

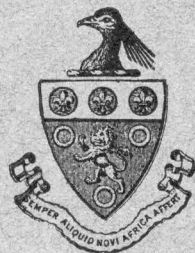
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ANNALS
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SOUTH AFRICAN MUSEUM

VOLUME X.

PART VI. containing:—

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12 Text-figures).
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South Africa*. By *A. RAFFRAY*.



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8.—Ephemeridae from South Africa.—By ESSEN PETERSEN.

(With 12 Text Figures.)

ONLY a few species of *Ephemeridae* are known from South Africa, and therefore I hope that this small contribution to our knowledge of the fauna may be of some interest. The material reported on belongs, with a single exception, to the South African Museum.

List of the species known from South Africa:—

1. *Elassoneuria trimeniana*, MacLachlan.
2. *Polymitarcys capensis*, nov. sp.
3. *Hexagenia fulva*, nov. sp.
4. *Atalophlebia tabularis*, Eaton.
5. *Adenophlebia dislocans*, Walker.
6. *Adenophlebia westermanni*, nov. sp.
7. *Tricorythus discolor*, Burmeister.
8. *Caenis*, sp. A. E. Eaton mentions in his "Revisional Monograph of Recent Ephemeridae" (Trans. Linn. Soc., Lond., 1888, pp. 142 and 308) an undescribed species of that genus from Cape Town.
9. *Centroptilum bifasciatum*, nov. sp.
10. *Cloëon africanum*, nov. sp.
11. *Cloëon*, sp., undescribed. A. E. Eaton, Trans. Ent. Soc., Lond., 1871, p. 103; Trans. Linn. Soc., Lond., 1888, p. 186.
12. *Ecdyurus péringueyi*, nov. sp.
13. *Ecdyurus*, sp., undescribed. A. E. Eaton, Trans. Linn. Soc., Lond., 1888, p. 309.

GEN. ELASSONEURIA, Eat.

ELASSONEURIA TRIMENIANA, MacLachlan.

Oligoneuria trimeniana, MacLachlan, Ent. Monthl. Mag., vol. iv., 1868, p. 177-178; A. E. Eaton, Trans. Ent. Soc., Lond., 1871, p. 56, pl. iii., 9-9a.

Elassoneuria trimeniana, Eaton, Ent. Monthl. Mag., vol. xvii., 1881, p. 191; Trans. Linn. Soc., Lond., 1888, p. 32, pl. iii., 3.

Of this interesting species, of which only the female is known, there were six specimens in the Collection, all females. They were taken at M'fongosi, Zululand, March, 1911, by W. E. Jones.

As the descriptions given by MacLachlan and Eaton are very short, I add a few supplementary notes.

Head and thorax pale brown. Eyes black. Ocelli white, surrounded by black. The basal joint of the antennae pale brown, the bristle black. Abdomen white with a faint yellowish tinge. All the dorsal segments with a small purplish brown hind border and a lanceolate median spot, which does not touch the front or hind border of the segments. The underside white with a small yellow spot in the middle of each segment and with yellow lateral margins. Setae and legs white.

Length of body, 16–20 mm.; forewing, 17–22 mm.

GEN. POLYMITARCYS, Eat.

POLYMITARCYS CAPENSIS, sp. nov.

Subimago ♂. Head and thorax light violet-grey. The ocelli white, surrounded by a black circle; the eyes jet black. On the prothorax two dark spots near the front margin; front angles and lateral margins reddish violet. Meso- and metathorax yellowish brown, with a fine reddish violet median line. Abdomen ventrally white, dorsally whitish with a faint reddish tinge, which becomes strong reddish yellow on the last two segments. From the front border of each segment two lunate spots extend backwards a little farther than the middle of the segments. The two spots do not touch each other. Forceps white; penis yellow. Fore femora and tibiae greyish black; tarsi and underside of femora whitish. Intermediate and hindlegs pale yellowish. Wings white with a faint ash-grey tinge. Neuration opaque, and the costa, subcosta, and radius in forewing with violet-greyish tinge.

Subimago. ♀. Setae white and very pilose.

Length of body: ♂, 13 mm.; ♀, 14–15 mm. Setae: ♀, 13 mm. Wing: ♂, 13 mm.; ♀, 15 mm.

One male and five females (all subimagines).

M'fongosi, Zululand, December, 1911.

In "A Revisional Monograph of Recent Ephemeridae or Mayflies" (Trans. Linn. Soc., Lond., 1888), p. 45, A. E. Eaton mentions a

species of *Polymitarcys* from South Africa, but without giving any description, and on Plate vi., 10*b*, he gives a drawing of the forewing. This figure agrees very well with the forewing of the above described species.

GEN. HEXAGENIA, Walsh.

HEXAGENIA FULVA, sp. nov.

Imago. ♀. Head pale yellow; eyes, a circle round each ocellus and two spots at the hind margin of head black. 1st joint of antennae light brown. Prothorax, above and beneath, pale yellow and with a broad yellowish brown lateral line. Meso- and metathorax yellowish brown; abdomen slightly paler, dorsally with a short curved blackish brown streak on the first six segments, extending from the middle of the lateral margin to the hind margin of each segment. Besides these short streaks there is on each side of the 1st-7th segments a comma-shaped blackish brown streak, the fore tip of which is broadest and touches the fore margin; the hind tip is curved inwards and does not touch the hind margin. On the dorsal surface of the 8th segment are found two dark brown longitudinal lines at each side and one along the front border; on the 9th segment one dark brown, and on the 10th two small lunate dark brown spots. Abdomen ventrally pale brown with the front angles of the segments blackish. Forelegs reddish brown, intermediate and hindlegs paler. Wings hyaline. Longitudinal nervures with the exception of the subcosta yellowish brown; the subcosta and the cross-veins blackish brown. Wing-roots yellowish. The marginal area of forewing yellowish brown.

Length of body, 22 mm.; forewing, 20 mm.

One example, ♀. The specimen has lost its setae. It was captured at M'fongosi, Zululand, December, 1911, by W. E. Jones. The species much resembles *Hexagenia limbata*, Pict., from North America, and it is the first species of the genus recorded from Africa.

GEN. ATALOPHLEBIA, Eat.

ATALOPHLEBIA TABULARIS, Eaton.

Atalophlebia tabularis, Eaton, Trans. Linn. Soc., Lond., 1888, p. 91, pl. x., 16*h*.

This South African species was not represented in the Collection. The only known example was found in 1874, floating on the streamlet at the Platteklip, Table Mountain, Cape of Good Hope. But amongst the material is a specimen, gummed on paper and

with the wings cleft together; it is in the subimaginal stage and collected at M'fongosi, Zululand, September, 1911, by W. E. Jones. With some hesitation I refer the specimen to a species of *Atalophlebia*.

GEN. ADENOPHLEBIA, Eat.

ADENOPHLEBIA DISLOCANS, Walker.

Ephemeria dislocans, Walker, Trans. Ent. Soc., Lond., vol. v., 1860, p. 198.

Adenophlebia dislocans, Eaton, Ent. Monthl. Mag., vol. xvii., 1881, p. 194; "Rev. Monogr. of Recent Ephemeridae," 1888, p. 112.

In the Collection are 2 ♂♂ (imagines) and 1 ♂ (sub-imago), all mounted on cardboard and not in good condition. The specimens were collected at Barberton, Transvaal, by Miss H. Edwards, March, 1911.

To the excellent description of both sexes in the imaginal stage, given by Eaton, I have only to add that the pterostigmatal region has a violet-grey tinge. In the subimago the wings have a slight greyish tinge and blackish neuration. The cross-veins are shaded with blackish grey.

ADENOPHLEBIA WESTERMANNI, sp. nov.

Imago. ♂. Head and thorax blackish brown. The abdominal segments dorsally yellowish brown with the hind border and an oblique streak on each side dark brown. The ventral surface of abdomen yellowish brown with a median longitudinal brown streak.

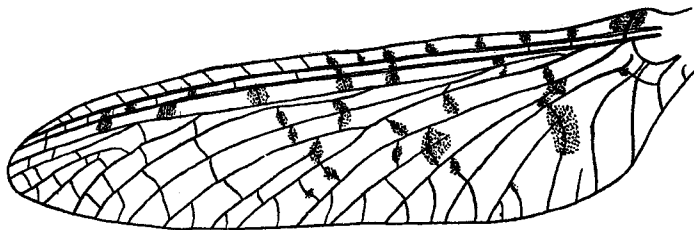


FIG. 1.—Left Forewing of *Adenophlebia westermanni*. ♂.

The forceps brown, the last joint yellow. Three caudal setae, which are of equal length, brown at their base, paler towards their apex. Legs brown; femora with a broad black median band and with a small black band at the base and at the apex. The tarsal claws all narrow and uncinat. Femur, tibia, and tarsus of foreleg almost

of the same length. 1st tarsal joint of foreleg very short, 2nd the longest, 3rd, 4th, and 5th gradually shorter.

Forewing very elongated; hindwing oblong and oblique; its marginal area abbreviated and very broad. Membrane of wings hyaline; neuration brownish; a great part of the cross-veins in forewings clouded with brownish. Hindwings with many cross-veins.

Length, 7 mm.; forewing, 8 mm.; setae, 17 mm.

One specimen, a male, from Cape of Good Hope, January, 1817, in the Westernmannian Collection in the Museum of Copenhagen.

The species differs from *Adenophlebia dislocans*, especially in the oblong form of forewings, and it is with some hesitation that I put the species in that genus; but as it agrees with the type species of the genus in neuration of wings, in form of hindwing, of the tarsal claws, as well as in the proportion of the length between femur, tibia, tarsus, and tarsal joints I place it provisionally in that genus.

GEN. TRICORYTHUS, Eat.

TRICORYTHUS DISCOLOR, Burm.

Oxycypta discolor, Burmeister, Handb. der Ent., ii., 1839, p. 797.

Cloëon discolor, Walker, Cat. Neur. Ins., Brit. Mus., iii., 1853, p. 577.

Caenis discolor, Eaton, Trans. Ent. Soc., Lond., 1871, p. 96. Hagen, Trans. Ent. Soc., Lond., 1873, p. 399.

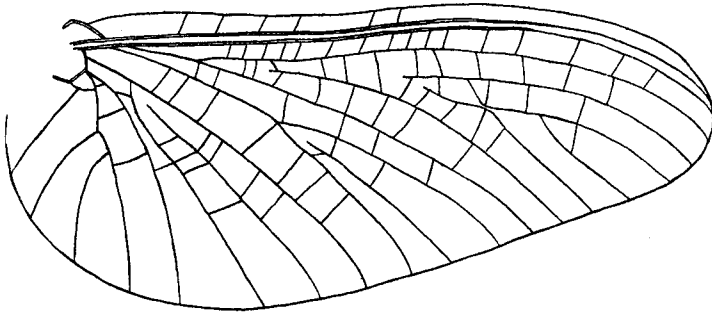


FIG. 2.—Forewing of *Tricorythus discolor*.

Tricorythus discolor, Eaton, "Rev. Monogr. of Recent Ephemeroidea," London, 1884, p. 139.

Imago. ♂. Head black, pro-, meso-, and metathorax castaneous. Abdomen dorsally greyish yellow-brown, hind borders of the seg-

ments darker. Setae greyish white with very small black annulations. Legs greyish. Wings greyish brown; longitudinal nervures darker; costa and subcosta blackish; cross-veins not very distinct.

Length of body, 6 mm.; forewing, 7-7.5 mm.; setae, 12 mm.

Three males, imagines, mounted on cardboard from Tulbagh, April, 1892, and two females, subimagines (pinned), from M'fongosi, Zululand, October, 1911, taken by W. E. Jones.

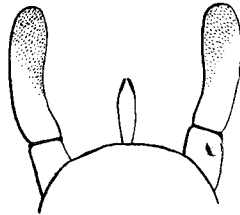


FIG. 3.—Forceps and Penis of *Tricorythus discolor*. ♂.

The species is described by Burmeister from a female, subimago, in Winthem's Collection, taken at Cape of Good Hope. The present two specimens of subimagines agree very well with the description, with the exception that the ventral surface of abdomen is more blackish, and that the legs are more greyish. I am undoubtedly right in referring the three males to the species. The neuration of wings is quite the same. The colour of wings in the subimago is blackish grey, in the imago brownish grey.

GEN. CENTROPTILUM, Eat.

CENTROPTILUM BIFASCIATUM, sp. nov.

Imago. ♂. Head and thorax light brown, darker at the sides. Abdomen vitreous in 2nd-7th segments; the last segments opaque,

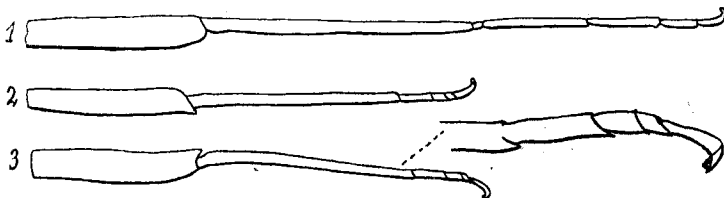


FIG. 4.—Fore (1), Intermediate (2), and Hindleg (3) of *Centropitulum bifasciatum*. ♂.

reddish yellow. The dorsal surface of the first-named segments with an oblong, reddish brown median spot, and an oblique spot

or streak of the same colour at each side; the side spots do not touch the front margin of the segments. On the underside of the 2nd-7th segments there are found the same markings as on the upper.

Limbs of the forceps yellowish, the basal joint with a greyish tint. Penis not visible. Femur of foreleg reddish brown, tibia dark reddish brown, yellowish at the base; all the tarsal joints yellowish,

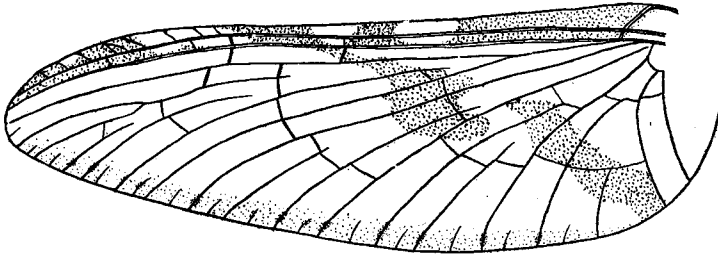


FIG. 5.—Forewing of *Centroptilum bifasciatum*. ♂.

reddish brown towards apex. Femora of intermediate and hind-legs reddish brown, yellowish at the base; tibiae and tarsi yellowish. Wings vitreous with the greater part of nervures light brown. Forewings with the marginal areas and an abrupt, oblique fascia brown coloured; along the hind border is found a faint brown shadow. A few cross-veins in the front and middle part of the wing blackish brown. Hindwing brown towards the apex.

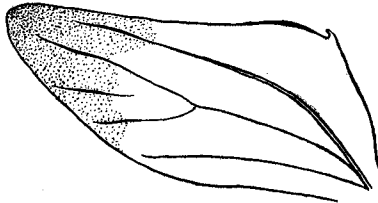


FIG. 6.—Hindwing of *Centroptilum bifasciatum*. ♂.

The female differs from the male in the colouring of the abdomen. 2nd-7th segments dorsally reddish with vitreous spots especially at the sides, ventrally with a reddish brown streak at the sides of the segments. In the forewing the abrupt fascia and the brown shadow along the hind margin are wanting. Hindwing without brown apex. Sub-imago (♂ and ♀). Thorax greyish brown. Abdomen light brown, ventrally paler. Setae greyish brown, paler in the male. Fore

femora brown, tibiae light brown, darker towards the apex. Tarsal joints light brown. Intermediate and hind femora yellowish reddish-brown; tibiae and tarsi yellowish. The greater part of the longitudinal nervures and all the cross-veins in the forewings brown, and and with greyish brown shadow. The membrane of wings mostly greyish brown, and the colour forming cross-bands.

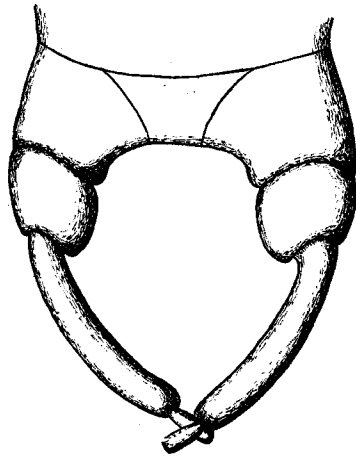


FIG. 7.—Forceps of *Centroptilum bifasciatum*. ♂.

Three imagines and three subimagines found at M'fongosi, Zululand, by W. E. Jones. Of the subimagines one male was captured in September, 1911, one female in October, 1911, and one in December, 1911. Of the imagines one female was captured in October, 1911, and two males in December, 1911.

Although the species does not agree with the other species in the genus in regard to the shape of the hindwing, I place it in the genus *Centroptilum*. Possibly a new genus ought to be established for the species, but I postpone doing so, because probably more allied species will also be found in South Africa. This species is the first *Centroptilum* recorded from this part of the world.

GEN. CLOËON, Sam.

CLOËON AFRICANUM, sp. nov.

Imago. ♂. Thorax castaneous. 2nd–6th segments of abdomen transparent, whitish and with a faint reddish tinge; the hind borders of the segments darker. The 7th–9th segments reddish brown on the dorsal surface, whitish on the ventral. Forceps yellow-

ish white. Setae white with darker annulations at the joints. Legs white with a yellowish brown tinge. Wings hyaline with a yellowish tinge in the marginal area. Longitudinal nervures yellowish brown; subcosta and radius mostly yellow. Cross-veins few in number, placed as in the typical *Cloëon*-wing, and only visible when the wing is held up to the light. The number of cross-veins in the pterostigmatal area is not visible owing to the forewings being compressed together. In the forelegs the tibia is longer than the femur and of the same length as all the tarsal joints together. 1st tarsal joint as long as the three others; the 2nd almost as long as the 3rd and the 4th together, and the 3rd is $\frac{1}{3}$ longer than the 4th.

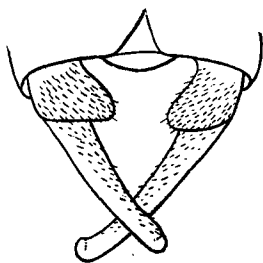


FIG. 8.—Forceps of *Cloëon africanum*. ♂.

Length of body, 4.5 mm.; wing, 5 mm.; setae, about 10 mm.

One specimen, male, was captured at M'fongosi, Zululand, September, 1911, by W. E. Jones.

The species has much likeness to a small male of *Cloëon dipterum*, but it differs in the shape of the forceps and by its blackish red eyes (dried). In *Trans. Ent. Soc., Lond., 1871, p. 103*, A. E. Eaton mentions a female specimen of a species of *Cloëon* from Knysna, very closely allied to *Cloëon dipterum*.

GEN. ECDYURUS, Eat.

ECDYURUS PÉRINGUEYI, sp. nov.

Imago. ♂ Pro-, meso-, and metathorax light brown. Abdomen dorsally reddish brown, with the hind border of the segments a little darker, ventral surface yellow with exception of the last segment, which is reddish yellow. Forceps yellow. Femora light brown, tibiae and tarsi yellow, the last named with darker joints and with blackish claws. Setae brownish yellow with small brown annulations at the joints. Wings vitreous with a very faint yellowish tinge in the marginal area of forewing, which is mostly due to the yellow

subcosta and radius; the other longitudinal nervures only a little darker than the membrane. The cross-veins almost invisible.

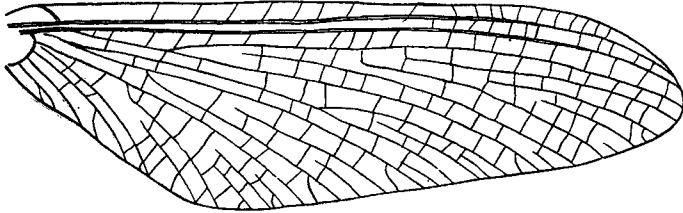


FIG. 9.—Forewing of *Ecdyurus peringueyi*. ♂.

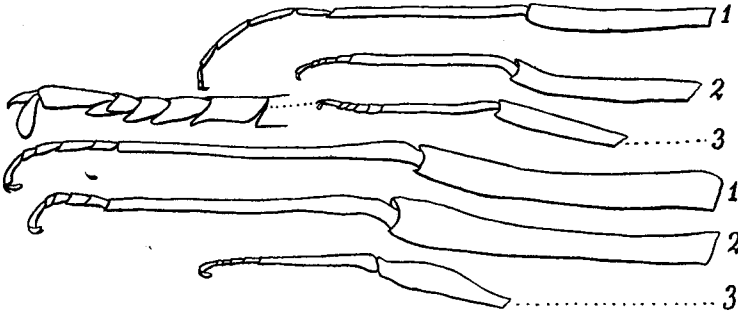


FIG. 10.—Legs of ♂ and ♀ of *Ecdyurus peringueyi*.
(The legs of ♀ more enlarged than of ♂.)

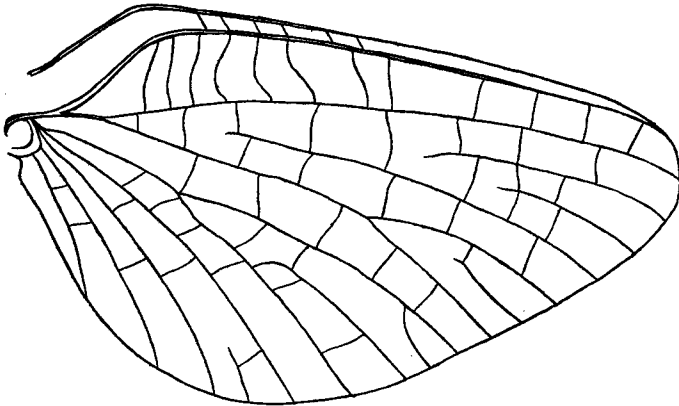


FIG. 11.—Hindwing of *Ecdyurus peringueyi*.

♀. Pro-, meso-, and metathorax light brown, at the sides with some small blackish stripes and spots. 1st–6th abdominal segments

dark reddish brown above with black stigmata and with yellowish hind borders; 7th-9th segments reddish yellow with a reddish brown median stripe. Ventral surface yellowish with a reddish brown median stripe; the 9th segment with a long prolongation, having an incision at its apex. Setae reddish at the base and becoming yellowish towards the apex; all the joints with a darker annulation. Legs and wings as in the male.

Length of body: ♂, 7 mm.; ♀, 11 mm.; forewing: ♂, 8.5 mm.; ♀, 14-15 mm.; setae: ♂ ca., 15 mm.; ♀, 30 mm.

Three males, three females, all imagines, and one female, sub-imago, are present in the Collection; all collected at M'fongosi, Zululand, October, 1911, by W. E. Jones.

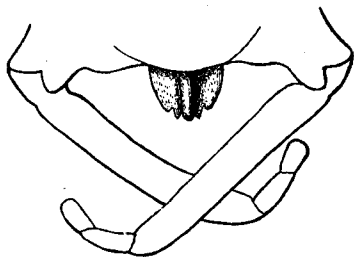


FIG. 12.—Forceps of *Ecdyurus peringueyi*. ♂.

I have placed the species in the genus *Ecdyurus*, although with some hesitation. The highly elongated and narrow forewings, the proportion between the length of the tarsi and tibiae and the shape of one of the claws, which is curved and plainly pointed, make in some degree the place of the species difficult to determine. The proportion between the length of tarsal joints is the same as in the genus *Ecdyurus*; but the pale colour gives the species much likeness to a species of *Heptagenia*. In "A Revisional Monograph of Recent Ephemeridae or Mayflies" (Trans. Linn. Soc., Lond., 1881), p. 309, A. E. Eaton mentions a specimen (♀) of *Ecdyurus*, taken by R. Trimen at Paarl. He says that the specimen "has a superficial likeness to species of *Heptagenia*, but differs therefrom in the proportion of its legs."