

THE
TRANSACTIONS
OF THE
Royal
ENTOMOLOGICAL SOCIETY
OF
LONDON
FOR THE YEAR

1870.



LONDON:

PRINTED FOR THE SOCIETY BY H. G. ROWORTH,
11, RAY STREET, FARRINGDON ROAD,

SOLD AT THE SOCIETY'S APARTMENTS, 12, BEDFORD ROW,
AND BY LONGMAN, GREEN, READER AND DYER,
PATERNOSTER ROW.

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I. *On some new British species of Ephemeridæ.* By the
Rev. A. E. EATON.

[Read 3rd January, 1870.]

In the course of the last year or two, I have met with the following species of our native *Ephemeridæ*, most of which have been undescribed until now.

With the exception of *Siphonurus armatus*, which was found in the collections of Messrs. R. McLachlan and P. C. Wormald, I have seen living specimens of the imago of each of the species described.

The measurements are given in millimetres; and in the lengths of the caudal setæ, the notation "set. 30 and 35—30 and 36" indicates that the length of the lateral seta is 30mm., of the median seta 35—36 mm.

1. EPHEMERA LINEATA.

Ephemera Danica, Pictet, *Ephem.* 130, pl. vii (*nec*
Müller).

♂. Eyes sooty umber. Thorax above fusco-piceous. Abdomen greenish-gray, tinged with fuscous, at the apex luteous; each of the hinder segments has six longitudinal black dorsal streaks, and two ventral lines: of those there are one short and two long streaks on each side, excepting in the more forward segments where the short middle pair is wanting, and only four streaks remain. Setæ fuscous with black joinings; forceps yellowish.

♀. Prothorax greenish-gray above, with a black streak on each side; the rest of the thorax yellow, with two dark streaks between the wings. Head ochraceous, yellow around the ocelli.

Length of body, ♂ 15-20, ♀ 21-25; fore-wing, ♂ 16, ♀ 20-21; set. ♂ 30 and 35-30 and 36, ♀ 24 and 26-25 and 24 mm.

Habitat.—The Thames and the Kennet above Reading, and Genthod near Geneva. In June and July. It flies higher than our other two species, but may be caught without difficulty towards sunset, or when fitful gusts of wind sweep down the river. The terminal joint of the forceps is subequal to the penultimate (as in *E. vulgata*) and not shorter than it (as in *E. Danica*, Müll.).

2. CLOEON SIMILE, n. sp.

♂. Turbinate eyes olivaceous or dark greenish sulphureous. Thorax black or fuscous above, polished. Apical veinlets of marginal area numerous, sparingly united. Legs olivaceous; hinder tarsi darker; foremost tibiæ greenish-gray, or blackish-green, the tarsi gray or black. Abdomen piceo-fuscous above; beneath cinereous, scarcely yellowish towards the tip. Setæ rusty white, with reddish joinings.

♀. Eyes black. Abdomen above, luteo-fuscous, with testaceous joinings, and dark subcutaneous tracheæ; beneath, olivaceous, with the last two segments stramineous. Legs green olivaceous; the tibiæ and tarsi darker.

Length of body, ♂ 9, ♀ 10; fore-wing, ♂ 8, ♀ 10-11; set. ♂ 14-15, ♀ 10-14 mm.

Hab.—Abundant at Clumber Park, Notts: it also occurs at Quy Fen, near Cambridge. September and October.

The male and female are much alike in colour; and this similarity has suggested the specific name.

3. CENTROPTILUM PENNULATUM, n. sp.

♂. Turbinate eyes carnelian red. Thorax fuscous, or bran-coloured above. Legs white, with the tips of the femora eretaceous, and the last tarsal joints slightly fawn coloured.

♀. Legs grayish-white, with the femora sub-cretaceous.

This differs from *C. luteolum* in having no point projecting from the last segment in the middle, just above the base of the forceps; the terminal joints of the legs of the forceps are comparatively smaller, pyriform with a narrower neck, and are slightly incurved (not straight). The posterior wing also is ligulate, with the apex elliptical (not acute or acuminate).

Length of body, ♂ 8-9, ♀ 8; fore-wing, ♂ ♀ 8; set. ♂ 14-17, ♀ 11 mm. About twice as large as *C. luteolum*.

Hab.—The Manifold, Ilam, Derbyshire; and Grazely near Reading. August to October.

4. BAETIS SCAMBUS, n. sp.

♂. Turbinate eyes clove-coloured. Thorax black or piceous above. Legs cretaceous or greenish-gray; the foremost tarsi fumose; hinder tibiæ and tarsi greenish-white, with slightly darker joinings and claws. Abdomen fuscous, belted with white or greenish-white. Setæ white. Forceps rather like those of *B. bioculatus*; but their limbs are more slender, and their bases closer together.

♀. Eyes dark olivaceous. Body olivaceo-fuscous. Legs olivaceous, with dark fumose tibiæ and tarsi. Setæ fumose, with slightly darker joinings.

The hind-wings are very similar to those of *B. bioculatus*, having the first and the second longitudinal nervures undivided; but there is no trace of the third nervure.

Length of body, ♂ 6, ♀ 6.5; fore-wing, ♂ 6, ♀ 7; set. ♂ 12, ♀ 9-10 mm.

Hab.—The Dove and Henmoor Brook, near Ashbourne, Derbyshire. June and September.

The specific name is taken from the crooked legs of the forceps.

The next four species are not easily distinguished, without figures, from *B. Rhodani*, Pict., which has turbinate eyes more or less sooty; thorax black above, polished; abdomen more or less fuscous, not belted with white, but sometimes slightly paler in the middle than at the tip; femora somewhat olivaceous or greenish-gray; hind-wing oblong, oblique at the base, obtuse at the tip, with a short costal process, the first two longitudinal nervures undivided, the third shorter than the others and also

undivided; each limb of the forceps has the apical joint small, globular, second joint about four-fifths as long as the first, nearly half as long as the third, rounded off obtusely towards the tip. (N.B. The proportionate lengths of the forcipal joints are slightly variable in every species.)

5. BAETIS ATREBATINUS, n. sp.

♂. Hind-wing narrow, destitute of the costal process, with only the first two longitudinal nervures; the third nervure is irregularly marked out by granulations. Limb of the forceps with a large and globular apical joint; second joint nearly as long as the first, gradually lessening in breadth towards the tip, and about half as long as the third joint. The limbs of the forceps are inserted rather closely together; and in the middle of the protuberance of the last segment, and above them, is a shallow pit containing a prominent short dark point.

Length of body, ♂ 7, ♀ 8; fore-wing, ♂ 6-7, ♀ 8; set. ♂ 11-13, ♀ 8-10 mm.

Hab.—The Kennet near Burghfield Bridge, Reading. October.

I have given to this species a geographical name. The *Atrebatii* occupied the neighbourhood of Silchester.

6. BAETIS PHEOPS.

Baetis phæopa, Ste. Cat. 336, n. 3394 (♀ sub-imago).

Hind-wing broad, with a well marked costal process, and three undivided longitudinal nervures, between the first two of which are some irregular delicate veinlets from the terminal margin; the third nervure attains to the middle of the inner margin at the least. First joint of the limb of the forceps with an oval apex, large; second joint gradually lessening in thickness from the base to the tip, nearly as long as the first, half as long as the third; third joint slightly contracted near the second joining.

Length of body, ♂ ♀ 6-8; fore-wing, ♂ 6-7, ♀ 7-9; set. ♂ 14-16, ♀ 10-12 mm.

Hab.—Great Britain (common at Babworth near Retford, Notts.); Norway (Hammerfest and Alten). May, June; September and October.

7. BAETIS TENAX, n. sp.

♂. Hind-wing broad, with the three longitudinal nervures undivided, the third extending beyond the middle of the inner margin: of the irregular veinlets from the terminal margin, two between the second and third nervures are the most distinct. Apical joint of the limb of the forceps large and oval; the second not quite so long as the first, gradually lessening in thickness from just beyond the base to the tip, nearly half as long as the third joint, which is slightly contracted near the second joining: sometimes there is a triangular toothlike projection just before the tip of the third joint on the inside; and an apical tuberosity on the inside of the first joint is slightly roughened, as if with a view to lending an unusual tenacity to the gripe of the forceps (whence the name).

Length of body, ♂ 8; fore-wing, 7; set. 16 mm.

Hab.—Ashbourne Green, Derbyshire. June.

8. BAETIS BUCERATUS, n. sp.

♂. Hind-wing broad, with a well marked costal process: the three longitudinal nervures are usually undivided, but sometimes the second is forked; the third nervure hardly reaches the middle of the inner margin. Limb of forceps with a large obovate apical joint, the second about two-thirds as long as the first, and one third as long as the third joint: the first joint is large, swollen on the inside at the tip; the second joint is rounded off obtusely (something like the dome of a locomotive) towards the third joint; the third joint is contracted near the base, and then suddenly curves inwards and downwards obliquely.

Length of body, ♂ 8-9; fore-wing, 8; set. 10-16 mm.

Hab.—The Kennet above Reading. April and May.

Holding a specimen back downwards, with the setæ away from the eye, the forceps so far resemble the horns of a bullock as to suggest the appellation *buceratus*.

The next species resembles in colour *B. pumilus*, having the turbinate eyes (♂) sooty; thorax black above, polished; legs whitish; abdomen somewhat fuscous or piceous, in the male belted with white; and the second longitudinal

nervure of the hind-wing forked. *B. pumilus* has the apical joint of the limb of the forceps ovate or globular; the second joint nearly two-thirds as long as the third, and slightly longer than the first. The fork of the second nervure of the hind-wing encloses one simple veinlet from the terminal margin; and the third nervure extends beyond the middle of the wing.

9. BAETIS NIGER.

Ephemera nigra, Linn. F. S. 377 (sub-imago).

♂. Limb of the forceps with the apical joint subcylindrical with rounded tip, and almost equal in dimensions to the third joint; the second is nearly twice as long as the first joint, and is as long as the third. The fork of the second nervure of the hind-wing usually encloses a forked veinlet from the terminal margin; and the third nervure is absent.

Length of body, ♂ ♀ 6-7·5; fore-wing, ♂ ♀ 6-7; set. ♂ 10-11, ♀ 6-8·5 mm.

Hab.—The Kennet above Reading, &c. May, June and September.

In the Linnæan diagnosis, there is nothing to disprove the identity of my insect with his *Ephemera nigra*; therefore I have utilised the name.

10. SIPHLONURUS ARMATUS, n. sp.

♂. Thorax luteo-piceous above. Wings suffused with greenish-gray; nervures piceous. Fore-legs piceous; hinder legs luteous or furfurose. Abdomen fuscous above, with the sides and joinings paler; beneath luteous or ochraceous, with a dark U-shaped streak under each segment which is incomplete in the more forward segments: the last segment is produced into a flattened spine on each side at the outward base of the forceps (as in *S. flavidus*, Ed. Pict.).

Length of body, ♂ 14-15; fore-wing, 16; set. 24-25 mm.

Hab.—Killarney (Coll. McLachlan, captured by Bouchard); Bishop's Wood, Hampstead (Wormald). July.

Of this species I have seen only dried specimens.

11. SIPHLONURUS LACUSTRIS, n. sp.

♂. Eyes sooty-black. Thorax black above, polished. Wings clear, with piceous venation; the tips of the marginal and submarginal areas slightly discoloured. Fore-femora blackish green, tibiæ and tarsi corvinous; hinder-legs dark greenish-gray. Abdomen coloured much the same as that of *S. armatus*; the last segment however is unarmed.

Length of body, ♂ 15; fore-wing, 14; set. 20 mm.

Hab.—Llyn Llydaw, Snowdon. August.

12. HEPTAGENIA VOLITANS, n. sp.

♂. Eyes fusco-piceous above. Thorax above atrofuscos. Wings clear, with blackish venation; the tip of the marginal area slightly discoloured. Fore-tarsus and tibia fuscous, the femur has two faint rings; hinder femora dull testaceous, with two carneous rings, tibiæ sometimes testaceous, tarsi fuscous. Abdomen fuscous above, with the tips of the segments darker; beneath dark greenish-gray, usually spotless. Setæ pale greenish-gray, with darker joinings.

Length of body, ♂ 12-15; fore-wing, 13-14; set. 25-28 mm.

Hab.—The Thames just above Pangbourne, and the Holy-brook near Coley Park, Reading. May.

It differs abundantly from the ♂ imago of *H. flavipennis*, which has green eyes, and the thorax furfurose above.

The *Heptageniæ* tower like a hawk when there is a slight breeze blowing. In allusion to this habit I have named this species *volitans*.

13. HEPTAGENIA INSIGNIS.

Buëtis montana, Hag. Ent. Ann. 1863, p. 26 (*nec* Pict.).

♂ and ♀. Eyes sub-olivaceous, intersected by a horizontal fuscous streak. Thorax above fuscous or sub-olivaceous (piceous in dried specimens). Wings clear, with piceous nervures: bases of the marginal and submarginal areas slightly discoloured, their tips blackish. Fore-legs atropiceous or corvinous; hinder legs sub-olivaceous or

greenish-olive, with blackish tarsi. Abdomen sub-olivaceous, with dark oblique lateral streaks; beneath, each segment has in the middle of the base a short black acute isosceles triangle, whose extreme apex is remotely flanked by a short diverging line on either side, which lines are followed each by a dot, and in a line both with these two dots and two lines respectively is a short line on each side close to the edges of the ventral region of the segment. Setæ black, piceous towards their tips.

Length of body, ♂ 11-12, ♀ 12-14; fore-wing, ♂ 13-17, ♀ 13-15; set. ♂ 22-33, ♀ 20 mm.

Hab.—The Dart, the Kennet, and the Trent. May to August.

This species closely resembles the Alpine *H. montana*, Pict., which, however, has blue eyes. The name which I have given it has reference to the neat ventral markings.

I am preparing for publication figures of the special structures of these and of many other British and foreign species of *Ephemeroidea*.
