes from Oxford.—A few immigrant *Colias edusa* were observed in the Oxford district during the spell of fine hot weather in late May and early June, and one of these, a ♂, I saw myself at Cothill on May 30th. Its appearance at this time of year naturally raised hopes of a plentiful August brood, but the gloomy and ungenial character of the weather from mid-June onwards certainly appeared most unsuitable to the requirements of this erratic butterfly. However, on August 14th the first newly emerged specimen was seen by me at Boar's Hill, Berks; and the next morning I was much pleased to meet with it in fair numbers and in beautiful condition, in a rough flowery field of no great extent near Headington, Oxon; no fewer than sixteen species of butterflies were noted on this occasion in little more than an hour within the limits of this field. For at least a month afterwards, specimens of *C. edusa* were observed in all parts of the district, one or two being seen in the city itself.

A hibernated example of *Polygonia c-album* was found on the iron fence of the University Park as early as March 15th, and several were brought to me from Bagley Wood in May, but I did not succeed in obtaining ova from these. The summer brood first appeared on July 11th, but was by no means as plentiful as the succeeding generation, first noticed at Headington on August 15th. The butterfly was reported as "quite common" at Boar's Hill at the flowers of *Buddleia* in late August, and it occasionally visited the attractive blossoms of this shrub in my own small garden, whenever the sun shone long enough to allow it to fly. Yesterday (October 15th) I boxed a perfectly fresh specimen, the first I had seen for several weeks, off the "Michaelmas daisies" in the grounds of the University Museum. It would appear that this interesting butterfly, for the time being at any rate, is fully established in the Oxford district.

In contrast with last year's experience, the second brood of *Rumiccia phlaeas*—a fairly numerous one, but by no means so abundant as in 1921—presented no striking modifications in colour or marking; the specimens, indeed, being hardly distinguishable from those of the early brood except by the more or less darkened costal margin of the ♂, which appears to be a constant character in this generation. The only noteworthy aberrations observed were a ♂, taken by myself at Tubney on June 8th, in which the left fore wing is entirely silvery-white, the black spots and hind margin being only very faintly indicated; and a very fresh ♀ (probably of the third brood) taken on September 27th near Cowley, Oxon, by Mr. A. H. Hamm, in which are combined the characters of *abs. caeruleopunctata* Staud. and *subradiata* Tutt, with the addition of a conspicuous sprinkling of coppery scales above the blue spots, the whole giving a very pretty and unusual ocellated effect to the hind wings.

The second brood of *Celastrina argiolus* was much more plentiful than is usually the case, being almost as numerous as the spring emergence; I saw a fresh-looking example as late as September 6th. *Plebeius icarus* has this year been notably scarce, and I regret to say that the sole and very restricted station of *Agriades corydon* in our district has been practically destroyed by close grazing.—JAMES J. WALKER, Aorangi, Lonsdale Road, Summertown, Oxford: October 16th, 1922.

The Ghost Swift Moth and the "Will-o'-the-Wisp."—The following remarks on this subject are extracted from Mr. K. G. Blair's presidential address read at the Annual Meeting of the "South London Entomological and Natural History Society" on January 22nd last, and recently published in "Proceedings" of that Society for 1921-22, pp. 12-20. After quoting numerous conflicting published statements regarding the phenomenon known variously as "Will-o'-the-Wisp," "Jack-o-Lantern," "Ignis Fatuus," etc., the author concludes his account of it thus: "We have now considered the four principal phenomena that have been claimed as giving rise to the popular legend of the Will-o'-the-Wisp, but, 'as we have seen,' each of them is distinct in itself, and it is their confusion under one name that has caused the considerable degree of mystery that has become attached to it. The luminous owl is quite a simple phenomenon in itself, and, apart from its moving luminescence, has none of the features characteristic of the Ignis Fatuus. The dancing swarms of midges that have become luminous owing to pathological causes is a nearer approach to our ideal, though its motions are very different from those of the popular conception. We also see that the popular explanation of the mystery, viz.:—the spontaneous ignition of marsh-gas evolved from decaying organic matter, though supported by definite scientific observations, relates not to the Will-o'-the-Wisp, but to a very different phenomenon that should be designated by a different name, such as 'Marsh Lights' or 'Marsh Fires.' . . . That the Ghost Swift Moth (♂) is the true source of the popular legend of the Will-o'-the-Wisp is, in my opinion, practically certain, since it is the *only* simple and natural solution of the luminous insect theory." On p. 17, Mr. Blair remarks:—"Many lepidopterists when out dusk-ing or later, on a June evening, have no doubt seen the appearance of a shining luminous object hovering in one spot for a time, then off to repeat the motions a few yards away, then off again, and then disappearing altogether, only to appear again a few moments later. You know it at once to be a male Ghost Swift Moth displaying his attractions in the hope of finding a mate. But would the average countryman know it as such?" Some naturalists have thought that the luminous insect must be the glow-worm *Lampyrus noctiluca* (♂), others that it is the mole-cricket (*Gryllotalpa vulgaris*), but Mr. Blair considers that the evidence against this is overwhelming.—Eds.

Osmia leucomelana Kirby in Shropshire.—In May last, my boy, E. H. W. Gardner, captured a ♀ of this bee on the west side of Ragleth Hill near Church Stretton. This is the first time, according to Saunders' "*Hymenoptera Aculeata*," that this uncommon species has been recorded so far north.—WILLOUGHBY GARDNER, Deganwy, N. Wales: September 24th, 1922.

Note on Nomada hillana Kirby.—In "Konowia," 1922, pp. 113-124, 161-172, Herr E. Stöckert has published very full descriptions of *Nomada ochrostoma* K. and the allied German species, and has kindly sent me a copy of his paper. To the group as represented in Germany four species are assigned, *guttulata* Sch., *braunsiana* Schmied., *hillana* K. and *ochrostoma* K. The two first-named of these are distinguished by pronounced structural characters, *guttulata* being, in my opinion, a dubious member of the group, while *braunsiana* is easily distinguished by the structure of its antennae. This species I have not seen, but it

is not likely to occur with us, being parasitic on *Andrena pandellei* F. Saund. That the German species assigned to *hillana* K. is distinct from *ochrostoma* there appears to be no doubt, as the sculpture of the mesonotum and scutellum is different, apart from other characters. It is said to be synonymous with *N. villosa* Thoms. Kirby's description of *hillana*, so far as it goes, appears to me to refer clearly to *ochrostoma* and not to *villosa* Thoms. Kirby's type, a ♂, was smaller than his ♂ *ochrostoma*, while Stöckhert's *hillana* is said to be larger than the latter. Owing to great individual variability in size, and seeing that Kirby saw only one ♂ of each species, possessing neither himself,* not much importance is to be attached to his measurements. In his description Kirby says that the ventral abdominal segments of *hillana* are variegated with yellow bands and spots, and that the legs are red, except certain specified parts—not including the tibiae—which are black or marked with black. The yellow markings of the abdomen are described as four lateral spots, two on each side, followed by three bands, of which the first two are interrupted. In species where the spots are larger he does not call these "lateral." In these points Kirby's description of *hillana* appears to me to accord with British *ochrostoma*, and of course the brevity of this does not allow much comparison with the detailed descriptions of Stöckhert, which in each case occupy several large pages of print. The host of *hillana* Stöckhert is apparently *Andrena lathyri* Alfk., a species unknown in Britain, but one which I have specially sought in many localities and in many collections from the time when it was first described and Herr Alfken furnished me with specimens. Hill, in whose collection Kirby found the ♂ *hillana*—"a *D. Hill Londinensi* capta"—does not appear to have been a special collector of bees, as very few species are credited to him in the Monographia, and it would be remarkable if he collected a *Nomada*, never since found in England and known to be parasitic on an *Andrena*, likewise unknown here. Though it would be a pleasure to add another *Nomada* to our limited list, I think that Kirby's *hillana* should not be accepted as such, and that the name *villosa* Thoms. should be applied to the species so carefully described by Stöckhert under the name *hillana* K. Incidentally I have re-examined a long series of a *Nomada* from Baden, Germany, collected by Mr. A. Koebele, in company with great numbers of *Andrena lathyri*, no other *Andrena* on which this could be parasitic being found at the same time and place. I had referred these to *N. ochrostoma*, as a larger and darker form than ours, and I find that they are this species, and not Stöckhert's *hillana*, as one might have expected. Herr Stöckhert gives a list of various hosts for *ochrostoma* and the authority for these, but very positive evidence is needed before some of them can be accepted as correct. In this Magazine (1918, p. 36) I have shown that in England *ochrostoma* apparently restricts its parasitism to *A. wilkella* (*xanthura*) and leaves the closely allied *afzeliana* K. and *similis* Sm. immune. It would be strange if, under these circumstances, the hosts *A. humilis* and *A. fucata*, and still more so if *Halictus scabiosae*, were correct. Various authors give *A. labialis* as a host, but Smith's record I know to be wrong, as his (supposed) Hampstead specimens of *ochrostoma* were *guttulata*, the well-known parasite of *A. cingulata*! In Germany *N. villosa* Th. appears about a month earlier in the season than *N. ochrostoma*. Any British

* Kirby's collection contained females of *ochrostoma*, but these were considered by him to be varieties of *rafcornis*.

Hymenopterist interested in this group of *Nomada* would do well to procure Herr Stöckert's very full account of these bees.—R. C. L. PERKINS, Newton Abbot: October 5th, 1922.

Abnormal abundance of Typhlocyba ulmi L. in Hyde Park.—Pedestrians, whether entomologists or otherwise, passing through Hyde Park between Alexandra Gate and The Magazine on the morning of October 9th, could scarcely fail to notice that the air appeared to be full of little, drifting, whitish specks. Some of these specks, alighting and resting for a moment on the writer's coat, were recognised as small Homopterous insects, further specimens of which were subsequently identified by the writer's colleague, Mr. F. Laing, as imagines of *Typhlocyba ulmi* L.—a Jassid bug which, in its larval stage, is parasitic on the leaves of the elm. Somewhat curiously, when seen in the air on the occasion mentioned, all the insects appeared to be moving against the wind, apparently drifting from the direction of Kensington Gardens towards the north-east, although a keen north-easterly current of air was making itself unpleasantly felt at the time; the possibility that a local eddy in the air-current may have determined or influenced the direction of flight was, unfortunately, not investigated. Since October 9th, only isolated specimens of *T. ulmi* have been noticed by the writer on the wing in Hyde Park, although before 10 a.m. the resting insect has been observed in numbers on the trunks of various species of trees near the Serpentine, and especially in the crevices of the bark of the horse-chestnuts outside the railings of The Magazine. According to Mr. Laing, *T. ulmi* hibernates in the adult state, so that the insect's activity at the present time may be stimulated by the necessity of finding suitable winter-quarters. That houses sometimes do duty for the latter is not impossible; at any rate, during the present week *T. ulmi* has been found in numbers on a window in a house about 150 yards or less from the south-western corner of Kensington Gardens. If any reader has observed *Typhlocyba ulmi* swarming on the wing elsewhere than in London, perhaps he will be good enough to place his observations on record.—E. E. AUSTEN (Major), British Museum (Natural History): October 12th, 1922.

A Synonymical Note on Orthezia maenariensis Dougl. (Coccidae).—Douglas in 1884 (Trans. Ent. Soc. Lond. p. 81) described *Orthezia maenariensis* from the Island of Montecristo. According to his description the species was peculiar in that the adult ♀ had 9 segments to the antennae, and the adult ♂ possessed three ocelli on the head. Acting on the supposition that the species possessed these characters (which, if true, would make them aberrant for the *Ortheziinae*), MacGillivray in "The Coccidae" (1921) erected *Douglariella* (surely a misprint for *Douglasiella*) with *maenariensis* as type. At the suggestion of Mr. Harold Morrison, U.S. Bureau of Entomology, I have examined Douglas's types. These were still contained in mica cells as Douglas received them from Lichtenstein. As no details could be made out through the mica, the specimens have been remounted on slides. The ♀ instead of having 9-segmented antennae, as Douglas described, has one 7-segmented and the other 8, while the ♂ has but the two normal, lateral ocelli. Lindinger had already ("Die Schildläuse," 1912) suggested that *O. maenariensis* was synonymical with *O. urticae* L., and, except for its slightly smaller size, I can

find nothing by which to separate the two species. The marsupium in the type ♀ was practically destroyed, so that it was not possible to check Douglas's remarks regarding it, but in the meantime I think we are justified in regarding *O. maenariensis* as a synonym of *O. urticae* L. and sinking MacGillivray's *Douglariella* to *Orthezia* Bosc.—F. LAING, British Museum (Natural History): October 10th, 1922.

Aleyrodidae: correction of generic nomenclature.—Messrs. Quaintance and Baker in their "Classification of the Aleyrodidae," Part ii (U.S. Dept. Agr., Bur. Ent., Techn. Ser. 27, pt. ii, 1914), assigned *Aleurodes vaporariorum* Westw., as the type species of *Asterochiton* Mask., while they erected the genus *Dialeurodoides* with *Aleurodes aureus* Mask. as the type. In the "Contents and Index" to the Classification, published in 1915, the authors, in the corrigenda, p. xi, point out that Cockerell had in 1902 designated *aureus* Mask. as the type of *Asterochiton* Mask., and cited *pergandei* Quaint. as the type of his sub-genus *Trialeurodes*. *A. pergandei* is congeneric with *vaporariorum* Westw. The synonym stands, therefore, as follows:—

Asterochiton (Mask.) Ckll., type *aureus* Mask.

DIALEURODOIDES Quaint. & Baker, type *aureus* Mask.

Trialeurodes Ckll., type *pergandei* Quaint.

ASTEROCHITON Quaint. & Baker, type *vaporariorum* Westw.

I had not seen the "Contents and Index" section (we do not seem to have a copy in the library here, and there is no mention of it in the "Zoological Record"), and it was not until Dr. A. S. Neave showed it to me that I was aware of its existence. As I have followed Quaintance & Baker's nomenclature and spread the mistake, I take this opportunity of pointing out to English Entomologists the necessary change.—F. LAING, British Museum (Natural History): October 10th, 1922.

Localities for Notonecta halophila J. Edw.—During the last few weeks Miss J. Barrington and Mr. J. Omer Cooper have kindly sent me several specimens of this species. Miss Barrington's specimens are from three localities near Bridgwater, Somerset, all at some distance from the sea. Mr. Omer Cooper's are from Little Sea, Studland, Dorset, and New Milton, Hants. I believe other collectors have taken the species in the latter county frequently. I have also one specimen taken at Madingley, near Cambridge, in a pond where *N. glauca* is common.—G. E. HUTCHINSON, Aysthorpe, Newton Road, Cambridge: October 10th, 1922.

Billaea irrorata Mg. in Britain.—In Major Austen's interesting note upon new British *Tachinidae* in pp. 182 and 183 of the present volume of this Magazine is a record of the occurrence of this species in various localities in this country in the years 1921 and 1922. I took a single female on August 19th, 1898. It was not identified by me until 1909, since when, however, it has been in my collection over its correct name. It was taken in Ran Dun Woods, in Worcestershire.—COLBRAN J. WAINWRIGHT, Daylesford, Handsworth Wood, Birmingham: October 13th, 1922.

Society.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
August 10th, 1922.—The President in the Chair.

Mr. D. W. Seth-Smith, 34 Elsworthy Road, was elected a member.

Mr. R. Adkin exhibited a series of *Arctia villica* reared from larvae picked up on Eastbourne Parade; they were common this year, whereas larvae of *A. caja* were unusually scarce. Mr. Tonge, a bred specimen of *Malenydris salicata* from Langridge Fell. Mr. Prideaux, aberrations of *Rumiccia phlaeas* from Kent, and a remarkable aberration of *Mesoleuca albicillata*, bred, from Brasted. Major Gillett, a unique black-banded form of *Agrotis corticea*, a very light ♂ and a dark ♀ of *A. cinerea*, and aberrations of *A. exclamatoris*, all taken in his light trap. Mr. Bunnett, larva and imago of *Ledra aurita* (Hemipt. Homopt.) and *Centrotus cornutus* from Box Hill, with the scarce beetles *Agrilus sinuatus* and *Rhinomacer attelaboïdes*. Dr. Robertson, Lepidoptera taken by him at Grindelwald in July, *Pieris napi*, var. *bryoniae*, *Albulina pheretes*, *Acidalia immorata*, *Zygaena achilleae*, *Crambus myellus*, etc. Mr. Hy. J. Turner, species of the S. American genus *Automeris* mostly sent by his friend Mr. Lindeman, and read notes on the distribution and characteristics. Messrs. Tonge, Hamm, and Carr reported the abundance of *A. villica* larvae, the scarcity of *A. caja*, and the occurrence of *Polygonia e-album* near and in Oxford, and fresh *Colias croceus (edusa)* respectively.

August 24th, 1922.—Mr. E. STEE, F.L.S., in the Chair.

Mr. Barnett exhibited series of two forms of the female of *Brenthis selene* from S. Devon. Mr. Withycombe, the larva of *Limacodes testudo* beaten from oak at Oxshott with the Hemipteron *Acanthosoma interstinctum*. Mr. Sims, examples of the large earwig *Labidura riparia*, and referred to its burrowing habits; he had seen a fly carried in the forceps. Mr. Turner, exotic species of "whites," *Pieridae*, to show the extreme development of brilliant coloration with total or almost total suppression of the white coloration on both surfaces. Mr. Robert Adkin, pupae of *Papilio machaon*, 3 spun up on a carrot-leaf, on the glass of the food-bottle, and on a dark stick amid the food, respectively, were pale yellowish green; 7 spun up on dark sticks leaning against the cage away from the food-plant were putty-coloured with broad black stripes along the sides and wing-cases black, giving them a very dark appearance.

September 14th, 1922.—The President in the Chair.

Exhibition of Orders other than *Lepidoptera*.—Mr. R. Adkin exhibited a large female of *Sirex gigas* from Eastbourne, 70 mm. in expanse. Mr. W. J. Lucas, *Orthoptera*: a brown form of *Mantis religiosa* from Spain, 1911; *Neuroptera*: specimens of *Palpares libelluloides* from Sierra de Carbonera and Algeciras, Spain, 1911-12; *Nemoptera bipennis* from S. de Carbonera, *N. coa* from Corinth, and *N. sinuata* from Macedonia and Syria; *Hymenoptera*: two specimens of the rare *Methoca ichneumonides* taken by himself in the New Forest, one on Aug. 27th of this year. Mr. H. W. Andrews, *Diptera*: *Dioctria orlandica*, found after many years search near Farningham, Kent; *Catantopidae*

pyrastris, a ♀ var. *unicolor*, from Shoreham, Kent; *Trophora cardui*, bred from thistle-galls, and its hymenopterous parasites, also from Shoreham. Mr. Hy. J. Turner, the curious "flue-brush" beetle, *Rhina barbirostris* (*Curculionidae*), from Brazil. Mr. F. J. Coulson, var. *infusata* of *Xylophasia monoglypha*, Aug. 22nd at Wimbledon Common, and a blackish speckled form of *Boarmia gemmaria* bred from ova from St. Leonards-on-Sea, with normal forms, and var. *perfumaria* from Wandsworth. Mr. C. L. Withycombe, *Orthoptera*: *Empusa egea* and *Oedipoda germanica* from S. France; *Psophus stridulus* from the Pyrenees; and a Mantid from the Straits Settlements with short prothorax and ill-developed fore legs. Mr. Enefer, *Coleoptera*: *Trichodes apiarius*, *Strangalia quadrifasciata*, both on cow-parsley; *Liparus germanus* and a Longicorn, both on pine-logs; and a living *Carabus auratus*—all from Mürren, Switzerland. Mr. Cheeseman, a striated *Polygonmatus icarus*. Mr. B. S. Williams, *Coleoptera* from Harpenden: *Punagaeus 4-pustulatus*, *Cassida hemisphaerica*, *Stilicis subtilis*, *Megarthus denticollis*, *Antherophagus nigricornis*, and *A. pallens*, with *Quedius othiniensis* and *Aleochara spadicea* from moles' nests. Mr. G. E. Frisby, *Hymenoptera*: *Ammophila luffii*, from St. Ouen's Bay, Jersey, with *A. hirsuta* and *Bembex rostrata*; and the two British *Sapyga*, *S. 5-punctata* and the rare *S. clavicornis* from Wrotham. Mr. Stanton, *Coleoptera* of economic importance: *Bruchus rufimanus* and *B. affinis*, with notes on their occurrence, habits, specific identity, etc.; *B. obtectus*, its origin and habits; *Anthonomus cinctus*, first recorded as British in 1921. Mr. Stanley Blekarn, *Coleoptera*: 1, British species of *Lembidium*; 2, larger ground-beetles; 3, many species of water-beetles; 4, British *Chrysomelidae*. Mr. Tonge, living larvae of *Sphinx ligustri* showing wide variation in the size and intensity of colour of the oblique stripes on the sides. The Society, the Ashdown Collection of British *Chrysomelidae*.—HY. J. TURNER, *Hon. Editor of Proceedings*.

SOME INDIAN COLEOPTERA (9).

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

(Continued from p. 220.)

Attalus flavoguttatus, n. sp.

♀. Elongate, much widened posteriorly, shining, clothed with fine dark pubescence intermixed with scattered long erect hairs; black, the basal joints of the antennae beneath and the basal margin of the prothorax testaceous; the elytra each with a sharply-defined, rounded, bright yellow spot on the disc beyond the middle and a common triangular testaceous apical patch; the head and prothorax rather sparsely, minutely, the elytra closely and more distinctly, punctate. Head a little narrower than the prothorax, the eyes rather prominent; antennae moderately long, subserrate. Prothorax broader than long, narrowed towards the base and apex, narrowly margined, subovate in the centre behind. Elytra elongate, much broader than the prothorax, rapidly widening to the rounded apex. Posterior tibiae feebly curved, simple at the tip.

Length $2\frac{3}{4}$ mm.

Hab. Nilgiri Hills (*H. L. Andrewes*).

One specimen. The bright yellow spot on the disc of each elytron beyond the middle and the triangular common testaceous apical patch readily distinguish the present species. The markings are very different from those of any other *Attalus* known to me—European, American, or Asiatic.

Attalus alutaceus, n. sp.

♀. Elongate-subtriangular, subopaque, finely pubescent, with a few longer hairs intermixed; aeneous, the basal joints of the antennae beneath, clypeus, basal margin of prothorax, and legs in great part, testaceous, the rest of the antennae black; alutaceous, the head and prothorax extremely finely, closely punctulate, the elytra densely, rugulosely punctured, with a few scattered raised points. Head nearly as wide as the prothorax, foveate in the middle between the eyes; antennae slender, moderately long. Prothorax transverse, feebly margined, rounded at the sides and base, foveate in the centre at the base. Elytra broader than the prothorax, rapidly widened posteriorly, moderately long. Posterior tibiae feebly sinuate, simple at tip.

Length $2\frac{1}{2}$ mm.

Hab. Nilgiri Hills (*H. L. Andrewes*).

One ♀. This insect has the upper surface dull, rugulose, and uniformly brassy, the testaceous basal margin of the prothorax, and the legs in part, excepted. *A. alutaceus* bears some resemblance to *A. hamatilis*, but it cannot be the ♀ of that species.

Attalus verticillatus, n. sp.

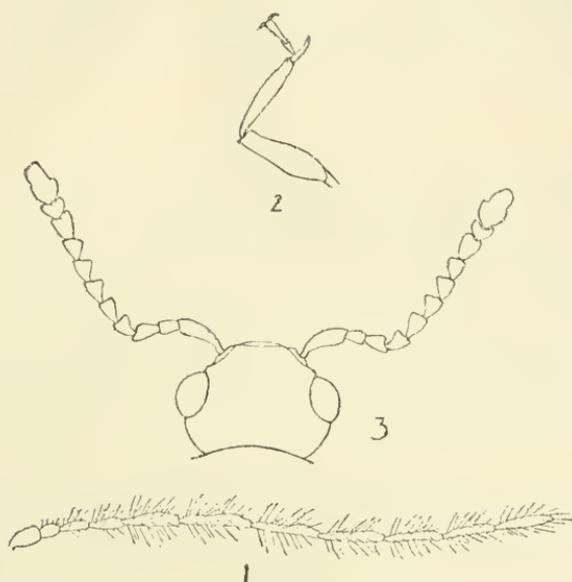
♂. Elongate, narrow, shining, finely pubescent, without longer hairs intermixed; brassy-black, the head at the sides in front, mouth-parts (the infuscate palpi excepted), the basal four joints of the antennae beneath, basal margin of prothorax, and anterior and intermediate coxae and legs in great part, testaceous, the apical margin of the elytra whitish, rest of the antennae black; the head and prothorax very sparsely, minutely punctate, the elytra alutaceous and rugulosely punctulate. Head as wide as the prothorax, the eyes rather prominent; antennae (fig. 1) slender, extremely elongate, longer than the body, set with long, stiff, projecting, bristly hairs, which are arranged somewhat in whirls on the third and following joints, 1, 3, 4 subequal in length, 5-11 each nearly twice the length of 4, asperate. Prothorax subquadrate, rounded at the sides anteriorly. Elytra elongate, a little wider than the prothorax, subparallel, rounded at the apex. Legs very long and slender; anterior tarsi distinctly 5-jointed, 1 and 2 thickened, subconnate, 2 extending over 3 above, rounded and nigro-pectinate at tip, the claws equal.

Length 3 mm.

Hab. Burma (*A. K. Weld Downing*).

One male, presented to the Museum by Mr. Andrewes. Very like *A. hamatilis* in general appearance, but with extremely long, subverticillate antennae, and normally formed anterior legs in ♂; the prothorax

relatively larger; the elytral apices narrowly margined with white, instead of having a testaceous spot. The antennal structure of the ♂ is very different from that of any other species of the genus known to me.



1. *Attalus verticillatus*, n. sp., antenna, ♂; 2. *A. hamtilis*, n. sp., anterior leg, ♂;
3. *Hypebaeus clavatus*, n. sp., head and antennae, ♂.

Attalus hamtilis, n. sp.

♂. Elongate, narrow, shining, finely pubescent, without longer hairs intermixed; brassy-black, the labrum, palpi and antennae (except at their tips), basal and outer margins of prothorax, a spot at the apex of each elytron, the apical segments of the abdomen beneath, anterior and intermediate coxae and legs in great part, and the posterior tibiae beyond the middle, testaceous; the head and prothorax very sparsely, minutely punctate, the elytra alutaceous and rugulosely punctulate. Head as wide as the prothorax; antennae very long, joints 3 and 4 a little broader than those following, subtriangular, 5-11 filiform. Prothorax small, convex, a little broader than long, rounded at the sides. Elytra elongate, wider than the prothorax, subparallel, rounded at the tip. Anterior femora incrassate, compressed, somewhat curved; anterior tibiae stout, feebly curved; intermediate tibiae curved, sinuate within, posterior tibiae sinuate; anterior tarsal joints 1 and 2 fused into a long narrow claw-like process, extending over 3 to its apex, 3 and 4 also connate, the claws unequal in length, the longer one thickened at the base, the other short (fig. 2).

Length $2\frac{3}{4}$ mm.

Hab. Kodaikanal, S. India (*T. F. Campbell*).

Two ♂♂, presented to the Museum by Mr. E. A. Butler. The insect is so like *A. triformis* and *A. verticillatus* that it seems best

included in the same genus. The anterior femora are incrassate; the anterior tarsi are apparently 3-jointed (joints 1 and 2 being fused into a one long, claw-like piece, and 3 and 4 connate); and the claws of the same feet are unequal in length, as in the African Dasytid-genus *Pagurodactylus* Gorh. The lateral vesicles of the body are present, and *A. humatilis* is therefore a true Malachiid.

PSEUDOCERAPHELES.

Pseudocerapheles Pic, L'Echange, xxx, p. 15 (1914).

This genus, if correctly identified by me, has simple 5-jointed anterior tarsi, the head without frontal excavation, and the elytra at most feebly excavate at the apex, in ♂; the sides of the front not raised above the points of insertion of the antennae, the apical joint of the maxillary palpi narrow and fusiform, the prothorax subquadrate, the elytra elongate, and the legs slender.

Pseudocerapheles superbus.

Pseudocerapheles superbus Pic, L'Echange, xxx, p. 15 (♂) (1914).

Hab. Himalaya (*type of Pic*), Chamba (*ex coll. H. E. Andrewes*).

A ♀ taken at Chamba agrees with the description of this species, except in its smaller size, length $3\frac{1}{4}$, instead of 4 mm. A shining, subglabrous, rufo-testaceous insect, with the head (except along the anterior margin), a transverse basal fascia on the elytra and a broader one towards the apex (divided at the suture), the posterior femora in part, and the metasternum and abdomen, greenish-black.

Pseudocerapheles rosti.

Pseudocerapheles rosti Pic, L'Echange, xxx, p. 15 (♂ ♀) (1914).

♂. Elongate, narrow, very shining, almost glabrous: brilliant bluish green, the elytra violaceous, the front of the head, the palpi, the antennal joints 1-4 beneath, the edges of the prothorax, the knees, apices of the tibiae, and the tarsi testaceous, the rest of the legs and antennae infusate or black; the head and prothorax almost smooth, the elytra very sparsely, finely punctate. Head broader than the prothorax, bi-impressed in front, the eyes prominent; antennae very long, joints 3 and 4 triangular, 5-11 elongate, 5-10 each produced at the apex into a long tooth. Prothorax convex, subquadrate. Elytra elongate, slightly widened posteriorly, parallel at the base, and there not wider than the head; the apices conjointly rounded, and with a small, common, transverse, excavation crossing the suture just before the tip. Legs very long, slender; anterior tarsi simple, 5-jointed; posterior tibiae slightly bowed inwards beyond the middle.

Length 3 mm.

Hab. Simla (*H. Chippendale*: v.1909), Falaon, Himalaya (*type of Pic*).

A ♂ from Simla, from Mr. Andrewes' collection, is probably referable to *P. rosti*. The small excavation at the apex of the ♂ elytra is not mentioned by Pic. The apical joint of the maxillary palpi is small and fusiform, the genus differing in this respect from *Cerapheles*.

Pseudocerapheles longipennis, n. sp.

♀. Elongate, shining, very finely, sparsely pubescent; black with a brassy or metallic green lustre, the antennae (the infusate tip of joint 11 excepted), palpi, anterior portion of head, the sides of the prothorax broadly, a sharply-angulate ante-median fascia on the elytra, connected along the suture with an apical patch and extending forward along the outer margin to the base (leaving a large triangular mark at the base, and a more elongate piriform space towards the apex, of the greenish ground-colour), and the legs (a broad black annulus on the posterior femora excepted) testaceous; the head and prothorax very sparsely, minutely punctate, the elytra rugulose and sparsely punctulate. Head transversely bi-impressed in front, about as wide as the prothorax; antennae slender, moderately long, joints 5-10 subtriangular, longer than broad. Prothorax subquadrate, depressed on each side before the base. Elytra very long, at the base subparallel and about as broad as the prothorax, gradually widening from the middle onward, rounded at the tip. Legs long; posterior tibiae bowed inward in their outer half.

Var. The metallic green portions of each elytron coalescent, leaving a mesially-widened sutural streak and the outer margin to near the middle testaceous.

Length (to tip of elytra) $3\frac{1}{4}$ mm.

Hab. Sunderdhunga Valley, W. Almora and Ranikhet Divisions of Kumaon, alt. 5000-8000 ft. (*H. G. C.*: v, vi.1919, vi.1920).

Three females, varying in the development of the elytral markings. Near *P. superbus* Pic; the prothorax broadly vittate down the middle; the elytra more elongate, and with the metallic portions nearly or quite coalescent on the disc. Found by beating blossom of *Symphlocos crataegoides*.

HEDYBIUS Er.

Three additional Indian species are referred to this genus, two of which are represented by ♀♀ only in the material before me.

Hedybius bipenicillatus, n. sp.

♂. Elongate, subparallel-sided, shining, clothed with fine pubescence intermixed with long, scattered, erect or projecting hairs, these latter conspicuous on the tibiae; black, the intra-ocular and anterior margins of the head and the mandibles (except at the tip) flavous, the antennal joints 1-3 (a

streak above excepted), palpi (the tips excepted), prothorax, anterior coxae, anterior femora beneath, and anterior tarsi in part, testaceous, the elytra cyaneous; the head and prothorax closely, minutely punctate, the elytra densely, finely punctured, with scattered larger punctures intermixed. Head nearly as wide as the prothorax, transversely excavate between the eyes, and with a laterally-compressed dentiform prominence in the centre of the cavity in front, on either side of which is a porrect pencil of matted hairs; eyes rather prominent; antennae comparatively stout, moderately long, joints 5-10 triangular, much longer than broad. Prothorax transverse, convex, rounded at the sides. Elytra long, at the base very little broader than the prothorax, widening posteriorly. Legs long; anterior tarsi with joints 1 and 2 thickened, 2 elongate, extending over 3 above, and nigro-pectinate along the entire outer edge.

Length $3\frac{1}{2}$ mm.

Hab. Manipur (*Doherty, ex coll. Fry*).

One example. Near *H. cristatus* Champ. (*antea*, 1921, p. 110), the frontal excavation of the ♂ transverse, smaller, and shallower, the antennae subserrate, the prothorax testaceous, and the sides and anterior margin of the head flavous.

Hedybius (?) *nigroplagiatus*, n. sp.

♀. Elongate, shining, finely pubescent; flavo-testaceous, the head with a broad oblique patch on each side behind (the testaceous portion extending triangularly backward in the centre), eyes, outer half of the antennae, scutellum, an elongate broad streak on the disc of each elytron beyond the middle, the meso- and metasternum, and wings infuscate or black; sparsely, minutely punctate, the elytra somewhat rugulose and with the puncturing a little stronger. Head nearly as wide as the prothorax, bifoveate between the rather prominent eyes, the clypeus also prominent; antennae moderately long, serrate. Prothorax convex, transverse, rounded at the sides, hollowed within the basal margin. Elytra at the base a little broader than the prothorax, gradually widened posteriorly, flattened on the disc, the apical margins rounded, leaving the last two abdominal segments exposed. Legs not very slender; posterior tibiae curved.

Length (to tip of elytra), 3 mm.

Hab. Binsar, Almora District, Kumaon, alt. 4500 ft. (*H. G. C.*: iii. 1919).

One specimen, taken on the wing. In the absence of the ♂, this species cannot be located with certainty. The broad, bifoveate head is suggestive of *Hedybius*, rather than *Ebaeus*. The general coloration is unusual. *Attalus donceeli* Pic (1908), from Chambaganor, the two sexes of which are known, may be an allied form; it is described as having a nigro-vittate prothorax and wholly pallid elytra, with strong, scattered, irregular punctuation.

Hedybius (?) *chitralensis*, n. sp.

♀. Elongate, rather broad, shining, somewhat thickly clothed with erect bristly hairs intermixed with fine scattered pallid pubescence; flavous, the head with an oblique patch on each side behind (the yellow portion extending triangularly backward in the centre), eyes, a broad oblong patch on the disc of the prothorax, scutellum, two large patches on each elytron—one basal, somewhat rounded, the other broader, transverse, subapical, neither reaching the suture nor outer margin,—the abdomen above, and metasternum, black or nigropiceous, the legs and antennae testaceous, the latter with the tips of the outer joints slightly infusate; the entire upper surface sparsely punctulate. Head broad, narrower than the prothorax, flattened anteriorly, the clypeus and eyes both prominent; antennae rather short, joints 5 and 6 sharply triangular, 7-11 each produced into a rather long tooth. Prothorax transverse, convex, rounded at the sides, narrowed behind, the margins hollowed towards the base. Elytra broader than the prothorax, moderately long, widened posteriorly, rounded at the tip. Legs hairy; posterior tibiae scarcely curved.

Length $3\frac{1}{2}$ mm.

Hab. Chitral (*R. Hill, in Mus. Brit.*).

One ♀, received in 1910. Broader and larger than *H. nigroplagiatus*, the upper surface setose, the prothorax vittate down the middle, and the elytra each with two large blackish patches, the outer joints of the antennae sharply dentate. The ♂ probably has these organs pectinate.

EBAEUS ER.

Ebaeus squamifer, n. sp.

♂. Moderately elongate, much widened posteriorly, shining, clothed with cinereous pubescence abundantly intermixed with long, erect, blackish hairs, which are also conspicuous on the tibiae, the apices of the elytra closely set with very small, oval, golden scales; green or bluish-green, the head and prothorax somewhat brassy, the antennae (the testaceous lower surface of the basal joints excepted) and legs (the testaceous thickened basal joints of the anterior tarsi excepted) piceous or black; the head and prothorax very sparsely, finely, the elytra densely rugulose punctate. Head nearly as wide as the prothorax, obsoletely bi-impressed anteriorly; antennae long, pectinate from joint 5 onward, 2 extremely short, transverse, 3 triangular, 4 dentate within. Prothorax convex, transverse, rounded at the sides, narrowed behind, narrowly margined at the base. Elytra moderately long, at the base a little wider than the prothorax, and rapidly widened thence to the broadly rounded apex; the sutural region depressed posteriorly, and with a narrow, deep, transverse groove before the tip. Pygidium notched at the apex. Anterior tarsi with joints 1 and 2 stout, 2 nigro-pectinate and claw-like at the tip, extending over the base of 3 above.

♀. Antennae serrate; elytra simple, not squamose towards the tip; anterior tarsi simple; pygidium entire.

Length $2\frac{3}{4}$ -3 mm.

Hab. Manipur, S. India (*Doherty, ex coll. Fry*).

Three ♂♂, one ♀. Separable from the similarly-coloured Indian *Hapalochri* by the distinctly 11-jointed antennae and the deeply, transversely sulcate apices of the elytra in the ♂. The presence of scales on the apical portion of the latter in this sex is a very unusual character amongst the Malachiids, and unique so far as I am aware.

Ebaeus tenuicornis, n. sp.

♂. Elongate, narrow, gradually widened posteriorly, shining, finely pubescent; black with a faint metallic lustre, the prothorax testaceous, broadly infuscate on the disc (this being partly due to transparency, the base of the head, etc., showing through the chitin), the elytra each with a small pallid subapical spot, the antennae (the testaceous lower surface of joints 1 and 2 excepted), femora and tibiae piceous, the tarsi testaceous; the head and prothorax almost smooth, the elytra closely, very minutely punctate. Head narrower than the prothorax, trapezoidally depressed anteriorly; antennae about as long as the body, slender, filiform. Prothorax transverse, rounded at the sides, convex. Elytra long, broader than the prothorax, widening to near the tip and then abruptly narrowed; with a common, narrow, deep transverse sulcus before the apex, the apical margin tumid, sinuato-truncate, and subbituberculate as seen from above. Legs long and slender; anterior tarsal joint 2 with a claw-like prolongation extending over the base of 3.

♀. Antennae more slender and much shorter; head similarly hollowed anteriorly; elytra immaculate, more widened posteriorly, the apex of each bluntly rounded and bifoveate; legs shorter, the posterior tibiae curved.

Length $2\frac{1}{2}$ mm.

Hab. Dudhatoli, Garhwal, U.P., alt. 10,000 ft. (*H. G. C.*: vi. 1920).

One pair, found on flowers of *Olematis montana*. An isolated form, referred to *Ebaeus*, rather than to *Attalus*, on account of the transversely furrowed, tumid, truncate apices of the elytra in ♂. The incompletely-diagnosed *E. madrasensis* Pic (1919), type ♀, has short, broad elytra and a prominent pygidium: the colour of the body is not mentioned (? black), and the length given is 2 mm.

HYPEBAEUS Kies.

Hypebaeus cavernosus, n. sp.

♂. Elongate, rather broad, shining, finely pubescent; the head, scutellum, meso- and metasternum, terminal segment of abdomen, and a spot at the apices of the posterior femora black, the labrum, antennae (the infuscate outer joints excepted), and the rest of the legs and abdomen, testaceous; the elytra violaceous, with a narrow, outwardly-widened, submedian fascia and the ear-like apical appendages testaceous; the head and prothorax almost smooth, the

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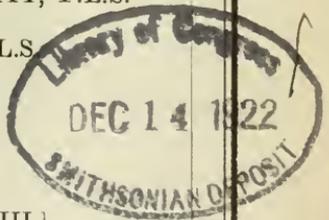
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MEETINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON, 41 Queen's Gate, S.W.7 (nearest stations: South Kensington and Gloucester Road).—Dec. 6th, 1922, Jan. 17th, 1923 (Annual Meeting), at 8 p.m.

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THE LONDON NATURAL HISTORY SOCIETY, now meets in Hall 40, Winchester House, Old Broad Street, E.C. 2, on 1st and 3rd Tuesdays in the month at 6.30 p.m. General meetings 1st Tuesdays, Sectional meetings 3rd Tuesdays. (No meetings in July or August indoors, but field excursions instead.)

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elytra closely, rather strongly punctured. Head narrower than the prothorax, bi-impressed in front; antennae long, slender. Prothorax transverse, rounded at the sides. Elytra broader than the prothorax, widened posteriorly, flattened on the disc, sharply carinate laterally from below the shoulder to near the apex; the apices produced into a large, posteriorly-truncate, externally smooth and convex, cavernous, ear-like appendage, and with a long, erect, hammer-shaped process arising from the inner margin of the cavity. Terminal segment of abdomen bilobate. Legs long; anterior tarsi 5-jointed, simple; posterior tibiae slightly curved.

Length 3 mm.

Hab. Mussoorie, U.P. (*ex coll. Fry*).

One specimen, injured by pinning. Near *H. cyanconotatus* Pic* ; the elytral appendages of ♂ testaceous, much larger, cavernous, differently shaped, and furnished with a long, apically-dilated, erect process on the inner margin; the posterior femora black at the tip only. *H. (Ebaeus) carinatipennis* Pic (1905) and *H. (Attalus) carinatifer* Pic (1919) are allied forms.

Hypebaeus carinatifer.

♀. *Attalus carinatifer* Pic, Mélanges exot.-entom. xxx, p. 16 (1919).

Hypebaeus auritus Champ. Ent. Mo. Mag. 1921, p. 73 (♂ ♀).

Pic's description was overlooked by me last year. The species also occurs in the Kangra Valley. The type of *A. carinatifer* was from "Indes."

Hypebaeus albocinctus, n. sp.

♀. Elongate, much widened posteriorly, shining, finely pubescent; the antennal joints 5-11, head, scutellum, meso- and metasternum, legs (the testaceous knees and apices of the tibiae excepted), and terminal segment of abdomen, black or piceous, the labrum, prothorax, and the rest of the antennae and abdomen testaceous; the elytra cyaneous, each with a slightly curved, complete, sharply-defined, white median fascia, extending for a short distance down the suture posteriorly; the head and prothorax almost smooth, the elytra closely, rather strongly punctured. Head comparatively small, without definite impressions; antennae moderately long, joints 5-11 much longer than broad, 1 elongate. Prothorax transverse, convex, rounded at the sides. Elytra much broader than the prothorax, rapidly widening to the apex, carinate laterally from a little below the shoulder to beyond the middle, the apices rounded. Legs long; posterior tibiae sinuously curved, produced into a stout, blunt spur at the apex.

Length (to tip of elytra) 3½ mm.

Hab. Manipur, S. India (*Doherty, ex coll. Fry*).

* Females of this species have been captured in the Tista Valley by Mr. H. Stevens.

One specimen. Near *H. cyaneonotatus* Pic and *H. auritus* Champ. (= *carinatifer* Pic, type ♀); the cyaneous coloration of the elytra more extended, leaving a curved median fascia only white, the elytra themselves more convex in their apical half and the inner fold on the disc wanting; the head and prothorax smaller; the legs in great part black.

Hypebaeus claratus, n. sp.

♂, Elongate, finely pubescent, shining; testaceous, the head (the whitish anterior portion, which extends angularly backward on each side near the eyes, excepted), the apices of the antennae, a common basal fascia and a very large rounded subapical patch on the elytra (extending to the outer margin but not reaching the suture), the bases of the posterior femora, meso- and metasternum, and apex of abdomen, black; the head and prothorax almost smooth, the elytra closely, finely punctured to near the tip. Head (fig. 3) much narrower than the prothorax, transversely, triangularly depressed between the eyes and bi-impressed in front; antennae (fig. 3) long, stout, joints 3-8 triangular, 9-11 widened, 9 subtriangular, much longer than 8, 10 transverse. 11 very stout, constricted at the middle and dentate within. Prothorax transverse, convex, rounded at the sides. Elytra a little wider than the prothorax, long, subparallel to about the middle, and arcuately narrowing thence to the apex, subcarinate in their basal half from the humeri downward and depressed along the suture anteriorly, the apices simple. Legs long; anterior tarsi 5-jointed, simple; posterior tibiae sinuately curved, slightly produced at the tip. Terminal ventral segment with two curved forcipiform processes.

Length $3\frac{1}{2}$ mm.

Hab. Nainital, Kumaon, alt. 7000 ft. (*H. G. C.*: vi.1921).

One male, attracted to light. Near *H. cyaneonotatus* Pic, the antennae long, stout, with joints 9-11 widened and 11 distorted, the head whitish in front and black at the base, the elytra subcarinate laterally and not excavate at the apex. The simple anterior tarsi separates *H. claratus* from *Ebaeus* and *Attalus*. The ♂-development in this insect is transferred to the apical joints of the antennae. The white face is common to males of other species of *Hypebaeus* and the simple elytra to *H. spinicornis*. There is a *Malachius clavicornis* Peyr. with somewhat similar antennae in ♂.

Hypebaeus uncatus.

Hypebaeus uncatus Champ. Ent. Mo. Mag. 1921, p. 77.

Additional ♀ ♀ of this species or of a closely allied form have since come to hand, including one from W. Ahmora with a complete, elongate-oval, black annulus on each elytron below the common cordiform scutellar

patch.* Till the ♂♂ have been found, these ♀♀ are best treated as vars. of *H. uncatu*s. *Atalau annulifer* Pic (1907), type from Murree, presumably ♀, must be nearly related to the present species.

Hypebaeus triangularis, n. sp.

♂. Elongate, narrow, widened posteriorly, shining, very sparsely, finely pubescent; pale testaceous, the head whitish in front, a spot on the latter at the base, eyes, antennal joints 5-10, scutellum, a common transverse basal patch on the elytra and a large oblique patch on each of them near the tip not reaching the suture), and the apex of the metasternum, black or piceous; the head and prothorax almost smooth, the elytra sparsely, minutely punctate. Head large, rhomboidal, as long as broad, rapidly, obliquely narrowed behind the eyes, the latter prominent; antennae long, slender. Prothorax transverse, convex, rounded at the sides. Elytra long, broader than the prothorax, subarcuately dilated posteriorly, the apices somewhat produced and deliscent at the sutural angle; with a common, deep triangular (Δ -shaped) subapical excavation, from the centre of which an erect, curved, black, setiform process arises from near the suture of each wing-case, this being followed by a shorter, blunt, pallid appendage, the apical margin thickened. Legs very slender, long; anterior tarsi simple; posterior tibiae slightly bowed towards the apex.

Length $2\frac{1}{2}$ mm.

Hab. W. Bhatkot in Kumaon, alt. 4000 ft. (*H. G. C.*: v.1920).

One male, found on blossom of *Crataegus crenulata*. Very like *H. uncatu*s and *H. adumbratu*s Champ., ♂, but separable from both of them by nigro-maculate, longer, rapidly narrowed basal portion of the head; the posteriorly-widened, differently shaped apical portion of the elytra; and the entirely testaceous legs. In the ♂ of *H. adumbratu*s the apex of the triangular subapical excavation is directed backward, while in the present species it is directed forward.

Hypebaeus nainiensis, n. sp.

♀. Elongate, much widened posteriorly, shining, finely pubescent; black, the palpi, antennae, prothorax, an outwardly-dilated ante-median fascia on the elytra extending down the suture to the apex and there triangularly widened (leaving a common basal fascia and a very large rounded-subquadrate subapical patch on each elytron extending from near the suture to the outer margin black), anterior and intermediate legs (the bases of the femora excepted), the base and apex of the posterior tibiae, and the posterior tarsi, testaceous or flavous; the head and prothorax almost smooth, the elytra densely, finely, conspicuously punctate. Head rather small, rhomboidal; antennae long, slender. Prothorax a little wider than the head, broader than long, rounded at the sides. Elytra long, much wider than the prothorax, rapidly widened to near the

* A ♀ from the Kangra Valley, Punjab (*Dudgeon*), very like typical *H. uncatu*s, with a black head and unarmed posterior tibiae, is probably referable to *H. spunicorais*.

apex. Legs long, slender; posterior tibiae slightly curved and sinuate towards the apex, the apices not produced.

Length $2\frac{1}{2}$ -3 mm.

Hab. Nainital, Kumaon, alt. 7000 ft. (*H. G. C.*: ix.1918).

Seven ♀♀. Larger than *H. triguttatus* Champ. (1921), type ♀, from the N. W. Himalaya, the black markings on the elytra more extended, the posterior tibiae less bowed. The Himalayan *Attalus kulucensis* Pic (1910) seems to be somewhat similarly coloured. The closely punctured elytra, darker legs, and much larger size separate *H. nainiensis* from the ♀ of *H. spinicornis*.

Hypebaeus stevensi, n. sp.

♂. Moderately elongate, much widened posteriorly, shining, very finely pubescent; black, the prothorax reddish-yellow, the elytra with an outwardly-widened transverse fascia below the base (not reaching the suture), and a common triangular sutural patch before the apex, white; the basal joints of the antennae, the knees, tarsi, and apices of the tibiae testaceous, the rest of the antennae infusate; the head and prothorax almost smooth, the elytra closely, extremely finely punctate. Head (as seen extended) rhomboidal, narrower than the prothorax, broadly subtriangularly depressed in the middle anteriorly; antennae long, slender. Prothorax nearly as long as broad, rounded at the sides, strongly narrowed towards the base and apex. Elytra elongate-subtriangular, much wider at the base than the prothorax; the apices simply transversely excavate. Legs very slender; posterior tibiae bowed inward towards the apex and produced into a short spur at the tip.

Length $2\frac{1}{5}$ mm.

Hab. Gopaldhara, Rungbong Valley, Sikkim (*H. Stevens*, in *Mus. Brit.*).

One specimen, certainly ♂. Amongst the numerous allied Himalayan forms described by me in the last volume of this Magazine, *H. stevensi* is perhaps nearest related to *H. quadrisignatus* (op. cit. p. 105) which has very different elytral markings.

Hypebaeus suffusus, n. sp.

♀. Moderately elongate, slender, much widened posteriorly, the head and prothorax shining, the elytra dull, very finely pubescent; testaceous, the head at the base, the antennae in their outer half, a divided median vitta on the prothorax and a triangular patch on each side of it (these markings confluent in front), the elytra (an outwardly-widened transverse mark on each side below the base and a common triangular mark at the tip excepted), the under surface in great part, and the posterior femora in their basal half, piceous or black; the head and prothorax almost smooth, the elytra excessively minutely, closely punctate. Head (with eyes) about as wide as the prothorax; antennae

slender, rather long. Prothorax transverse, rounded at the sides. Elytra wider than the prothorax, arcuately dilated posteriorly. Legs very slender; posterior tibiae bowed towards the apex, simple at tip.

Length 2 mm.

Hab. Siqni Gad, Garhwal, alt. 4000 ft. (*H. G. C.*: vi.1920).

One specimen. Smaller and more slender than *H. stevensi*, the head testaceous in front; the prothorax fusco-trinaculate; the elytra duller, with less conspicuous testaceous markings, the triangular spot apical; the legs and antennae very slender and in great part testaceous. *H. albocaudatus* is another allied form.

Hypebaeus flexuosus, n. sp.

♂. Moderately elongate, slender, very finely pubescent, shining; testaceous, the basal half of the head, joints 5-11 of the antennae, abdomen, and metasternum piceous or black; the elytra greenish on the disc and at the sides posteriorly, leaving a sinuate, testaceous marginal stripe, which extends forward around the humeri, inward below the base, and reaches the suture at the tip, the apices with an indication of a triangular pallid spot; the head and prothorax and tip of the elytra almost smooth, the rest of the last-named closely, conspicuously punctured. Head (with eyes) about as wide as the prothorax; antennae long, slender, tapering towards the tip, the intermediate joints triangular. Prothorax transverse, rounded at the sides. Elytra moderately long, wider than the prothorax, parallel at the base, explanate from a little before the middle to near the apex, the dilated portion separated from the rest by a rather deep longitudinal groove, which is bordered within by a short carina, the apices simple. Legs long, slender; anterior tarsi 5-jointed, simple; posterior tibiae bowed towards the tip.

Length 2 mm.

Hab. W. Bhatkot, in Kumaon, alt. 4000 ft. (*H. G. C.*: v.1920).

One specimen, undoubtedly ♂, the simple apices of the elytra notwithstanding. The ♂-development is here transferred from the tip to the outer margin. *H. spinicornis* and *H. clavatus* also want the apical excavation. The flexuous elytral markings resemble those of a *Phyllostreta*. *H. sulcicauda* is perhaps the nearest ally of *H. flexuosus*.

Hypebaeus lenis, n. sp.

♂. Elongate, narrow, slender, shining, very finely pubescent; testaceous, the head (epistoma excepted), the elytra with the basal margin and a common transverse patch just before the tip, and the under surface in part, black or piceous, the intermediate joints of the antennae slightly infusate; the upper surface extremely finely punctulate. Head (with the eyes) slightly wider than

the prothorax, broadly hollowed in the middle anteriorly; antennae long, slender. Prothorax small, transverse, rounded at the sides. Elytra long, wider than the head, parallel at the base, slightly widened posteriorly; transversely excavate and feebly plicate before the apex, the apical margin reflexed and subtruncate. Legs very slender; anterior tarsi simple; posterior tibiae feebly curved.

Length $1\frac{1}{2}$ mm.

Hab. Siuni Gad, Garhwal, U.P., alt. 4000 ft. (*H. G. C.*: vi.1920).

One male, found on *Machilus*-blossom. A very slender, minute, narrow, pallid insect, with the head (except in front) and the basal margin and apex of the elytra infuscate or black, the apical excavation transverse and simply plicate within. Near *H. lamellatus* and *spinicornis* Champ.

Hypebaeus diversipennis.

? *Attalus (Indiattalus) diversipennis* Pic, Mélanges exot.-ent. xiv, p. 12 (♂ ♀) (1915).

♂. Narrow, slightly widened posteriorly, finely pubescent, shining; black, the antennal joints 1-4, prothorax, anterior femora in part, tarsi, and apices of the tibiae testaceous, the elytra with a common, large, transverse, whitish patch just before the tip; the head and prothorax almost smooth, the elytra very minutely punctured. Antennae long, slender. Elytra with a common, deep, transverse, subtriangular excavation at the apex, and with a long, erect, slender, dentiform process arising from each sutural margin within the cavity. Anterior tarsi simple, 5-jointed. Posterior tibiae almost straight to near the tip and then bowed inward, the apex unarmed.

♀. Elytra wholly black, much widened posteriorly; antennae a little shorter and paler; posterior tibiae curved, spurred at the tip.

Length $2\frac{1}{4}$ - $2\frac{1}{2}$ mm.

Hab. Himalaya (*types of Pic*), Gopaldhara, Darjeeling, alt. 3400-4720 ft. (*H. Stevens*: 23.x.1914, l.v.1918).

A ♂ and ♀ recently presented to the British Museum are provisionally referred to *A. diversipennis* Pic; they are smaller than the types (length 3 mm.), and apparently have blacker femora and tibiae, to judge from the description. The simple 5-jointed anterior tarsi of the ♂ separates the specimen of that sex before me from *Attalus*. This is one of the Indian Malachiids mentioned on p. 215 (*antea*) as not represented in the collections under examination.

MALACHIUS F.

Malachius sikkimensis Pic.

A ♂ of the insect described by me under this name last year (Ent. Mo. Mag. 1921, p. 145) has now been received from Ranikhet. The ♀ only was known.

♂. Antennae very long, joints 5-11 strongly pectinate, 4 broad, triangular, 5 produced into a stout, blunt tooth within; elytra subparallel, the apices produced beyond the abruptly deflexed, transversely excavate terminal portion, and furnished with a long, curved, testaceous appendage near the sutural angle; posterior femora curved, compressed; posterior tibiae sinuately curved.

Horsell.

June 1922.

. During the course of publication of my account of the Indian Dasytids, *antea* pp. 126-131 (issued on June 1st), 145-151 (issued July 1st), various new species of *Dasytes* from India, etc., have been diagnosed by Pic (Bull. Soc. Ent. Fr. 1922, No. 11, pp. 155, 156, Séance du 14 juin). This paper, M. Joannis informs me, was published on July 22nd.—G. C. C.

SOME OBSERVATIONS ON THE GENUS *BOMBUS*, etc., IN WALES.

BY C. L. WALTON, M.Sc.

(Adviser in Agricultural Zoology, University College, Bangor.)

During the period 1913-16, and again from 1919 to 1921, I had a wide experience of the counties of West and North Wales, and thus had ample opportunity of observing the havoc wrought by "Isle of Wight" (Acarine) disease among the Hive Bees of these areas. Also, through F. W. L. Sladen's book, I became interested in the Humble-Bees, their distribution, work, etc. I noted whole districts depleted or cleared of Hive Bees, and wondered whether the absence of pollinators would be felt in any way by farmer, gardener, or fruit-grower. I have not, so far, been able to satisfy myself that such has been the case, and believe that the work is effectually performed by the Wild Bees. During July and August 1919, I began to make notes on the flowers worked by the various Bombi to be met with (chiefly during a three-week holiday period in Mid-Wales). Such notes were continued subsequently with a view to obtaining some data as to the work of the various species of Humble-Bees to be found in West and North Wales. I wished to bring out, if possible, any differences that might exist in the type of flowers visited by the various species throughout the season, and to form some idea as to their value to Agriculture and Horticulture; or to prove, on the other

hand, whether any were mere weed visitors. Incidentally, also, some idea has been gained as to the species present in West and North Wales, and their relative abundance.

In compiling these notes no special attention was paid to any particular type of cultivation, etc., notes being made wherever and whenever opportunity offered, whether in field, garden, or on hillside or woodland, so as to try to get as complete a view as possible of the total activities of the species. It must be mentioned, however, that the mountains were less worked than the lowlands and foothills. Records included flower visits by *Apis mellifica*, *Anthophora pilipes*, and a few by various *Psithyri* (recorded thus and not specifically). Records of other *Apidae* or of *Colletidae* and *Andrenidae* were not made owing partly to lack of time to extend the scope, but chiefly owing to lack of knowledge of the species; although numbers of these are undoubtedly of importance as pollinators of fruit, etc.

The data were mostly obtained from the following localities:— Crosswood, Cardiganshire, a few; Aberystwyth district (per Mr. T. A. Stephenson); Aberdovey, a few (for which I am indebted to Mr. C. H. Mortimer); Aberhosan, near Machynlleth; the four North Wales counties, from Pwllheli to near Chester, with a preponderance from the vicinity of Bangor and Bethesda; about Ludlow (Salop) and Leominster (Herefordshire), a few; the vicinity of Liverpool (Altcar, Formby, etc.), a few; North Lancashire (Ulverstone, Barrow, and the Islands of Roa, Piel, and Foulney), a few records. The majority of records, however, relate to West and North Wales; others are chiefly in the nature of controls and agree with the Welsh records in every way. The records contained in Knuth's "Handbook of Flower Pollination" and other literature have been consulted, but the data found are not incorporated in this account.

Records of queens, workers, and males visiting flowers were included under the one heading, although the earlier records were, of course, those of queens, while any males recorded chiefly came under July–September.

It should be noted that very considerable variations in size occur among all the castes of the various species; Graenicher, for instance, records variation between 9 and 17 mm. in body-length and from 5–11 mm. in tongue-length in the American species, *B. pennsylvanicus* (see Bull. Wisconsin Nat. Hist. Soc. vol. viii, no. 4, 1910). Such differences will be reflected in corresponding variability in the flowers visited in some instances.

The following table is based on that given by Knuth (p. 160) with some additions and modifications from measurements made by myself, Mason (Journ. S. E. Agric. Coll., Wye, 1907, pp. 178-180), and others:—

Length of Tongue in Bombus, showing variation.

| | | | |
|------------------------------------|-----------|----|-------------------------------------|
| 1. <i>B. terrestris</i> | 7 - 9 mm. | .. | 9 -11 mm. |
| 2. <i>B. lapidarius</i> | 9·5-14 „ | .. | 9·5-14 „ |
| 3. <i>B. pratorum</i> | 8 -12 „ | .. | 9 -14·5 „ |
| 4. <i>B. derhamellus</i> | 12 -13 „ | .. | 13 -14 „ |
| 5. <i>B. agrorum</i> | 12 -13 „ | .. | 13 -15 „ |
| 6. <i>B. hortorum</i> | 7 -16 „ | .. | 12 -21 „ |
| | | | (the higher figures are from Knuth) |
| 7. <i>Apis mellifica</i> | 6 mm. | | |

Within the areas examined the Bombi, *lapidarius*, *terrestris*, *lucorum*, *hortorum*, and *agrorum* are abundant, although Stephenson found *terrestris* scarce about Aberystwyth in 1915-16. *B. pratorum* likewise was scarce at Aberystwyth, but proved to be fairly common in North Wales in 1920-21 and on the Lancashire Coast in 1919. *B. soroönsis* was scarce at Aberystwyth, 1915-16, and also occurred sparingly in Carnarvonshire, 1921. Mr. C. H. Mortimer reports it common but very local at Aberdovey in August, where also *B. jonellus* and *B. lapponicus* were both similarly reported from Aberdovey, but were rare in Carnarvon, etc., and also at Aberystwyth, 1915-16. *B. derhamellus* is local. *B. sylvorum* and *helferanus* were found by Stephenson to be fairly frequent about Aberystwyth, but the former is not reported from North Wales, while the latter is by no means common. Of *latreillellus* I have only a single record, near Bethesda on July 11th, 1920.

With regard to the interpretation of the mass of data collected, it is at once obvious that the species showing the widest ranges of activities are *terrestris*, *lucorum*, and *agrorum*. Of these the last-named shows the longest series of flowers visited and seasonal activities. I am not able to record it as a useful worker of fruit blossoms, with the exception of Raspberry. During the period May-August, however, it was the chief visitor of Red Clover, while Alsike, White Clover, and *Lotus corniculatus* were also included to a very considerable extent. It was also very abundant on *Centaurea nigra*, *Galeopsis*, *Teucrium*, *Prunella*, etc.

B. terrestris and *B. lucorum* are considered by Sladen ("The Humble-Bee") to be closely related, and in this connection it is interesting to compare their work, which shows close similarity in the kind of

flowers visited, periods of occurrence, etc. Both are active on Plum, Gooseberry, and Black Currant in April, Apple in May, Alsike and White Clover in July, while Charlock was also a favourite. *B. lapidarius* shows much more restricted range both as to season and flowers. It is not a visitor of fruit blossoms as it appears later in the season, and the workers do not become numerous until June–July. Clovers were visited to some extent, also *L. corniculatus*; but such flowers as *Prunella vulgaris*, *Rubus fruticosus*, *Centaurea nigra*, etc., were favourites. *B. hortorum* also commences late in the season, July being apparently its month of greatest activity. Clovers again receive some attention, but its favourite flower is undoubtedly the Foxglove, also Yellow Rattle and such garden flowers as *Tropaeolum* and *Antirrhinum*. The queens were fairly common on Broad Beans. *B. pratorum* is an early insect, but is little seen after July. It is a diligent visitor of Plum, Raspberry (which in my experience is its favourite), and to some extent Black Currant. *B. soröensis* is a rare mid-summer bee; but Mr. C. H. Mortimer records it as common in one small field at Aberdovey on *Centaurea nigra*, which flower has a great attraction for bees, as has also the Blackberry. Of *B. jonellus* and *lapponicus* little can be said; the former is a frequenter of *Vaccinacae* and *Ericacae*, while the latter especially visits *Erica vagans* (Mortimer) and Blackberry. *B. derhamellus* also visits Red and White Clover in July and Raspberry in May; *helferanus* has been recorded from Clovers, etc., but is a scarce species. *Andrena fulva* is very active in visiting Gooseberry, and to a lesser extent, Black Currant and Plums.

It must be remembered that there is this great difference between the work of Bombi and others and Hive Bees: these latter can commence work in large numbers as soon as weather permits, while the Wild Bees must start afresh and build up their colonies anew each season, their spring work being restricted to the queens alone.

Knuth does not record any *Bombus* as visiting Ivy, but several specimens were noted on flowers at Tregarth, near Bethesda, in early October 1921, and these were probably *B. lucorum*; but this could not be verified, as they were too high to be netted.

It is also curious that so few records were obtained from *Ulex*, although great masses were frequently examined during fine weather. Another flower from which no records were obtained was the Blackthorn (*Prunus spinosa*). A nest of *B. helferanus* (the only one I have taken as yet) was found near Llanfair P. G., Anglesey, close to the surface and

on the margin of a wet ditch, only a few inches from water, on September 24th, 1921.

A male and female of *B. lapidarius* were taken in copula on the ground in a grass field, near Bethesda, at 6.30 P.M. during August 1920.

The perforation of the corolla base of flowers by *B. terrestris* has not been noted in the districts examined, though it does not follow that it may not occur, as I have often seen it in other areas.

Some instances were noted of Bombi passing from one species of flower to another, although, as a rule, they adhere to one species at a time; examples were:—(1) *B. agrorum*, 24.iv.21, from *Viola canina* to *Geranium robertianum*; the same species, 29.viii.20, visited *Stachys germanica*, *Galeopsis* sp., Shirley Poppy, and back to *Galeopsis*; *B. lapidarius*, 24.viii.20, from *Centaurea nigra* to *Hieracium*; *B. hortorum*, July 1919, from Foxglove to *Prunella vulgaris*. Similar cases are quoted by J. H. Lovell ("The Flower and the Bee," 1920, p. 92).

Chittenden (Ann. Appl. Biol., May 1914, p. 42) calls attention to the importance of the numbers of visits paid by an individual insect, and states that a specimen of *B. terrestris* paid 48 visits to different flowers in the course of 10 minutes. I made notes on this subject on April 6th, 1921, in a plum orchard at Tregarth, Carnarvonshire.

| | | | | | | | | |
|----------------------|---------|----|---------|-----|--------|----|-----|----------|
| <i>B. pratorum</i> | visited | 10 | flowers | per | minute | on | the | average. |
| <i>B. terrestris</i> | " | 8 | " | " | " | " | " | " |
| <i>B. lucorum</i> | " | 10 | " | " | " | " | " | " |

One other point seems worthy of mention, the apparently irregular (not to say capricious) manner in which certain flowers are visited by Humble-Bees. For instance, *Fuchsia*, *Weigela*, and *Rhododendron* were practically deserted on June 2nd and 3rd, 1920, in the college grounds, while there were a few visitors to *Azalea* and on *Cotoneaster* only *Colletidae* were present. At the same time *Escallonia* swarmed with *B. terrestris*, *lucorum*, *lapidarius*, *agrorum*, and others. Near Bethesda, on August 29th, *B. terrestris*, *lucorum*, and *agrorum* were concentrated upon *Fuchsia*. No doubt a careful investigation as to the factors involved would clear up such cases; probably the maximum nectar flow was to be obtained from *Escallonia* at the moment.

Bangor.

August 1922.

Clytus arcuatus L. in *Notts and Lines*.—In reference to Mr. W. W. Fowler's remarks on recent captures of this beetle, it may be of interest to know that I caught a specimen in a timber-yard in Nottingham on July 13th, 1914. A Nottingham entomologist has since taken a specimen in Lincolnshire.—J. W. SAUNT, 53 Enfield Road, Stoke, Coventry: *October 18th, 1922*,

Acanthocinus aedilis Linn. in *Inverness-shire*.—I think it is worth while to record the capture of a specimen of *Acanthocinus aedilis* Linn., ♂, on September 10th, 1922, by my friend, R. H. Style, of Boxley House. He was walking from one shooting-butt to another at Phones, Newtonmore, Inverness-shire, N.B., and noticed this beetle on the arm of a loader. He was struck by the great length of the antennae, and sent the specimen down to me.—REV. JAMES R. HALE, Boxley Vicarage, Maidstone, Kent: *September 27th, 1922*.

Seitz's "*Macrolepidoptera of the World*."—The publication of this important work is now making rapid progress, about four parts of the "Exotics" being sent out per month by the present publisher, Mr. C. Kernen of Stuttgart, Germany. The Palaearctic section has been completed in 130 parts (each part contains eight pages of text and two coloured plates, or 16 pages and one plate, price 2s. per part); the Exotic section is estimated to include about 500 parts, 261 of which have been issued.—EDS.

Hymenoptera and Aphides.—In the August number of this Magazine Mr. Butler records that he observed on a rose-bush a small Hymenopteron stroking and tickling with its antennae the body of an Aphis, and in the October number Mr. Donisthorpe suggests that the Hymenopteron was endeavouring to "milk" the Aphis in the same manner as that employed by ants when obtaining "honey dew" from plant-lice. On several occasions I have watched Braconids of the genus *Aphidius* gently touching with their antennae the bodies of Aphides, sometimes continuing the process for several minutes, the attention being apparently unwelcome; but I have always considered the proceeding to be preparatory to oviposition by the Braconids. Indeed, I once saw the ovipositor plunged into the body of the host when the latter was raised in the manner described by Mr. Butler, but cannot recollect whether any lengthy preparatory "tickling" took place on that occasion. The late G. C. Bignell, in *Trans. Devon Association for Advancement of Science*, etc. 1901, xxxiii. p. 663, records as follows:—"The attack of the *Perilitus* on the ladybird is similar to that which the *Aphidius* adopts when she deposits her egg in the aphis 'green fly' that infests roses and other plants. *Aphidius*, after examining the aphis with her antennae and finding that it is not occupied by another, at once proceeds to business by thrusting the abdomen forward between her legs so as to project beyond the head; the abdomen and terebra are extended so as to reach about the middle of the ventral sutures of the aphis." I will not go so far as to say I think Mr. Donisthorpe's theory is wrong, although I have never noticed the Hymenopteron, when tapping or stroking the aphis, place its mouth-parts near enough to the body of the latter

to imbibe any "sweet secretion" which may have been exuding therefrom. However, I must admit I have not made any careful observations on this last point, as it has never struck me that the Braconid might be doing other than selecting a pabulum for her progeny. Again, it is quite possible that the *Aphidius* may combine the pleasures of the "flowing bowl" with the ordinary business of her life. Another Hymenopteron frequently bred from Aphides is *Allotria victrix* Westwood, which is said to be always a hyperparasite through an *Aphidius*. Of this species Bignell also writes (*l. c.*): "These small flies. I observed, were paying great attention to these infested *Aphides* by constantly applying their antennae to several parts of the body, and after ascertaining it was a fitting subject, commencing to deposit their eggs within it." Here again it will be noticed that the antennae are used in a similar manner.—G. T. LYLE, Briarfield, Shibden, near Halifax: *October 6th, 1922.*

Phasmid larvae from Mount Everest.—Orthoptera collected by Dr. T. G. Longstaff, of the Mount Everest Expedition, 1922, have been examined by me, but they all proved to be, unfortunately, in larval stage. They include only three small larvae of a short-horned grasshopper, *Hypernephia everesti* Uv., described by me from the last year's collection of the Expedition,* all taken at the Mount Everest Base Camp, Upper Rombuk, Tibet, 16,500 ft., May 1922, and also three larvae of a Phasmid from the same locality. As the latter larvae are very small (14 mm. long) their identification is impossible, but I am inclined to think that they belong to the genus *Menexenus*, which is represented by several species in the Himalaya (Sikkim, Silet), though none of them is known to occur as far north as Tibet, while the altitude at which these larvae have been taken beats all existing records of vertical distribution of *Phasmidae*—an essentially tropical family—by many thousands of feet.—B. P. UVAROV, Natural History Museum, London, S.W. 7: *Oct. 24th, 1922.*

Gymnetron squamicolle Reitt. in *Hants and Surrey.*—For some time past I have had several specimens of a *Gymnetron* set aside in my collection as *G. squamicolle* Reitt., but I have hesitated to record their capture till the determination had been established with certainty. This has now been verified, Dr. Marshall having lent me a recently acquired co-type of Reitter's species for comparison. *G. squamicolle* was added to the British list last year by Mr. Donisthorpe (*Irish Nat.*, Nov. 1921, p. 135, and *Proc. Ent. Soc. Lond.* 1921, p. lxxxvi), on the authority of a specimen captured by himself at Glencar, Co. Kerry, on June 6th, 1902. The five examples in my own collection were each taken singly, by sweeping herbage in marshy places, the first in June 1871 at Brockenhurst, three at Woking in 1875, 1876, and 1878 respectively, and one at Wisley, in 1912 or 1913.—G. C. CHAMPION, Horsell: *October 1922.*

Sympetrum fonscolombii and other Dragonflies near London in October.—When in London recently, Mr. Martin E. Mosely conducted me on October 1st to Ruislip reservoir. The day was warm but with much cloud, and such sunshine as we had consisted of gleams of rather short duration and never

* *Ann. & Mag. Nat. Hist.*, Ser. 9, vol. ix, p. 551, 1922.

brilliant. Our primary quest was supposed to be after Trichoptera, but excepting *Limnophilus affinis*, there seemed to be few about, and we were lapsing into easy-going indifference and small expectations, when Mosely netted and handed me a dragonfly which I at once recognised as *Sympetrum fonscolombii*, an unlooked-for capture. It soon became evident that the species was present in some numbers, and several examples of both sexes were secured, all of them in general condition, varying only in degree, some of them able to fly actively enough, others still in the limp state of almost recent emergence. Mr. Herbert Campion, to whom I sent early notice of the occurrence of *fonscolombii*, tells me that his brother, Mr. F. W. Campion, has since visited Ruislip five times between October 7th and 16th but has failed to find any trace whatever of the species. On the earlier visits the days were fairly bright although rather cold, but the last mentioned day was a favourable one for dragonflies and *S. striolatum* was still flying freely. Mr. Campion has also learned that Mr. Haines, as the result of an accident, had not been able to visit the pond at Morden, Dorset, during the summer, but that he had been there in September and had seen no *fonscolombii*, the day, however, having turned out badly.

This occurrence of *S. fonscolombii* is an interesting addition to what is known of it as a British breeding species. I am not aware that it has hitherto been taken in this country so late in the season, most of those recorded having been captured in June and July, the latest, I think, being about the end of August, and these fully mature specimens. Lucas, in 1912 ("Entomologist," p. 144), summarised the recorded occurrences prior to that date, he having found it rather commonly in the New Forest in 1911, and in the same magazine for 1913-14-15 there are further references to the species. Haines ("Entomologist," 1921, p. 197) records the reappearance of the insect in Dorset after a supposed absence since 1914. Although from the observations of Haines, the species would appear from time to time to be able to breed in the South of England for several consecutive years, yet the evidence at present available supports, on the whole, the view that *S. fonscolombii* is in the same category as some of our Lepidoptera, an alien immigrant unable permanently to establish itself as a British breeding species.

The life-cycle of *S. fonscolombii* does not appear to be known, but in the warmer countries in which it is really at home, it probably develops rapidly, producing more than one brood in the year. In a cold summer like the past one, however, the possibility of this October emergence being the result of an immigration earlier in the same season is excluded (if such a result is ever possible in our climate), the presumption rather being that the insects are descendants of others that were present at Ruislip in the warmer summer of 1921, and that their development has been unduly retarded by the absence of genial weather, with, it is feared, disastrous consequences to the local stock.

Dr. Ris has pointed out to me that analogy exists in colour-system and distribution (though probably not depending on affinity) between this species and the North American *Sympetrum corruptum*. In this connection it may be mentioned that Needham, who describes the nymph of *S. corruptum* in his "Aquatic Insects of New York State" (N.Y. State Mus. Bull., 68, p. 271, 1903), says that Professor Cockerell took this species in transformation at

Tempe, Arizona, March 30th, 1902, and also sent a ♂ with cast nymphal skin labelled Las Vegas, New Mex., Oct. 1901. In New York State, Needham says "this species flies only in late summer and autumn (in early spring I have twice found a specimen that I suppose had hibernated), but in the south-west it flies throughout the greater part of the season." May it not be suggested that the presence of the species in spring in New York State was due to immigration rather than hibernation?

At Ruislip I had also the pleasure of taking a fine ♂ of *Aeschna mixta*; one or two others were seen and a good many pairs of *Sympetrum striolatum* were present. *Ae. mixta* was, I believe, seen on September 30th between Chertsey and Weybridge. On October 2nd, at Burnham Beeches, two fine pairs of *Ae. cyanea* were taken at the ponds there, at which the only other dragonflies seen were *S. striolatum*. At a pond near Burnham Beeches Station in the afternoon of the same day *Ae. mixta* was again found, and the *Sympetrum* just named was very abundant.—KENNETH J. MORTON, 13 Blackford Road, Edinburgh: October 1922.

Obituary.

Thomas George Bishop, as announced in our October No. (*antea* p. 237), died at his residence, Dalmore, Helensburgh, after a short illness, on 26th August last. He was born at Carlisle on August 11th, 1846, but left there while still a boy for Glasgow, where, except for a short term of residence at Lewisham, near London, he spent his business life. It was probably during his boyish days in Glasgow that he first began to take an interest in natural history and particularly in Entomology, for there is still in existence a Journal compiled by him when only 14 years of age, in which, in addition to voluminous notes upon birds and birds' eggs, there is evidence that even at that early age his attention was turned towards the Coleoptera, of which in later years he became an enthusiastic collector and student.

While yet in his teens he appears to have become acquainted with the late Dr. David Sharp, who at that time was resident in Edinburgh, and the friendship then begun, founded as it was upon their mutual interest in Coleoptera, endured during their lifetime. In the autumn of 1864 they paid a joint visit to Rannoch, then almost *terra incognita* to the Coleopterist, and the result of that visit was chronicled in the "Entomologist's Annual" for 1865, pp. 41, 42, as the addition of four species to the British list, one of them, *Agathidium rhinoceros* Shp., being new to science. During this period Mr. Bishop also collected Coleoptera in the neighbourhood of Glasgow, and the writer can well remember the pleasure with which he related his early collecting experiences in such well-known Glasgow localities as Tolleross sand-pits, Possil Marsh, and Cadder Wilderness. A good deal of his Glasgow collecting was done along with the Rev. J. E. Somerville, who states that during their entomological excursions to Possil Marsh, Mr. Bishop was also much interested in the birds of the Marsh and had great skill in finding their nests. He was a member and for some time acted as Secretary of the Glasgow

Naturalists' Society before its union with the Natural History Society of Glasgow.

For many years after 1870 the increasing claims of business curtailed Mr. Bishop's opportunities for collecting, but, although debarred from active participation in the pursuit of Coleoptera, his interest in the group still remained keen, and he acquired at various times the British collections of the late Samuel Stevens, Alfred Beaumont, and George Guyon, as well as the foreign collection of Dr. Heath.

In later years more leisure enabled him, along with Dr. Sharp, to re-visit Rannoch, Nethy Bridge, and other famous northern collecting grounds. During this period some of his more important captures, usually made in the company of Dr. Sharp or his daughter, were *Bledius annae* Shp., *B. fuscipes* Rye, *B. terebrans* Schiödtte, *B. denticollis* Fauv., *Gabrius bishopi* Shp., *Crioccephalus rusticus* Dej., *Pachyta sexmaculata* L., and *Rabocerus bishopi* Shp.

Mr. Bishop became a member of the Glasgow Society in 1883, and although he was not a frequent attender he always took an interest in the affairs of that Society and on various occasions contributed to the meetings by sending for exhibition examples of his notable captures of Coleoptera.

Although he was a most successful collector of beetles Mr. Bishop hardly ever wrote on the subject: in fact, almost the only notes from his pen appear to be those on the occurrence of *Deleaster dichrous* at Lewisham and *Ocypus cyaneus* at Grantown-on-Spey, both published in this Magazine, the first in 1868 and the second in 1907! In many respects it was a pity he did not publish more, for he was a keen and accurate observer in the field and had a large store of information regarding the habits of his favourite group, particularly of the Northern species. A man of singular personal charm and generosity, he was always pleased, in spite of the cares of a great business, to share his knowledge with his fellow Coleopterists and to assist them in whatever way lay within his power. By his death and that of his old friend Dr. Sharp, who, by a pathetic coincidence, passed away only a day later, the little group of Entomologists who did so much in the middle of last century to direct attention to the richness of the Scottish coleopterous fauna has almost vanished.

Mr. Bishop's extensive collections of British and foreign Coleoptera were left to his grandson, Mr. T. G. Bishop, but the ultimate destination of the collections has not yet been decided.—A. FERGUSSON.

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