

AN ANNOUNCEMENT OF NEW GENERA OF THE EPHEMERIDÆ.

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

(continued from Vol. xvii, p. 197).

CALLIARCYS, n. g.

Allied to *Habrophlebia* and *Thraulius*, having forceps like those of the latter, but hind-wings like those of the former in outline: cross-veinlets in both wings more plentiful than in *Habrophlebia*. Three long, sub-equal, caudal setæ, in ♂ nearly half as long again as the body. Fore tibiæ of ♂ about a sixth longer than the femur, the tarsus half as long again as the same; hind leg about one-sixth longer than the intermediate leg; hind tarsus about a third as long as the tibia; ungues of hinder tarsi dissimilar in form and size. Proximal joint of ♂ forceps' limb by far the longest. Type *Calliarcys humilis*, n. sp. Distrib., Portugal and, perhaps, W. Indies.

Calliarcys humilis, n. sp.

Sub-imago. Wings tinted with greyish-black.

Imago (dried), ♂. Thorax deep black above, glossy; abdomen piceous with pale joinings. Legs piceous, the hinder tibiæ and tarsi rather paler. Wings vitreous, slightly tinted with brownish; their neuration piceous-brown. Forceps pale piceous, or pale yellowish-brown. Setæ pale fuliginose, with reddish joinings.

Long. corp., ♂ ♀, 7—9; al., ♂, 7—8.5, ♀, 9; set., ♂, 10—11.5 mm.

Hab.: common on the northern slopes of Foia, near Monchique, and sparingly in other parts of Portugal. Mistaking the imago for *Thraulius*, I did not search for the nymph.

At p. 196, l. 21 from bottom, after "sexes, and" insert "usually."

The prior name, *Isonychus*, Mannerheim, precluding the employment of *Isonychia*, Etn., *Chirotonetes* may be substituted for the latter. It equals *Baëtis*, Walsh, Section B.

In *Heptagenia* and kindred forms, the first and second of the axillary nervures in the fore-wing run sub-parallel with one another, and rather close together, to the inner margin, meeting it either near the anal angle, or at least midway between this and the wing-roots. The nervures interposed between the first axillary and the anal nervure constitute a definite abbreviated group, and do not simulate short branchlets of the anal nervure (in *Siphilurus*, &c., they do). So far as I have been able to ascertain, amongst forms ranked with *Heptagenia* in 1871 (= *Baëtis* of most authors, but not of Leach), the chief differences in the proportions of the tarsal joints, discernible in

the imagines, correspond with differences in the nymphs; and, consequently, I am disposed to accept these differentia as bases for the distinction of genera, although they are only in a few instances accompanied by differences in the neuration of the wings, or in the number of the caudal setæ. To make a complete survey of this group of genera, *Ametropus* may as well be referred to.

AMETROPUS, Albarda.

Intermediate tibia shorter than the tarsus, the proximal joint of the latter about half as long as the former. Fore tarsus in ♂ about four and three-fifths, in ♀ about twice and two-thirds, as long as the tibia; the proximal joint in ♂ once and a half, in ♀ three-fifths, as long as the tibia. Three long caudal setæ. Type, *A. fragilis*, Alb. Distrib., Holland.

ATOPOPUS, n. g.

Hind tibia about half as long as the tarsus, the proximal joint of the latter rather longer than the former. Fore tarsus in ♂ nearly one and two-fifths, its proximal joint almost half, as long as the tibia. The proportions of the intermediate tarsus are more largely in excess of the tibia. Relative lengths of tarsal joints:—fore leg, 24, 18, 14, 8·5, and 6; intermediate, 31, 11, 7, 4, and 5; hind-leg, 30·5, 9, 6, 3, and 5. Two caudal setæ, in ♂ about twice as long as the body. Type, *A. tarsalis*, sp. n. Distrib., Borneo.

Atopopus tarsalis, n. sp.

Imago (dried). Body above piceous-black, with the last segment or two of the abdomen flavescens; belly flavescens. Fore-leg piceous-black, the femur to the middle piceous-brown; hinder-legs with femora piceous-brown, tibiæ flavescens, and tarsi rather deep fumatose, with the joinings and apical joint darker. Wings vitreous, with black neuration: fore-wing with the marginal area beyond the middle, and in part nearer the base, the sub-marginal area almost to the base, and a short narrow cloud upon the terminal margin by the anal angle, and the hind-wings likewise bordered round the apex and along the terminal margin, piceous-brown. Setæ piceous-black. Long. corp., ♂, 9—10; al., 11; set. 20 mm.

Hab.: Labuan.

THALEROPHYRUS, n. g.

Hind tibia of ♂ as long as the tarsus, whose proximal joint is about a third as long. Fore-legs damaged in the specimens examined by me. Relative lengths of the posterior tarsal joints:—intermediate tarsus, 10, 7, 5, 3, and 4; hind tarsus, 10, 7·5, 6, 3, and 4. Two caudal setæ incomplete. Type, *Th. determinatus* (in *Baëtis*), Walk. Distrib., Java and the Philippines.

PÆGNIODES, *n. g.*

Hind tibia of ♂ about twice as long as the tarsus, whose proximal joint is about one-eleventh as long as the tibia. Fore-leg of ♂ damaged in the specimens examined; in ♀ the tarsus is nearly three-quarters as long as the tibia, and its proximal joint about one-ninth as long. Relative lengths of tarsal joints:—fore-leg, ♀, 6, 13, 11, 5, and 6; intermediate, 5, 7, 7, 2, and 5; hind-leg, 5, 7, 7, 3, and 5. Two caudal setæ, in ♂ twice and two-thirds (?), in ♀ thrice and three-eighths, as long as the body. Type, *P. cupulatus* (in *Heptagenia*), Etn. Distrib., China and Tibet.

COMPSONEURIA, *n. g.*

Hind tibia of ♀ about twice and a quarter as long as the tarsus, whose proximal joint is about one-tenth as long as the tibia. Fore-tarsus in ♀ very nearly as long as the tibia. Relative lengths of tarsal joints, in ♀:—fore-leg, 18, 23, 16, 8, and 12; hind-leg, 10, 9, 5, 3, and 10 or 11. Cross-veinlets in the disc of the fore-wing very sparse, disposed in only three transverse broken series. Two caudal setæ. Type, *C. spectabilis*, *n. sp.* Distrib., Java.

Compsoneuria spectabilis, *n. sp.*

Imago, ♂ (dried). Ochraceous or pale straw-yellow, varied with fusco-piceous on the thorax. Hind-legs (the others lost) pale straw-yellow; the trochanter, median and apical band of the femur, base of tibia, and the tarsal joints very narrowly at the joinings, black-piceous. Wings vitreous, with pellucid longitudinal nervures, excepting that the costa, sub-costa, and radius towards their extremities are piceous; cross-veinlets piceous, narrowly clouded with the same colour. Last two abdominal segments pale; the others edged narrowly above with black at the tips, and with a line on each side near the spiracles, obliquely recurrent from this edging also black; the third, fourth, sixth, and seventh have, besides, a lanceolate black streak in the middle of the back produced out of the same edging: forceps and belly ochraceous.

♀ (dried) very similar, but with the body luteous instead of ochraceous.

Long. corp., ♂ ♀, 6; al., ♂, 7, ♀, 8 mm.

Hab.: Lahat (Leyden Mus.), from Mr. C. Ritsema.

RHITHROGENA, *n. g.*

Imago. Hind tibia of ♂ about twice and one-half as long as the tarsus, whose proximal joint is scarcely more than one-thirteenth as long as the tibia. Fore tarsus in ♂ nearly half as long again as the tibia, in ♀ scarcely upwards of half as long as the tibia; the proximal joint in ♂ about one-eleventh, in ♀ about one-fifteenth as long as the tibia. Relative lengths of tarsal joints:—fore-foot, ♂, 6·5, 27, 27, 18,

and 9, ♀, 4, 9·5, 8, 5, and 10; hinder feet nearly as 3, 3, 3, 2, and 7. Two caudal setæ, usually twice, or twice and a half as long as the body. Penis-lobes narrow, very slightly enlarged at the tip.

Wings of sub-imago usually unicolorous greyish, the nervures not conspicuously darker.

Nymph with seven pairs of abdominal tracheal branchiæ; *the first pair very large, ventral*, the laminæ broad, slightly curved, flattened, and contiguous at their tips with one another beneath the base of the abdomen; the next five pairs lateral, their laminæ deflected, so as to be almost out of sight from above; the last pair meet one another underneath the body, and their laminæ are folded lengthwise: tracheæ not obvious; the fasciculated fibrils are scarcely two-thirds as long as the laminæ. Head much flattened, somewhat transverse: labrum distinct, small. Mandibles terminated by a single, large, acutely-triangular fang, with a smaller tooth at its inner base; the former nearly half as long as the interval between the base of the latter and the point of the molar tuberosity. First joint of the upper maxillary palpus largely dilated behind, and about half as long as the second joint, which is slightly dilated before the tip. Lateral lobes of the tongue narrower than the median lobe. Caudal setæ three, subequal to each other. Type, *Rh. semicolorata* (in *Baëtis*), Curt = *Baëtis*, Walsh, Section C. Pictet, Mon. Ephem., pl. 21, f. 1, seems to be a nymph of a *Rhithrogena*; but I think *B. lateralis*, to which he refers it, is a species of *Ecdyurus*. Distrib., Europe and N. America to Oregon.

HEPTAGENIA, Walsh (restrict.).

Imago. Hind tibia of ♂ about twice and a half as long as the tarsus, whose proximal joint is about one-eighteenth as long as the tibia. Fore-tarsus in ♂ about once and two-thirds, in ♀ about two-thirds, as long as the tibia; the proximal joint in ♂ about one-fourteenth, in ♀ about one-eleventh, as long as the tibia. Relative lengths of the tarsal joints:—fore-foot, ♂, 4, 28, 28, 18, and 7·5, ♀, 4·5, 10, 8, 3·5, and 7; hinder feet, ♂, 2·5, 4, 4, 2·5 or 2, and 8. Two caudal setæ, usually in ♂ twice, in ♀ once and a half, as long as the body. Penis-lobes rather broad and divergent from one another.

Wings of sub-imago usually of a yellowish tint, and at first almost unicolorous; in the next place the cross-veinlets become darkened; and still later, transverse fasciæ and streaks of a similar dark greyish hue are developed in the disc of the wing. The sub-imago in repose erects the wings, and stands upon all of its feet, with the setæ divergent.

Nymph with seven lateral pairs of abdominal tracheal branchiæ; *the laminæ small*, nearly alike in form, reflected backwards and outwards, with their edges up and down; their tracheæ indistinct; *the fibrils abundant, and about as long as the lamina*. Head rounded and broadly flattened out; postero-lateral angles of pronotum rectangular or obtuse; *labrum not obvious*, a velvety fold of the palate taking its place. Mandibles terminated by two strong slender fangs, of which the outermost is the stronger, and is about as long as the interval between the base of the other and the point of the molar tuberosity. First joint of the upper maxillary palpus about two-thirds as long as the second, and rather stouter than it. Lateral lobes of the tongue broader than the median lobe. Caudal setæ three. Type, *H. flavescens*, Walsh. Distrib., Europe, N. America, Cape Colony.

ECDYURUS, Etn. (revived; misspelt *Ecdyonurus* in Trans. Ent. Soc. Lond., 1868, p. 142, n.; corrected in E. M. M., v, 90).

Imago. Hind tibia of ♂ about once and three-quarters as long as the tarsus, whose proximal joint is almost one-ninth as long as the tibia. Fore-tarsus in ♂ nearly, or quite, twice as long as the tibia, rarely so little as one and two-thirds as long; in ♀ from three-quarters as long, to almost the same length, as the tibia; the proximal joint in ♂ from nearly one-third to four-ninths, in ♀ from about one-fifth to one-seventh as long as the tibia. Relative lengths of the tarsal joints:—fore-foot, ♂, 12, 24, 22·7, 17, and 9, or 23, 31, 33·5, 23, and 17·5, or 19, 30, 28·7, 22, and 18; in ♀, 7, 8, 7, 4, 7, or 7, 9, 8, 5, and 8; hinder feet, ♂, 5, 4, 3·5, 2·5, and 6. Caudal setæ in ♂ two and a half to three times as long as the body, in ♀ about once and a half as long. Penis lobes very broad.

Wings of the sub-imago at first greyish with dark neuration, usually edged with grey; afterwards, in most cases, dark transverse bands and fasciæ appear in the disc of the fore-wings.

Nymph with seven lateral pairs of tracheal gills, the first the smallest; laminæ reflected obliquely outwards: with distinct tracheæ; *the branchlets of the median trachea usually pinnately arranged* in some of the laminæ; fibrils nearly as long as the lamina in the first three pairs, and nearly half as long as it in the others. Head rounded and broadly flattened out; *postero-lateral angles of the pronotum prolonged backwards*. Labrum distinct, small. Mandibles with two strong slender fangs, the outermost of which is about one-third as long as the interval between the base of the other and the point of the molar tuberosity. First joint of the upper maxillary palpus about half as

long as the second, and rather stouter than it. Lateral lobes of the tongue broadly claw-shaped, with the points turned outwards, narrower than the median lobe. Three caudal setæ. Pictet, Mon. Ephem., pl. 16, f. 1—7, may be an *Ecdyurus*, but, if so, are apparently not accurate in minutæ. Type, *E. venosus*, Fab. Distrib., Europe and N. America.

EPEORUS, n. g.

Imago. Hind tibia of ♂ about twice and a half as long as the tarsus (in Colorado species twice and one-fifth), whose proximal joint is almost one-twelfth as long as the tibia (Colorado one-eleventh). Fore-tarsus in ♂ about once and one-sixth (Colorado nearly once and a half), in ♀ nearly three-quarters as long as the tibia. Relative lengths of the tarsal joints:—fore-foot, ♂, 18, 18, 15, 13, and 9 (Colorado, 32, 32, 32, 23, 10); ♀, 7·5, 8, 7·5, 5, and 8; hind-foot, ♂, 4·5, 4·5, 3·5, 2, and 6 (Colorado, 4·5, 4·5, 4·5, 3, and 7). Caudal setæ two, in ♂ about twice and three-quarters, in ♀ twice, as long as the body. Penis lobes of moderate breadth, divergent.

Wings of sub-imago greyish, or sometimes yellowish, with dark neuration, but with neither fasciæ nor streaks.

Nymph with seven pairs of lateral tracheal branchiæ on the abdomen, the fibrils scanty, not half as long as the lamina, to whose edge they stand at right angles; the laminae decumbent, with a sub-median trachea rather irregularly branched. Head rounded, flattened. Labrum distinct, small. Mandibles terminated by a pair of short broad teeth, the outermost less than half as long as the space between the base of the other and the point of the molar tuberosity. First joint of the upper maxillary palpus almost two-thirds as long as the second, rather stouter than it, and slightly dilated. Lateral lobes of the tongue relatively large, oblong. *Median seta absent in the adolescent insect.* Hind edge of pronotum straight. Type, *E. torrentium*, *n. sp.* Distrib., Portugal, the Pyrenees, the Alps, and, perhaps, also Oregon, Colorado and Costa Rica. [The American species have, perhaps, rather slenderer legs than the European.]

Epeorus torrentium, n. sp.

Imago (living), ♂. Oculi above dark fuscous, darker beneath. Thorax lutescent above. Abdomen above, fusco-luteous, paler at the sides, with oblique piceous streaks from the dark tips of the segments; the usual pale dorsal spots very distinct from the second to the eighth segment; beneath, with a dark ventral stripe enlarged posteriorly in each segment, and containing four darker lines. Neuration of wings black. Fore-legs piceous, or luteo-piceous, the tarsal joinings paler, the ungues alike and sub-equal; hinder legs gamboge-yellow, with the usual bands indistinct, the tarsi blackish, with darker claws and joinings. Setæ fuliginose, darker at the base, with dark joinings.

Description of ♀ and sub-imago deferred.

Long. corp., ♂, 11, ♀, 13; al., ♂, 12, ♀, 15; set., ♂, 28—29, sub-im., 17, ♀, 22—26, sub-im., 19 mm.

Hab.: in a mill stream at Tarascon (Ariège). August and September.

My introductory caution against laying too much stress upon the admeasurements given in the descriptions of the genera should not be lost sight of. Accidents in early life, to which the legs and setæ are very liable, interfere with the dimensions in the adult insect; and some allowance must be made for exceptional peculiarities in the fore tarsus of the ♂ of certain species, all of which are not indicated here. The hind tarsus is less liable to variation.

Croydon: April, 1881.

ANNOTATED LIST OF BRITISH ANTHOMYIIDÆ.

BY R. H. MEADE.

(Continued from page 5).

3. MYDÆA, R. Desv.

Spilogaster, pt., Auctt.

Aricia, pt., Macq.

Gen. ch.—Eyes bare, contiguous, or sub-contiguous in male; arista plumose; abdomen mostly oval, and always unspotted; alulets well developed, the under scale being much longer than the upper one; anal vein not prolonged to the margin of the wing.

With legs wholly black.

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| 1. VESPERTINA, Fall. | 3. ALLOTALLA, Meig. |
| 2. NIGRITELLA, Zett. | |

With legs partly pale.

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| 4. URBANA, Meig. | 9. IMPUNCTA, Fall. |
| 5. ANGELICÆ, Scop. | <i>indistincta</i> , Rond. |
| 6. TINCTA, Zett. | 10. SEPARATA, Meig. |
| 7. PAGANA, Fab. | 11. FLAVEOLA, Fall. |
| 8. NIGRICOLOR, Fall. | <i>varians</i> , Zett. |

The species placed in this group form part of the genus *Spilogaster* of most authors, but differ from those properly belonging to that genus by having unspotted bodies. The genus *Mydæa* is closely related to *Hydrophoria*, but may be distinguished from it by the species having the abdomen usually oval and not conical, and not having the anal vein prolonged to the posterior margin of the wing.

M. NIGRITELLA, Zett.

This little black and rather rare species bears a very considerable resemblance