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IV. *Notes on Hydroptilidæ belonging to the European Fauna, with descriptions of new species.* By KENNETH J. MORTON, F.E.S.

[Read December 7th, 1892.]

PLATES V. & VI.

THE discovery of a species of *Oxyethira* new to the British Islands, and the enquiries made in connection with its determination, have resulted in bringing before me a considerable mass of *Hydroptilidæ*, including species of much interest, several of which are quite new. Noteworthy amongst the material referred to is a large consignment, from the collection of Mr. McLachlan, of undetermined *Hydroptilidæ*, in which forms apparently belonging to the genus *Hydroptila* are most numerous, and comprise at least three which are undescribed. I now describe these, together with the British *Oxyethira* above alluded to, which has proved to be new; and I also take the opportunity to describe another new *Oxyethira*, received from Dr. John Sahlberg, of Helsingfors. A few notes are added concerning points of interest in connection with previously-known species.

In these notes I have endeavoured to follow the terminology used by Mr. McLachlan in describing the appendages of the male; but in such minute and densely hairy insects, the points of origin and true nature of these parts are not always easy to trace. I think, however, that with the aid of the accompanying figures, drawn under the microscope with the camera lucida, there should be no difficulty in understanding what is intended.

Genus HYDROPTILA, *Dalman*.

Hydroptila stellifera, n. sp.

Antennæ about 34-jointed in the male, fuscous; clothing of vertex yellowish white, the hairs on the face darker; palpi

yellowish; legs dingy testaceous, with greyish pubescence. Anterior wings brownish, with yellowish white markings arranged in what appears to be the usual manner in the genus, *viz.*, a slight marking near the base, an oblique fascia about the middle intersecting the fringes of both margins, an ill-defined patch beyond the middle; nearer the apex is another fascia, often vague and little more than a strong marking on the costa and one on the inner margin; the apex itself is also usually pale; costal fringes nearly black, save where intersected by the whitish markings; inner margin with dark grey fringes. Posterior wings dark grey and iridescent, with concolorous fringes on the inner margin; costal fringes darker. In the male there is an elongate dorsal plate, with incurved edges; this plate narrows towards the apex, which is slightly upturned when viewed from the side. Penis long and slender, with downturned point. Lower penis-cover with dilated angulated apex; from the angles radiate short hairs or spines, and from the outer margin arises a strong down-turned blackened hook. The inferior appendages (?) are short, rounded and somewhat incurved. Ventral processes long, narrow and contiguous, with blackish tips. Lobe of ante-penultimate ventral segment long. In the female there is a rather long and slender ovipositor. Expanse of male about 6 mm.; female slightly larger.

Italy (Apennino Pistoiese, 27th July and 5th August), 5 males and 5 females (*Eaton*).

In almost all respects different from any of the known European species.

PLATE V., fig. 1, apex of abdomen of male, from beneath; 2, same, from side.

Hydroptila fortunata, n. sp.

Antennæ about 35-jointed in the male, inclining to fuscous in colour; vertex clothed with whitish hairs; palpi yellowish; legs yellowish testaceous. Anterior wings brownish, darker on the costa; markings white, arranged pretty much in the usual way; apex margined with yellowish white; fringes of inner margin dark silky grey. Posterior wings greyish, darker at tip, with concolorous fringes; iridescent. In the male there is a large, semi-transparent, dorsal plate, with usually much incurved lateral margins (but apparently varying in this respect in the dry insect); in certain aspects its outer margin appears excised. The penis is slender, with a very slight dilatation before the apex, which terminates in a sharp twisted hook (like the last turn of a cork-screw). There is probably a single spiral sheath. Of the lower penis-cover

there is usually visible the down-turned black apex. Inferior appendages, seen from the side, are large, elongate, obtuse, almost semitransparent at apex, which is slightly curved inwards and downwards; very hairy externally and their upper and lower margins regularly beset with short hairs. There are also two subparallel ventral processes, between which the black apex of the lower penis-cover usually lies. Ventral lobe large and long, minutely serrate on its margins. Expanse about 6 mm.

Grand Canary, 9th and 11th December, 5 males (*Rev. A. E. Eaton*). Several mutilated specimens, including a female, from the same locality, doubtless belong to the same species. Thirteen examples from Teneriffe, 15th Dec. and 25th Dec., also appear to be identical, and I can detect no appreciable differences in a single male from Madeira, 20th November; all collected by Eaton.

A very distinct species, easily to be distinguished on account of the large inferior appendages and the apex of the penis. The broad inferior appendages are sometimes turned in, and lying close to the dorsal plate conceal the inner parts. The density of the hair is also a difficulty, on account of which figure 2 is not quite satisfactory.

PLATE V., fig. 1, apex of abdomen of male, from beneath; 2, from side (in outline); 3, penis; 4, apex of ditto (more enlarged).

Hydroptila uncinata, n. sp.

Antennæ about 31-jointed in the male (mutilated?), fuscous. Vertex densely clothed with white hairs, hairs in front darker. Palpi yellowish white. Legs dingy testaceous. Anterior wings dark brown or blackish, with white markings arranged in the usual way. Posterior wings greyish, iridescent, with concolorous fringes on the inner margin; costal fringes darker. In the male there is a large semitransparent dorsal plate, with incurved edges, slightly produced at apex; outer angles bearing a long down-turned incurved hook. The penis is slender, scarcely dilated towards the apex, where it is twisted. Lower penis-cover bearing some analogy to that of *H. fortunata*, but apparently broader at apex. Inferior appendages large and elongate, their apices obtuse, semitransparent and concave, outwardly hairy, and their margins regularly beset with short hairs. Ventral processes as in *H. fortunata*. Ventral lobe large and long. Expanse about $5\frac{1}{2}$ mm.

Italy (Apennino Pistoiese, 26th July (2), and 5th August (1)), three males (*Eaton*).

A species with a certain amount of resemblance to *H. fortunata*, but amply distinct therefrom, on account of the hooks on the dorsal plate.

PLATE V., fig. 1, apex of abdomen of male, from beneath; fig. 2, same, from side.

Hydroptila Maclachlani, Klap.—This very distinct species was described by Klapálek in Sitz. Böhm. Ges., 1890. It proves to have a wide distribution, and examples from the following localities are now before me:—

England (Charmouth, Dorset, June 18th, *Rev. A. E. Eaton*); Scotland (Carlisle, August, very common, *Morton*); Pyrenees (Léz and Laruns, 14th and 24th July, *Eaton*); Portugal (Silves, 17th May; Cintra, 31st May, *Eaton*, many examples); and evidently the same species from Madeira (one male, 21st Nov., *Eaton*).

As Klapálek's figures may not be generally accessible, I give, on Plate VI., a figure of the apex of abdomen from beneath (fig. 1); also one of the penis, which is peculiar and has not been previously figured.

Note.—I have denuded and examined the heads of many examples of the foregoing four species, with the view of satisfying myself regarding the presence or absence of the large valve-like lobes given by Mr. McLachlan as a leading character of the genus *Hydroptila*. That these lobes do not exist at all in *H. Maclachlani* is, I think, certain; and if they are present in any of the other species, they almost certainly do not reach the enormous proportions to which they are developed in such species as *H. occulta* and *H. femoralis*. Without doubt good characters exist for generic subdivision, but as one or more of the previously described species are doubtful in respect of the elevated lobes, steps in this direction are not yet safe. Each species should be carefully studied on the point from fresh material, when the chance occurs.

The neurulation of the four species may be said to agree both among themselves and with Mr. McLachlan's figure.

GENUS STACTOBIA, *McLach.*

Stactobia atra McL.—Mr. McLachlan has kindly communicated the figure of the neurulation of this species, referred to at page 72 of his 'First Additional Supple-

ment.' As he has there indicated, *S. atra*, being so much larger than the other described species, this figure gives a better idea of the neurulation of the genus than his earlier one.

Two insects from Madeira (*Eaton*) appear to belong here. The anal parts are much concealed in the hairs, and the figures given are from an example entirely denuded and mounted in balsam. The true form of the part between the pieces which are produced into a spine at the apex, is a little uncertain.

PLATE VI., fig. 3, neurulation of anterior wing (from Mr. McLachlan's drawing); fig. 1, apex of abdomen, from beneath fig. 2, apex of abdomen, latero-ventral view.

Genus OXYETHIRA, *Eaton*.

Oxyethira costalis, Curt.—It appears to me that the lower margin of the inferior appendages in this species does not run continuously to the incurved apex, but is angulated before the apex, as shown in Plate VI., fig. 1. There is a pair of down-turned hooks lying above the ventral plate, one of which is shown in fig. 2.

Oxyethira ecornuta, n. sp.

Antennæ 33-jointed in the male (mutilated?), fuscous; clothing of head whitish yellow; palpi fuscous; legs dingy testaceous. Anterior wings brown, with whitish markings and darker fringes. The ventral plate in the male is large and usually much produced, the excision in its outer margin being shallow but extensive; the lateral lobes of the plate when viewed directly from beneath are small, but well marked, inturned and blackened. The inferior appendages are very short and scarcely incurved. Above the ventral plate is a pair of black much downturned hooks. The penis is not exerted in the examples before me; its apex, as far as visible, seems to be more decidedly dilated than in *O. costalis*. Ventral lobe apparently as in that species. Expanse of male about 5 mm.

Three males and one female from Teisko, Finland, received from Dr. John Sahlberg.

A species very closely allied to *O. costalis*, Curt., yet sufficiently distinct. It differs in the form of the ventral plate, and of the hooks above the plate; also and especially in the absence of the black inturned tips which mark the inferior appendages of *O. costalis*. From

O. distinctella it differs in the absence of the bifid superior appendages.

PLATE VI., fig. 1, apex of abdomen, from beneath; 2, same, in front; 3, same, from side; 4, hook; 5, apex of penis.

Oxyethira distinctella, McLach.—The types of the species were very kindly forwarded for examination, by Dr. John Sahlberg, of the Helsingfors Museum. Although closely allied to the foregoing species, it is very distinct, on account of what I have called above the bifid superior appendages, which are shown in figure, Plate V.

Oxyethira unidentata, McLach.—A unique species, belonging to the group of *O. costalis* on account of its having distinct inferior appendages. Mr. McLachlan was good enough to favour me with a sight of the types and I here give two figures, as none has been published.

PLATE V., fig. 1, apex of abdomen from beneath (the closure of the anal cavity above is not shown); fig. 2, same, from side.

The species which follow seem to differ from the foregoing in wanting definite inferior appendages. They are characterized by having black spines on the lower angle of the dorsal section of the last segment.

Oxyethira spinosella. McLach.—I am also indebted to Mr. McLachlan for having let me see the types of this species, and I give a few figures taken therefrom.

PLATE V., fig. 1, apex of abdomen from side, obliquely; 2, same, from above; 3, ventral plate and penis; 4, 5 and 6, various aspects of penis.

Oxyethira falcata, n. sp.

Antennæ 37-jointed in the male, usually fuscous (apparently with pallid tip), but sometimes paler; clothing of head yellowish white on vertex, black in front; legs dingy testaceous, the femora sometimes fuscous, and the tarsi indistinctly annulated with darker. Anterior wings brown, with white or yellowish markings; fringes very dark, save where the paler markings intersect them. In the male the last dorsal segment has the lower angles inturned, and these angles bear two (or three) short blackish spines. The penis varies much in appearance according to the aspect from which it is viewed; it is dilated asymmetrically, one side being produced into a kind of tusk, the margin of the other side being angulated. The inner anal parts are complicated, but a pair of ear-shaped appendages are usually visible, if a strong reflected

light is thrown into the cavity. The ventral plate is rather deeply excised with well-marked lateral lobes; from between the lobes springs a broad process which almost fills up the space between the lobes, and which tapers slightly towards the pointed apex; anteriorly, the margins of this process appear to be narrowly folded and are blackish along with the apex. Expanse of male about 5 mm., female about 7 mm.

Scotland (Redmyre Loch, near Carluke, about 600 ft., not rare, *Morton*); England (near Woodbury, and Ottery St. Mary, Devon, in July, *Eaton*); Ireland (Knappagh Laogh and Cushinsheen Laogh, near Westport, *J. J. King*).

A species abundantly distinct, on account of the process arising from between the lateral lobes of the ventral plate. It appears to belong to the same group as the Madeiran *O. spinosella*, McLach., but differs in the peculiarity of the ventral plate alluded to; the spines, too, are different, the innermost spine in *O. spinosella* standing apart from the others, and being carried on an obtuse process. The penis in the two species is on the same plan.

PLATE V., fig. 1, apex of abdomen in front; 2, ventral plate; 3, outline of apex of abdomen from side continued beneath, to show ventral lobe; 4, 5, 6 and 7, aspects of penis.

Oxyethira Frici, Klap. — This species was also described in Sitz. Böhm. Ges., 1890. At one time I considered the above-described British insect might belong to this species, but Professor Klapálek, who has kindly presented specimens of his species to me, points out the following differences:—The spines in the British insect are much stouter and shorter than in *O. Frici*, in which there are on the left side 4, and on the right 3 spines. In *O. Frici* the penis is dilated quite symmetrically, but the teeth are a little asymmetrical, being nearer to the apex on the one side than on the other. The form of the ventral plate in *O. Frici* is also peculiar, and there is no process between its lateral lobes.

A reproduction of Klapálek's figures is here given.

PLATE VI., fig. 1, apex of abdomen from beneath; 2, same, from side; 3, penis, from above.

EXPLANATION OF PLATES V. & VI.

PLATE V.

Hydroptila stellifera.—Fig. 1, apex of abdomen of male from beneath ; 2, do., from side.

H. fortunata.—Fig. 1, apex of abdomen of male from beneath ; 2, do., from side (in outline) ; 3, penis ; 4, apex of penis (more enlarged).

H. uncinata.—Fig. 1, apex of abdomen of male from beneath ; 2, do., from side.

Oxyethira distinctella.—Superior appendages.

O. unidentata.—Fig. 1, apex of abdomen of male from beneath ; 2, do., from side.

O. spinosella.—Fig. 1, apex of abdomen of male from side, obliquely ; 2, do., from above ; 3, ventral plate and penis ; 4, 5 and 6, various aspects of penis.

O. falcata.—Fig. 1, apex of abdomen of male, in front (fig. inverted) ; 2, ventral plate ; 3, outline of apex of abdomen from side, continued beneath to show ventral lobe ; 4, 5, 6 and 7, aspects of penis.

PLATE VI.

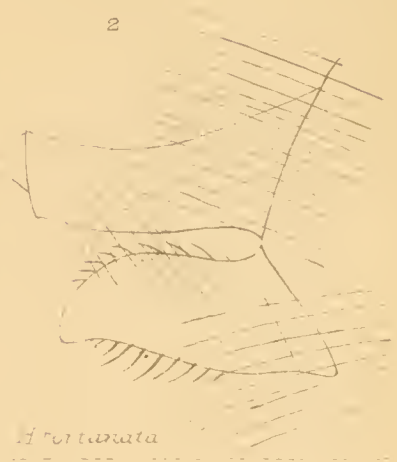
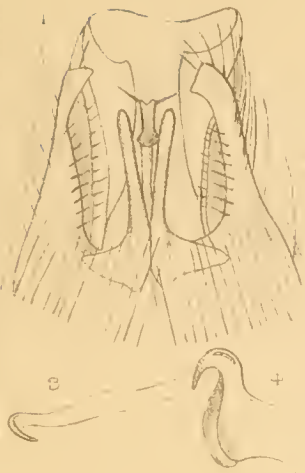
Hydroptila Maclachlani.—Fig. 1, apex of abdomen of male from beneath ; 2, penis.

Stactobia atra.—Fig. 1, apex of abdomen of male from beneath ; 2, do., latero-ventral view ; (a) obtuse process, (b) pieces produced into spine at apex, (c) downturned lobes, (d) inferior appendages (?) (cf. McLach., Mon. Rev., 1st Additional Supplement, p. 72) ; 3, neuration of anterior wing.

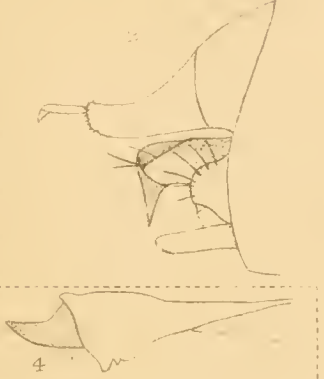
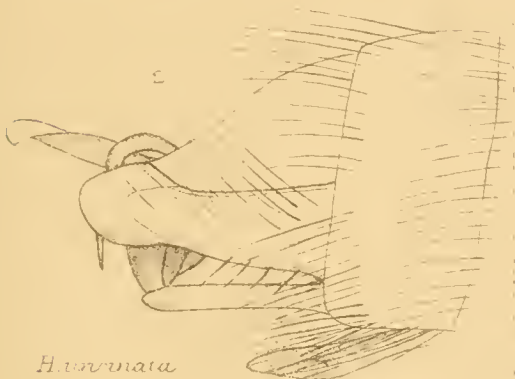
Oxyethira costalis.—Fig. 1, apex of abdomen of male from beneath ; 2, hook above ventral plate.

O. ecornuta.—Fig. 1, apex of abdomen of male from beneath ; 2, do., in front ; 3, do., from side ; 4, hook above ventral plate ; 5, apex of penis.

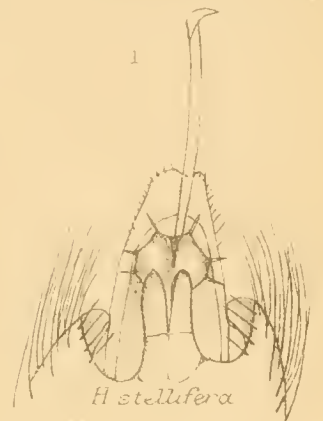
O. Frici.—Fig. 1, apex of abdomen of male from beneath ; 2, same from side ; 3, penis from above.



H. uninata



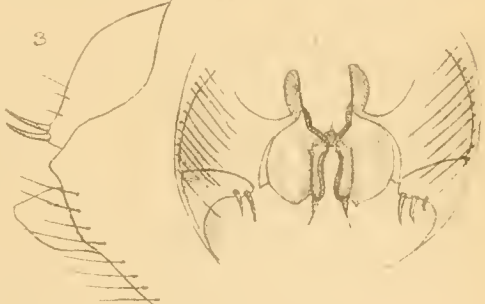
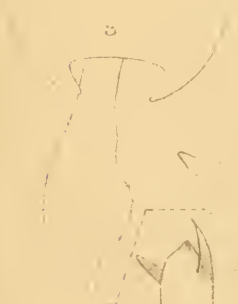
H. uninata



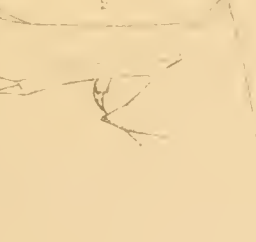
H. stellifera



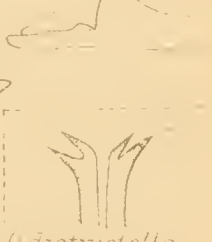
O. spinosella



O. undentata



O. undentata



O. distinctella

K.J.M. del.

West Newman lith.



O. costata



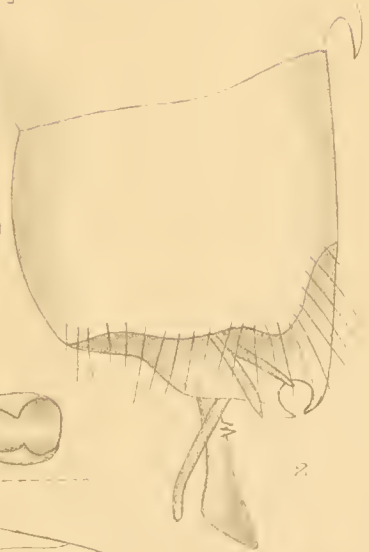
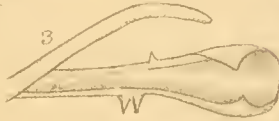
H. MacLachlani



O. acornuta



O. Friesi



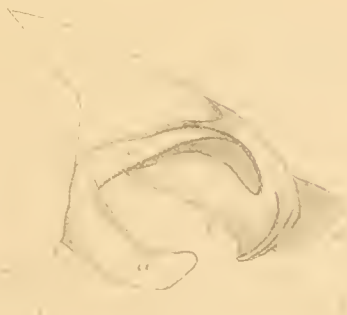
2



3



S. alba



K.J. M. del.

West Newton, Pa.