

LVIII.—*On some British Neuroptera*.

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IN the collection of Neuroptera in the Zoological Museum of the Cambridge University there are some British insects which deserve mention on account either of individual peculiarities or of their being unrecorded hitherto as natives of this country.

Tribe PLANIPENNES.

Family Hemerobiidæ.

Genus CHRYSOPA, Leach.

C. vittata, Wesmael.

A specimen of this insect has the third cubital cell of the fore wing normal on the right side; but on the left the partition vein receives two transverse nervures, the additional one being near the apex of the cell.

C. phyllochroma, Wesm.

Another example of the above arrangement of nervures is met with in both fore wings of an insect of this species.

Family Panorpidæ.

Genus PANORPA, L.

The structure of the last three segments of the body, especially of the last one, presents peculiarities which serve to distinguish the males of the several species of this genus.

At first sight the terminal segment seems to be merely an oval or pyriform forcipate mass with two appendices beneath; but upon a close examination it is found to be far more complicated. The segment proper is comparatively small, and is mitriform, the horns of the mitre being respectively dorsal and ventral. The dorsal horn carries near its end two minute appendices superiores (app. sup.); the ventral horn, in a like manner, supports two long appendices inferiores (app. inf.). The sides and base of the mitral cleft bear the enormous two-jointed appendices intermediae (app. interm.), which, together with the seventh and eighth segments, constitute the well-known forceps. Their basal joints are convex without and concave within, and enclose a considerable hollow space, in which lie the penis and its sheaths.

In the absence of other structures, the number of the denticulations on the lower edge of the tarsal claws is of use in determining the species of female specimens.

P. communis, L.

Lower edge of the tarsal claws with four long teeth before the tip. Wings usually with an apical and a median transverse blotch, and with numerous spots of a brownish-black colour.

♂. Abdomen:—

The lateral profile of the seventh segment (fig. 1) somewhat resembles that of an inverted gun-stock, its upper edge being oblique, and almost angulated near the base; its lower edge curved slightly, and the segment itself being expanded towards the apex; its posterior edge is convex. The eighth segment is very like the seventh. The dorsal extension of the ninth segment seems oblong, and has raised edges. At its abrupt apex are the triangular app. sup. (fig. 2). The app. interm. has a

Fig. 1.

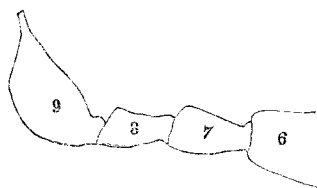


Fig. 2.

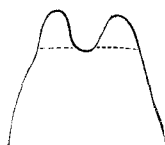
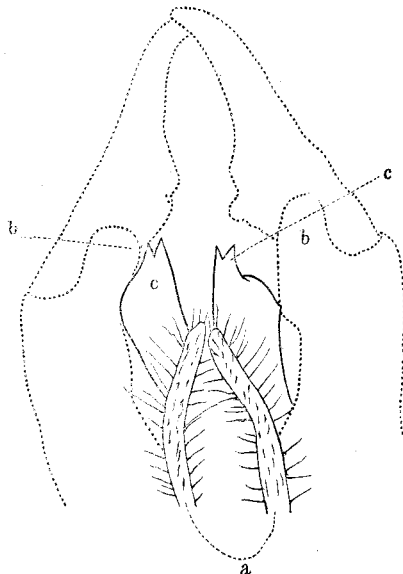


Fig. 3.



minute oblong projection (fig. 3 b) at the apex of the first joint, which is applied to the underside of the second joint. The second joint is flattened from above downwards, curved inwards at the tip, and bidentate within. The ventral extension of the segment seems somewhat triangular and truncate. The filiform app. inf. fall short of the tip of the first joint of the app. interm. (fig. 3 a). Projecting above them are the broad and flattened penis-sheaths, which are somewhat expanded just before their oblique apices, and which end in two short triangular points (fig. 3 c).

P. germanica, L.

Claws of the tarsi tridentate within. The wings are usually well spotted with black or grey brown.

♂. Abdomen:—

The seventh and eighth segments are very like those of *P. communis*. The dorsal extension of the ninth segment seems oblong; it is prolonged in advance of the app. sup. (fig. 4), which

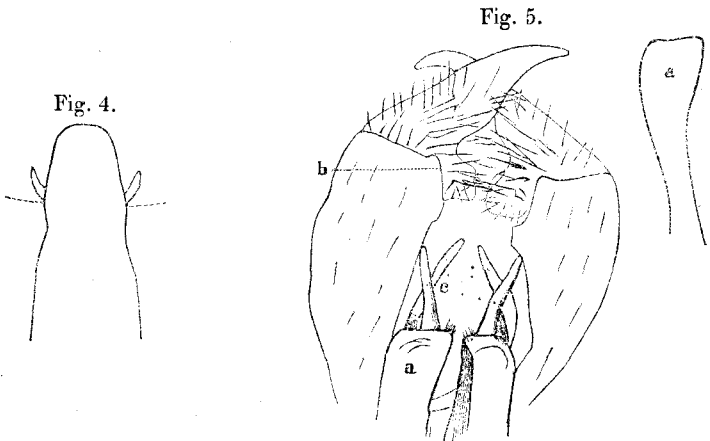


Fig. 5.

appear almost cylindrical from one point of view, and clavate from another. The basal joint of the app. int. has a minute, almost semicircular projection within, from the apical margin beneath (fig. 5 *b*). The second joint has one large tooth on the inner edge. The ventral extension of the segment seems subquadrate with rounded corners. The app. inf. (fig. 5 *a*) are flattened at either extremity, narrowed in the middle, and have a rounded impression near their tips. Above them are seen the acute linear divisions of the bifid penis-sheaths, which are twisted together in opposite directions (fig. 5 *c*). The penis is forked; its short and widely divergent divisions are each of them armed with two unequal hooks, the inner and shorter of which is curved upwards; the outer hook is at first directed upwards, and then suddenly curved backwards and inwards.

P. cognata, Rambur.

The wings have a median brownish blotch, and a few dots of the same colour on the veins. Expanse of wings 11 lines. Length of the body 6 lines.

♂. Abdomen:—

The last three segments, the tip of the sixth, and a hump at

the upper margin of the fifth segment testaceous. The seventh segment is something like an old-fashioned bonnet. The eighth segment is oblong. Figure 6 will give some idea of their outline as it appears from the side. The dorsal extension of the ninth segment seems

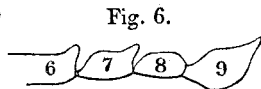


Fig. 6.

oblong. The app. sup. are obtuse and apparently cylindrical. The apical margin of the first joint of the app. interm. has only an obscure projection beneath. The second joint appeared to be toothless; but it is not well shown in the Cambridge specimen. The ventral extension of the segment seems triangular, and bears the obtuse filiform app. inf., which extend as far as the projection from the apical margin of the first joint of the app. interm. The divisions of the bifid penis-sheaths are linear, long, and subequal; they diverge at the base, and converge towards their tips in a vertical direction. The lower divisions reach just beyond the extremities of the app. inf.

A single specimen was associated with *P. germanica* in a collection of British insects presented some years ago to the University by the Cambridge Philosophical Society. Although no locality was assigned to it, I do not doubt that it is British; for the foreign Neuroptera were contained in a separate cabinet. Rambur appears not to have known the habitat of this species.

Tribe TRICHOPTERA.

Section INÆQUIPALPIDÆ.

Family Limnephilidæ.

Genus ANABOLIA, Leach.

A. nervosa, Curtis.

I captured a ♀ specimen near Cambridge in October 1864, in whose left fore wing the first two apical sectors become united at about the last quarter of their length, *i. e.* just before they reach the anastomosis. In both its hind wings the first apical sector bifurcates near its distal extremity. This specimen is not in the museum.

Family Sericostomidæ.

Genus SILO, Curtis.

S. fumipennis, M'Lachlan.

In Mr. Jenyn's collection of Cambridgeshire insects this species stood for *Polycentropus picicornis*, Steph. It is common on small streams near Cambridge.

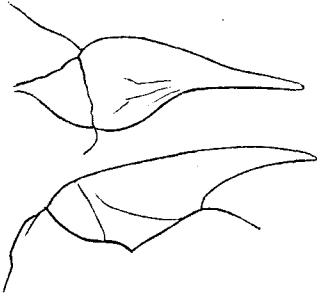
GENUS BRACHYCENTRUS, Curtis.

B. subnubilus, Curtis.

Description of the empty pupa-skin.—Mandibles 2-jointed, edentulous (fig. 7); under a high power, however, their inner edge seems very finely denticulated. The subulate anal

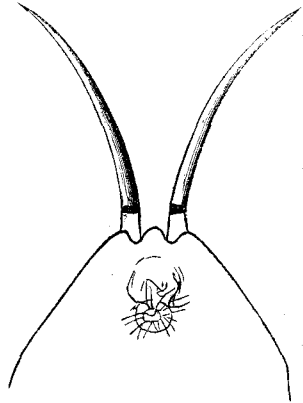
Fig. 7.

♀ (side).



♀ (beneath).

Fig. 8.



crotchets (fig. 8) are testaceous, with a broad whitish ring at the base, and are nearly as long as the last segment. A raised hairy tubercle in the middle of the back of the last segment precedes a deep excavation. The testaceous chitinous processes on the back of the abdomen, which are subservient to movements within the case, are disposed in two oval patches at the base of each of the segments between the third and the seventh inclusively (the points of these being directed backwards), also on the edges of two semicircular projections from the apical edge of the second segment, and, lastly, in a line near the tip of the fifth segment, with the points forwards.

Section *ÆQUIPALPIDÆ*.

Family Rhyacophilidæ.

In April 1865 I found a small *Trichopteron* on the river above Cambridge, which did not conform to any described genus. It was pronounced by Dr. Hagen to be the *Silo minutus* of Kolenati. Unfortunately it was too late to insert a description of it in Mr. M'Lachlan's 'Monograph of the British Trichoptera' (*q. v.* page 166).

As it resembles a *Berea*, and is closely related to that genus, the name *Bereodes* may be not inappropriately assigned to it.

BEREODES, nov. gen.

The second joint of the labial palpi is equal to the third in length; the first joint is minute. The second joint of the maxillary palpi is shorter than the fifth, equal to the fourth, and longer than the third; the first joint is minute. Ocelli absent. The first two joints of the antennæ are very much stouter and longer than the others. Spurs 2.2.4. There is no sexual difference in the neuration of the wings, excepting that the short nervure at the base of the fore wings behind the cubitus is greatly thickened in the male, and that the costule (?) in the hind wing is furcate in the ♀ (fig. 9), and simple in the ♂ (fig. 10). The fore wings are very hairy, and have long fringes. The neuration is indistinct. The transverse veins are alike in both sexes. Fig. 10 represents the neuration of the ♂.

Fig. 9 (♀).

Fig. 10 (♂).



according to Mr. M'Lachlan. Any discrepancies that can be detected between the two figures, other than those I have already mentioned as dependent on the sex, are due to a difference of opinion respecting the neuration. The lower edge of the last abdominal segment in the ♀ is produced upwards and turned in. The appendices of the ♂ are well developed, but are not easily seen, on account of the last segment being clothed with long hair on the sides. In both sexes there is a tubercle on the last ventral plate, clothed with erect hairs.

B. minutus, Kolenati.

Length 2-2½ lines. Antennæ and maxillary palpi sooty; the first two joints of the one and the first four joints of the other are clothed with spreading hairs. Labial palpi testaceous. Wings fuscous, the anterior with suberect black hairs on the veins near the inner margin. Legs testaceous, with fuscous joinings. Hairs on the tubercle of the last ventral plate fulvo-griseous. The app. inf. of the ♀ are obtusely triangular; in the ♂ the app. inf. are short, very like spear-points, and are testaceous. The app. sup. are difficult to describe: they are filiform, except at the base, which is greatly expanded in the form of a

triangle; they seem to consist of one joint only, and are testaceous. The filiform part is curled in a peculiar manner, its general direction being first upwards and then backwards and inwards towards the tip of the penis. Its middle portion being hidden more or less by the long hair of the segment, the extremities are at first liable to be mistaken for two independent organs; and the shape of the upper would be likened to an italic *S*. The above-mentioned appendices are glabrous; but the app.interm. are clothed with short hairs. The whitish app.interm. are obovato-lanceolate and curved inwards at the tips; they are furnished with a slender divergent process near the base, and are applied to the edge of the segment during life. Seen from the side in this position, they appear to be obliquely truncate. Penis bifid, strongly deflected in dried specimens; the triangular points of its upper sheaths project from beneath its oblong upper cover. Its long and subulate lower sheaths are about equal in length to the penis, and are curved downwards at the tips. The dorsal extension of the last segment has a raised dot on each side, and two raised longitudinal lines in the middle*.

This insect is common above Cambridge, from the end of April to the end of May. I have found it also on the Kennet and Avon Canal, near Reading.

Tribe SUBULICORNES.

Family Ephemeridæ.

Genus CLOEOPSIS, mihi.

C. diptera, L.

In the museum, together with the ordinary form of this insect, are some specimens whose costal area is traversed towards the apex by numerous irregular veins, which here and there are united so as to form double cells. An examination of living specimens is required before their identity can be disproved; but as, even in the dry examples, there appear to be some other slight deviations from the type, this is possibly a distinct species.

* Dr. Hagen considers these to be the app. sup., and the app. sup. of this paper to be the penis-sheaths. In figs. 9 and 10 the wings are represented with the costal fold not flattened out; and the pouch-like fold near the short nervure at the base of the fore wing (δ) is not given in fig. 10. This should be borne in mind if at any time they happen to be compared with the figure in a monograph of *Berea* and its allies which, I am told, Dr. Hagen is going to bring out. The usual tubercles on the head are largely developed.

Bibliography of the Neuropterida

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