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"In relation to the human mind Nature is boundless; and though nowhere
inaccessible, she is everywhere unfathomable."

HUXLEY.



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MDCCCLXXXI.

AN ANNOUNCEMENT OF NEW GENERA OF THE *EPHEMERIDÆ*.

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

Names for some new genera being required in the lettering of plates to illustrate my forthcoming work on the *Ephemeridæ*, I am anxious to establish them. It will be sufficient to characterize the genera concisely, reserving detailed descriptions of them for the contemplated monograph. The admeasurements given in the descriptions of genera, though exact, should, for all practical purposes, be regarded as only approximate: they are only necessary in the absence of illustrations.

ELASSONEURIA, n. g.

Allied to *Oligoneuria*. Wing-membrane dull or satin-like; fore-wing with three longitudinal nervures, of which the hinder two are forked, and with a short, free, epinotal prolongation of the membrane at the wing-roots. Caudal setæ of ♀ 3, subequal to one another and about one-third as long as the body. Type, *E. Trimeniana* (in *Oligoneuria*), McLach. Distrib., S. Africa.

SPANIOPHLEBIA, n. g.

Allied to *Lachlania*. Wing-membrane clear neutral tint, "shot" with blue; fore-wing with five or six obvious longitudinal nervures, of which the hinder two are forked (the pabrachial deeply so), also with several series of cross-veinlets disposed transversely, and with a short free prolongation of the membrane at the peak of the mesonotum. Fore-tibia of ♂ about as long as the femur; 1st tarsal joint longer than the next. Caudal setæ 2. Type, *S. Trailiæ, n. sp.* Distrib., Tropical S. America.

Spaniophlebia Trailiæ, n. sp.

Imago, ♂, in spirits, and dried; thorax stro-piceous; abdomen sub-piceous, with paler joinings; caudal setæ pitchy-black, with testaceous pilosity; forceps as in *Lachlania*. Neuration black; fore-wing with pabrachial nervure forked before the middle, and with cross-veinlets, as far as the præbrachial nervure only (another species has the furcation at the middle, and more numerous cross-veinlets extending as far as the anal nervure), viz.: about twenty-five in the marginal, two to five in the sub-marginal, one or two in the next area; the sub-costa towards the tip, and the neighbouring cross-veinlets, strongly bordered with dark fuliginous. Legs black with pale margins.

♀ unknown.

Long. corp. 9, al. 10, set. 8 mm.

Hab.: São Paulo, Rio Solimões, September and November (Mus. McLach.).

The other species (from Ecuador) has pubescent ♂ setæ about 2½ times as long as the body.

HOMONEURIA, *n. g.*

Akin to *Lachlania*. Wing-membrane as in *Spaniophlebia*. Forewing with undivided longitudinal nervures, and no cross-veinlets; three sub-equal caudal setæ, in ♀ about one-fourth as long as the body and glabrous. Type, *H. Salvinia*, *n. sp.* Distrib., Central America.

H. Salvinia, *n. sp.*

Imago, ♀, dried. Head and thorax above smooth, black; wing-neuration fuscous; legs pale (discoloured); back of abdomen fuscous, with pale joinings, belly pale; setæ black. Long. corp., ♀, 11, al. 11—12, set. 3 mm.

Hab.: Guatemala.

ASTHENOPUS, Etn., = CAMPSURUS, Etn.

JOLIA, *n. g.*

Allied to *Polymitarcys*. Median caudal setæ abortive in both sexes. Neuration of the wings rather similar to that of *Polymitarcys*. Nymph agile, with seven pairs of abdominal trachæal branchiæ of uniform make, each consisting of an obovate membranous lamina, with a fascicle of filaments annexed to its hinder base (almost similar to the trachæal branchiæ of *Heptagenia*). Fore femur and tibia fringed within with dense stiff hair, as in *Oligoneuria* (tarsus slender). Mandibles not prolonged into a tusk; their lobes slender and acute. Caudal setæ natatorial, about seven-tenths as long as the body; the lateral setæ ciliated internally, and the median seta plumose for upwards of half their length, and then tail-pointed. Type, *J. Roselli* (in *Palingenia*), Joly. Distrib., the Garonne, near Toulouse, in September. Drawings and specimens were most kindly transmitted to me by Dr. E. Joly; and I caught three nymphs last August at Toulouse.

RHOENANTHUS, *n. g.*

Very like *Potamanthus* (restrict.), but with the median caudal seta abortive in both sexes; lateral setæ in ♂ upwards of twice as long as the body (in ♂ *Potamanthus* one and a-half times). Type, *Rh. speciosus*, *n. sp.* Distrib., Lahat.

Rhoënanthus speciosus, *n. sp.*

Subimago dried. Wings whitish, with most of the cross-veinlets well bordered with sanguineous, excepting those near the inner and terminal margins, where the wing-membrane is more or less tinted with ochraceous.

Imago dried. ♂, mesonotum lutescent or brownish-luteous. Fore-leg pale ochraceous, with the apex of the femur, the base and apex of the tibia, and the tarsal joinings tinged with purple or sanguineous; ungues dissimilar: posterior legs with the tarsal joints very narrowly tipped with sanguineous. Wings vitreous;

many of the cross-veinlets of the fore-wing conspicuously bordered with sanguineous, their borders more or less confluent, so as to form irregular blotches. Abdomen discoloured, varied with sanguineous above; belly ochraceous. Setæ pale ochraceous or whitish, with joinings more or less sanguineous or blackish-sanguineous, with which colour the forceps also are, in some measure, tinged.

The markings of the ♀ are less distinct than those of the ♂.

Long. al., ♂ 11—12, ♀ 16; corp., ♂ 13, ♀ 16; set. ♂ 25 and 1—26, and 1 mm.

Hab.: Lahat (Leyden Mus.).

The professedly temporary groups ranked provisionally with *Leptophlebia* in 1871, may be dealt with as follows:—

A.—Hind-wings somewhat arcuate in front (Trans. Ent. Soc. London, 1871, pl. iv, 20a and 26d). Basal joint of the ♂ forceps many times longer than the remainder taken together.

BLASTURUS, *n. g.*

Two long caudal setæ, the other abortive; lateral setæ in ♂ about three times, in ♀ about one and a half as long as the body; median seta about one-fifth as long as it. Fore tibia of ♂ scarcely longer than the femur, the tarsus about one and three-sevenths as long as the femur; unguis of posterior tarsi dissimilar. Type, *B. cupidus* (in *Ephemera*), Say. Syn., *Leptophlebia*, ser. 4, Etn., 1871. Distrib., Temperate N. America.

LEPTOPHLEBIA, Westw. (restrict.).

Three long, sub-equal caudal setæ; lateral setæ of ♂ about one and a half times as long; of ♀ nearly the same length as the body. Fore tibia of ♂ scarcely longer than the femur, but the tarsus nearly one and a half times as long as it; unguis of hinder tarsi dissimilar. Nymph with seven pairs of double tracheal branchiæ, each one bipartite with subulate divisions distantly beset with minute hairs. Type, *L. marginata*, Lin. Syn., *Leptophlebia*, ser. 3, Etn., 1871. Distrib., Northern Temperate Regions.

ATALOPHLEBIA, *n. g.*

Three long, sub-equal caudal setæ (or in individual specimens sometimes only two), in the ♂ usually twice as long as the body. Normal species: fore tibia of ♂ about one and a half times as long as the femur (in ♀ scarcely longer than it), and the tarsus about one and four-elevenths as long as the femur. Hind tarsus about half as long as the hind tibia; its unguis alike in shape, uncinat. Exceptional species: some Cingalese species have setæ three times as long as the body, the ♂ fore tarsus one and three-sevenths as long as

the femur, and the hind tarsus three-thirteenths as long as the hind tibia. Type, *A. australis* (in *Ephemera*), Walk. Syn., *Leptophlebia*, ser. 1, Etn., 1871 (exclusive of the last two reputed species). Distrib., S. Africa, Ceylon, Australasia, Japan, and S. America.

B.—Anterior margin of hind-wing suddenly refracted before the apex, somewhat as in fig. 24*b*, of Trans. Ent. Soc. Lond., 1871, pl. iv.

ADENOPHLEBIA, *n. g.*

Three long, sub-equal caudal setæ, in ♂ about twice as long as the body. Fore tibia of ♂ about one and one-sixth as long as the femur, the tarsus about one and one-fourth as long as the same; hind leg about one and a half as long as the intermediate leg; hind tarsus little over one-third as long as the hind tibia; unguis of the hinder tarsi alike in form, uncinatè. Proximal joint of ♂ forceps' limb far longer than the rest put together. Type, *A. dislocans* (in *Ephemera*), Walker, the ♀ of *L. auriculata*, Etn., 1871. Syn., *Leptophlebia*, ser. 1 (part), and *idem*, ser. 2 (*L. colombiæ*, Walk.), Etn., 1871. Distrib., S. Africa; and apparently many Malay and Tropical American species belong here.

CHOROTERPES, *n. g.*

Three long, sub-equal caudal setæ; lateral setæ of ♂ about one and one-fifth as long as the body. Fore tibia of ♂ about one and eight-thirteenths as long as the femur, the tarsus about one and a half as long as the same; hind leg about one and five-thirteenths as long as the intermediate leg; hind tarsus nearly two-fifths as long as the hind tibia; hinder unguis dissimilar in form and size. Proximal joint of ♂ forceps' limb short, the next joint by far the longest (somewhat as in *Ephemerella*). Nymph latent, with seven pairs of foliaceous abdominal tracheal branchiæ, sparsely and very minutely hairy along their edges; 1st pair single, the blade entire, linear lanceolate, and acuminate; the remainder double, both divisions of each nearly alike, ovate, acute, proliferous or else deeply incised on both sides at the base of the produced points, and obliquely sub-cordate at the base. Type, *Ch. lusitanica*, *n. sp.* Distrib., Portugal; and, perhaps, De Geer's *Ephemera vespertina*, L. (though its gills are not proliferous nor auricled), indigenous to Scandinavia, may belong here.

The sub-imago rests with the outer caudal setæ divergent, the fore legs raised, so as to protect the tibia and tarsus, and held apart.

CHOROTERPES LUSITANICA, *n. sp.*

Sub-imago. Wings purplish-black throughout. Legs and setæ dark piceous; tibia and tarsi at first reddish-piceous.

Imago, v. v. s. Oculi strongly aequaliphoid, the upper part obscurely tinged with liver-colour; rest of head, and the thorax, black, polished. Legs blackish-piceous, the fore tarsi scarcely paler; but the hinder tibiæ and tarsi distinctly reddish-piceous, the latter being rather the darker. Wings vitreous, with a somewhat talcose gloss, the fore-wing tinged with blackish in the marginal and sub-marginal areas, the base of the costa somewhat testaceous, and the rest of the neuration piceous; cross-veinlets, in the coloured areas, numerous, viz.: in marginal area, six before, and about sixteen irregularly anastomising beyond, the nodal point; in sub-marginal area, three before, and nine beyond, that point. Abdomen blackish-piceous, with pale rufescent joinings; beneath, the last segment but one is distinctly, and a few of the next preceding it are faintly, tinged with rufescent posteriorly. Forceps within and towards the tips rufescent. Penis and setæ blackish-piceous.

Long. corp., ♂, 10; al., ♂, 10; set., ♂ im., 12, sub-im., 9 and 12 mm.

Hab.: in the stream near Aldea de Neuves, Alemtejo, and near São Marcos da Serra.

C.—Anterior margin of the hind-wing deeply sinuated before the apex (compare Trans. Ent. Soc. London, 1871, pl. v, 2 b).

THRAULUS, *n. g.*

Three long, sub-equal caudal setæ (mutilated). Fore tibia of ♂ about one and ten-thirteenth as long as the femur, the tarsus about the same length as this last; hind leg about one and one-twelfth as long as the intermediate leg; hind tarsus almost half as long as the hind tibia; unguis of hinder tarsi dissimilar in form and size. Proximal joint of ♂ forceps' limb by far the longest. Nymph latent, with seven pairs of double tracheal branchiæ; the divisions of each of them alike in form, but those of the 1st pair filiform, simple, and minutely hairy, whilst the divisions of each of the others are foliaceous, oblong-ovate, fringed with long, simple, filiform processes. Type, *Thraulius bellus*, *n. sp.* Distrib., Portugal (and, perhaps, W. Indies).

Thraulius bellus, *n. sp.*

Sub-imago. Wings pale blackish.

Imago (living). ♂. Oculi fuliginosæ. Body blackish-piceous; the thorax deep black above, glossy, and with the sutures pale. Fore tarsi blackish, the hinder tibiæ and tarsi paler.

Long. corp., ♂, 8; ♀, 7 mm.

Hab.: in the stream below Cintra.

HABROPHLEBIA, *n. g.*

Three long, sub-equal caudal setæ, about thrice as long as the body in both sexes. Fore tibia of ♂ about one and one-third as long as the femur, the tarsus about one and a half as long as the same; hind leg scarcely longer than the intermediate leg; hind tarsus about one-fourth as long as the tibia; unguis of hinder tarsi alike in form,

uncinate. Proximal joint of ♂ forceps' limb sub-equal in length to the rest put together. Nymph latent, with seven pairs of abdominal tracheal branchiæ, all nearly alike in form; each one bifid into unequal segments, which are divided into slender filaments. Type, *H. fusca* (in *Ephemera*), Curt. Syn., *Leptophlebia*, ser. 5, with *L. Picteti*, Etn., 1871; also misprinted *Halecophlebia* (Etn., MS.), by Rostock, 1880. Distrib., Temperate and Southern Europe. [N.B.—The citation here given of *L. Picteti* is based upon recollection only.]

As I have suggested (in private correspondence) the possibility of Dr. Joly's *Cænis maxima* nymph being the young of a *Tricorythus*, I take the opportunity of stating that (judging from specimens in a better condition of preservation than those upon which I relied in the first instance), it is, after all, more likely to be a real *Cænis*. The examples previously examined by me, were all of them defective.

CALLIBÆTIS, n. g.

Allied to *Baëtis*. Two long caudal setæ, in ♂ two and a half times, in ♀ twice as long as the body. Fore-wing with several cross-veinlets in the marginal area before the nodus, in both sexes, and with single (if any) interneural veinlets at the terminal margin. Hind-wing tri-nervate, with several cross-veinlets, and with the costal shoulder very obtusely rounded off (compare Trans. Ent. Soc. London, 1871, pl. v, 27—29). Fore tibiæ in ♂ about one and one-sixth, in ♀ three-quarters, as long as the femur; the tarsus in ♂ about as long as, in ♀ about two-thirds as long as, the tibia, the 3rd joint in ♂ shorter than the 2nd joint. Type, *C. pictus* (in *Baëtis* formerly), Etn. Distrib., North and Central America and Australia.

BÆTIS, Leach (restricted).

Two long caudal setæ, in ♂ two to two and a half, in ♀ one and one-fourth to two and a half, times as long as the body. Fore-wing without cross-veinlets in the marginal area before the nodus (as a rule, almost without an exception) in both sexes, and with interneural veinlets in pairs at the terminal margin. Hind-wing bi-, or tri-nervate (the intermediate nervure in the latter case sometimes forked), and, generally speaking, destitute of cross-veinlets; usually oblong-ovate, with an acute costal projection, seldom (*B. atrebatinus*) without any costal shoulder at all (compare Trans. Ent. Soc. London, 1871, pl. v, 16 a to 26 a). Fore tibia in ♂ about one and one-third times as long, in ♀ the same length as the femur; fore tarsus in ♂ about one and a

half, in ♀ about three-fifths, as long as the femur, the 3rd joint in ♂ as long as the 2nd. Nymph agile, with seven pairs of single abdominal tracheal branchiæ, all nearly alike in form, viz.: obtusely ovate or obovate, and traversed lengthwise by a pinnately branched trachea, irregularly subdivided. The median seta is usually about three-eighths as long, the lateral setæ about three-fourths as long as the body; but sometimes (*e. g.*, in *B. amnicus*) the median seta is far more abbreviated. Type, *B. binoculatas*, L. Distrib., Europe and Egypt, Indo-Malay region, Australia; North, Central, and, perhaps, South America.

Some species of *Callibaëtis* and *Baëtis* have the front border of the anterior wings variegated in one or in both of the sexes.

(To be continued).

DESCRIPTION OF ANOTHER NEW SPECIES OF *DAMASTER*.

BY GEORGE LEWIS.

I have now from the West Coast an insular species of *Damaster* which is very interesting to me, as the head and thorax show considerable divergence from the form usual in the genus. The insect comes from the island of Sado, where it appears to be rare, four specimens only being obtainable last month, and these came from the mountains eight miles from the coast. I characterize it as:

DAMASTER *CAPITO*, *sp. n.*

Nigro-violaceus, corpore vix lato, capite prothoraceque latioribus, validis, oculis subprominulis; elytris granulosis, haud mucronatis.

Hab. in ins. Sado.

Long. corp. 18—19 lin.

Head and thorax violet-black, elytra dull black; more robust in figure than *D. pandurus*, with shorter legs, more robust tarsi, head, mandibles and thorax much larger. The thickness of the head gives the region of the eyes a greater space, and renders them much less prominent, viewed from above they project but little beyond the outline of the head. The thorax is somewhat quadrate, widest in the middle, its greatest breadth equalling its greatest length, which is $2\frac{1}{2}$ lines, and the posterior angles are more acute than in any other described species. The thorax of *D. pandurus* measures, in an average specimen, $3\frac{1}{2}$ lines in width and 4 in length; what *D. capito* loses in length it gains in breadth. Elytra granulose, the striæ as usual scarcely visible.

In speaking of the dilated tarsi in the ♂ of the northern species, as compared to *D. blaptoides*, it must be observed that in *D. rugipennis*, *D. viridipennis*, and the present species, the tarsi are stouter in both sexes, but the difference in the ♂ and ♀ of any one is very little, not more than in the large southern species.