

1913

Ann. Mag. Nat. Hist. 12: 271-278

On Ephemeroidea from Tropical Africa.

271

backwards, their vertical greater than their horizontal diameter, triangular, pointed, with a high main cusp and the anterior and posterior secondary cusps quite low. In *Glossophaga* and *Lonchophylla* the lower premolars are elongate horizontally, especially the anterior one, which exceeds the second, and their secondary cusps are proportionally much more developed.

Type:—

Lionycteris spurrelli, sp. n.

Size and general appearance about as in *Glossophaga soricina*. Colour above bistre, the bases of the hairs darker and greyer, the ends paler, near "snuff-brown"; under surface rather paler, near "olive-brown" (Ridgway, 1912). In other *Glossophaginae* the bases of the hairs are lighter than the tips. Ears and nose-leaf apparently as in *Glossophaga soricina*.

Skull and teeth as described above.

Dimensions of the type (the italicized measurements taken in the flesh):—

Forearm 33 mm. (Specimen immature.)

Head and body 49; tail 7; ear 13; lower leg and hind foot (c. u.) 23.

Skull: greatest length 18.7; condylo-basal length 17.5; interorbital breadth 3.7; breadth across brain-case 8; palatal length 8.4; front of canine to back of m^3 6.1; breadth between outer corners of m^2 4.8.

Hab. Condoto, Choco, Colombia. Alt. 300'.

Type. Immature male (teeth unworn, outer incisors not fully erupted, and milk-incisor still present). B.M. no. 13. 8. 10. 1. Original number 314. Collected 10th May, 1913, by Dr. H. G. F. Spurrell. One specimen.

This genus, while clearly most related to *Lonchophylla* and *Glossophaga*, is readily recognizable by its quite normal and unmodified premolars, which have nothing of the peculiar horizontal lengthening of those of other *Glossophaginae*.

Even by its colour *Lionycteris spurrelli* is distinguishable from its allies, as other *Glossophaginae* bats have light bases to the fur, while here the bases are darker than the tips.

XXXII.—Ephemeroidea from Tropical Africa.

By the Rev. A. E. EATON, M.A., F.E.S.

REPORTING upon thirteen specimens of May-flies received from the British Museum of Natural History last July, it may be remarked that most of the species represented are in

many instances solitary specimens, more or less defective, that have been relaxed and spread out, and by being thus treated have suffered loss of, or detriment to, their body-markings. Where it was not justifiable in such circumstances to name an insect as a species, it has been deemed desirable to name as nearly as possible the genus to which it should be referred, noting, by illustration or description, characteristics likely to aid in the recognition of other specimens of the same species of flies from at least the identical localities. Some wings, detached, have been mounted in Canada balsam, to enable them to be examined and figured as to neurulation. Hind wings of dried May-flies are apt to be shrivelled up; if detached and let fall upon hot water they can usually be induced to unfold (with the exception of the marginal area) on the surface of the water. Taken up from that on thin glass or a feather, while thus expanded, they can, while moist, be floated off from it on to distilled water and cleaned without being submerged. Then, transferred in a similar manner to a prepared cover-glass for the object to be mounted for the microscope (already in position on the centring-card, and with bits of distance-glass in position, as well as the space for the object duly moistened), the wing can be adjusted upon the glass, and the ordinary method of preparation be completed. No attempt to submerge the wing afloat should be made prior to its being hardened in spirits.

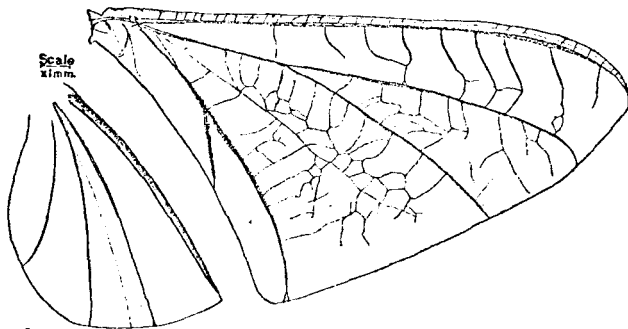
ELASSONEURIA, Etn. (1881).

Related to *Oligoneuria*, Pictet (1843-5).

Elassoneuria candida, sp. n.

? Subimago ♀ (dried).—Wings dull, light, transparent smoky grey, with the stronger veins and cross-veins opaque, light sepia-grey. Cross-veins in the marginal area simple and indefinite (this area folded over); below the vein R¹ 13, within the sectorial fork 7, and 13 very faint and whitish below this fork and its stem. Epinotal prolongations of the wing-membranes, reaching to the base of the third dorsal segment, blackish. Dorso-lateral points of the ninth abdominal segment extend rather beyond the insertions of the caudal setæ. Last ventral plate, on each side of its terminal sinus, produced into a subacute point. Markings of the thorax and abdomen similar in character to those of the imago.

Adult ♀ (dried).—Wings white; the stronger veins and cross-veins whitly-brown; but the faint traces of finer obsolete neuration between the strong veins subopaque white. Epinotal subulate continuations decurrent from the fore wing, defective, but also white. Cross-veinlets in the marginal area straight and simple, about 27 in number; 9 below R^1 and 10 within the sectorial fork. Thorax largely eaten out by cabinet-pests; mesonotum brown ochreous, intersected lengthwise by a fine median black suture; scutum edged at the sides with whitish; this edging, opposite the fore wings, widened and joined together across the dorsum by a narrow,



Elassoneuria candida, sp. n.

Neuration of wings, with obsolescent interneural reticulation.

subtransverse, slightly retiring whitish band; prescutum, on each side of the front margin of the segment, flanked by a whitish spot or streak. Abdomen before oviposition dull green, owing to the eggs, but afterwards light drab-colour, with a narrow, black-bordered, medio-dorsal sepia-grey stripe from the second segment to the tip of the penultimate. Ventrally the nerve-ganglia and the nerve-chords for nearly half their length in front of each ganglion are black. Caudal setæ defective, Roman-sepia, with blackish joinings; the joints very short.

Length of wing about 21 mm.

Hab. Ilesha, S. Nigeria (*L. E. H. Humphrey*, 1911), no. 57.

Preparation of wings in Ca. balsam; Etn.

POLYMITARCYS, Etn. (1868).

Through misunderstanding a conversation with Dr. E. Joly

of Toulouse in 1880, I wrongly coupled together a defective subimago of *P. virgo*, Ol., and a nymph inhabiting the Garonne, naming them *Jolia roeseli* in 1881. Professor Joly could not show me the fly, which he had reared from nymphs of that kind; but in 1905 an allied American species was bred by Dr. J. G. Needham, Professor of Zoology at Lake Forest College, N.Y., and was identified with the genus named from the adult fly *Chirotonetes*, Etn. (1881). Simultaneously the nymph conjectured by me in that year to be a *Chirotonetes* was shown by Dr. Needham to be an *Ameletus*, Etn. (1881).

Polymitarcys sp.

A subimago, ♀ of a small species, deprived of caudal setæ. Fore wing, not fully extended, about 13 mm. long, dull, white, shaded very lightly from the costa to the radius, and the strongest of the longitudinal veins faintly tinged with reddish-violet grey; the remaining neuration whitish.

Hab. Zungeru, N. Nigeria (Nov. 1910); *J. W. Scott-Macfie*, 1911, 417. British Museum.

Prep. Part of hind wing in Ca. balsam; Etn.

Polymitarcys sp.

♀.—A larger insect than the preceding. Fore wing about 20 mm. long, dull, semitransparent, light warm sepia-grey, with opaque neuration. Setæ pilose.

Hab. Usangu District, German E. Africa (Nov. 29–Dec. 15, 1910). Alt. 3500–4500 ft.; *S. A. Neave*, 1911, 17, 7, British Museum.

Prep. Hind wing in Ca. balsam; Etn.

EPHEMERA, Linn. (1746), restricted Leach (1815).

Species of this genus appear to be less constant in the matter of wing-markings than has generally been supposed. Specimens bred in cool waters are much alike; but others of the same species that have inhabited warmer lakes or ditches might often be mistaken for quite different kinds at the first glance, the spots in their wings being more numerous and confluent, and the coloured edging of cross-veinlets broader or more pronounced. *Gregarine* may even produce modifications of markings in the abdomen in individual flies.

Ephemera sp.

Imago ♂ (dried).—Wings of a talcose gloss, transparent, tinted very faintly with a brownish adumbration, especially

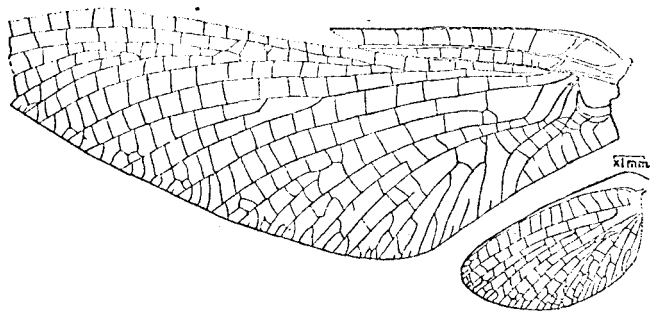
visible in parts not flattened out near the subcosta of the fore wing, and less strongly in a diffused cloud of moderate width extending from the tip along the outer margin of the hind wing; cross-veinlets also bordered narrowly with the same faint tint. Neuration piceous. In the fore wing the usual spots are almost obsolete, being represented only by a faint nebulosity just discernible in the immediate vicinity of the bifurcation of the median vein, and another even less visible at the near end of the long intercalar vein included in the cubital fork; in the hind wing no spot can be seen. In the figure both of the wings are incomplete, and cross-veinlets in the costal area (roughly sketched) are omitted. Cabinet-pests have left too little remaining of body, legs, and setæ for description, and the ♂ genitalia are ill displayed.

Approximate length of wing, ♂ im. 13, ♀ subim. 15 mm.

To this species are referred four defective specimens:— 1 ♀ subim., Nyasaland, Domira Bay, W. shore of Lake Nyasa (18–21 Oct., 1910), *S. A. Neave*; 2 ♂ im., Uganda, Entebbe (11–12 Aug., 1911), *C. C. Goudey*, 1912, 70, British Museum; and 1 ♂ subim., Uganda Prot., Tero Forest, S.E. Buddu, 3800 ft. (26–30 Sept., 1911), *S. A. Neave*, Entomological Research Committee.

PENTAGENIA, Walsh (1863).

A genus known hitherto from N. America only.



Pentagenia sp.?

Neuration of wings, incomplete.

? *Pentagenia* sp.

Subimago ♀ (dried).—Wings dull, semitransparent, smoky whitish, with black neuration; the terminal margin outlined

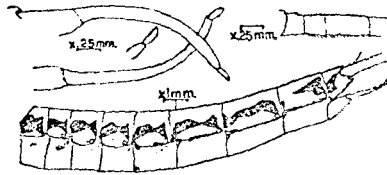
with grey-black and skirted by a narrow edging of a smoky tint shaded off inwards; most of the longitudinal veins in the hind wings white. Abdomen probably yellowish white, with black markings, a somewhat serrated stripe on each side of the dorsum being the principal. Fore legs opaque, subluteous; hinder legs of a lighter yellow, especially the tibiæ; ungues and joinings of their tarsi dark.

Length of fore wing about 27 mm.

Hab. British E. Africa, Ilala, Maramas Dist., 14 miles E. of Mumias, 4500 feet alt. (June 18-21, 1911), *S. A. Neave*; 1912, 20, British Museum.

HEXAGENIA, Walsh (1863).

All species previously known are natives of N. and S. America and Asia respectively.



Hexagenia (?) *illustris*, sp. n.

Abdomen from the side, showing lateral markings of the dorsum; the median seta (rudimentary), part of a lateral seta, and a limb of the ♂ forceps in dotted outline out of focus. Part of forceps; the apical joint of one of them from a different standpoint; and the base in profile of an outer caudal seta, on a uniform larger scale than the former detail.

Hexagenia illustris, sp. n.

Innago ♂ (dried).—Dorsum ivory-white down the middle, with black lateral markings above the spiracular line on the abdomen (see fig.); a broad fuscous stripe along each side of the meta- and mesonotum, black on the pronotum, and the pleura, below that, black as far as the insertions of the legs. Head black; the space between the antennæ besides their first two joints whitish. The abdomen has in addition a fine abbreviated transverse line in the middle of the dorsal base of segment 9, a small triangular spot in segment 8, and a short acute triangular streak in segment 7, barely indicated in segment 6, all in corresponding positions, blackish. Venter spotless, except the joining at the base of segment 9, and, close

to it, a short streak on each side of the nervous track; also its apical border and a spot at the roots of the genitalia greyish or fuscous. Forceps: limbs elongate, somewhat darkened towards their extremities, and composed seemingly of only a single minute joint terminating the long basal joint. Wings transparent, vitreous, with light green and red-purple iridescence; fore wing in the costal and subcostal areas tinged with light yellow-amber; venation black, excepting the bases of the veins posterior to the radius and the shortest venules of the anal group, and in the hind wing a large proportion of the longitudinal veins and a few of the cross-veinlets, which are whitish or not coloured. Fore legs lutescent; hinder legs flavescens or light yellow-amber, with the femora towards the tips and the tarsi tinged with traces of the former colour. Joints of the fore tarsus shortening from the longest, second subequal to third, fourth, fifth, first; hinder tarsi fifth, third, fourth (first indistinct). Setæ at the roots light burnt-umber brown, their joinings darker and the bases of the joints faintly tinged with the same, becoming gradually lighter; and then, in nearly their terminal halves, the outer tails become piceous or bistre-brown.

Length of body about 25, fore wing 22, outer setæ 65 mm.; median seta as long as the first two joints combined.

Hab. Uganda Protectorate, Mpanga Forest, 4800 ft. (13-23 November, 1911), *S. A. Neave*.

Three small fragmentary flies can be placed in the group of *Ecdyurus*:—

A single ♀ subim., captured on a tent-fly 300 yards from the river Mara-Mara, Liembwa Dist., Nyanza Prov., Brit. E. Africa (12 Dec., 1911), *C. M. Dobbs*, no. 52.—Hind tarsus: first joint longer than second and second longer than third joint. Fore tarsus: first joint equal in length to second and longer than third. Hind wings well developed. Femora each with a short, acute, longitudinal, black, recurrent apical streak near the lower edge, but no median dark band.

Affinities with *Epeorus*, Etn.

A single ♀ imago from N.E. Rhodesia, Niamadzi R., near Nawalia, at 2000 ft. alt. (17-22 Aug., 1910), *S. A. Neave*; 1911, 177, British Museum.—Hind tarsus (only one remaining) in course of reproduction, and therefore abnormal; fore legs beyond the trochanter lost.—Sedis incerti.

A single ♀ imago, labelled N. Nigeria, Zungeru (Nov. *Ann. & Mag. N. Hist.* Ser. 8. Vol. xii. 20

1910), *J. W. Scott-Macfie*; 1911, 417, British Museum.—Hind tarsus: first joint equal in length to second and longer than the third; fore legs beyond the trochanters lost; hinder femora not banded nor with any dark streak near the middle.—Sedis incerti.

To name such fragments would be foolish and reprehensible.

XXXIII.—*Fishes from Peru, collected by Dr. H. O. Forbes.*
By C. TATE REGAN, M.A.

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A SMALL series of fishes from Peru, collected and presented to the British Museum by Dr. H. O. Forbes, is of some interest, as it includes the type of a new species of *Chirolophius*, an example of the little-known *Trachinotus paitensis*, and specimens of some Californian species not previously known to range southwards to Peru.

1. *Branchiostoma elongatum*, Sundev.

Lobos de Tierra, 5 to 8 fathoms.

2. *Lebiasinã bimaculata*, Cuv. & Val.

Pacasmayo; fresh water.

3. *Tetragonopterus microphthalmus*, Günth.

Pacasmayo; fresh water.

4. *Tetragonopterus simus*, Bouleng.

Pacasmayo; fresh water.

5. *Vomer setipinnis*, Mitch.

Ferrol Bay.

6. *Trachinotus paitensis*, Cuv. & Val.

Hist. Nat. Poiss. viii. p. 438 (1831).

Trachinotus paloma (Jord. & Starks), Starks, Proc. U.S. Nat. Mus. xxx. 1906, p. 786.

Depth of body $2\frac{1}{4}$ in the length, length of head $3\frac{2}{3}$. Snout