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ODONATA COLLECTED IN REPUBLIQUE CENTRE— AFRICAINNE BY R. PUJOL

by

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SUMMARY

This collection was made by R. Pujol in the neighbourhood of Bangui between 1965 and 1969. Over five hundred and forty specimens were kindly submitted to me by Dr. Armin Heymer who had received them from Pujol. These represented fifty one species of Odonata, one of them a new species of *Nesciothemis* Longfield.

The unrecorded ♀ of *Elatoneura nigra* Kimmins is described here and some information is supplied on the genera *Sapho* Selys and *Nesciothemis* Longfield. It is found that *Sapho superba* Sjöstedt is only a form of *S. bicolor* Selys; and *Limnetothemis* Pinhey is placed in synonymy with *Nesciothemis*.

Little known species in the collection include *Orthetrum latihami* Pinhey and *Trithemis fumosa* Pinhey.

Many of the adult males in this collection have lost pruinosity in species developing this, presumably through heat in the drying process. When such species are well marked with black in juvenile males the de-pruinosed adults will tend to be very black insects, as is well known.

INTRODUCTION

I am greatly indebted to Dr. Armin Heymer of Brunoy who not only sent this collection of over five hundred Odonata for examination but also permitted me to retain all the specimens for the National Museum, Bulawayo.

One of the interesting features of this collection is that nearly all the specimens were collected in one locality, Bangui, in the Central African Republic. This gives a moderate picture of the environment and a general idea of the dragonfly population of the area. For instance, *Sapho* Selys, *Chlorocypha* Fraser, and the Aeshnidae amongst others, are typical of heavy equatorial forest; *Platycnemis* Burmeister, and *Agriocnemis* Selys are normally palustrine; some of the others, such as the ubiquitous *Pseudagrion kersteni* (Gerstaecker) are typically savannah insects. Fifty one species altogether are represented in over five hundred specimens of Odonata.

A new species of *Nesciothemis* Longfield is named in honour of the collector. A brief review of the species of this genus is given here and in view of Gamble's paper (1966) on species of this genus it has seemed necessary to place *Limnetothemis* Pinhey

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(published later in 1966) in synonymy to *Nesciothemis*.

In identifying the two species of *Sapho* which are in the collection it seemed advisable to check the status of four species of the genus, with the result that, by examination of the prothalli, *S. superba* Sjöstedt is found to be only a form of *S. bicolor* Selys, but *S. gloriosa* Selys is distinct from *S. orichalcea* McLachlan.

The ♀ of *Elattoneura nigra* Kimmins, although previously known, is described here for the first time. It has already been suggested that *Rhyothemis fenestrina* (Rambur) is conspecific with *R. notata* (Fabricius) and from comparative data it would appear that their real relationship is more of a cline than racial. Little known species in the collection are *Orthetrum latihami* Pinhey (with abnormal venation) and *Trithemis fumosa* Pinhey, but *O. monardi* Schmidt is in the same category since it is poorly represented in most collections.

PROTONEURIDAE

Elattoneura nigra Kimmins

1938, *Ann. Mag. nat. Hist.* **11** (1): 297, ff. (♂, Nigeria)

Described from S. Nigeria, Cameroons and Uganda, this small dark species is known from Portuguese Guinea (Schmidt, 1949); Carnot in the Cameroons (Pinhey, 1961); Garamba National Park, northern Congo-Kinshasa (Pinhey, 1966); and now from the Central African Republic.

It appears that the female, although known from some of the recorded localities, has not yet been described in detail. In markings it is very like the male.

Allotype-♀ (Bangui): Labium brownish, labrum pale ochreous with black mid-basal dot, genae ochreous. Postclypeus, frons and head above all dull black; orbits blackish posteriorly.

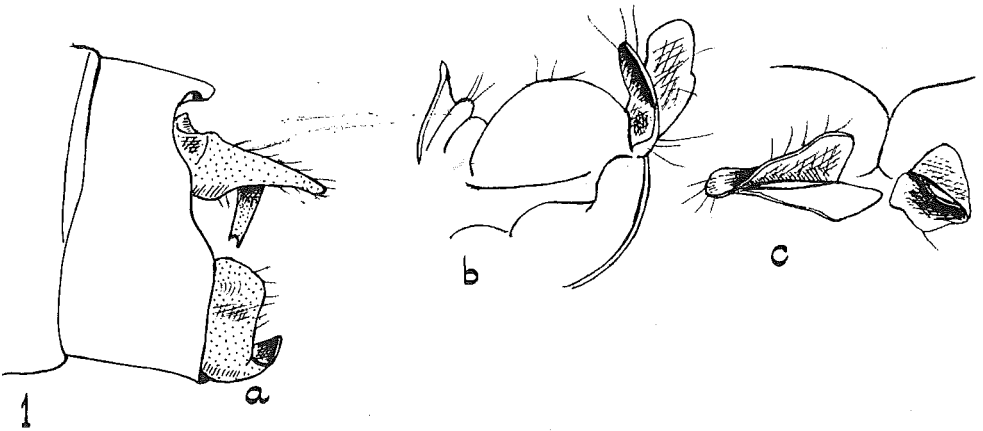


FIG. 1. *Elattonneura nigra* Kimmins a—anal appendages of ♂ (Bangui) from left. b, c—prothorax of allotype ♀ to show stylets, from left and dorso-laterally, respectively.

Prothorax black with some white pruinosity. Stylets (fig. 1, bc) in the form of two pairs of well raised broad lobes. Synthorax black with very slender pruinosed white antehumeral stripe and some white lateral pruinosity which includes a white band

along the metepisternum. Legs black with some white dusting; claws ferruginous.

Venation blackish. Pterostigma a brown parallelogram between brown veins. Forewing with 12 Px (but in left forewing the 10th Px has not developed, there is only an impression); hindwing with 10 Px. Anal vein ending at end of subquadrangle.

Abdomen black, with traces of white dusting on basal segments. Cerci short, broadly conical.

Abdomen 29 mm, hindwing 19 mm.

Paratype females vary greatly in size from abdomen 25 mm, hindwing 17 mm to that of the allotype.

MATERIAL EXAMINED

Bangui, 2 ♂, 30.xi.1967, 4 ♂, 3 ♀, 9.xii.1967, 1 ♂, 15.xii.1967, 4 ♂, 1 ♀, 18.ix.1968, 5 ♂, 4 ♀, 19.ix.1968 (including the allotype ♀)

Chlorocnemis nigripes nigripes Selys

1886, *Mem. Cour. Acad. Belg.* 38: 141 (♂, ♀, Mount Cameroon)

A slender, colourful species known from Angola and Congo northwards to Nigeria and eastwards to Uganda. It is often common near streams circulating through mud in dense forest. A description of both sexes is given by Pinhey (1969).

MATERIAL EXAMINED

Boukoko, 2 ♂, 5.ii.1965.

PLATYCNEMIDIDAE

Platycnemis sikassoensis (Martin)

Psilocnemis sikassoensis Martin, 1912, *Feuille jeun. Nat.* 42: 98 (♂, Sikasso)

This species has been known between Nigeria and Sierra Leone, so that the present examples from the Central African Republic extend the range quite appreciably. It must be pointed out that at present the genus *Platycnemis* Burmeister is very inadequately known in Africa and a revision of the species is necessary.

MATERIAL EXAMINED

Bangui, 1 ♀, 30.xi.1967, 1 ♀, 9.xii.1967, 1 ♂, 18.ix.1968.

COENAGRIONIDAE

Only two of the genera are represented in this collection.

Pseudagrion kersteni (Gerstaecker)

Agriion kersteni Gerstaecker, 1869, *Arch. Naturgesch.* 35 (1): 222 (♂ ♀, Mbaramu, Tanzania)

This is one of the most abundant Zygoptera in continental Ethiopian Africa. Yet it is not found in the more arid regions, nor in swamp such as the Okavango system of Botswana. In heavy forested regions it is confined to the outskirts. It therefore seems that the large number collected at Bangui (136 ♂, 21 ♀) were in more or less open sources of water.

The size of the specimens varies appreciably, the ♂ abdomen being 27-30 mm. In general examples of this species the black markings on the head are scarcely developed. In one ♀ the prothoracic stylets are shorter than usual.

It should be noted that pruinulent ♂ Odonata which have much black markings in the juvenile condition will be very black insects in the adult state when pruinosity

is removed (for instance, by heat or solvents). This applies to many *kersteni* as well as other Odonata in the present collection.

MATERIAL EXAMINED

Bangui, 1 ♀, 23.xi.1967, 3 ♂, 28.xi.1967, 27 ♂, 4 ♀, 30.xi.1967, 47 ♂, 9 ♀, 9.xii.1967, 1 ♂, 15.xii.1967, 5 ♂, 1 ♀, 17.ix.1968, 11 ♂, 1 ♀, 18.ix.1968, 24 ♂, 3 ♀, 19.xi.1968, 7 ♂, 1 ♀, 27.ix.1968, 10 ♂, 2 ♀, 10.x.1968.

Pseudagrion melanicterum Selys

1876, *Bull. Acad. r. Belg. Cl. Sci.* 42 (2): 492 (♂, ♀, Sierra Leone, Nigeria)

A slender dark forest species found in forests of Zambia and Congo to Uganda, Nigeria and westwards to Sierra Leone. In distribution it overlaps with the more colourful relative, *P. hageni* Karsch but whereas *melanicterum* is far commoner in its western haunts, *hageni* replaces it in Eastern and South Eastern Africa. Variation is noticeable in the green band of the frons, being widely broken centrally in 1 ♂.

MATERIAL EXAMINED

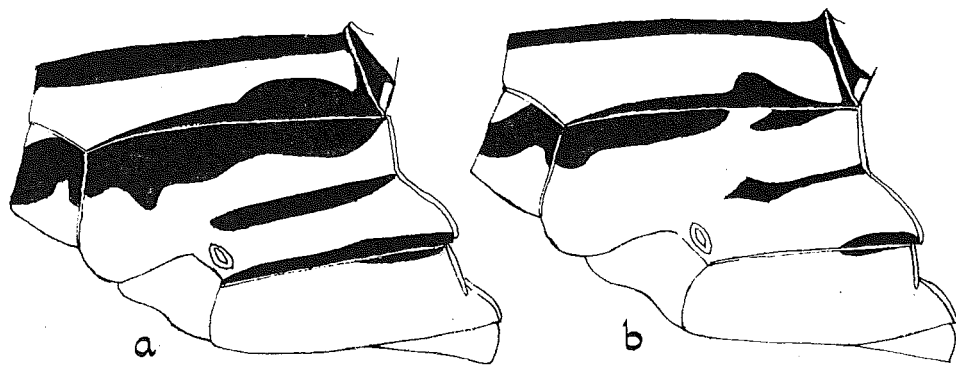
Boukoko, 1 ♂, 5.ii.1965; Bangui, 7 ♂, 30.xi.1967, 11 ♂, 9.xii.1967, 1 ♂, 1 ♀, 18.ix.1968, 8 ♂, 1 ♀, 19.ix.1968.

Pseudagrion sjostedti Förster

1906, *Jber. Ver. Naturk. Mannheim* 71-72: 62 (Cameroons)

Pseudagrion jacksoni Pinhey, 1961, *Publication Brit. Mus. (Nat. Hist.)*: 37 (Northern Uganda)

In some areas, particularly N.W. Zambia, Botswana and Southern Katanga, the status of *jacksoni* is a racial concept. Yet in some of the territories further north,



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FIG. 2. *Pseudagrion sjostedti* Förster, ♂ synthorax from left. a—forma *jacksoni* (Bangui 19. ix. 68). b—transition from forma *jacksoni* to forma *sjostedti* (Bangui, 18. ix. 1968).

including the Bangui material, it is no more than a more melanic form. In fact, although tending more towards *jacksoni* than to *sjostedti* there are intermediates in this collection (fig. 2). Descriptions of all the forms of this species are given in Pinhey, 1964. The face in Bangui males may be orange or red, postocular spots yellowish to greenish yellow, antehumeral stripes red or greenish yellow.

MATERIAL EXAMINED

Bangui, 4 ♂, 1 ♀, 39.xi.1967, 4 ♂, 1 ♀, 9.xii.1967, 3 ♂, 17.ix.1968, 6 ♂, 18.ix.1968, 4 ♂, 19.ix.1968, 1 ♂, 27.ix.1968, 2 ♂, 1 ♀, 10.x.1968.

Pseudagrion whellani Pinhey

1956, *Occ. Pap. Coryndon Meml. Mus.* 4: 18 (Rhodesia)

A dark species widely distributed in Continental Ethiopian Africa and easily distinguished in the ♂ from related black species by the pale reddish brown tibiae and tarsi contrasting with the black femora.

MATERIAL EXAMINED

Bangui, 12 ♂, 2 ♀, 30.xi.1967, 23 ♂, 1 ♀, 9.xii.1967, 1 ♂, 17.ix.1968, 17 ♂, 8 ♀, 18.ix.1968, 4 ♂, 10.x.1968.

Agriocnemis forcipata Le Roi

1915, *Ergebn. 2 deutsch. zentr. Afrika Exped. 1910-11, unter Führung Adolf Friedrichs, Herzogs zu Mecklenburg*, 1: 341 (♂ ♀, Sudan)

Locally gregarious in tropical Central Africa. There is some variation in body markings when a series is examined but I believe this is mainly or entirely maturational. However, there is only one example in this collection under review.

MATERIAL EXAMINED

Bangui, 1 ♀, 30.xi.1967.

Agriocnemis zerafica Le Roi

1915, *Ibiden* 1: 343 (♀ Bahr-el-Zeraf)

Smaller than *forcipata* and more northerly in its distribution.

MATERIAL EXAMINED

Bangui, 4 ♂, 18.ix.1968, 1 ♂, 4 ♀, 19.ix.1968.

CHLOROCYPHIDAE

Chlorocypha curta (Hagen)

Libellago curta Hagen, 1853, in Selys, *Bull. Acad. r. Belg. Cl. Sci.* 20: 58 (♂, Guinea)

This beautiful species, with the basal segments of the abdomen in the ♂ red, the terminal segments blue, is variable both in the ratio of red to blue segments and in the degree of black fasciae on the segments. In the typical ♂ only segments 7-10 are blue. In a moderately common variety the last five segments 6-10 are blue. This variation is not only reflected in the Bangui material but it is interesting to see intermediates, with segment 6 only partially blue. This is indicated below. No significance can be attributed to dates. It seems that in some localities, like Bangui, it is individual variation. In other places, for instance, Uganda, I have not noticed any such variation.

MATERIAL EXAMINED

All are from Bangui

Typical ♂ (segments 7-10 blue): 1 ♂, 23.xi.1967, 1 ♂, 28.xi.1967, 20 ♂, 30.xi.1967, 16 ♂, 9.xii.1967, 1 ♂, 17.ix.1968

♂ variety (6-10 blue): 10 ♂, 9.xii.1967, 1 ♂, 15.xii.1967, 1 ♂, 17.ix.1968, 1 ♂, 18.ix.1968.

♂ variety (4½ blue segments): 1 ♂, 15.xii.1967

♂ variety (4⅓ blue segments): 1 ♂, 23.xi.1967, 4 ♂, 30.xi.1967, 1 ♂, 9.xii.1967

♂ variety (4 segments blue and a trace): 2 ♂, 30.xi.1967

♀: 15 ♀, 9.xii.1967, 1 ♀, 15.xii.1967, 3 ♀, 18.ix.1968.

Chlorocypha cyanifrons (Selys)

Libellago cyanifrons Selys, 1873, *Bull. Acad. r. Belg. Cl. Sci.* 35 (2): 493 (♂, Gabon)

Distributed in forests from the Congo to Nigeria. There is only a single example in this collection.

MATERIAL EXAMINED

Boukoko, 1 ♀, 5.ii.1965.

AGRIONIDAE

Phaon iridipennis (Burmeister)

Calopteryx iridipennis Burmeister, 1839, *Handb. Ent.* 2: 827 (♂, Durban)

Widespread over Continental Ethiopian Africa.

MATERIAL EXAMINED

Bangui, 1 ♀, 25.ix.1968.

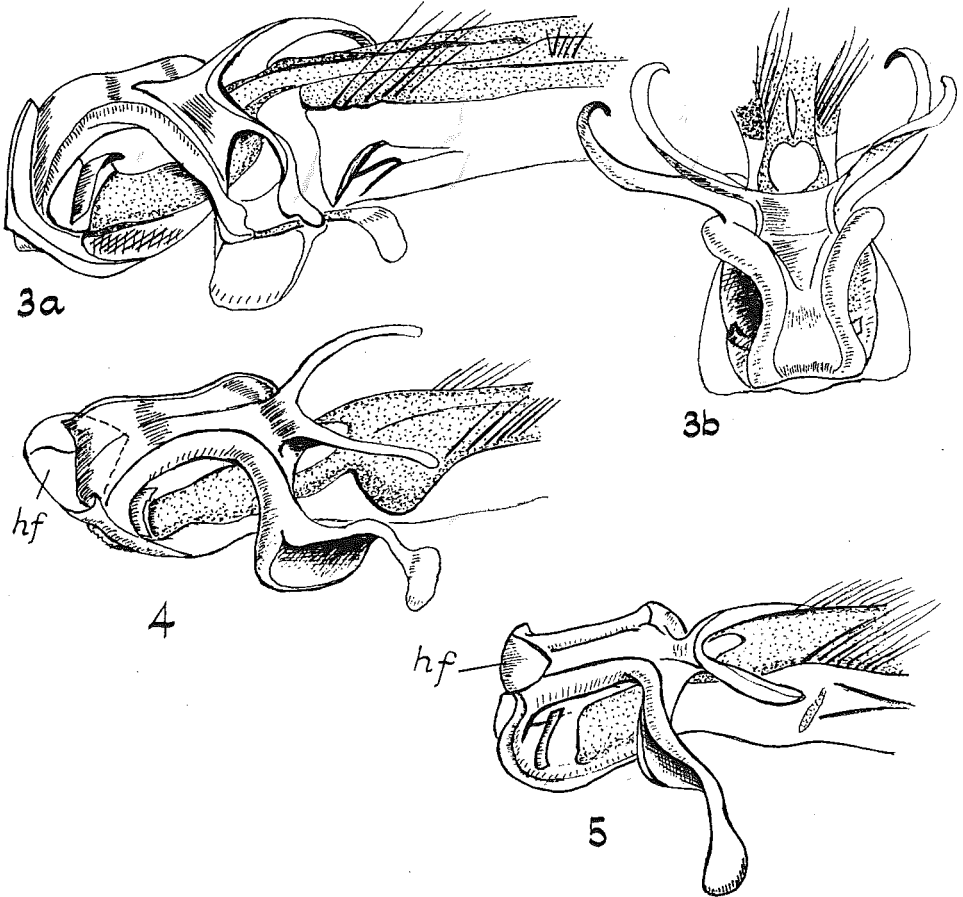


FIG. 3-5. Prothalli of *Sapho* Selys
3 a, b—*bicolor* Selys. 4—*gloriosa* Selys. 5—*orichalcea* McLachlan.

Umma mesostigma (Selys)

Cleis mesostigma Selys, 1879, *Bull. Acad. r. Belg. Cl. Sci.* **47** (2): 358 (Cameroons)

Distributed in many forest localities from the Congo to Dahomey.

MATERIAL EXAMINED

Boukoko, 3 ♂, 5.ii.1965.

Sapho bicolor, Selys

1853, *Bull. Acad. r. Belg. Cl. Sci. Suppl.* **20**: 21 (♂, Guinea)

Sapho superba Sjöstedt, 1917, *Ark. Zool.* **14**: 10 (♂, Cameroons) **syn. nov.**

There were two males of *bicolor* in this collection and in assessing the relationship of this taxon to the very similar *superba* it appears that they are conspecific but since their distribution overlaps they are forms, not races. Both have brown apical fasciae on the wings, reflecting purple; both show some variation in the maximum width of the hindwing and in the shape of the inner edges of the apical fasciae. The difference between them depends on the presence, in *superba*, of a broad milky white zone just proximal to the apical patches. Yet this may at times be faintly discernible also in *bicolor*.

The prothallus (fig. 3) of one of the La Madoke *bicolor* shows two pairs of long slender, curved branches, one terminal the other subterminal. A *bicolor* from Ivory Coast and a *superba* from Etoumbi, Congo Brazzaville, were examined and had essentially similar prothalli, so that I must consider them conspecific. *S. bicolor* has been known previously from Guinea, Ghana, Cameroons and there is a series from Ivory Coast in the National Museum, Bulawayo; *superba* is known from several localities from Congo Brazzaville to Sierra Leone.

MATERIAL EXAMINED

La Madoke, 1 ♂, 22.i.1967, 1 ♂, 23.v.1967, leg. P. Téocchi.

Sapho gloriosa Selys

1873, *Bull. Acad. r. Belg. Cl. Sci.* **36b** (2): 611 (♂ ♀, Gabon)

This species is known from the Congo Kinshasa to the Cameroons and overlaps with the closely similar *S. orichalcea* McLachlan, 1869. The beautiful mature ♂ with completely dark wings reflecting purple has a black nodal band which is absent in *orichalcea*. The prothallus of the single Boukoko ♂ (fig. 4) has long arms as in *bicolor* but the terminal pair are shorter, less curled, and the subterminal branches have deeper sockets near their bases. One from Ketta Forest (Congo Brazzaville) was compared and found to be similar. It may be mentioned that the hinge flap (h.f.) can be open as illustrated or closed as indicated by the dotted line.

In *orichalcea* (fig. 5) the terminal arm is still shorter and thicker, the folded glans is straight-edged, not curved, and the hinge flap is only a small triangle. These two are distinct species.

MATERIAL EXAMINED

Boukoko, 1 ♂, 5.ii.1965.

GOMPHIDAE

Ictinogomphus ferox (Rambur)

Ictinus ferox Rambur, 1842, *Ins. Névropt.*: 173 (Senegal)

A large common Gomphid in tropical and subtropical Africa. It is usually seen on reed-fringed rivers and streams and is a savannah insect, not a forest species.

MATERIAL EXAMINED

Boukoko, 2 ♂, 5.ii.1965.

Phyllogomphus spec.

This is one of the larger species of *Phyllogomphus* Selys, 1854, with three green stripes on each side of the thorax. Unfortunately, it is so severely damaged that it cannot be identified as a species.

MATERIAL EXAMINED

Bangui, 1 ♂, 19.ix.1968.

Paragomphus genei (Selys)

Gomphus genei Selys, 1841, *Rev. Zool. Guér. Mén.*: 245 (♀, Sicily)

Under its more familiar name *hageni* (Selys, 1870) now synonymized, this is considered the commonest of the Gomphidae in Africa.

MATERIAL EXAMINED

Bangui, 1 ♀, 30.xi.1967, 1 ♂, 9.xii.1967.

AESHNIDAE

The collection includes three forest species which fly at dusk or dawn but are easily disturbed by day.

Gynacantha bullata Karsch

1891, *Ent. Nachr.* 17: 305 (♂ ♀, Chinchoco)

A small species of the genus generally recognisable by the black fascia at the junction of femora and tibiae. It is common in forests from the Congo and Uganda to Guinea.

MATERIAL EXAMINED

Boukoko, 1 ♂, 5.ii.1965, leg. Pujol; Bobua de Bokanga, 1 ♀, 2.ix.1969, leg. M. Serrano & R. Pujol.

Gynacantha villosa Grünberg

1902, *Jber. Ges. naturf. Freunde Berl.*: 233 (♂, Langenburg)

This is a larger, more robust species than *bullata*, distributed in forest or thick bush (probably former forest areas) from Mozambique via Malawi and Zambia as well as Uganda westwards to Nigeria.

MATERIAL EXAMINED

Bangui, 1 ♀, 18.ix.1968.

Heliaeschna fuliginosa Karsch

1893, *Ent. Nachr.* 19: 194 (♂ ♀, Cameroons)

A moderately large dark species distributed in forest from the Congo to Nigeria and (in the National Museum, Bulawayo) from Ivory Coast.

MATERIAL EXAMINED

Bangui, 1 ♀, 15.xii.1967.

LIBELLULIDAE

Some interesting species of this large family were collected.

Tetrathemis bifida Fraser

1941, *Proc. R. ent. Soc. Lond.* B10: 138 (♂ ♀, Uganda)

A small primitive species known from Uganda westwards to Nigeria.

MATERIAL EXAMINED

Bangui, 1 ♂, 19.ix.1968.

Neodythemis africana Fraser

1954, *Revue Zool. Bot. afr.* **50**: 257 (♂ ♀, Congo Kinshasa)

Described from Congo Kinshasa, there is a series in the National Museum, Bulawayo, from Congo Brazzaville and an example from Western Uganda. The specimen in the present collection continues the known range of this species.

MATERIAL EXAMINED

Boukoko, 1 ♀, 29.i.1965.

Hadrothemis defecta (Karsch)

Thermotheremis defecta Karsch, 1891 *Ent. Nachr.* **17**: 61, 62 (♂ ♀, Sierra Leone)

This is a small species of the genus with a bright red abdomen in the ♂. The single example here belongs to this species by general characters and accessory genitalia, although in one respect it is abnormal since the arculus is slightly proximal to the second antenodal cross vein in each forewing instead of the distal position.

It is distributed in forest from Zambia to Nigeria, westwards to Sierra Leone.

MATERIAL EXAMINED

Boukoko, 5.ii.1965.

Orthetrum austeni (Kirby)

Thermotheremis austeni Kirby, 1900, *Ann. Mag. nat. Hist.* **6** (7): 72 (♂ ♀, Sierra Leone)

This huge species is locally widespread on the outskirts of forests or in clearings, from Zambia to Nigeria and westwards to Sierra Leone.

MATERIAL EXAMINED

Boukoko, 1 ♀, 5.ii.1965.

Orthetrum brachiale (Beauvois)

Libellula brachialis Beauvois, 1805, *Ins. Afr. Amér.*: 171 (♂ ♀, Oware)

Orthetrum stemmale kalai Longfield, 1936, *Trans. R. ent. Soc. Lond.* **85**: 487, 493

(♂, Zambezi River)

This is a common and widespread species in most of the Ethiopian region. The specimens collected were of the dark form *kalai*.

MATERIAL EXAMINED

Bangui, 1 ♂, 9.xii.1967, 2 ♂, 18.ix.1968, 5 ♂, 19.ix.1968. (all leg. R. Pujol); Bobua de Bokanga, 1 ♂, 4.ix.1969, leg. M. Serrano & R. Pujol.

Orthetrum chrysostigma (Burmeister)

Libellula chrysostigma Burmeister, 1839, *Handb. Ent.* **2**: 857 (♂ ♀, Teneriffe)

Abundant in continental Africa, spreading into Western Asia, Southern Europe and some neighbouring islands.

The thorax usually exhibits one lateral white stripe but this is not so in these Bangui specimens.

MATERIAL EXAMINED

Bangui, 2 ♂, 30.xi.1967, 8 ♂, 9.xii.1967.

Orthetrum guineense Ris, 1909, *Cat. Coll. Zool. Selys* **10**: 207 (♂, Angola)

Widespread in most parts of the Continental Ethiopian region.

MATERIAL EXAMINED

Bangui, 1 ♂, 18.ix.1968, 3 ♂, 19.ix.1968, 2 ♂, 25.ix.1968, 1 ♀, 11.viii.1969.

Orthetrum hintzi Schmidt

1949, *Archos Mus. Bocage* (1951) 20: 174, 178 (♂, Portuguese Guinea)

Widely distributed in Continental Ethiopian Africa. The form *zernyi* Schmidt, 1949, is, I consider, only the mature condition; as in the Bangui specimens. The single ♂ has evidently been dried rapidly and is completely black, without pruinosity.

MATERIAL EXAMINED

Bangui, 1 ♂, 30.ix.1967, 1 ♀, 25.ix.1968, 1 ♀, 28.ix.1968.

Orthetrum julia Kirby

1900, *Ann. Mag. nat. Hist.* 6 (7): 75 (♂ ♀, Sierra Leone, etc.)

A forest dominant in equatorial Africa, widespread in the Continental Ethiopian region.

MATERIAL EXAMINED

Boukoko, 1 ♀, 4.iv.1964, 1 ♂, 2 ♀, 5.ii.1965; Bangui, 1 ♀, 9.xii.1967, 1 ♀, 25.ix.1968.

Orthetrum latihami Pinhey

1966, *Explor. Parc Natn. Garamba. Miss. H. de Saeger* 45: 40 (♂ ♀, Congo Kinshasa)

The single specimen in this collection is very fragmented and, moreover, it is abnormal in venation. By venation, for instance, it could be nearer *Hadrothemis* Karsch because each hindwing has 2 Cuq whereas there should be only a single cubital cross vein in *Orthetrum* Newman. The envelope containing the incomplete fragments has, however, a single loose hamule which is typical of *latihami*. The damaged head and crushed thorax with yellow stripes is also like *latihami*. It is certainly this species, despite the peculiar venational abnormalities.

The species is widespread from Congo to Sierra Leone but hitherto very few specimens have been recorded.

MATERIAL EXAMINED

Bangui, 1 ♂, 11.viii.1969.

Orthetrum microstigma microstigma Ris

1911, *Revue Zool. Bot. afr.* 1: 128 (♂ ♀, Cameroons, etc.)

A dark species with small pterostigma. It occurs in most parts of Continental Ethiopian Africa north of the Zambezi River.

MATERIAL EXAMINED

Boukoko, 1 ♂, 28.i.1965; Bangui, 1 ♂, 9.xii.1967, 1 ♂, 19.ix.1968.

Orthetrum monardi Schmidt

1949, *Archos Mus. Bocage* (1951), 20: 179 (♂, Portuguese Guinea)

This species is of wide distribution from Zambia and Angola to Kenya, Uganda and westwards to Guinea. Yet it is not extensively represented in collections. In the National Museum, Bulawayo, it is moderately well represented from Zambia, with few others from Kenya, Congo, Cameroons and Nigeria. The Bangui specimens are a valuable addition.

MATERIAL EXAMINED

Bangui, 1 ♂, 28.xi.1967, 7 ♂, 30.xi.1967, 4 ♂, 9.xii.1967.

Orthetrum sp.

A small *Orthetrum* with unstable venation, has been reduced to wings only through coleopterous attack. It might possibly be another *latihami*.

MATERIAL EXAMINED

Bangui, 1. 25.ix.1968.

Palpopleura lucia (Drury)

Libellula lucia Drury, 1773, *Ill. Exot. Ins.* 2: 82 (♀, Sierra Leone)

Libellula portia Drury, 1773, *Ibidem*, 2: 86 (♂, Sierra Leone)

The two forms *lucia* and *portia* are widely distributed in Continental Ethiopian Africa. The ♂ is usually distinct as one or other of these forms although intermediates occasionally occur. The females intergrade and so will be recorded here separately from the males.

MATERIAL EXAMINED

♂ f. *lucia*:

Bangui, 2 ♂, 30.xi.1967, 1 ♂, 9.xii.1967, 1 ♂, 23.ix.1968, 3 teneral ♂, 27.ix.1968, 5 ♂, 28.ix.1968, leg. R. Pujol; Bobua de Bokanga 1 ♂, 2.iii.1969, 1 ♂, 3.ix.1969, leg. M. Serrano & R. Pujol.

♂ f. *portia*:

Bangui, 2 ♂, 9.xii.1967.

♀: Boukoko, 1 ♀, 5.ii.1965; Bangui, 1 ♀, 15.xii.1967, 2 ♀, 18.ix.1968, 1 ♀, 19.ix.1968, 2 ♀, 23.ix.1968.

NESCIOTHEMIS Longfield

1955, *Publicões cult. Co. Diam. Angola* 27: 59

Type-species *Orthetrum farinosum* Förster

Limnetothemis Pinhey, 1966, *Explor. Parc Natn. Garamba. Miss. H. de Saeger* 45: 60

Syn. nov.

As originally defined by Longfield this genus included *farinosum* (Förster, 1898), the male dark but coated with very pale blue pruinosity; and *fitzgeraldi* Pinhey, 1956, in which the male is darker but has some of the abdominal segments red. Gambles (July, 1966) published a description of two new species, *minor* and *nigeriensis*, the first like a dwarf *farinosum*, the second with a much more slender red abdomen. The same year I described *Limnetothemis erythra* Pinhey (October, 1966), with a very slender, almost completely red abdomen. Since all five have very similar accessory genitalia I am now inclined to agree with Gambles that the slender-bodied *erythra*, like *nigeriensis*, is a species of *Nesciothemis*.

This, however, entails a certain broadening of the generic characters. The arculus may be distal in position, at or just before the second antenodal cross vein, or in the more advanced species, the red ones, habitually well before this cross vein. The seemingly more primitive members like *farinosum* darken in the ♂ but develop extensive pruinosity, the abdomen retaining some yellowish fasciae. Then red pigment was developed in the males, starting with *fitzgeraldi* (of known species), this pigment increasing with narrowing abdomen to *erythra* the extreme amongst known species and with a corresponding narrowing of the body.

Gambles' *minor* is like a small *farinosum* but with the lateral lobes of the labium mainly yellow and the labrum also pale; tibia with yellow posterior stripe. In the National Museum, Bulawayo, there are only two males of this species, one from Northern Nigeria, the country of its type, the other from Sierra Leone. In long series

of *farinosum*, however, tendencies towards the patterns of *minor* may occur. For instance, a mature ♂ from Kafue, Zambia, hindwing 31 mm (max. size for *minor* 30,5 mm, teste Gambles), has the lateral lobes of the labium all yellow except a narrow brown central band; labrum blackish with the outer margin yellow; tibia all black. A small mature ♂ from Katimbora, west of the Victoria Falls, hindwing 27mm has the labium broadly black in the centre with the lateral lobes half yellow; labrum also with yellow margin; posterior tibiae yellowish posteriorly, the other tibiae black. Another from the same locality, hindwing 31 mm slightly less pruinose and probably not fully mature, has similar lips, but all the tibiae are yellowish brown posteriorly.

Again, a mature ♂ from Swaziland, hindwing 32 mm, has the lateral lobes of the labium yellow with brown central smear; labrum with yellow outer margin; tibiae all black. Other examples are from Tanzania.

Consequently, in differentiating between *farinosum* and *minor* it is necessary to

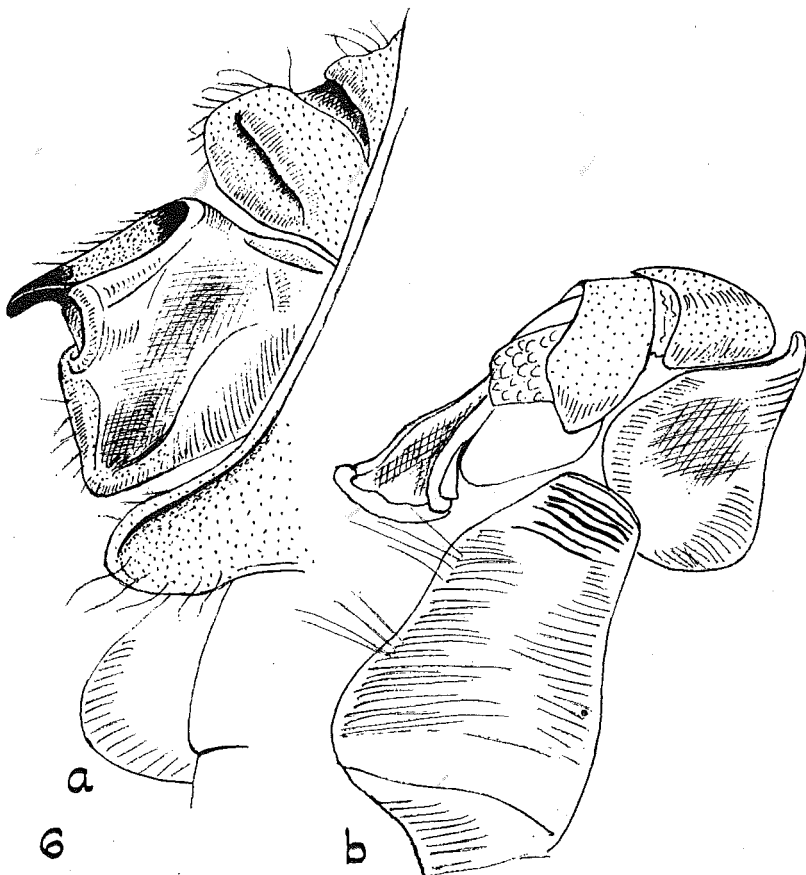


FIG. 6. *Nesciothemis pujoli* spec. nov.
a—accessory appendages from left (holotype).
b—prothallus (paratype).

compare the accessory genitalia and consider the colour of the labrum; whether all yellow in *minor* or mainly black in *farinosum*.

In Pujol's material there are two large, robust, dark males which I consider to be a new species, which I take pleasure in naming after the collector.

***Nesciothemis pujoli* spec. nov.**

Holotype- ♂ (mature): Labium blackish brown, the anterior margin very narrowly yellow. Labrum, postclypeus, frons, vertex and occipital triangle all black; anteclypeus greenish ochreous.

Prothorax black, the collar yellow on anterior margin, the hindlobe broad and slightly notched at centre of margin. Synthorax blackish brown except a yellowish brown ventral area on the mesepisternum; coated with dark violet blue pruinosity. Legs all black.

Venation black, but the subcostal and radial cross veins yellow. Pterostigma as in other species, brownish yellow, deeply brown costally, between brown veins. Forewing with 14-13 Ax, 10-11 Px. Arculus between first and second Ax but nearer second. Rspl of distinctly two rows in all wings.

Abdomen shaped as in *farinosum*; black, with thin dark blue pruinosity on segments 1 to base of 4; segments 4-5 with two yellowish stripes each side; segments 6-7 with upper yellowish stripes only, 8 with a shorter stripe, 9 with faint latero-basal dot. Segment 10 and anal appendages all black. Accessory genitalia (fig. 6) with the inner hook closer to the ridge behind it than in *farinosum*. Prophallus (fig. 6b) differs slightly from *farinosum* in the terminal portion.

Abdomen 26,5 mm, hindwing 32,5 mm, pterostigma 35 mm.

Paratype ♂ similar but the pruinosity lost in drying. The holotype and paratype are in the National Museum, Bulawayo. The mature ♂ differs most obviously from *farinosum* in its darker pruinosity.

MATERIAL EXAMINED

Boukoko, 1 ♂ (paratype), 5.ii.1965, 1 ♂ (holotype) Bangui, 8.viii.1969, leg. R. Pujol.

A preliminary key to mature males of this genus is as follows:—

- | | |
|--|--------------------------|
| 1. Abdominal segments 6-8 black with yellow or orange markings | 2 |
| — Segments 6-8 all red | 4 |
| 2. Labrum yellow, lateral lobes of labium mainly yellow. Tibiae with posterior yellow stripe. Hindwing usually less than 30 mm | <i>minor</i> |
| — Labrum black or nearly all black. Labium generally mainly black. Tibiae generally all black. Hindwing normally over 30 mm | 3 |
| 3. Thorax and base of abdomen with pale chalky blue pruinosity. Inner hook of hamule distant from ridge behind it | <i>farinosum</i> |
| — Thorax and base of abdomen with dark violet blue pruinosity. Inner hook of hamule close to this ridge | <i>pujoli</i> spec. nov. |
| 4. Abdominal segments moderately broad; only segments 6-8 all red, 9 partly red. Forewing usually with 14 Ax | <i>fitzgeraldi</i> |
| — Abdomen very slender. At least segments 5-9 all red. Forewing usually with 12 Ax | 5 |
| 5. Frons and vertex without violet sheen. Thorax all dark, with pale blue pruinosity. Segments 1-3 dark, with pale blue pruinosity. Pterostigma less than 3,5 mm | <i>nigeriensis</i> |
| — Frons and vertex with violet sheen. Thorax with yellow dorsal and lateral stripes. No pruinosity. Segments 1-3 also red. Pterostigma over 4 mm | <i>erythra</i> |

Hemistigma albipuncta (Rambur)

Libellula albipuncta Rambur, 1842, *Ins. Névropt.*: 93 (♂, Senegal)

A common and widespread Ethiopian species but very variable in size and in wing coloration and markings.

MATERIAL EXAMINED

Bangui, 1 ♀, 15.xii.1967, 1 ♂, 27.ix.1968.

Eleuthemis buettikoferi Ris

1910, *Cat. Coll. Zool. Selys* 11: 384 (♂, Liberia)

Although widespread in the warmer parts of Continental Ethiopian Africa I have seldom found this species to be common except, for instance, at the Victoria Falls and for some distance up the Zambezi River. In this region it is nearly always possible to find it.

MATERIAL EXAMINED

Bangui, 1 ♂, 25.ix.1968.

Acisoma trifulidum Kirby

1889, *Trans. zool. Soc. Lond.* 12: 341 (♂, Congo)

Widespread in tropical Continental Ethiopian Africa. It is darker than *A. panoroides* Rambur, 1842, and is confined to forested areas.

MATERIAL EXAMINED

Bangui, 2 ♀, 15.xii.1967, leg. R. Pujol; Bobua de Bokanga, 2 ♀, 29.viii.1969, 1 ♂, 2.ix.1969, leg. M. Serrano & R. Pujol.

Crocothemis erythraea (Brullé)

Libellula erythraea Brullé, 1832, *Exped. Sci. Morée* 3 (1): 102 (Moravia)

Abundant in most parts of Africa and neighbouring territories and perhaps conspecific with *servilia* (Drury, 1773) of Asia.

MATERIAL EXAMINED

Bangui, 2 ♂, 15.xii.1967.

Crocothemis sanguinolenta (Burmeister)

Libellula sanguinolenta Burmeister, 1839, *Handb. Ent.* 2: 859

Also widespread but only in the Ethiopian region.

MATERIAL EXAMINED

Bangui, 1 ♂ (damaged), 15.xii.1967.

Trithemis arteriosa (Burmeister)

Libellula arteriosa Burmeister, 1839, *Handb. Ent.* 2: 850 (♂, Durban)

One of the most abundant Odonata throughout Continental Africa. This slender red species has an amber basal zone on each wing which is well defined in the long series from Bangui. This saffronated area varies in extent but never reaches the tornus of the hindwing as it does in *imitata* Pinhey and the black markings on abdominal segment 6 extend latero-ventrally along the whole segment instead of being concentrated at the distal half as in *imitata*.

MATERIAL EXAMINED

Boukoko, 1 ♀, 29.xii.1964; Bangui, 1 ♂, 2 ♀, 23.xi.1967, 13 ♂, 30.xi.1967, 22 ♂, 1 ♀, 9.xii.1967, 1 ♂, 2 ♀, 15.xii.1967, 1 ♂, 19.ix.1968.

Trithemis dichroa Karsch

1893, *Berl. ent. Z.* 38: 24 (♂ ♀, Togo)

A small black species distributed from Zambia to Southern Sudan and westwards to Sierra Leone.

MATERIAL EXAMINED

Bangui, 2 ♂, 9.xii.1967.

Trithemis fumosa Pinhey

1962, *J. ent. Soc. sth. Afr.* 25: 48 (♂, Congo Brazzaville)

A distinctive species with short, stout body and strongly saffronated wings. So far it is only recorded from a few specimens in the Congo Brazzaville (Etoumbi Forest).

MATERIAL EXAMINED

Boukoko, 5.ii.1965.

Trithemis imitata Pinhey

1961, *Publication Brit. Mus. (Nat. Hist.)*: 164 (♂ ♀, Congo Kinshasa)

A local red species of Central Africa related to *arteriosa*.

MATERIAL EXAMINED

Bangui, 1 ♂, 23.xi.1967, 1 ♂, 9.xii.1967.

Zygonyx torrida (Kirby)

Pseudomacromia torrida Kirby, 1889, *Trans. zool. Soc. Lond.* 12: 299, 340 (♂, Sierra Leone, etc.)

Widespread over most of the African continent, occurring also on some islands and in Southern Europe.

MATERIAL EXAMINED

Bangui, 1 ♀, 25.ix.1968.

Olpogastra lugubris Karsch

1895, *Ent. Nachr.* 21: 199, 201 (♀, Dongola, Sudan)

Easily recognised by the abdominal shape, greatly swollen at the base, the remaining segments very slender. Widespread in continental Ethiopian Africa.

MATERIAL EXAMINED

Bangui, 1 ♂, 28.ix.1968.

Rhyothemis notata (Fabricius)

Libellula notata Fabricius, 1781, *Species Insectorum exhibentes eorum differentias specificas*, etc. Hamburg. 2 (Odonata), 1 (5): 390 (Sierra Leone)

This dark winged species is known from Congo Kinshasa to Sierra Leone. It appears to intergrade with *R. fenestrina* (Rambur, 1842) which is commoner in Eastern and Southern Africa. They probably form a cline rather than distinct races.

MATERIAL EXAMINED

Bobua de Bokanga, 1 ♂, 29.viii.1969, leg. M. Serrano & R. Pujol.

Pantala flavescens (Fabricius)

Libellula flavescens Fabricius, 1798, *Suppl. Ent. Syst.*: 285 (♀, India)

The most widely distributed of all *Anisoptera*, being known in many parts of the tropics and subtropics in the different continents.

MATERIAL EXAMINED

Bangui, 1 ♂, 28.xi.1967, 1 ♀, 22.ix.1968, 1 ♀, 12.x.1968.

Tholymis tillarga (Fabricius)

Libellula tillarga Fabricius, 1798, *Ibidem*: 285 (East Indies)

Widespread in most of the Ethiopian and Oriental regions. Crepuscular, but often flies on stormy days. In one of the examples only wings were found. All these show

an abnormality in the anal loop of the hindwing which is closed at the margin, whereas it is normally open. This is the kind of instance when a generic key breaks down.

MATERIAL EXAMINED

Bangui, 1 ♀, 18.ix.1968, 1 (wings only), 28.x.1968, 1 ♀, 15.viii.1969.

Zyxomma atlanticum Selys

1889, *Ann. Mus. civ. Stor. nat. Giacomo Doria*, 27: 449 (West Africa)

This is another crepuscular species, found usually in equatorial forest, from the Congo to S. Nigeria. Balinsky (1961) records it from bush in Zululand. The Bangui ♀ here is strongly marked with amber at each wing nodus.

MATERIAL EXAMINED

Boukoko, 1 ♀, 5.ii.1965.

Trapezostigma basilare (Beauvois)

Libellula basilare Beauvois, 1805, *Ins. Afr. Amér.*: 171 (S. Nigeria)

A widely distributed migrant in Ethiopian Africa and in the Oriental Region.

MATERIAL EXAMINED

Bangui, 1 ♀, 23.xi.1967, 1 ♀, 19.ix.1968, 1 ♀, 22.ix.1968.

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