

EXPLORATION HYDROBIOLOGIQUE
DU BASSIN DU LAC BANGWEULO
ET DU LUAPULA

1767
HYDROBIOLOGICAL SURVEY OF
THE LAKE BANGWEULU
LUAPULA RIVER BASIN

Résultats scientifiques publiés par Scientific results edited by

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back copy

Volume XIV, fascicule 3

ODONATES ZYGOPTÈRES ODONATA ZYGOPTERA

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Expl. hydrobiol. Bangweolo - Luapula
Vol. XIV, fasc. 3



CERCLE HYDROBIOLOGIQUE DE BRUXELLES
Association sans but lucratif
73, RUE ROOSENDAEL

BRUXELLES BRUSSELS
Belgique Belgium

1967

Distribué le 15 octobre 1967

Issued October 15th, 1967

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INTRODUCTION

The present paper gives part of the results of "Hydrobiological Survey of the Lake Bangweulu-Luapula River Basin" directed by Professor Dr J. J. SYMOENS, Lubumbashi (Elisabethville). It is based on a large and interesting collection of Zygoptera, particularly rich in *Pseudagrion* SELYS, with over nine hundred examples of the genus. The author is indebted to Professor Dr J. J. SYMOENS and Dr M. A. LIEFTINCK for permission to examine this extensive material.

The collection includes two new species of *Pseudagrion* described here (one of them previously known but unrecorded). The following are described as new in the Zygoptera:

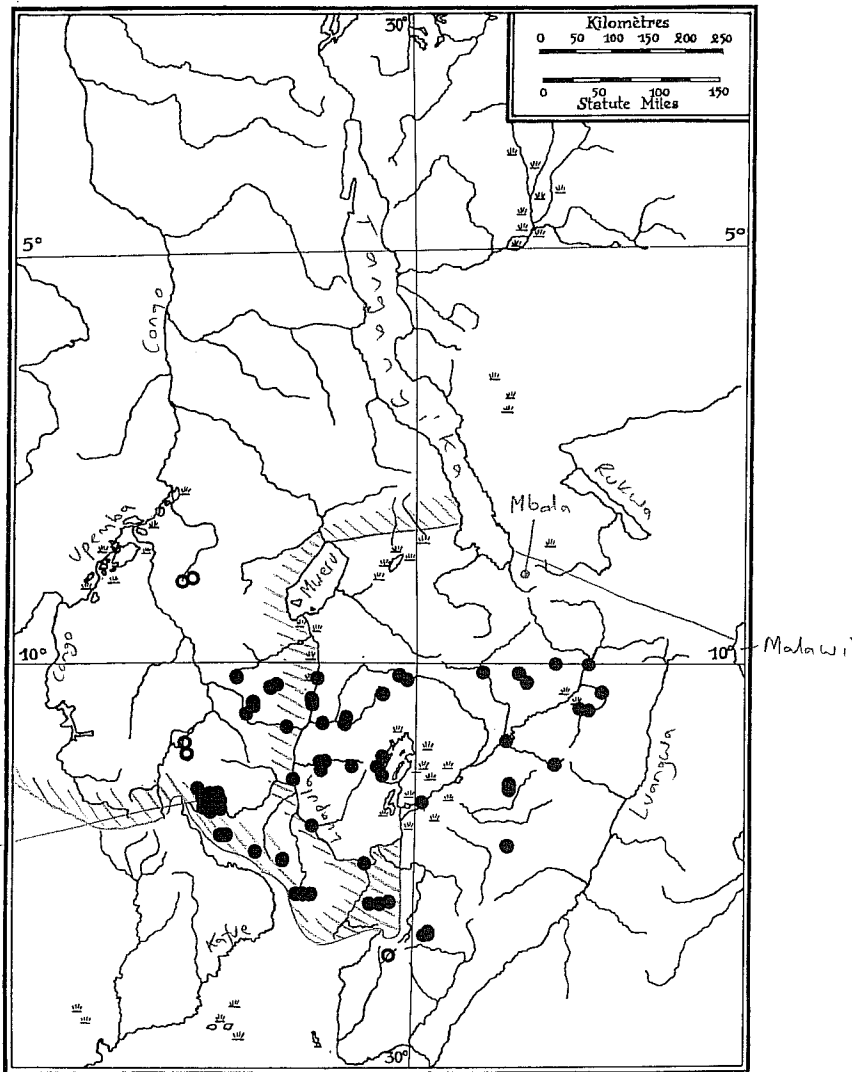
Pseudagrion coeruleipunctum PINHEY (1964), allotype ♂.

Pseudagrion symoensii PINHEY n. sp., both sexes.

Pseudagrion tricornis PINHEY n. sp., holotype ♂.

Platycypha lacustris chingolae PINHEY (1962), allotype ♀.

One species of *Pseudagrion*, *P. rufostigma* LONGFIELD (1945) which might be expected from this region, is unrepresented. Described from Angola and recorded from Ndola westwards to Mwinilunga this species may not extend to the Bangweulu region but it will probably be found in the southern Katanga. A more surprising omission is the family *Platynemididae*.



Map 1 — Distribution of samples mentioned in the present paper.

The black circles represent localities in the Bangweulu-Luapula Basin; the white circles represent localities in the neighbouring regions.

TAXONOMY AND DISTRIBUTION OF SPECIES

Key to genera

A. With 2 antenodal cross-veins:

I. Pterostigma 2 or more cells in length. R_{4+5} and $1R_3$ rise nearer arculus than nodus *Lestes* (p. 7)

II. Pterostigma less than 2 cells long. R_{4+5} and $1R_3$ rise nearer subnodus than arculus:

a. Discoidal cell rectangular. Anal vein not reaching more than 1 cell at most beyond this cell:

1. Anal vein not reaching beyond basal side of discoidal cell. Wings hyaline *Elatoneura* (p. 10)

2. Anal vein reaching 1 cell beyond distal side of discoidal cell. Wings of ♂ yellowish *Chlorocnemis* (p. 11)

b. Discoidal cell with lower distal angle acute. Anal vein much longer:

1. Frons with distinct crest. Body uniformly coloured with scarcely any black marking at all

Ceriagrion (p. 11)

2. Frons without crest. Body more or less marked with black:

a. Arculus far distal to second antenodal cross-vein. Small species, the abdomen less than 20 mm long
Agriocnemis (p. 33)

β. Arculus close to or at second antenodal cross-vein. Usually larger species:

★ Anal vein leaves posterior margin at or close to the anal-crossing vein:

■ Pterostigma rhomboidal, shorter than 1 cell, usually rounded on outer border. ♀ with vulvar spine on 8th sternite *Acigrion* (p. 30)

■ Pterostigma a parallelogram, 1 cell in length on posterior border, the outer border often elongated. ♀ without vulvar spine *Pseudagrion* (p. 12)

★★ Anal vein leaves posterior margin well before this cross-vein:

■ Pterostigma on forewing of ♂ bicoloured. Postclypeus in both sexes metallic
Ischnura (p. 33)

■ Pterostigma unicolorous. Postclypeus non-metallic *Enallagma* (p. 31)

B. With 5 or more antenodal cross-veins:

I. Large species with broad wings, not petiolate at base. Pterostigma small or absent:

a. Thorax pale brown with broad green bands. Pterostigma minute or absent. Branch of 1 A turns distad
Phaon (p. 35)

b. Thorax uniformly metallic green or blue, without brown markings. Pterostigma narrow. Branch of 1 A not turning outwards *Umma* (p. 35)

II. Small species with narrow, petiolate wings. Pterostigma long and narrow:

a. Tibiae of ♂ not expanded. ♀ without black central line on abdomen *Chlorocypha* (p. 36)

b. Tibiae of ♂ with flattened expansions, white on one surface, red or orange on the other. ♀ with black mid-dorsal line on abdomen *Platycypha* (p. 37)

Family LESTIDAE

Genus LESTES LEACH (1815)

Moderately well represented in this collection but only a doubtful female of the very widespread *L. pallidus* (RAMBUR). The latter species is, however, more common in open bush country or semi-arid territory. The other species are generally found either in pools near luxuriant growth or in shaded localities, as in thick bush.

A. Abdomen without broad black dorsal band. Thorax also very sparsely marked with black *L. pallidus*

B. Abdomen with black dorsal band. Thorax generally well marked with black:

I. Thoracic stripes straight, regular, well developed:

a. Thorax with linear green or black stripes, often pruinose in ♂; anal appendages of ♂ distinctly down-turned
L. plagiatus

b. Thorax with thick green stripes but no black stripes; not pruinose dorsally. Appendages of ♂ forcipate:

1. Wings amber with brown apices *L. amicus*

2. Wings hyaline or fumose, without brown apices *L. virgatus*

II. Thoracic stripes very irregular or, in females, much reduced:

a. Small species with smoky wings. Anal appendages of ♂ forcipate *L. spec. prope simulans*

b. Wings not fumose. Anal appendages of ♂ strongly down-turned:

1. Large species, abdomen over 35 mm long. Superior appendage of ♂ very hirsute *L. uncifer*

2. Abdomen under 33 mm. Superior appendage not so hirsute *L. pinheyi*

Lestes amicus MARTIN

MARTIN (1910), *Ann. Soc. ent. Fr.*, 79, pp. 85, 91.

A truly Central African species found at the Victoria Falls and in Zambia, Angola, Katanga, Moçambique and Southern Tanzania.

KAFUBU REGION: Lubumbashi (Elisabethville), *Symoens* 9211 (1 ♂), 9251 (1 ♂).

KUNDELUNGU PLATEAU: 20 km S. W. of Msipashi, *Symoens* 9771 a (1 ♂).

Lestes? pallidus (RAMBUR)

RAMBUR (1842), *Névroptères in Suites à Buffon*, 17, p. 252.

A species widespread in Africa and Asia, but represented in this collection only by one doubtful female. Until the genus, particularly the female members, are revised it is occasionally difficult to determine the species with certainty. It may even be a pale ♀ example of *uncifer*.

KIBARA PLATEAU: 12 km W.S.W. of Lusinga, *Symoens* 10266 (1 ♀).

Lestes pinheyi FRASER

FRASER (1955), *Exploration du Parc National de l'Upemba. Mission G.F. de Witte (1946-1949)*, fasc. 38, p. 10, figs.

Widely but sparsely distributed in Rhodesia, Zambia, Angola, Katanga and Northern Nigeria.

LAKE BANGWEULU REGION: Samfya, *Symoens* 9663 (1 ♀).

KUNDELUNGU PLATEAU: 15 km S. W. of Msipashi, *Symoens* 9754 b (5 ♂).

Lestes plagiatus (BURMEISTER)

BURMEISTER (1839), *Handbuch d. Entomologie*, II. B., 2. Abth., p. 824.

Very widespread in the Ethiopian region.

One ♀ in the present collection (No. 7693) is enormous. The thorax is very robust, the abdomen 37 mm, hindwing 30 mm. Normally the largest dimensions are abdomen 36 mm, hindwing 28 mm.

KAFUBU REGION: Lubumbashi (Elisabethville), *Symoens* 7693 (1 ♀), 7697 (1 ♂); 6 km S. of Mampa, *Symoens* 8903 (1 ♀).

Lestes uncifer KARSCH

KARSCH (1899), *Ent. Nachr.*, 25, p. 381.

A local and not very common species found from the Victoria Falls and Moçambique northwards to Kenya, Uganda and Nigeria. Its range is thus rather similar to that of *pinheyi* but a more westerly insect and less common at the southern end of its distribution.

KAFUBU REGION: 7 km S. of Lukuni, *Symoens* 8922a (1 ♀); Lubumbashi (Elisabethville), *Symoens* 9877 (1 ♀).

Lestes virgatus (BURMEISTER)

BURMEISTER (1839), *Handbuch d. Entomologie*, II. B., 2. Abth., p. 824.

A common species from Natal northwards to the Congo, Nigeria and East Africa.

KAFUBU REGION: Lubumbashi (Elisabethville), *Symoens* 8914 (1 ♀), 9687a (1 ♂).

KUNDELUNGU PLATEAU: 20 km S. W. of Msipashi, *Symoens* 9771 c (1 ♀); Lualala, *Symoens* 9794 (7 ♂, 5 ♀); Katshupa, *Malaise*, 4168 (2 teneral ♀), 4187 (1 teneral ♀).

LOWER LUAPULA REGION: Kabiashia, *Malaise* 4559 (1 ♂).

Lestes spec. prope simulans MARTIN — Fig. 1

MARTIN (1910), *Ann. Soc. ent. Fr.*, 79, pp. 85, 88.

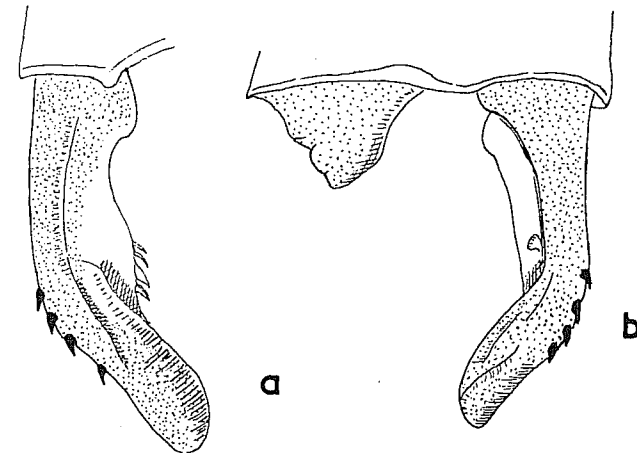


Fig. 1. — *Lestes* sp. prope *simulans* MARTIN, ♂. — a, b. Left superior appendage from above and from left side.

One male in this collection is of indeterminate status until a revision of the African members of the genus is undertaken. It belongs to the group including *L. dissimulans* FRASER (1955) and *L. simulans* MARTIN (1910), but not typical of either. It is, however, identical to a series in the National Museum, Bulawayo, which has not yet been assigned to a species but is very close to *simulans*. This series is mainly from the Victoria Falls, but a few specimens from equatorial Africa are also very near it. The anal appendages are figured here (fig. 1) of No. 8161.

By thoracic markings this species does not agree with *dissimulans*. Unfortunately, FRASER'S description of the latter does not include any illustrations and the type ♂ *dissimulans*, from Dakwa, Congo, has lost the terminal segments of the abdomen. To add to the difficulties MARTIN also omitted any illustrations of *simulans* and the type ♂ appears to be lost!

KAFUBU REGION: Tumbwe, *Symoens* 8161 (1 ♂).

Family PROTONEURIDAE

Genus *ELATTONNEURA* COWLEY (1935)

Elattonneura frenulata (HAGEN) — Fig. 2

HAGEN (1860), *Bull. Acad. roy. Sc., Lett. et Beaux-Arts Belg.*, 2^e sér., 10, p. 444.

Distributed from the Cape Province to the Congo and Uganda. Although described from the Cape, examples further north appear to be very similar but normally larger. The latter probably represent a northerly race.

The anal appendages of a ♂ and the prothorax of a ♀ taken in copula at the Mbiya River are figured here (fig. 2).

CONGO-LUANGWA WATERSHED REGION: Mbiya River, 21 km N.N.E. of Kalonje, *Symoens* 10777a (5 ♂♂, 2 ♀♀), 10777b (2 ♂♂, 1 ♀); Shiwa Ngandu, *Symoens* 10896c (1 ♂).

LAKE BANGWEULU REGION: Mukaluka, *Symoens* 9016 (2 ♂♂, 1 ♀).

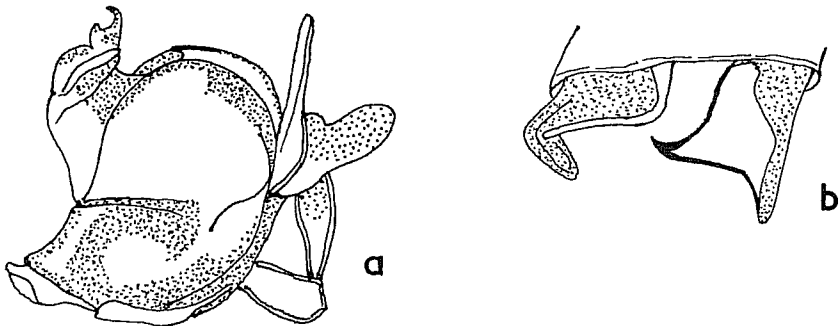


Fig. 2. — *Elattonneura frenulata* (HAGEN), ♂×♀ in copula. — a. Prothorax of ♀ from left; b. Anal appendage of ♂ from left side.

UPPER LUAPULA REGION: Serenje, *Symoens*, 10663a (2 ♂♂), 10676 (14 ♂♂, 1 ♀); Milenje River, *Symoens* 10759a (3 ♂♂, 1 ♀), 10759b (4 ♂♂), 10759d (2 ♂♂).

MIDDLE LUAPULA REGION: Namwandwe, *Symoens* 9910a (3 ♂♂); Kabunda, near Fort Rosebery, *Symoens* 10196 (1 ♀).

LUBEMBE REGION: Sakania, *Symoens* 9292a (2 ♂♂), 9292b (1 ♂).

KAFUBU REGION: Lubumbashi (Elisabethville), *Symoens* 7713 (2 ♂♂, 1 ♀), 7714 (1 ♂), 8081 (1 ♂), 8084 (2 ♂♂), 8845 (6 ♂♂), 8878 (1 ♂), 8906b (8 ♂♂, 1 ♀), 8906c (1 ♀), 8913a (1 ♂), 8913b (5 ♂♂, 1 ♀), 8913c (4 ♂♂), 8913d (2 ♂♂, 1 ♀), 8914 (5 ♂♂), 8928a (1 ♂), 8928b (1 ♂), 8933 (2 ♂♂), 8944 (2 ♂♂), 9168 (5 ♂♂), 9169a (1 ♂), 9170 (1 ♂), 9173b (1 ♂), 9179 (4 ♂♂), 9188 (3 ♂♂, 1 ♀), 9197 (7 ♂♂), 9207 (1 ♂), 9223a (1 ♀), 9226 (1 ♂, 2 ♀♀), 9228 (2 ♂♂), 9262b (3 ♂♂), 9262c (4 ♂♂, 1 ♀), 9712 (1 ♂), 9720 (1 ♀), 9721a (5 ♂♂, 1 ♀), 9721b (2 ♂♂), 9722a (3 ♂♂), 9722b (1 ♂), 9839 (1 ♂), 9865 (6 ♂♂), 9877 (6 ♂♂), 9884 (13 ♂♂, 4 ♀♀), 9955 (10 ♂♂, 1 ♀), 9957 (5 ♂♂), 10124 (4 ♂♂, 3 ♀♀), 10125 (1 ♂), 10348 (1 ♂), 10357 (2 ♂♂, 1 ♀); Kikwanda, *Symoens* 8003 (2 ♂♂, 1 ♀); Tumbwe, *Symoens* 8007 (2 ♂♂), 8013 (1 ♂), 8632 (1 ♂); 7 km S. of Lukuni, *Symoens* 8282 (3 ♂♂), 8922a (5 ♂♂); Lubumbashi River, *Symoens* 8856 (1 ♂), 8880 (1 ♂); Kipopo, *Symoens* 8959 (1 ♂, 1 ♀); Mupopele, *Symoens* 9836 (1 ♂, 1 ♀).

KUNDELUNGU PLATEAU: Lualala, *Symoens* 9800 (1 ♀).

LOWER LUAPULA REGION: Kabiashia, *Malaisse* 4097 (1 ♂).

Genus *CHLOROCNEMIS* SELYS (1863)

Chlorocnemis wittei FRASER

FRASER (1955), Exploration du Parc National de l'Upemba. Mission G. F. de Witte (1946-1949), fasc. 38, p. 7.

Described from Katanga, this also occurs in forests of northern Zambia (Mwinilunga).

KAFUBU REGION: Tumbwe, *Symoens* 8007 (7 ♂♂), 8188 (3 ♂♂).

Family COENAGRIONIDAE

Genus *CERIAGRION* SELYS (1876)

Four species are in the SYMOENS collection, all of which are typical of the region.

A. Thorax distinctly green in both sexes:

- I. Wings hyaline. Inferior appendage longer than superior. Epaulette long and narrow *C. bidentatum*
- II. Wings broadly amber. Inferior appendage not longer than superior. Epaulette circular *C. whellani*

B. Thorax not green or only dull greenish in ♀:

- I. Small species, abdomen 28 mm, the thorax reddish brown dorsally, sharply white laterally. Epaulette circular situated below dorsal end of mesostigmal lamina *C. sakejii*
- II. Larger species, without the sharp colour division on thorax, the thorax normally more reddish at least in ♂. Epaulette more dorsal:
 - a. Segment 10 in ♂ with distal spines. Epaulette of ♀ well blackened *C. glabrum*
 - b. Segment 10 without spines. Epaulette only partly darkened *C. suave*

Ceriagrion whellani LONGFIELD

LONGFIELD (1952), *Proc. R. ent. Soc. Lond.*, (B) 21, p. 42, figs.

Locally common in Rhodesia, Zambia and northwards to Cameroons and Sierra Leone.

Only represented by a single example in the present collection.

KUNDELUNGU PLATEAU: Katshupa, *Malaisse* 4688 (1 ♂).

Ceriagrion bidentatum FRASERFRASER (1941), *Proc. R. ent. Soc. Lond.*, (B) 10, p. 64, figs.

Local in Angola, Zambia, Malawi and Uganda.

The three ♀♀ recorded here are very teneral and not named with certainty. The Samfya ♂♂ are typical.

LAKE BANGWEULU REGION: Samfya, *Symoens* 9937a (1 ♂), 9945b (1 ♂), 10296 (1 teneral ♂).UPPER LUONGO REGION: 6 km N.W. of Chisunka, *Symoens*? 10208a (1 teneral ♀).KIBARA PLATEAU: Lusinga, *Symoens*? 10264 (1 teneral ♀), ? 10269 (1 teneral ♀).**Ceriagrion glabrum** (BURMEISTER)BURMEISTER (1939), *Handbuch d. Entomologie*, II. B., 2. Abth., p. 821.

Distributed almost throughout Africa and neighbouring islands, including Madagascar, Seychelles, etc., and Arabia.

LAKE BANGWEULU REGION: Samfya, *Symoens* 9077 (1 ♂); 2 km of Ndoba, *Symoens* 10014a (2 ♀♀).KAFUBU REGION: Lubumbashi (Elisabethville), *Symoens* 7693 (1 ♂, 1 ♀), 7697 (1 ♂), 7714 (1 ♂), 8744b (1 ♂, 1 ♀), 8840 (1 ♂), 8842 (1 ♂), 8845 (1 ♂), 8914 (1 ♂), 9179 (1 ♂), 9188 (1 ♂), 9823a (1 ♂), 9823c (1 ♂), 9865 (1 ♀), 9877 (14 ♂♂, 7 ♀♀), 9884 (1 ♂), 9955 (2 ♂♂, 1 ♀); Kalota, near Kasokota, *Symoens* 8956 (1 ♂); Naviundu River, 7 km of Lubumbashi (Elisabethville), *Symoens* 9883 (1 ♂).LOWER LUAPULA REGION: Kikungu, *Symoens* 8425 (1 ♂).UPPER LUFIRA REGION: Mose, *Symoens* 10062 (1 ♀).**Ceriagrion sakejii** PINHEYPINHEY (1963), *Ann. Mag. nat. Hist.*, 13th ser., 6 (No. 61), p. 21, figs.

Hitherto only known from very few localities in Zambia. In the field it is easily distinguished by the contrast in the reddish brown thorax and its whiter sides.

CONGO-LUANGWA WATERSHED REGION: Shiwa Ngandu, *Symoens* 10811 (1 ♂), 10896a (1 ♂, 1 ♀).LAKE BANGWEULU REGION: Samfya, *Symoens* 9937a (1 ♀), 9937b (1 ♂), 9954 (1 ♂).KUNDELUNGU PLATEAU: 20 km from Msipashi, *Symoens* 9771b (1 ♀), 9771c (1 ♀).**Ceriagrion suave** RISRIS (1921), *Ann. S. Afr. Mus.*, 18, p. 316, figs.

Described originally from Katanga, this species is widespread from Rhodesia northwards to Nigeria and Kenya.

LAKE BANGWEULU REGION: Samfya, *Symoens* 9937a (1 ♂).KAFUBU REGION: Lubumbashi (Elisabethville), *Symoens* 7698 (1 ♂); 7 km S. of Lukuni, *Symoens* 8922a (1 ♂).UPPER LUONGO REGION: 12 km from Chipili, *Symoens* 9549a (1 ♂, 3 ♀♀).KUNDELUNGU PLATEAU: Katshupa, *Symoens* 9731 (1 ♂); *Malaisse* 4187 (1 teneral ♂).LOWER LUAPULA REGION: Kabiashia, *Malaisse* 4559 (1 ♀).Genus **PSEUDAGRION** SELYS (1876)

Two new species as well as the allotype of a third are added to this large genus which has been monographed by the author (PINHEY, 1964b). The opportunity is taken of correcting the Type

species which, as KIMMINS has indicated in correspondence, should have been *Agrion furcigerum* RAMBUR (1842), teste KIRBY, 1890, p. 153. In fact KIRBY at that time was uncertain of the status of *Agrion caffrum* BURMEISTER (1839) and did not include it under *Pseudagrion* but as a doubtful synonym of *Brachybasis rhomboidalis* (BEAUVOIS, 1805). The latter is itself a synonym of *Ceriagrion glabrum* (BURMEISTER, 1839) (vide PINHEY, 1962a, p. 119).The new allotype mentioned above is erected through SYMOENS' discovery of the male of *P. coeruleipunctum* PINHEY, a most remarkable dimorphic species found by the Author in East Angola. Because of its very blueness the type series of females were placed (PINHEY, 1964) in the *glaucescens* group (or subgenus). The new males, however, show this species to belong definitely to the *caffrum* group (subgenus), as a quite exceptionally pale species. The robust anal appendages confirm this apart from the absence of distal spines on segment 10.

Key to mature males

A. Segment 10 of abdomen without flat spines at distal end:

I. Abdominal segments 2 and 10 broadly blue dorsally, 8-9 also blue. Antehumeral stripe on thorax very broad but widely broken into two portions *P. coeruleipunctum*

II. Segment 2 and usually segment 10 all black or bronze-black above. Antehumeral band rarely broken and if so the band is very narrow:

a. Superior anal appendage much longer than segment 10 and the upper branch of this appendage decidedly longer than lower branch *P. greenii*

b. Superior appendage not conspicuously longer than segment 10; its upper branch not longer than lower branch:

1. Labrum bright orange:

a. Superior appendage shaped like a boxing glove, the lower branch the larger and longer:

★ Very large species with complete narrow thoracic antehumeral stripe *P. gigas*

★★ Normal size (abdomen less than 26 mm), the antehumeral stripe considerably reduced

P. symoensii

β. Superior appendage with wide gap between the branches which are of more or less equal length and size:

★ Abdominal segments 8-9 black above. Side of thorax with only short streak on second lateral suture *P. fisheri*★★ Abdominal segments 8-9 blue or violet above. Complete black stripe on second lateral suture
P. hageni tropicanum

2. Labrum green, blue or black:

a. Pterostigma black. Abdominal segments 8-9 all blue or violet:

★ Antehumeral stripe at least half as wide as mesepisternum *P. kibalense*

★★ Antehumeral stripe distinctly narrower:

■ Labrum black. Gape between branches of superior appendage small *P. makabusiensis*■ Labrum green. Gape between branches very wide *P. melanicterum*

β. Pterostigma pale or reddish brown. Abdominal segments 8-9 all black or at least broadly black laterally:

★ Lower branch of superior appendage much longer than upper branch:

■ Labrum blue or green. Narrow bluish antehumeral stripes, usually pruinose

P. inconspicuum■ Labrum black. Broad antehumeral stripes, pruinose in adults. *P. kersteni*

★★ Lower branch not or scarcely extending beyond upper branch:

■ Superior appendage with branches equal in size and horizontal *P. salisburyense*

■ Lower branch slender, directed obliquely upwards across the broad upper branch

P. spernatum

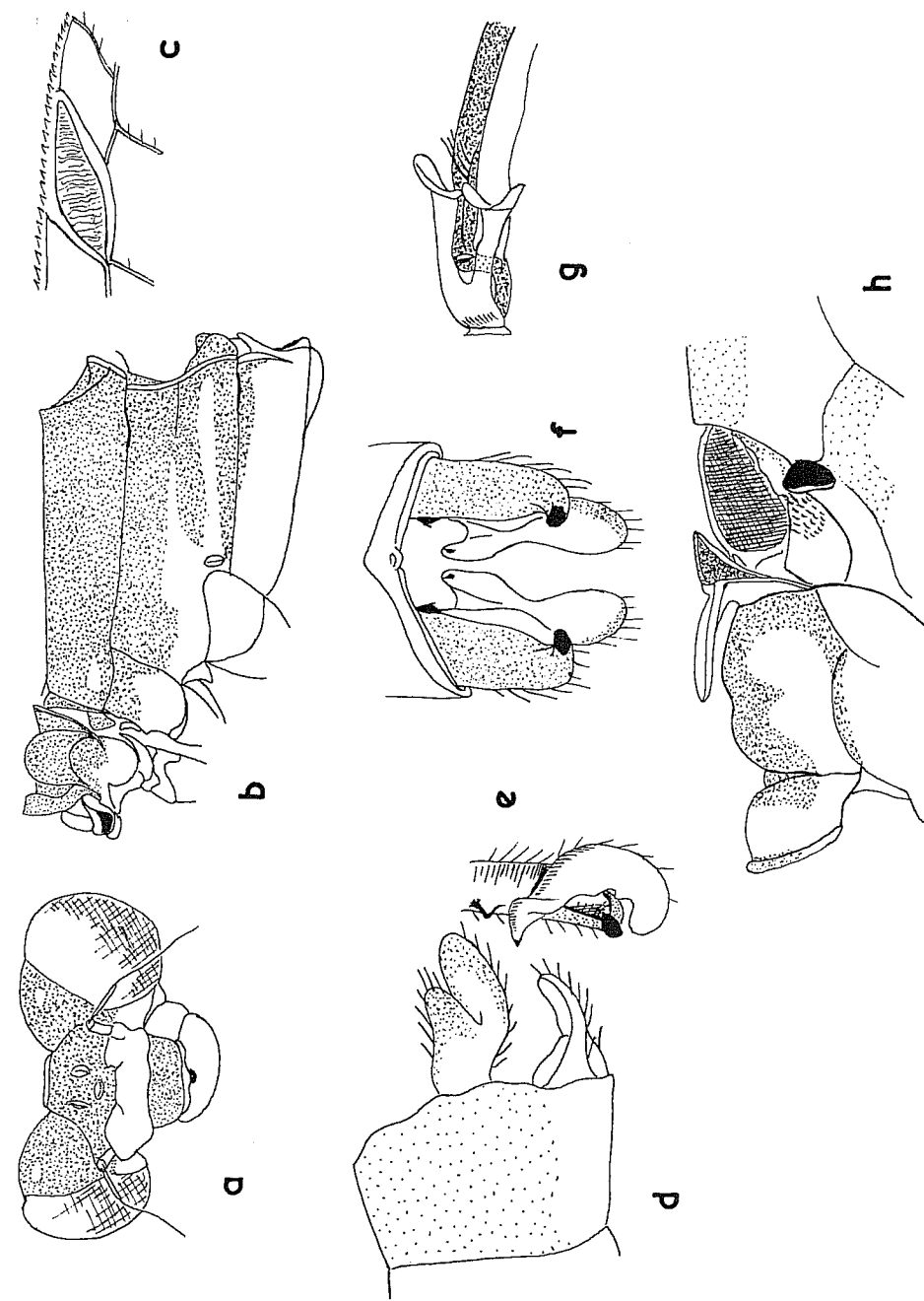


Fig. 3. — *Pseudagrion symoensii* PINHEX n. sp. — a, b. Head and thorax of holotype ♂; c. Pterostigma of left forewing, ventral view, of ♂; d. Segment 10 and anal appendages of holotype ♂ from left; e. Left superior appendage on inner surface; f. Anal appendages from above; g. Penial lobe of paratype ♂; h. Prothorax and adjacent part of mesothorax of allotype ♀ from left, the epaulette blackened.

dark reddish between brown veins, the posterior edge shorter than the cell below it. Venation dark brown. Forewings with 14 Px. Quadrilateral with lower distal angle acute, longer in hindwing than in forewing. Ac at end of petiole.

Abdomen black dorsally, except segments 8-9 which are dark violaceous (bluer in life), black laterally. Segments 1-2 coated with white pruinosity, 3-6 strongly bronze-green. Ventral surface yellowish brown. Penial lobe (fig. 3, g) with funnels like *P. furcigerum* (RAMBUR, 1842) but with three vertical spines on a ridge on the stem in front of the funnels. Segment 10 without flat distal spines. Superior anal appendage (fig. 3, d-f) blackened laterally and dorsally; in shape like a boxing glove, the upper branch ("thumb") the smaller, the lower branch shorter than in *bicoerulans* and upturned (like a nearly closed boxing glove). Apex of superior with strong hook on upper branch, the lower branch with an inner flange turning upwards and ending sub-basally in an outwardly turned tooth. A small black tooth on inner basal surface of superior appendage. Inferior appendage shorter, not heavily chitinised, spoon-shaped.

Abdomen 25.5 mm, hindwing 19.5 mm.

Paratype males differ only slightly from the mature holotype. The antehumeral orange stripe may be more or less complete but very slender, or else broken, in other mature males and probably the ultimate condition is a loss of this feature altogether. There may be traces only of the postocular spots and these evanescent markings also vanish with age. In more juvenile males segments 8-9 of the abdomen are distinctly pale blue dorsally (but black laterally). The pterostigma is light red at this stage.

In the teneral male the postocular spots are very elongated and linked together across the occipital plate; prothorax yellow on anterior collar and a yellow lateral spot; antehumeral stripes complete and broader but still barely a quarter of the width of each mesepisternum. Pterostigma pale ochreous or with a reddish tinge. There is no appreciable variation in size.

Allotype ♀ (near Mspashi), not quite mature. Resembles the teneral male except in a few details. Anteclypeus orange; postocular spots, elongate, linked across back of occiput; head otherwise as in male.

Prothorax (fig. 3, h) bronze black; the anterior collar and a lateral patch on median lobe, as well as central twin dots on that lobe and a median line on posterior lobe, all orange. Posterior lobe highly convex posteriorly and with yellow stylets reaching half across middle lobe. Synthorax bronze green to below humeral suture, with complete orange antehumeral stripe about a quarter as wide as the mesepisternum; black stripe on upper third of first lateral suture and dorsal spot on second suture. Mesostigmal lamina very narrow, preepisternum with reddish bristles; an epaulette, slightly tilted antero-laterally, close to lamina.

Legs ochreous, with brown exterior lines on femora and traces on tibiae. Pterostigma pale brown, elongated at upper distal angle. Forewing with 16 Px.

Abdomen greenish bronze-black dorsally on all segments except distal half of 9 and all 10 which are bluish with brown lateral line. Cerci slightly shorter than segment 10, ovipositor sheath not quite reaching end of 10.

Abdomen 25.5 mm, hindwing 23.5 mm.

One immature paratype female is very similar but with longer stripe on first lateral suture and a narrow stripe instead of a spot on second suture. Probably in the mature female the second lateral suture has a well developed stripe. Another paratype female is apparently a variety (labelled var. A) in which the prothoracic stylet is shorter, only extending a quarter across middle lobe; and the markings on the lateral sutures are a dash and a dot on first and a stripe on second suture.

P. bicoerulans MARTIN, male, apart from its much larger size and high montane habitat, has a blacker appearance without a bronze sheen. Labrum black on outer margin, frons all black, prothorax almost entirely black; synthoracic pattern slightly different; lower branch of superior appendage

longer, horizontal and incurved instead of upcurved and with only a long narrow inner flange, lacking the conspicuous spines. *P. fisheri* PINHEY male is more like the new species on the head but has only traces of orange on the frons; prothorax with broader posterior lobe. Synthorax bronze black to below humeral suture, with narrow complete antehumeral stripe and black stripes on both lateral sutures. Segments 8-9 of abdomen are bronze-black. The superior appendage in side-view has a more axe-head shaped ventral branch and the inferior appendage is exceptionally long, as long as the superior.

The female of the new species is, however, nearer *P. salisburyense* RIS in thoracic characters, differing in head and body pattern, including the wider antehumeral stripes of the latter.

Holotype, allotype and paratypes in Musée royal de l'Afrique Centrale, Tervuren; 1 paratype ♂, 1 paratype ♀ in National Museum, Bulawayo.

KUNDELUNGU PLATEAU: Katwe River, 15 km S.W. of Msipashi, *Symoens* 9762, 2.XI.1962 (holotype ♂, 4 paratype ♂♂); 15 km S.W. of Msipashi, *Symoens* 9754a, 2.XI.1962 (8 paratype ♂♂, allotype ♀, 1 paratype ♀), 9754b (1 paratype ♂, 1 paratype ♀ var. A); Lualala, *Symoens* 9800, 3.XI.1962 (2 paratype ♂♂).

Pseudagrion coeruleipunctum PINHEY — Fig. 4

PINHEY (1964), *Publ. cult. Comp. de Diamantes de Angola*, No. 63, pp. 103-104, fig. 6.

The original description of this remarkable species was made from a series of females collected by the Author near Caianda, Eastern Angola, in 1963. No males were found but since the thoracic pattern and other features were so distinctive it was considered worth while describing it from this sex. The origin of the radial veins was also remarkable in that 1 R_3 and R_{4+5} arise very close together. Another unique feature in African *Pseudagrion* is that these females are polychroic in head and thoracic colours.

Professor SYMOENS' collection fortunately includes two of each sex and, quite incidentally, one example of each colour variety in each sex. The male body patterns are very similar to those of the females of the type series and the venation has the same character, thus justifying the original description. Very surprisingly, however, the 10th abdominal segment has no flat terminal spines, so that the species does *not* belong to the *glaucescens-massaicum* group (Group B of PINHEY, 1964). Although there is no epaulette, close examination of the female thorax shows a pronounced bristle pad (not mentioned in the original description of this species) on the pre-episternum thus clearly indicating that it belongs to the *furcigerum-caffrum* Group A. Moreover the robustly branched superior appendage of the male confirms this grouping. In colour-pattern as well as in its polychroism it is quite *exceptional* for this Group.

Allotype ♂ (*mature*). Face and head black with pale blue band across frons from eye to eye; large isolated pale blue postocular spots. Occiput ventrally whitish.

Prothorax (fig. 4, a) mainly black except a blue triangle on anterior collar and a small blue latero-ventral area on median lobe. The narrow black posterior lobe rather straight posteriorly. Synthorax (fig. 4, a) bronze-black to well below humeral suture, with a very broad pale blue broken antehumeral band consisting (as in the female) of a long ventral portion and a large dorsal spot. Sides blue to whitish with irregular black band on second lateral suture.

Femora black, whitish anteriorly. Tibiae and tarsi brown and dark brown, the fore tibiae blacker. Venation and pterostigma brown, the latter a parallelogram, slightly shorter than the cell below it and very *slightly* longer in hindwing than in forewing. Forewing with 12-13 Px. Discoidal cell (quadrilateral) distinctly longer in hindwing than in forewing. Ac at end of petiole. 1 R_3 and R_{4+5} arising very close together.

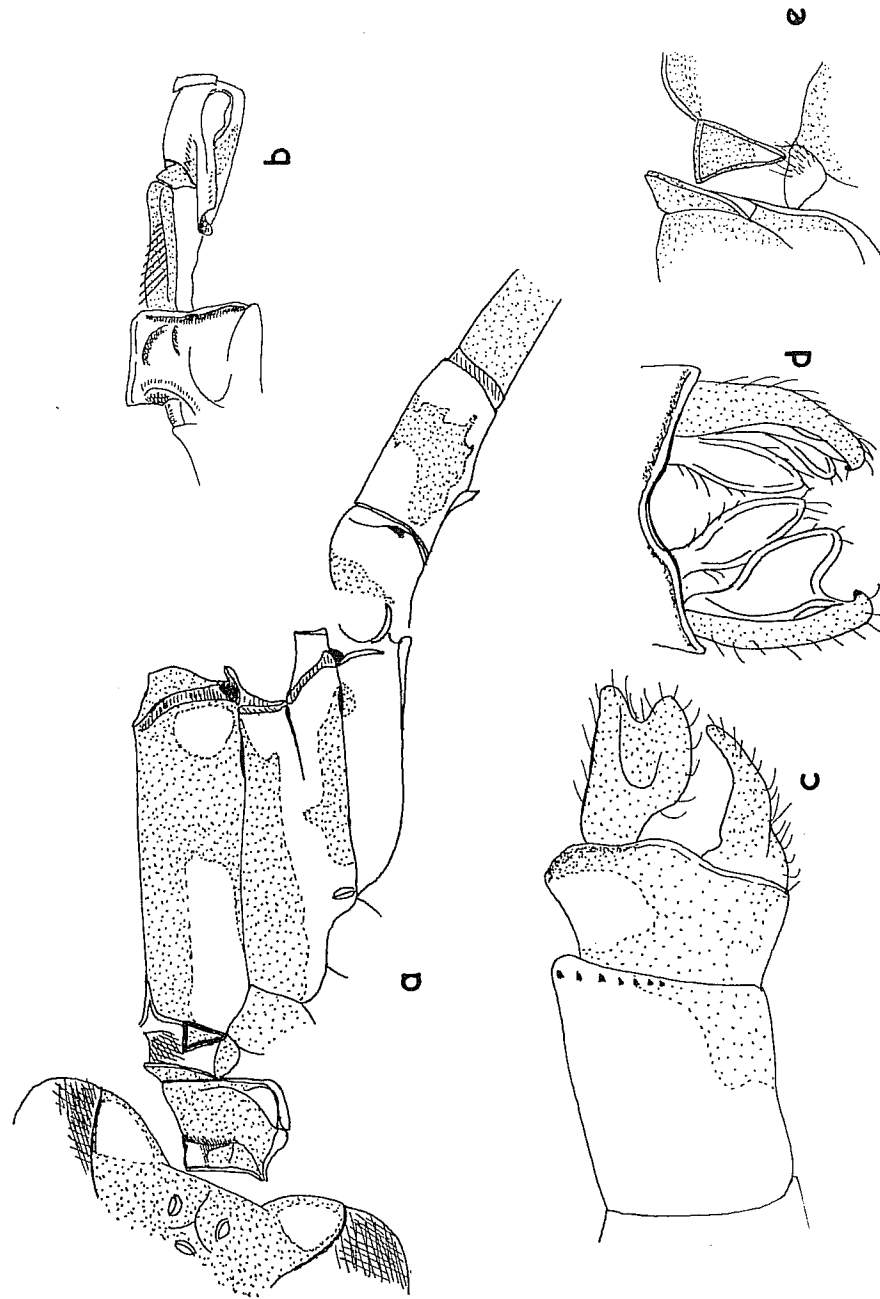


Fig. 4. — *Pseudagrion coeruleipunctum* PINHEY. — a. Head, thorax, base of abdomen of ♂; b. Penial lobe and right hamule; c, d. Anal appendages of ♂ from left and from above; e. Junction of pro- and mesothorax of ♀ from left.

Abdominal segments 1-2 (fig. 4, a) pale blue, with baso-dorsal black patch on 1 and a bronze black central band on 2 which extends forwards at sides of segment; segments 3-7 bronze-black with only a trace of cream at the extreme base of each. Segments 8-9 mainly blue with a small latero-distal blackish patch, segment 10 black with blue dorsal bar across the middle. No distal flat spines. Anal appendages blackish externally. Peneal lobe (fig. 4, b) with series of long and short setae on stem. Superior appendage shallowly forked, the inferior branch the broader and, seen inwardly, with a slight ridge directly below the upper branch. The upper branch has the single moderate apical hook. Inferior appendage almost as long, as in *P. fisheri* PINHEY.

Abdomen 27.5 mm, hindwing 20 mm.

Paratype male. Similar except that as in ♀ variety A the frontal stripe, postocular spots, triangle on anterior collar of prothorax and the lower band of the antehumeral stripe are all yellow instead of blue. The black band on second lateral suture has a small dot separated off from its upper surface and this dot becomes a mark on the first lateral suture (as in the holotype ♀). The lateral extension of the black marking on abdominal segment 2 reaches the base of this segment.

Of the two females one, with blue markings on head and thorax, is typical (cf. holotype); the other has yellow markings on head and thorax, both parts of the antehumeral stripe being yellow. This is variety A.

This species is an aberrant member of Group A of the genus, the male's superior anal appendages being near *P. epiphonematicum* KARSCH and *P. serrulatum* KARSCH, the superior and inferior being also reminiscent of *P. fisheri* PINHEY. The colour pattern and shape are quite different to these, in fact the colour and pattern are distinct from all the other African species, particularly those of the *furcigerum-caffrum* group. In PINHEY's revision of the genus (1964) the species must be transferred from Group B to Group A.

MIDDLE LUAPULA REGION: Kasomeno, *Symoens* 8622, 9.IV.1961 (Allotype ♂, paratype ♂ and two ♀♀). Paratype ♂ in the National Museum, Bulawayo.

Pseudagrion kersteni GERSTAECKER

GERSTAECKER (1869), *Arch. Naturgesch.*, 35, p. 222.

This is usually the most abundant *Pseudagrion*, sometimes in fact the commonest of all the Odonata, over most of its extensive range. It seems to occur throughout continental Africa south of the Sahara deserts.

UPPER CHAMBESHI REGION: Lubwa, *Symoens* 10525 (3 ♂♂).

CONGO-LUANGWA WATERSHED REGION: 5 km S.E. of Shiwa Ngandu, *Symoens* 10511 (1 ♂, 1 ♀); 21 km N.N.E. of Kalonje, *Symoens* 10777b (1 ♂).

UPPER LUAPULA REGION: Kabeleshi River, *Symoens* 9359 (1 ♂); Kipushia, *Symoens* 9385 (1 ♂); Mufumbi, *Symoens* 9394a (3 ♂♂).

MIDDLE LUAPULA REGION: Muwanguni River, *Symoens* 9668 (2 ♂♂); Namwandwe River, *Symoens* 9910a (4 ♂♂); Masaba, *Symoens* 10200 (4 ♂♂); Matanda, *Symoens* 10207 (12 ♂♂).

LUBEMBE REGION: 3 km S.E. of Kakiasu, *Symoens* 9284 (10 ♂♂, 2 ♀♀); Sakania, *Symoens* 9292a (4 ♂♂), 9292b (5 ♂♂, 1 ♀), 9292c (1 ♂); Mipapa River, *Symoens* 9337 (4 ♂♂, 1 ♀); 5 km E. of Libangila, *Symoens* 9342 (2 ♂♂); 4 km S. of Kalumbwe, *Symoens* 9672 (2 ♂♂), Kalumbwe, *Symoens* 10174 (13 ♂♂, 4 ♀♀); Kikwashi, *Symoens* 10180 (2 ♂♂).

KAFUBU REGION: Lubumbashi (Elisabethville), *Symoens* 7693 (7 ♂♂, 4 ♀♀), 7697 (1 ♀), 7713 (1 ♀), 7714 (3 ♂♂, 3 ♀♀), 8084 (2 ♂♂), 8651 (3 ♂♂), 8654 (1 ♂), 8744b (3 ♂♂, 3 ♀♀), 8763 (4 ♂♂, 1 ♀), 8835 (3 ♂♂, 1 ♀), 8840 (2 ♂♂, 1 ♀), 8842 (6 ♂♂, 8 ♀♀), 8845 (2 ♀♀), 8877a (4 ♂♂), 8878 (7 ♂♂, 1 ♀), 8906a (3 ♂♂), 8906b (14 ♂♂, 2 ♀♀), 8906c (3 ♂♂), 8913a (1 ♀), 8928a (2 ♂♂, 1 ♀).

8928b (2 ♂♂, 1 ♀), 8944 (1 ♀), 9223a (1 ♂), 9228 (6 ♂♂, 2 ♀♀), 9254a (7 ♀♀), 9262a (1 ♂), 9273 (1 ♀), 9446 (1 ♀), 9552b (2 ♂♂), 9669b (7 ♂♂, 1 ♀), 9678 (1 ♂), 9684 (1 ♂, 1 ♀), 9685 (3 ♂♂, 1 ♀), 9688a (2 ♂♂), 9870 (2 ♂♂), 9880 (1 ♂), 9969 (12 ♂♂), 10152a (1 ♂), 10170 (6 ♂♂), 10347a (6 ♂♂), 10347b (2 ♂♂), 10357 (1 ♂), 10365 (1 ♂, 1 ♀), 10368 (5 ♂♂), 10375 (1 ♂); Lukuni, *Symoens* 7702 (1 ♂, 1 ♀); Mukupa, *Symoens* 7989 (1 ♂); Kikwanda, *Symoens* 8003 (1 ♂); Tumbwe, *Symoens* 8189 (1 ♂), 8321 (2 ♂♂), 8632 (2 ♂♂), 8729 (1 ♂), 8823 (2 ♂♂), 7 km S. of Lukuni, *Symoens* 8282 (1 ♂), 8922a (2 ♂♂), 9682a (4 ♂♂), 9682b (6 ♂♂, 1 ♀); Masika, *Symoens* 8714 (2 ♂♂, 2 ♀♀); Kipopo, *Symoens* 8959 (1 ♂); N.E. of Kilando, *Symoens* 9677 (2 ♂♂, 1 ♀); Keyberg, *Symoens* 10165 (2 ♂♂).

UPPER LUONGO REGION: Lufubu, *Symoens* 10232 (2 ♂♂, 1 ♀).

KUNDELUNGU PLATEAU: Katshupa, *Malaisse* 4193 (1 ♂), 4196 (2 ♂♂).

LOWER LUAPULA REGION: Kabiashia, *Malaisse* 4070b (1 ♀), 4097 (1 ♀), 4130 (1 ♂), 4251 (1 ♀), 4255 (17 ♂♂, 2 ♀♀).

UPPER LUFIRA REGION: Mose, *Symoens* 10062 (1 ♂).

Pseuda grion salisburyense RIS — Fig. 5

RIS (1921), *Ann. S. Afr. Mus.*, 18, p. 306, figs.

SYN. NOV.: *Pseudagrion chongwe* PINHEY, 1961, *Occ. Pap. Rhodes-Livingstone Mus.*, No. 14, p. 26, figs.

In the present Author's monograph (1964b) it was suggested that *chongwe* was possibly a Central African race of the more Southerly and Eastern *salisburyense*. The chief differences given in the male were that the labrum is blue in *chongwe* rather than green; abdominal segments 8-9 blue dorsally, black laterally (black in mature *salisburyense*) and slightly different anal appendages. However, in the long series in SYMOENS' collection, there are various combinations of these features and it seems evident that *chongwe* is not even racially distinct but only a variety.

The previously known range of the species extends from South to East Africa and from Zambia to Angola. In this collection it is the most numerous of the *Zygoptera*.

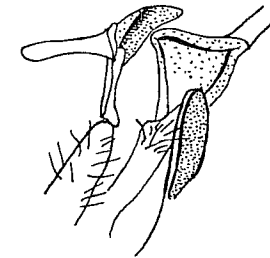


Fig. 5. — *Pseudagrion salisburyense* RIS, ♀. — Epaulette—stylet region of thorax from left.

MIDDLE LUAPULA REGION: Lukangwa, *Symoens* 9669a (3 ♂♂).

LUBEMBE REGION: Kalumbwe, *Symoens* 10174 (1 ♂, 1 ♀).

KAFUBU REGION: Lubumbashi (Elisabethville), *Symoens* 7693 (2 ♂♂), 7697 (1 ♂, 1 ♀), 7713 (13 ♂♂, 5 ♀♀), 7714 (2 ♂♂), 8649 (1 ♂, 1 ♀), 8654 (2 ♂♂), 8763 (1 ♂), 8835 (2 ♀♀), 8837 (5 ♂♂, 2 ♀♀), 8840 (2 ♂♂, 1 ♀), 8842 (2 ♂♂, 2 ♀♀), 8845 (4 ♂♂, 3 ♀♀), 8850b (1 ♂), 8856 (1 ♂), 8876 (2 ♂♂), 8877a (4 ♂♂), 8878 (2 ♂♂, 1 ♀), 8906a (1 ♂), 8906b (3 ♂♂), 8906c (1 ♂), 8907a (3 ♂♂, 4 ♀♀), 8907b

(9 ♂♂, 2 ♀♀), 8908 (8 ♂♂), 8928a (1 ♂), 8929 (4 ♂♂, 2 ♀♀), 9172a (1 ♂), 9173a (2 ♂♂), 9179 (1 ♂), 9180 (2 ♂♂), 9188 (6 ♂♂, 1 ♀), 9197 (1 ♂, 2 ♀♀), 9199 (1 ♂), 9226 (4 ♂♂, 1 ♀), 9228 (1 ♀), 9253 (3 ♂♂), 9254a (1 ♂), 9254b (1 ♀), 9262c (1 ♂), 9446 (1 ♂), 9447 (5 ♂♂), 9552b (3 ♂♂, 1 ♀), 9678 (1 ♀), 9684 (2 ♀♀), 9685 (1 ♂), 9688a (2 ♂♂), 9712 (1 ♀), 9720 (25 ♂♂, 4 ♀♀), 9722a (1 ♀), 9823a (1 ♂), 9823b (2 ♂♂, 1 ♀), 9823c (2 ♀♀), 9823d (2 ♂♂), 9848 (8 ♂♂, 1 ♀), 9870 (5 ♂♂), 9877 (1 ♀), 9880 (6 ♂♂), 9884 (1 ♂, 1 ♀), 9957 (1 ♀), 9969 (1 ♂), 10125 (4 ♂♂), 10158 (1 ♂), 10170 (4 ♂♂), 10347a (1 ♂), 10347b (1 ♂), 10365 (1 ♀), 10378 (2 ♂♂, 1 ♀), 10391 (1 ♂), 7 km S. of Lukuni, *Symoens* 8282 (3 ♂♂), 8922a (2 ♂♂), 9682b (3 ♂♂); Kipopo, *Symoens* 8697 (1 ♀), 9217 (3 ♂♂), 9246b (1 ♂); 11 km from Lubumbashi (Elisabethville), *Symoens* 8875 (3 ♂♂, 1 ♀), 9680 (1 ♂, 1 ♀); 6 km S. of Mampa, *Symoens* 8903 (1 ♀); Kalota, near Kasokota, *Symoens* 8956 (2 ♂♂); Keyberg, *Symoens* 9847 (1 ♂).

LOWER LUAPULA REGION: Kabiashia, *Malaisse* 4155 (2 ♂♂, 2 ♀♀), 4249 (1 ♂), 4255 (1 ♂).

UPPER LUFIRA REGION: Mose, *Symoens* 10062 (1♂).

Pseudagrion spernatum spernatum SELYS (HAGEN, MS)

SELYS (1881), *Ann. Mus. civ. Stor. nat. Genova*, 16, p. 223.

This is the Central and West African race, occurring from Zambia northwards through the Congo to Western Uganda and also Ethiopia. Other races are found to the South and East.

LAKE BANGWEULU REGION: Luwingu, *Symoens* 9544 (2 ♂♂, 1 ♀).

UPPER LUAPULA REGION: Mufumbi, *Symoens* 9394a (1 ♂).

KAFUBU REGION: Lubumbashi (Elisabethville), *Symoens* 7693 (6 ♂♂), 7714 (2 ♂♂), 8845 (1 ♀), 8906b (1 ♂, 1 ♀), 8906c (1 ♂), 8928b (1 ♂), 9175a (1 ♂), 9179 (1 ♂), 9218 (1 ♂), 9223a (1 ♂), 9552b (2 ♂♂), 10357 (1 ♂); Lukuni, *Symoens* 7702 (1 ♂), 8647b (1 ♂), 8731 (1 ♀); Masika, *Symoens* 8714 (2 ♂♂, 1 ♀); Tumbwe, *Symoens* 8720 (1 ♂), 8729 (1 ♂, 1 ♀), 8823 (1 ♂); 7 km S. of Lukuni, *Symoens* 8922a (1 ♂); Kipopo, *Symoens* 8959 (1 ♂); Keyberg, *Symoens* 10387 (1 ♂).

UPPER LUONGO REGION: Luongo, *Symoens* 10572a (1 ♀)

UPPER LUFIRA REGION: Mose, *Symoens* 10062 (4 ♂♂, 1 ♀).

Pseudagrion inconspicuum RIS

RIS (1931), *Rev. suisse Zool.*, 38 (n° 7), p. 98, fig. 1.

Known from Angola and Zambia. In these territories, in the field, it is easy to confuse this with *P. makabusiensis*, until the appendages of the male or the thorax of the female are examined.

CONGO-LUANGWA WATERSHED REGION: 5 km from Shiwa Ngandu, *Symoens* 10511 (1 ♂).

UPPER LUAPULA REGION: Serenje, *Symoens* 10663a (1 ♂); Milenje River, *Symoens* 10759b (1 ♀).

MIDDLE LUAPULA REGION: Kale, *Symoens* 10291a (3 ♂♂, 4 ♀♀), 10291b (2 ♂♂).

LUBEMBE REGION: Kamita, *Symoens* 10180 (2 ♂♂).

KUNDELUNGU PLATEAU: Katshupa, *Symoens* 9731 (1 ♂), 9789 (1 ♂); 15 km S.W. of Msipashi, *Symoens* 9754a (5 ♂♂, 1 ♀).

Pseudagrion makabusiensis PINHEY — Fig. 6

PINHEY (1950), *Ann. Transv. Mus.*, 21, p. 263, figs.

Known from Rhodesia and Zambia; the collection under review extends the range into Katanga.

A male from Lubwa is unusual in having the antehumeral stripes broken for a short distance before dorsal end. The female from Lusanga has broader antehumeral stripes than normal; about

half as wide as the mesepisternum, instead of being very narrow. The tandem gripping points on the female are shown in figure 6.

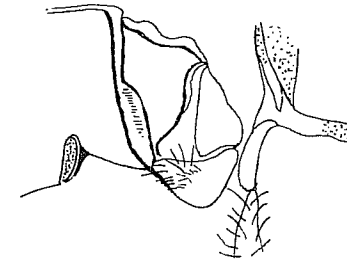


Fig. 6. — *Pseudagrion makabusiensis* PINHEY, ♀. — Epaulette—styilet region of thorax from right.

UPPER CHAMBESHI REGION: Lubwa, *Symoens* 10525 (3 ♂♂).

CONGO-LUANGWA WATERSHED REGION: Shiwa Ngandu *Symoens* 10811 (1 ♂), 10812 (2 ♂♂), 10896c (1 ♂).

LAKE BANGWEULU REGION: 12 km from Chibaye, *Symoens* 9506 (2 ♂♂); 32 km E. S.E. of Chalabesa, *Symoens* 9511 (1 ♂); 9 km from Luwingu, *Symoens* 9544 (2 ♂♂); 29 km N.W. of Chungu, *Symoens* 9548 (2 ♂♂).

UPPER LUAPULA REGION: Namopala, *Symoens* 9381 (3 ♂♂); W. of Mufumbi, *Symoens* 9399 (2 ♂♂); Serenje, *Symoens* 10663a (1 ♂), 10676 (2 ♂♂); Milenje River, *Symoens* 10759a (1 ♂), 10759d (2 ♂♂, 2 ♀♀).

MIDDLE LUAPULA REGION: Lukangwa River, *Symoens* 9669a (1 ♂); Namwandwe River, *Symoens* 9910a (1 ♂); Chimese, *Symoens* 10186 (1 ♂, 1 ♀); Kabunda, near Fort Rosebery, *Symoens* 10196 (6 ♂♂); Kale, *Symoens* 10291a (5 ♂♂).

LUBEMBE REGION: Kalumbwe, *Symoens* 10174 (1 ♂).

KAFUBU REGION: Mulemena, *Symoens* 7931 (1 ♂); Tumbwe, *Symoens* 8321 (1 ♂); Lubumbashi (Elisabethville), *Symoens* 9720 (1 ♂), 10152a (2 ♂♂), 10152b (5 ♂♂), 10347b (1 ♂), 10357 (1 ♂), 10375 (10 ♂♂).

UPPER LUONGO REGION: Luongo, *Symoens* 10572a (2 ♂♂).

KIBARA PLATEAU: Lusanga, *Symoens* 10264 (1 ♀).

Pseudagrion melanicterum SELYS

SELYS (1976), *Bull. Acad. roy. Sc., Lett. et Beaux-Arts Belg.*, 2^e sér., 42, p. 492.

Widespread in tropical West Africa, ranging from Zambia through the Congo to Uganda and Nigeria, then westwards to Sierra Leone.

Despite this distribution there are few in this collection.

KAFUBU REGION: 7 km from Lubumbashi (Elisabethville), *Symoens* 7982 (1 ♂); Kanduluwe, *Symoens* 8311 (1 ♀).

KUNDELUNGU PLATEAU: Katshupa, *Malaisse* 4688 (1 ♂).

LOWER LUAPULA REGION: Kabiashia, *Malaisse* 4123 (1 ♂).

KIBARA PLATEAU: Lusanga, *Symoens* 10264 (1 ♀).

Pseudagrion hageni tropicanum PINHEYPINHEY (1966), *Rev. Zool. Bot. Afr.*, 73 (fasc. 3-4), p. 290.

Widespread in tropical and subtropical Africa from Transvaal and Natal northwards to the equatorial regions. The nominotypical race is only known from the Western Cape Province.

Surprisingly few are present in this collection.

KAFUBU REGION: Lukuni, *Symoens* 7702 (1 ♂).

LOWER LUAPULA REGION: Kabiashia, *Malaisse* 4123 (1 ♂), 4559 (1 ♂).

KIBARA PLATEAU: Lusinga, *Symoens* 10264 (8 ♂♂).

Pseudagrion kibalense LONGFIELDLONGFIELD (1959), *Publ. cult. Comp. de Diamantes de Angola*, No. 45, pp. 17, 22, figs.

Not a common species in the southern part of its range, Zambia and Katanga, but commoner in the Northern Congo and, particularly, in the topotypical regions of Uganda.

KAFUBU REGION: Tumbwe, *Symoens* 8007 (2 ♂♂), 8102 (1 ♂).

Pseudagrion gigas RISRIS (1936), *Abh. Senckenb. Naturf. Ges.*, 433, p. 33, figs.

A very large species which is probably commoner in South East Africa than over the rest of its range, which extends from the warmer parts of South Africa to East Africa, Katanga and sparsely elsewhere in Northern Nigeria and Guinea.

The prothoracic stylets of the female are unusually variable in development (vide PINHEY, 1964, pp. 58, 59). Merely a single male in this collection.

KAFUBU REGION: 6 km S.S.W. of Kikwesa, *Symoens* 8311 (1 ♂).

Pseudagrion greeni PINHEYPINHEY (1961), *Ent. mon. Mag.*, 96, p. 260, figs.

Previously only known from Zambia, the present collection extends the range into Katanga. The unusually large anal appendages of the male and cerci of the female are characteristic of this species.

KAFUBU REGION: Lubumbashi (Elisabethville), *Symoens* 8084 (1 ♂); 9865 (1 ♀), 10391 (2 ♂♂); Tumbwe, *Symoens* 8189 (1 ♂).

Pseudagrion fisheri PINHEYPINHEY (1961), *Occ. Pap. Rhodes-Livingstone Mus.*, No. 14, p. 29, figs.

Another species hitherto only known from a few localities in Zambia.

UPPER CHAMBESHI REGION: About 7 km from Chinsali, *Symoens* 10516 a (1 ♀), 10516 b (2 ♂♂, 2 ♀♀); Lubwa, *Symoens* 10525 (1 ♀); Chitimukulu, *Symoens* 10555 (3 ♂♂).

CONGO-LUANGWA WATERSHED REGION: 5 km from Shiwa Ngandu, *Symoens* 10511 (1 ♀).

LAKE BANGWEULU REGION: 29 km N.W. of Chungu, *Symoens* 9548 (1 ♂).

UPPER LUONGO REGION: 25 km W. N. W. of Luwingu, *Symoens* 10572a (2 ♂♂, 3 ♀♀).

Pseudagrion tricornis PINHEY n. sp. — Fig. 7a-c

The Author has seen examples previously of this species which is very near *P. nubicum* SELYS and still nearer *P. coelestis* LONGFIELD (1947), but differing by the additional long inner tooth on the superior anal appendages. The superior appendage in oblique dorsal view (fig. 7, c) appears to have three "horns" on the inner flange or lower branch, hence the specific name selected. Only a single male in the present collection.

Holotype ♂ (Lukwesa). Face and frons pale green, with small black basal dot on labrum, three large irregular spots on postclypeus and a crescentic mark on frons. Vertex bronze black with narrow pale green postocular spots not quite linked to a green posterior line on occipital plate.

Prothorax mainly black; anterior collar, lateral margins, a lateral spot and two twin dorsal dots yellowish. Synthorax bronze black to just below humeral suture, with continuous pale green antehumeral stripe half as wide as the mesepisternum. Sides pale greenish, with black stripe on upper third of first lateral suture and dorsal spot on second suture. The ventral surface is heavily infested with larval *Acarina*.

Legs ochreous with blackish external line on femora. Pterostigma a pale brown parallelogram slightly elongated at upper distal angle, venation pale brown. Forewing with 11 Px. Ac at end of petiole.

Abdomen pale bluish green. Segment 1 with blackish baso-dorsal patch. Segment 2 with broad bronze-black U-shaped patch connected to both ends of the segment. Segments 3-7 with bronze-black dorsal band; 8-9 all blue; segment 10 black dorsally, blue laterally, with distal flat spines. Peneal lobe shown *in situ* at fig. 7, b. Superior anal appendage (fig. 7, a, c) nearly as long as segment 10, slightly bifid in lateral view. In dorsal view, with large terminal hook and broad inner flange ending basally in an upward short tooth and with a large, strong tooth on the inner-ventral edge. Inferior appendage horizontal and shorter than superior.

Abdomen 29 mm, hindwing 20 mm.

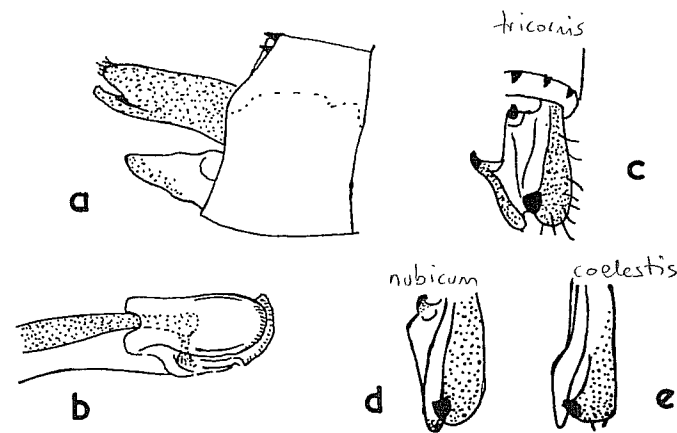


Fig. 7. — a-c. *Pseudagrion tricornis* PINHEY n. sp., ♂: a. Segment 10 and anal appendages from right; b. peneal lobe drawn *in situ*; c. Right superior appendage seen from above; d. *P. nubicum* SELYS, ♂: right superior appendage; e. *P. coelestis* LONGFIELD, ♂: right superior appendage.

Paratype ♂ (Uganda) with broader black stripes on femora. It is a more mature example. Female not seen.

This species is close to the normal darker form of *nubicum* and to *coelestis*, differing in the two robust teeth on the superior appendage. The pale body markings are usually more extensive in *coelestis*, for instance the antehumeral stripes are broader and segment 2 has only a "cat's head" mark on the distal half. This, however, is more like the *pale* form of *P. nubicum* except that the latter has still wider antehumerals. It seems very probable that all these blue species have dark or pale forms, so that a more melanic *coelestis* or a paler *tricornis* may possibly be discovered. *P. glaucescens* Selys certainly occurs in both conditions.

LOWER LUAPULA REGION: Lukwesa, *Symoens* 8469a, 1.IV.1961 (holotype ♂ in Musée royal de l'Afrique Centrale, Tervuren).

UGANDA: Paraa, Murchison Falls, Uganda, 9.X.57 (1 paratype ♂ in National Museum, Bulawayo).

***Pseudagrion nubicum* SELYS** — Fig. 7, d

SELYS (1876), *Bull. Acad. roy. Sc., Lett. et Beaux-Arts Belg.*, 2^e sér., 42, p. 501.

As mentioned above this species exists in two forms, the normal darkish one and a pale variety. It is very widespread from South to North Africa but in some parts of the continent it is local or scarce, in a few places more or less dominant.

LAKE BANGWEULU REGION: Samfya, *Symoens* 9949 (1 ♂), 10242 (1 ♀).

UPPER LUFIRA REGION: Mulandi, *Symoens* 10071 (2 ♂♂, 1 ♀).

***Pseudagrion glaucescens* SELYS**

SELYS (1876), *Bull. Acad. roy. Sc., Lett. et Beaux-Arts Belg.*, 2^e sér., 42, p. 498.

Distributed through Rhodesia, Zambia, Mozambique to East Africa.

The dark variety, f. *zambeziensis* PINHEY (1964) has been collected in June and November, the others from September to December. The melanic condition would appear to be ecological rather than seasonal.

UPPER LUAPULA REGION: 7 km W. of Serenje, *Symoens* 10679a (1 ♂).

MIDDLE LUAPULA REGION: Mwenda, *Symoens* 9895 (1 ♂).

KAFUBU REGION: Lubumbashi (Elisabethville), *Symoens* 8907a (1 ♂), 8908 (2 ♂♂), 8929 (1 ♂, 1 ♀), 9712 (1 ♂), 9722d (1 ♂), 9823a (4 ♂♂), 9823b (1 ♂), 9823c (1 ♂), 9823d (1 ♂), 9839 (1 ♀), 9848 (6 ♂♂), 9859a (3 ♂♂), 9864 (5 ♂♂), 9865 (1 ♂); 7 km S. of Lukuni, *Symoens* 8922a (2 ♂♂).

Forma *zambeziensis* PINHEY

LAKE BANGWEULU REGION: Samfya, *Symoens* 9628 (1 ♂).

KAFUBU REGION: Kafubu, *Symoens* 9864 (1 ♂).

***Pseudagrion sjöstedti* FÖRSTER**

Pseudagrion sjöstedti FÖRSTER (1906), *Jber. Ver. Naturk. Mannheim*, 71-72, p. 62, sep.

Pseudagrion jacksoni PINHEY (1961), *Publ. Brit. Mus. (Nat. Hist.)*, p. 37.

Most of the examples (♂♂, only 1 ♀) are of the dark form *jacksoni* PINHEY and probably around Lubumbashi (Elisabethville) this form is dominant and may be considered as a local or perhaps ecological race. This is also apparently the race (rather than variety) in the neighbouring regions of Northern and North Western Zambia, where *jacksoni* seems to be the only form of the species and occurs in the well-wooded "litus" or gallery forests. Teneral specimens from Fort Rosebery and

Lubumbashi may possibly develop at a later stage into the darker *jacksoni*, with narrowed red antehumeral stripes but must here be placed under the nominotypical form name. The example from Keyberg appears to be more mature and may, in this locality, be nearer the true *sjöstedti*.

The species is widespread but local in tropical and subtropical Africa and exceptionally variable. It is either in a state of flux or it is one of the more primitive members of the group or subgenus B (PINHEY, 1964).

f. *sjöstedti*:

MIDDLE LUAPULA REGION: Fort Rosebery, *Symoens* 9908 (1 teneral ♂), 10042b (1 teneral ♂).

KAFUBU REGION: Lubumbashi (Elisabethville), *Symoens* 7714 (1 teneral ♂); Keyberg, *Symoens* 9847 (1 ♂).

LOWER LUAPULA REGION: Kabiashia, *Malaisse* 4050b (1 teneral ♀).

f. *jacksoni*:

LAKE BANGWEULU REGION: 32 km E.S.E. of Chalabesa, *Symoens* 9511 (1 ♂).

KAFUBU REGION: Lubumbashi (Elisabethville), *Symoens* 8837 (1 ♂), 8848 (1 ♂), 9188 (3 ♂♂), 9197 (1 ♂), 9199 (2 ♂♂), 9254c (1 ♂), 9884 (1 ♀), 10125 (1 ♂), 10357 (1 ♂).

***Pseudagrion sudanicum rubroviride* PINHEY**

PINHEY (1956), *Occ. Pap. Coryndon Mus.*, No. 4, p. 23, figs.

KNOWN so far from Rhodesia, Zambia and Uganda, usually on large rivers. The nominotypical race is found in Sudan and Northern Nigeria. One ♂ in the present collection has broken antehumeral stripes on the thorax (No. 7713).

LAKE BANGWEULU REGION: Chambeshi, *Symoens* 10543 (3 ♀♀).

UPPER LUAPULA REGION: Kapalala, *Symoens* 10594a (3 ♀♀), 10594b (2 ♀♀); Kabunda, *Symoens* 10595 (1 ♀).

KAFUBU REGION: Lubumbashi (Elisabethville), *Symoens* 7713 (1 ♂ var.), 9262b (1 ♀), 9262c (1 ♂, 1 ♀); Kipopo, *Symoens* 9217 (2 ♂♂, 1 ♀).

***Pseudagrion acaciae* FÖRSTER**

FÖRSTER (1906), *Jber. Ver. Naturk. Mannheim*, 71-72, p. 56, sep.

Like *P. sudanicum rubroviride* this species usually prefers large rivers, but it is of much wider distribution from South Africa to Egypt. The inferior appendages of the male are upturned in both these species.

Only a single example in the present collection.

KAFUBU REGION: Lubumbashi (Elisabethville), *Symoens* 10125 (1 ♂).

***Pseudagrion acaciae hamoni* FRASER**

FRASER (1955), *Rev. fr. Ent.*, 22, pp. 239-240.

Few examples of this apparently melanic form or perhaps ecological race of *acaciae*, described from Haute Volta, are recorded.

In the National Museum, Bulawayo, there is a short series from the lower Sabi River and the Limpopo River, Rhodesia and Mpatamanga Gorge, Malawi.

LOWER LUAPULA REGION: Kabiashia, *Malaisse* 4070b (1 teneral ♂).

***Pseudagrion pseudomassaicum* PINHEY**

PINHEY (1951), *Ann. Transv. Mus.*, 5, p. 93, figs.

Another species which likes large expanses of water, rivers or lakes.

As mentioned elsewhere (PINHEY, 1964, p. 111) this may be a form of *P. sublacteum* (Karsch, 1893), known only from the mislaid type ♀.

Widespread in Southern, Central and tropical Africa. One Kipopo ♂ is very dark, melanic.

UPPER CHAMBESHI REGION: Mundu, *Symoens* 10531 (1 ♂).

LAKE BANGWEULU REGION: Chambeshi, *Symoens* 9014 (? 1 very teneral ♂).

LUBEMBE REGION: Sakania, *Symoens* 9292b (1 ♂).

KAFUBU REGION: Lubumbashi (Elisabethville), *Symoens* 8877a (1 ♂), 8906b (1 ♂), 10124 (1 ♂); Kipopo, *Symoens* 10645 (1 melanic ♂, 1 ♀).

LOWER LUAPULA REGION: Kisamamba, S. of Kasenga, *Symoens* 8504 (1 ♂).

***Pseudagrion massaicum* SJÖSTEDT**

SJÖSTEDT (1909), *Wiss. Ergebn. schwed. zool. Exp. Kilimandjaro*, II.B., Abt. 14,1, pp. 40-48.

Widespread in Ethiopian Africa. Frequently found in quiet pools. Only one pair in this collection.

KAFUBU REGION: Kipopo, *Symoens* 8697 (1 ♂, 1 ♀).

***Pseudagrion whellani* PINHEY — Fig. 8**

PINHEY (1956), *Occ. Pap. Coryndon Mus.*, No. 4, p. 18, fig.

Widespread in Rhodesia, Moçambique, Congo, Tanzania, Kenya, Uganda, Nigeria, Southern Sudan.

The mature male is characterised by its red face, very broad dark red antehumeral stripes, sometimes melanicised in old examples, pale reddish tibiae and tarsi, in contrast to the much darker

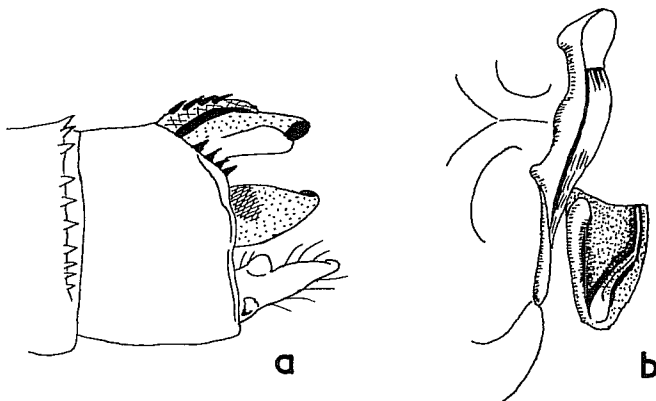


Fig. 8. — *Pseudagrion whellani* PINHEY. — a. Segment 10 and anal appendages of ♂ seen dorso-laterally from left; b. The vertical posterior lobe of prothorax and mesostigmal lamina of ♀ (no 8877a) from left.

femora, and the anal appendages (fig. 8, a). The superior is short and broad, conical in lateral view, unbranched; inferior appendage slightly longer and with a sub-basal dorsal tumour.

The female thorax (fig. 8, b) has a few characters. The posterior lobe is raised almost vertically and has two tumours on the ridge instead of stylets. The mesostigmal lamina has two ridges united laterally. The anterior ridge is all pale, nearly straight, swollen at the free dorsal end; the posterior ridge is sinuous, very slender on dorsal half, black except near the junction with the other ridge.

UPPER LUAPULA REGION: Kipushia, *Symoens* 9354 (1 ♂).

LUBEMBE REGION: Sakania, *Symoens* 9292b (1 ♂).

KAFUBU REGION: Lubumbashi (Elisabethville), *Symoens* 7693 (1 ♀), 7698 (2 ♂♂), 7713 (1 ♂), 8651 (5 ♂♂, 2 ♀♀), 8744b (1 ♀), 8845 (2 ♂♂, 1 ♀), 8877a (1 ♂, 1 ♀), 8878 (1 ♂), 8906b (2 ♂♂), 9181 (1 ♂), 9254a (3 ♂♂, 1 ♀), 9254c (2 ♂♂, 3 ♀♀), 9254d (3 ♂♂), 9254e (1 ♂), 9884 (1 ♂); 11 km from Lubumbashi (Elisabethville), *Symoens* 8874 (1 ♂), 8875 (1 ♂), 7 km S. of Lukuni, *Symoens* 8922a (1 ♂); Kipopo, *Symoens* 8697 (1 ♂), 9217 (8 ♂♂), 10645 (2 ♂♂).

LOWER LUAPULA REGION: Kikungu, *Symoens* 8432 (1 ♂); Chibambo, *Symoens* 8438 (1 ♂); Kabiashia, *Malaise* 4255 (1 ♂).

***Pseudagrion deningi* PINHEY — Fig. 9**

PINHEY (1961), *Occ. Pap. Rhodes-Livingstone Mus.*, No. 14, p. 28, fig. 2.

Originally described from Samfya, this is a very black species. The male is easily distinguished from all other African species by the very broad leaf-shaped superior appendage (fig. 9, a) and the dorso-apical tooth on the inferior appendage. At the base of each superior there is also a minute

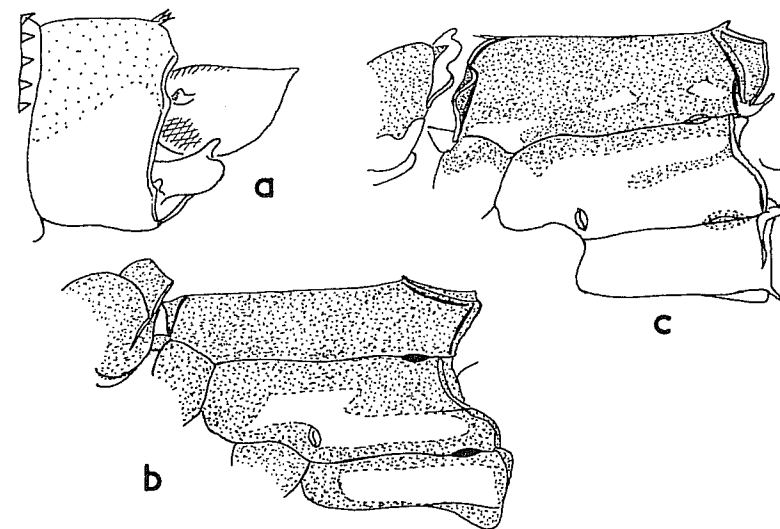


Fig. 9. — *Pseudagrion deningi* PINHEY. — a. Segment 10 and anal appendages of ♂ from left; b. Thorax of ♂ from left; c. Thorax of ♀ from left.

external tumour-like tooth (as in the figure). The very black (bronze-black) thorax of the male is shown in fig. 9, b. The prothoracic hindlobe is broad, the posterior margin straight. There are no antehumeral stripes and the pale areas are confined to two creamy white lateral bands.

BALINSKY's comments (1963, p. 241) concerning the original description require brief enlightenment. The text figure may be at fault but the type male, preserved by R. C. DENING in a paper triangle is not in poor condition, only slightly flattened in the vertical plane. The description did *not* of course state that the superior appendages were fused, as BALINSKY implied.

The females in SYMOENS' collection are interesting for their great variability. The form approaching the allotype is shown in figure 9, c. The posterior lobe of the prothorax is distinctly tripartite, mainly yellowish. The synthorax is black to a little below the humeral suture, with incomplete orange antehumeral stripes; either a long ventral portion and a dorsal spot or, as in the figure here, still more broken into three isolated spots.

Other females, heteromorphic or more strictly andromorphic are very like the male but with tripartite posterior lobe on the prothorax which is all black; there are no pale antehumeral stripes and the bronze-black extends beyond the first lateral suture, with a black band also on the second suture. This condition is thus almost as dark as in the male. Either these andromorphs are melanic dimorphs or possibly they are an older condition. All these dark females are from Chisunka.

The typical vertically raised mesostigmal lamina is seen in all the females.

UPPER CHAMBESHI REGION: Mundu, *Symoens* 10531 (2 ♂♂, 2 ♀♀ typical); Mulanshi, *Symoens* 10551 (1 ♂).

UPPER LUONGO REGION: 6 km from Chisunka, *Symoens* 10208b (3 ♀♀ andromorphic),

10208c (1 ♀ andromorphic).

LOWER LUAPULA REGION: Kabiashia, *Malaisse* 4548 (1 ♂).

Genus ACIAGRION SELYS (1891)

A few specimens of three species are in this collection.

A. Abdomen over 28 mm long:

- I. Abdomen under 32 mm long. Superior appendages very large, inferior much shorter *A. congoense*
 II. Abdomen over 38 mm long. Superior and inferior appendages of equal length *A. heterosticta*

B. Abdomen under 26 mm long. Superior appendage very short but slightly longer than inferior *A. steeleae*

Aciagrion congoense (SjÖSTEDT) — Fig. 10, b

SjÖSTEDT (1917), *Ark. Zool.*, 11 (No. 14), p. 15, figs.

This species is very near *A. africanum* MARTIN (1908) but the thorax is almost entirely blue instead of being broadly black and the superior appendage of the male is more straight-edged at the apex not rounded (fig. 10). Although placed at one time as a subspecies of *A. africanum*, it would appear to be distinct. In these two the superior appendage is massive and much longer than the inferior. The superior has a large ventro-basal tooth as shown in the figures.

Described from the Congo, it occurs also in Mozambique and probably other localities formerly ascribed to *africanum*.

KAFUBU REGION: Kafubu, *Symoens* 9823c (2 ♂♂), 9823d (2 ♂♂).



Fig. 10. — a. *Aciagrion africanum* MARTIN: right superior appendage of ♂ on inner surface; b. *A. congoense* (SjÖSTEDT): right superior appendage of ♂ on inner surface.

Aciagrion heterosticta FRASER

FRASER (1955), *Rev. Zool. Bot. Afr.*, 52 (fasc. 1-2), p. 19.

Known sparingly from few localities in Katanga and Northern Zambia.

With its exceptionally long slender body it is superficially like a *Temobasis*. The anal vein, however, leaves the posterior margin of the wing only slightly beyond Ac and the anal appendages of the male are similar to those of other *Aciagrion*. The female has a ventral spine on the 8th segment.

KAFUBU REGION: Lubumbashi, *Symoens* 8913c (1 ♂).

Aciagrion steeleae KIMMINS

KIMMINS (1955), *Entomologist*, 88, p. 109, figs.

A small species found in the northern provinces of Zambia.

CONGO-LUANGWA WATERSHED REGION: Shiwa Ngandu, *Symoens* 10865 (3 ♀♀).

LAKE BANGWEULU REGION: Ndoba, *Symoens* 10014a (8 ♂♂, 9 ♀♀), 10016 (1 ♀).

Genus ENALLAGMA CHARPENTIER (1840)

The collection includes a few examples of five species. The Author has found that places he has visited in Zambia and Katanga are not usually rich in this genus.

A. Small species, abdomen under 21 mm. Pterostigma small, very rounded on distal margin. Superior appendage of male dorsally toothed. *E. angolicum*

B. Abdomen usually over 22 mm. Pterostigma more or less a parallelogram. Appendage of male not dorsally toothed:

I. Superior appendage of ♂ directed horizontally:

- a. Pterostigma rhomboidal *E. subtile*
 b. Pterostigma a parallelogram but the distal margin lengthened *E. glaucum*

II. Superior appendage dipping down strongly:

- a. Spine on inferior appendage of ♂ long and slender. Thorax normally broadly black *E. elongatum*
 b. Inferior appendage with short spine. Thorax normally mainly pale *E. sinuatum*

Enallagma angolicum PINHEY

PINHEY (1966), *Arnoldia*, 2 (No. 33), p. 9, nom. nov. pro *risi* PINHEY (1962) nec SCHMIDT (1961).

This attractive but elusive little species has been taken in Angola (topotypical; also, Pinhey, 1961, ♀ Dundo); Abercorn, North East Zambia (leg. Pinhey, 1954, both sexes).

The present collection includes examples of both sexes from Samfya, Zambia.

Both sexes are easily distinguished from other known African *Enallagma* by the very small pterostigma, one cell long and strongly rounded on its distal margin; bright pinkish red in the male, pale brown in the female. The shape of the pterostigma is more like that of an *Aciagrion*. The anal appendages of the male are also quite distinctive, robust and toothed. BALINSKY has notified the Author that he is publishing a description of this species, including the known but hitherto undescribed female.

LAKE BANGWEULU REGION: Samfya, *Symoens* 9950e (1 ♂), 9961 (1 ♂, 1 ♀).

Enallagma elongatum (MARTIN)

MARTIN (1906), *Bull. Mus. Hist. Nat. Paris*, 12, p. 513.

South to East Africa, Angola and Congo.

KAFUBU REGION: 6 km S. of Mampa, *Symoens* 8903 (2 ♂♂).

KUNDELUNGU PLATEAU: Katshupa, *Malaise* 4688 (1 ♂).

Enallagma glaucum (BURMEISTER)

BURMEISTER (1839), *Handbuch d. Entomologie*, II. B., 2. Abth., p. 821.

Common and widespread in most parts of the Ethiopian region.

KUNDELUNGU PLATEAU: Katshupa, *Symoens* 9789 (1 ♂, 1 ♀); Lualala, *Symoens* 9794 (1 ♂).

KIBARA PLATEAU: 12 km W.S.W. of Lusinga, *Symoens* 10266 (10 ♂♂).

Enallagma sinuatum RIS

RIS (1921), *Ann. S. Afr. Mus.*, 18, p. 330, figs.

Congo, Zambia, Rhodesia, South Tanzania, Natal, Nigeria. Widespread but usually uncommon.

One female in this collection (no. 7702) is abnormal in having a darker thorax. On the left-hand end of the left mesostigmal lamina there are small hooks. On the right mesostigmal lamina this portion is broken off.

KAFUBU REGION: Lukuni, *Symoens* 7702 (2 ♀♀); Lubumbashi (Elisabethville), *Symoens* 9210 (1 ♀).

KUNDELUNGU PLATEAU: 15 km S.W. of Msipashi, *Symoens* 9754a (2 ♂♂), 9754b (2 ♂♂); 20 km S.W. of Msipashi, *Symoens* 9771a (1 ♀); Katshupa, *Symoens* 9789 (1 ♂), *Malaise* 4168 (1 ♂, 1 ♀), 4187 (1 ♂), 4688 (3 ♂♂, 2 ♀♀); Lualala, *Symoens* 9800 (1 ♀).

CONGO-LUANGWA WATERSHED REGION (S.E. SIDE): Mkushi River, *Symoens* 10423 (1 ♂, 2 ♀♀).

Enallagma subtile RIS

RIS (1921), *Ann. S. Afr. Mus.*, 18, p. 332, fig.

Described from Katanga, this is widely distributed in tropical and subtropical Africa.

Normally this is a very pallid species, even when mature. A few specimens in the present collection, however, are partially melanic, the head and thorax being marked with black, even in the teneral male: postclypeus black, vertex with very broad bronze-black band across the ocellar region. Synthorax bronze-black to below the humeral suture, with pale bluish antehumeral stripes, half the width of the mesepisternum. Abdomen with continuous dorsal band except segments 8-9 which are all blue except a small black basal triangle on segment 8.

In typical *subtile* the whole face is pale, the vertex has a narrower band, the synthorax has only a black stripe on either side of the median dorsal carina and segments 8-10 of the abdomen are entirely pale blue.

These melanic examples may be a distinctive race, particularly since the blackening has developed in the teneral condition.

UPPER LUONGO REGION: 12 km from Chipili, *Symoens* 9549a (1 ♀).

Melanic form:

LAKE BANGWEULU REGION: 5 km from Chilubula, *Symoens* 9542 (2 teneral ♂♂, 1 ♀).

Genus *ISCHNURA* CHARPENTIER (1840)

Ischnura senegalensis (RAMBUR)

RAMBUR (1842), *Névroptères in Suites à Buffon*, 17, p. 276, figs.

Throughout Africa and neighbouring islands and across Asia as far as the Philippines.

The female shows much variation, some of which may be developmental: homochroic (andromorphic), heterochroic or intermediate stages. All these stages are exhibited in the present collection.

In the material examined female polychroism is indicated by abbreviations.

LAKE BANGWEULU REGION: Mundubi, *Symoens* 9149 (1 ♂); Lubwe, *Symoens* 10018 (1 ♂); Kabanga, *Symoens* 10247 (1 ♂).

UPPER LUAPULA REGION: Kapalala, *Symoens* 10594b (1 ♂); Serenje, *Symoens* 10663a (1 ♂).

KAFUBU REGION: Lubumbashi (Elisabethville), *Symoens* 8651 (1 ♂), 8842 (1 ♀ interm.); Kipopo, *Symoens* 9453 (1 ♀ hom.).

UPPER LUFIRA REGION: Mose, *Symoens* 10062 (1 ♀ hom.); Mulandi, *Symoens* 10071 (5 ♂♂, 1 ♀ hom., 1 ♀ het.).

Genus *AGRIOCNEMIS* SELYS (1869)

Four species are in this collection with *A. exilis* predominating as usual.

Key to males

- A. Superior appendages forcipate *A. forcipata*
 B. Superior appendages not forcipate:
 I. Back of prothorax somewhat broadly rounded. Labrum violet with yellow margin. Superior appendage broad in basal half, then down-turned *A. exilis*
 II. Back of thorax with rectangular central portion somewhat raised at sides:
 a. Labrum black with yellow edge. Superior appendage broad in basal half, then down-turned *A. pinheyi*
 b. Labrum all violet. Superior appendage entirely down-turned, tapering *A. gratiosa*

Key to females

- A. Labrum mainly pale not deeply metallic. Hind lobe of prothorax broad, the posterior edge straight along only a short central part *A. pinheyi*
 B. Labrum mainly metallic. Hindlobe of prothorax different:
 I. Labrum metallic brown. Prothoracic hindlobe not tripartite, but broad, rather straight for most of the posterior edge *A. gratiosa*

11. Labrum with yellow anterior margin. Prothoracic hindlobe tripartite:

- a. Labrum metallic violet, narrowly edged with yellow. Prothoracic hindlobe with two lateral rounded lobes and a shorter central portion *A. exilis*
- b. Labrum with broad yellow border. Prothoracic hindlobe narrow at sides with small central tongue projecting backwards *A. forcipata*

Agriocnemis exilis SELYS

SELYS (1869), *Pollen et van Dam, Madagascar* 24 (nom. nud.).
A. exilis SELYS (1872), *Rev. et Mag. Zool. pure et appl.*, 2^e sér., 23, p. 182.

Widespread in the Ethiopian Region, including Madagascar and other islands.

UPPER CHAMBESHI REGION: Mundu, *Symoens* 10531 (1 ♀).

LAKE BANGWEULU REGION: Mundubi, *Symoens* 9149 (3 ♀♀); Samfya, *Symoens* 9153b (1 ♀), 9158b (1 ♂), 9159c (1 ♂), 9937a (1 ♀), 10296 (2 ♀♀); 5 km S.S.E. of Chilubula, *Symoens* 9542 (2 ♂♂, 7 ♀♀); Bwalya Mponda, *Symoens* 9561a (1 ♂); 9593a (1 ♂, 8 ♀♀); 2 km from Ndoba, *Symoens* 10016 (1 ♂); Lubwe, *Symoens* 10018 (1 ♂, 1 ♀).

UPPER LUAPULA REGION: Serenje, *Symoens* 10663b (? 1 ♂ abdomen incomplete).

MIDDLE LUAPULA REGION: Mwenda, *Symoens* 10181 (1 ♀); Kale, *Symoens* 10291a (1 ♀).

KAFUBU REGION: Lubumbashi (Elisabethville), *Symoens* 8845 (1 ♀).

KIBARA PLATEAU: Lusinga, *Symoens* 10269 (1 ♂).

Agriocnemis forcipata LE ROI

Agriocnemis forcipata LE ROI (1915), in SCHUBOTZ, *Ergebn. d. zweit. deutsch. Zentr.-Afr.-Exp.*, B.I, p. 341, fig.
Agriocnemis victoria FRASER (1928), *Trans. ent. Soc. Lond.*, 76, p. 123, fig.

Distributed in Zambia, Angola, Congo, Uganda, Cameroons, Nigeria, Sudan, Sierra Leone. The two examples in this collection are of the small form *victoria* FRASER.

LAKE BANGWEULU REGION: Samfya, *Symoens* 9937a (1 ♀), 9951c (1 ♂).

Agriocnemis gratiosa GERSTAECKER

GERSTAECKER (1891), *Jahrb. hamb. wiss. Anst.*, 9, p. 190.

Widespread from Natal to East Africa, Zambia, Malawi and Madagascar.

LAKE BANGWEULU REGION: Samfya, *Symoens* 9153b (2 ♀♀), 9176b (1 ♀).

LUBEMBE REGION: Sakania, *Symoens* 9292b (1 ♂).

KAFUBU REGION: Lubumbashi (Elisabethville), *Symoens* 9848 (1 ♂, 1 ♀), 9877 (2 ♂♂).

UPPER LUFIRA REGION: Mulandi, *Symoens* 10071 (1 ♂, 1 ♀).

Agriocnemis pinheyi BALINSKY

BALINSKY (1963), *J. ent. Soc. S. Afr.*, 26, p. 247, figs.

Local in Rhodesia, Zambia and Transvaal.

KIBARA PLATEAU: 12 km W.S.W. of Lusinga, *Symoens* 10266 (1 ♂).

Family AGRIONIDAE

Genus **PHAON** SELYS (1853)

Phaon iridipennis (BURMEISTER)

BURMEISTER (1839), *Handbuch d. Entomologie*, II. B., 2. Abth., p. 827.

Common and widespread in tropical and subtropical Africa. The author has previously remarked that some individuals from Northern Zambia are darker and duller on the thorax than normal and this applies to some of the Katanga examples (PINHEY, 1961).

MIDDLE LUAPULA REGION: Kasomeno, *Symoens* 8622 (4 teneral ♂♂; 4 teneral ♀♀); Namwandwe River, *Symoens* 9910a (2 ♂♂).

KAFUBU REGION: Mukupa, *Symoens* 7989 (1 ♂); Lubumbashi (Elisabethville), *Symoens* 8906c (2 ♂♂), 8913b (1 ♂), 8913c (3 ♂♂, 2 ♀♀), 8934 (1 ♀), 9197 (1 ♀), 9443 (2 ♂♂), 9721c (1 ♂), 9839 (1 ♀), 9865 (2 ♂♂, 1 ♀), 9877 (1 ♂, 3 ♀♀), 9884 (4 ♂♂), 9955 (1 ♀), 9957 (6 ♂♂, 5 ♀♀); Kalota, near Kasokota, *Symoens* 8953a (1 ♂).

LOWER LUAPULA REGION: Kabiashia, *Malaisse* 4123 (7 ♂♂, 1 ♀).

UPPER LUFIRA REGION: Mose, *Symoens* 10062 (1 ♂).

Genus **UMMA** KIRBY (1890)

Two of LONGFIELD's species in the collection, one of them the very common South-Central African species *distincta* LONGFIELD.

- A. Wings greenish yellow. Pterostigma green, sometimes with traces of blue *U. distincta*
 B. Wings not greenish yellow. Pterostigma violet blue *U. electa*

Umma distincta LONGFIELD

LONGFIELD (1933), *Stylops*, 2, p. 139, figs.

Originally described from Katanga, this also occurs commonly in Northern Zambia and Eastern Angola.

In the present collection one teneral ♀ from Mkushi River has an abnormally short pterostigma, only 2 mm long on forewing, slightly longer on hindwing. It appears, however, to belong to this species.

UPPER LUAPULA REGION: Serenje, *Symoens* 10676 (1 ♀); Milenje River, *Symoens* 10759c (1 ♀), 10759d (1 ♂).

KAFUBU REGION: Tumbwe, *Symoens*, 8321 (1 ♂), 8633 (1 ♂); 7 km S. of Lukuni, *Symoens* 9682b (1 ♀).

UPPER LUONGO REGION: 25 km W.N.W. of Luwingu, *Symoens* 10572b (1 ♂).

KIBARA PLATEAU: Lusinga, *Symoens* 10264 (2 ♀♀), 10269 (1 ♂).

CONGO-LUANGWA WATERSHED REGION (S.E. SIDE): Mkushi River, *Symoens* 10651 (1 teneral ♀).

Umma electa LONGFIELD

LONGFIELD (1933), *Stylops*, 2, p. 139, figs.

By no means a well known species, known from few records in Katanga (original description) and Angola; also doubtful determinations from Uganda.

KUNDELUNGU PLATEAU: Katshupa, *Symoens* 9731 (1 immature ♂); Lualala, *Symoens* 9800 (1 ♂).

Family CHLOROCYPHIDAE

Genus CHLOROCYPHA FRASER (1928)

Three species in this collection, all with red abdomen in male.

Key to males

- A. Epistome blue in front. Tibiae not white anteriorly *C. frigida*
 B. Epistome not blue in front. Tibiae white on anterior edge:
 I. Segment 2 with broad black bands enclosing a red central ellipse *C. consueta*
 II. Segment 2 with bean shaped markings, either free or joined to one or both ends of segment, more or less to enclose an irregular red area *C. wittei*

Key to females

- A. Segment 2 all pale except for black spots connected to distal end *C. frigida*
 B. Segment 2 with continuous black markings enclosing a pale central area:
 I. Segment 2 with central patch broadly framed with black *C. consueta*
 II. Segment 2 with only narrow frame to the central area *C. wittei*

Chlorocypha consueta (KARSCH)

KARSCH (1899), *Ent. Nachr.*, 25, p. 376.

Described from Nyasaland (Malawi) this species is abundant in the forested areas of Moçambique, the eastern districts of Rhodesia and all northern Zambia and continues northwards into Katanga and southern Tanzania.

In this collection there is a large or normal form, robust, the abdomen of the male over 20 mm long; and a dwarf form, abdomen of the male about 18 mm. There is also one male variety (leg. *Malaisse* No. 4196) with black bands on segment 2 incomplete, not reaching the basal end of this segment.

Normal large form:

CONGO-LUANGWA WATERSHED REGION: 21 km N.N.E. of Kalonje, *Symoens* 10777b (? 1 ♀).
 UPPER LUAPULA REGION: Kabeleshi, *Symoens* 9359 (1 ♂); Milenje River, *Symoens* 10759c (1 ♂).
 KAFUBU REGION: Lubumbashi (Elisabethville), *Symoens* 8913b (1 ♂), 8930 (1 ♂).

Small form:

UPPER LUAPULA REGION: Serenje, *Symoens* 10663a (1 ♂), 10676 (1 ♂), 10755 (1 ♂); Munte River, *Symoens* 10679b (1 ♂); Milenje River, *Symoens* 10759a (1 ♂), 10759c (1 ♂).
 KAFUBU REGION: Tumbwe, *Symoens* 8007 (1 ♂).
 KUNDELUNGU PLATEAU: Katshupa, *Malaisse* 4196 (1 ♂ var.).
 LOWER LUAPULA REGION: Kabiashia, *Malaisse* 4097 (1 ♂), 4559 (1 ♀), 4817 (5 ♂♂).

Chlorocypha frigida PINHEY

PINHEY (1961), *Occ. Pap. Rhodes-Livingstone Mus.*, No. 14, p. 43, figs.

So far only known from the Mwinilunga District of North-West Zambia. A single female in

the present collection may be this species but it is not typical in markings on the abdomen. It is, however, rather immature, which may account for the differences.

KIBARA PLATEAU: *Symoens* 10269 (? 1 ♀ var.).

Chlorocypha wittei FRASER

FRASER (1955), *Exploration du Parc National de l'Upemba. Mission G. F. de Witte (1946-1949)*, fasc. 38, p. 10.

Described from Katanga this species varies in markings on the second abdominal segment of the male, the black bean-shaped marking being isolated, or joined to the distal end of the segment or sometimes joined to both ends of segment 2 as is the case in occasional specimens of the present collection. These are probably developmental stages, the complete joining being indicative of older males.

It is distributed in Zambia, Katanga and Nigeria (leg. *Gambles*).

KAFUBU REGION: Lubumbashi (Elisabethville), *Symoens* 7714 (1 ♀); Tumbwe, *Symoens* 7896 (1 ♂), 8013 (3 ♂♂), 8114 (2 ♂♂), 8189 (1 ♂), 8321 (1 ♂), 8632 (1 ♂); 6 km S.S.W. of Kikwesa, *Symoens* 8311 (2 ♀♀); Lukuni, *Symoens* 8826 (1 ♀).

UPPER LUONGO REGION: 25 km W.N.W. of Luwingu, *Symoens* 10572a (4 ♂♂), 10572b (3 ♂♂).

Genus PLATYCYPHA FRASER (1949)

Two species in the collection, the males with blue abdomen and broad red and white flanges to the tibiae. Females with black central line on abdomen.

Key to males

- A. Side of thorax red or reddish. Segments 6-7 not broadly black distally *P. caligata*
 B. Side of thorax green. Segments 6-7 broadly black distally *P. lacustris chingolae*

Key to females

- A. Posterior lobe of prothorax all pale except a narrow black edge *P. caligata*
 B. Posterior lobe of prothorax mainly black in the central part, pale laterally and with pale post-central spot *P. lacustris chingolae*

Platycypha caligata (SELYS)

SELYS (1853), *Bull. Acad. roy. Sc., Lett. et Beaux-Arts Belg.*, Annexe (1853-1854), p. 57

Widely distributed from South to Central and East Africa.

Two ♂♂ in this collection are slight varieties with rather less black on the abdomen. A ♂ Lukuni example has reduced black on segment 5 (No. 8647a); similarly one from Lubumbashi (No. 8856).

CONGO-LUANGWA WATERSHED REGION: Manshya River, *Symoens* 10511 (1 ♀); Shiwa Ngandu, *Symoens* 10812 (1 ♀).

MIDDLE LUAPULA REGION: Namwandwe River, *Symoens* 9910a (1 ♂); Kabunda, near Fort Rosebery, *Symoens* 10196 (1 ♂, 6 ♀♀), Mansa River, *Symoens* 10200 (1 ♂, 6 ♀♀).

LUBEMBE REGION: Kalumbwe, *Symoens* 10174 (2 ♂♂, 1 ♀).

KAFUBU REGION: 6 km S.S.W. of Kikwesa, *Symoens* 8311 (1 ♂, 7 ♀♀); Tumbwe, *Symoens* 8321 (1 ♀); Lukuni, *Symoens* 8647a (5 ♂♂), 8731 (5 ♀♀), 8826 (1 ♀); 11 km from Lubumbashi (Elisabethville), *Symoens* 8735 (2 ♂♂, 1 ♀), 8856 (1 ♂); Lubumbashi (Elisabethville), *Symoens* 8837 (1 ♂), 8845 (1 ♂), 8906c (1 ♂), 8913b (2 ♂♂, 2 ♀♀), 8913c (2 ♂♂), 8913d (1 ♂), 8928a (1 ♂), 8928b (1 ♀), 9179 (1 ♂, 1 ♀), 9226 (1 ♂), 9228 (1 ♀), 9688b (1 ♂, 1 ♀), 9688c (1 ♂), 9721a (1 ♀), 9721b (2 ♂♂, 2 ♀♀), 9721c (1 ♀), 9722c (1 ♂), 9722d (2 ♀♀), 9865 (2 ♂♂, 4 ♀♀), 9884 (2 ♂♂), 10125 (1 ♂), 10348 (1 ♀), 10357 (8 ♂♂, 1 ♀), 10365 (2 ♂♂, 1 ♀), 10391 (1 ♂); 7 km W.N.W. of Lubumbashi (Elisabethville), *Symoens* 8880 (2 ♂♂, 2 ♀♀); 6 km S. of Mampa, *Symoens* 8899c (1 ♂); Kalota, near Kasokota, *Symoens* 8953b (1 ♂).

UPPER LUONGO REGION: 25 km W.N.W. of Luwingu, *Symoens* 10572a (1 ♀).

LOWER LUAPULA REGION: Kabiashia, *Malaisse* 4050a (8 ♀♀), 4050c (2 ♂♂), 4070a (1 ♂, 4 ♀♀), 4123 (1 ♂), 4141 (4 ♀♀), 4255 (1 ♂, 2 ♀♀), 4559 (1 ♂), 4765 (1 ♀).

UPPER LUFIRA REGION: Mose, *Symoens* 10062 (2 ♂♂, 4 ♀♀).

Platycypha lacustris chingolae PINHEY — Fig. 11

PINHEY (1962), *Occ. Pap. Nat. Mus. S. Rhod.*, 3 (No. 26 B), p. 904, figs.

The males, described from Chingola, Zambia, are distinguished from the blue *caligata* by their more extensive black markings on the abdomen and by the side of the thorax being greenish instead of red. From *lacustris* it differs: the larger blue spots on segment 2 are triangular and framed with black: squarer and less surrounded with black in *lacustris*; and segment 8 is entirely blue in *chingolae*.

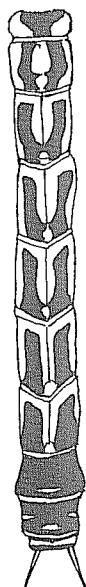


Fig. 11. — *Platycypha lacustris chingolae* PINHEY, allotype ♀. — Abdomen from above.

The nominotypical race occurs in Uganda and Western Kenya. The race *chingolae* has hitherto been known only from Zambia. Since the type female has not yet been designated, it will be described here from the National Museum collections. In markings it is quite distinct from the female *lacustris lacustris* (FÖRSTER, 1914) and consequently it might be more correct to regard *chingolae* as a separate species. In fact the female *chingolae* is hard to distinguish from *caligata*.

Allotype ♀ (Chingola, Zambia). Labrum black with two yellow triangles, genae yellow; epistome in front yellowish with large black central spot, above mainly pale; frons with two large pale spots; vertex with the usual *Platycypha* pattern around the ocelli and two very small pale postocular spots.

Prothorax mainly black dorsally, with pale anterior collar, median twin spots and lateral pale spots. The posterior lobe differs from the similar *caligata* ♀ in being mainly black, with pale postero-central dot and pale lateral spots. Synthorax black almost to first lateral suture, with the usual pale antehumeral "fish hook" stripe and a pale stripe below humeral suture. A black streak on upper third of first lateral suture and a complete black band on second suture.

Legs mainly blackish, sparsely powdered with white pruinosity. Wings marked with pale greenish yellow at base and along costal zone. Pterostigma yellow, brown at each end. Forewing with 11-13 Ax, 16-17 Px. Quadrilateral, forewing with 1-2 cross-veins, hindwing 3-2 cross-veins, the left wings given first.

Abdomen (fig. 11) robust, very similar to *caligata*, with black markings as follows: segment 1 with large dorsal patch. Segment 2 with black frame to two central pale spots, the larger spot triangular; segments 3-5 with black U; 6-7 with broad black bands, joined to ventral black bands. Segment 8 black with small pale spot at distal end; 9 black with small distal and lateral spots; 10 with black basal and distal transverse stripes. Cerci slender.

Abdomen 17 mm, hindwing 23.5 mm. Paratypes similar.

From *caligata* the ♀ of *chingolae* is distinguished by the much blacker posterior lobe of the prothorax, the narrower triangles on abdominal segment 2, and the paler 10th segment.

UPPER LUALABA REGION: Kolwezi, leg. *V. Allard* (1 ♂, 4.VII.1964).

UPPER LUFIRA REGION: Mose, *Symoens* 10062 (2 ♂♂).

UPPER KAFUE REGION: Chingola, leg. *Pinhey* (allotype ♀, IV.1963; paratype ♀, 15.V.1963; 1 paratype ♀, V.1961; 1 paratype ♀, 11.I.1965, in National Museum, Bulawayo). — Also, Chingola, type series of ♂♂ (previously recorded, 1962).

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(¹) For relevant literature prior to 1959, see PINHEY (1962a).

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