

alors pourquoi des animaux semblables sont-ils terricoles d'un côté du canal de Mozambique et arboricoles de l'autre côté? Ceci nous invite à beaucoup de prudence quant à des conclusions tirées à la vue d'exemplaires non vivants; ceci nous démontre également que contrairement aux théories les plus séduisantes, un type aussi étroitement spécialisé morphologiquement que le type *Archæa* est capable, sans changer d'aspect, d'avoir des modes de vie radicalement différents et de peupler des milieux très variés.

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Notes on African Odonata, particularly type material

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These notes are some of the results obtained from examining types of Ethiopian dragonflies in European Museums in 1964. The author is greatly indebted to the specialists in charge of these collections, at the following Institutions:

Alexander Königs Museum, Bonn; British Museum (Natural History), London; Institut royal des Sciences naturelles, Bruxelles (DE SELYS collection); Muséum National d'Histoire Naturelle, Paris; Musée Royal de l'Afrique centrale, Tervuren; Institut des Parcs Nationaux du Congo; Royal Scottish Museum, Edinburgh; Senckenberg Museum, Frankfurt/Main; Zoologisches Museum (Naturkunde), Humboldt Universität, Berlin.

During the survey it was soon evident that errors had crept in regarding the interpretation of some types. This was particularly noticeable in the « *Macromia sophia* group » and with a view to correcting the anomalies Dr. BASILEWSKY kindly loaned the Tervuren material of this group.

It has also been possible to clear up uncertainties in little known species such as MARTIN's « *Aciagrion varians* » as well as the position of several undescribed specimens labelled types.

NUBIOLESTES FRASER (1945)

The erection of this name *Nubiolestes* by FRASER to displace the preoccupied name of *Eolestes* (SCHMIDT) FRASER (1944) has been recognised in previous papers (vide PINHEY, 1962a: 89). However, SCHMIDT's argument that his new name « *Camerumolestes* » should be accepted since he was the original Author of the genus requires some clarification. « *Camerumolestes* » was apparently printed by SCHMIDT's own Press in an unrecognized journal in 1958 and cannot be accepted either by reason of publication nor by priority.

Camerumolestes SCHMIDT (1958, publ. E. SCHMIDT, Bonn, pp. 1-4) must therefore be considered a *nomen nudum*.

The type species, *Eolestes diotima* (SCHMIDT-FRASER, 1944) is represented by a holotype ♂ in Hamburg Museum and the present Author has been informed that this example has been relabelled « *Eolestes camerunensis* spec. nov. », presumably by the primary Author Dr. SCHMIDT. In the British Museum (Nat. Hist.) there is a photograph also labelled « *Eolestes camerunensis* SCHMIDT ». This name, apparently inedited, is therefore *invalid*.

Lestes sponsa (HANSEMANN)

Lestes sponsa (HANSEMANN, 1823), *Wiedem. Zool. Mag.* 2 (1): 159.

Three males in Edinburgh Museum, belonging to this species, are labelled « Laikipia, Brit. East Africa, 6/1905, F. J. JACKSON ». This is a most unlikely record for this palaearctic species and it is almost certain that it is an instance of locality error. The specimens are from the G. T. BETHUNE-BAKER collection. It seems possible that they may have been captured during one of the periods when the late F. J. JACKSON was on holiday in Europe (probably in England) and were accidentally confused with some insects he found in the Kenya locality.

Lestes jacobi MARTIN

MARTIN, 1910, *Ann. Soc. ent. Fr.*, 79: 85, 91.

Holotype ♂, from Congo, is possibly lost. From the description it is almost certain that *L. disarmatus* FRASER (1961) is the same species. The ill-defined blackish antehumeral stripes mentioned by MARTIN were, perhaps, caused by postmortem discoloration, since this happens in some of the paler members of the genus, but traces of black do show on the thorax of old males of *disarmatus*:

Syn. nov. *Lestes jacobi* MARTIN (1910) = *L. disarmatus* FRASER (1961).
Allolestes maclachlani SELYS, 1869, *Ann. Soc. ent. Belg.*, 12: 97.

Type ♀ in British Museum (Nat. Hist.), from Seychelles. It is a general example and lacks the end of the abdomen.

Allolestes nigra MARTIN

R. MARTIN, 1896, *Mém. Soc. zool. Fr.*, 9: 107; — CAMPION, 1913, *Trans. Linn. Soc. Lond.*, (2) 15: 442.

In the Zoological Record (1896) the authorship was erroneously attributed to MACLACHLAN and this error was unfortunately repeated by the present Author (PINHEY, 1962a: 100).

The type ♂ in British Museum (Nat. Hist.), is labelled « Silhouette Isl., Percy Slade Trust Exped. ». This is a mature ♂:

Labrum green, genae and anteclypeus white; frons, postclypeus and vertex black. Occipital plate yellowish and from this plate yellow stripes extend forwards to bases of antennae.

Prothorax black, with latero-dorsal row of yellow punctations; hindlobe black with yellow lateral patches. Synthorax black to below first lateral suture, with short yellowish, triangular antehumeral stripe; a short yellow streak below middle of humeral suture. Sides broadly blackish, with yellow triangle at base of first suture. Legs brown with dark spots.

Second abdominal segment blackish, with blue latero-dorsal spot on basal half; segments 3-7 blackish, each with yellow basal annulus; segments 8-10 pale yellowish above with black dorsal triangle on segment 8. Anal appendages similar to *A. maclachlani* SELYS.

Pterostigma dark brown. Left forewing, with deformed venation, has 26 Px.

From material examined from Seychelles by the present author it is apparent that type *nigra* is a mature example of *maclachlani*:

Syn. nov.: *Allolestes nigra* MARTIN (1896) falls in synonymy to *Allolestes maclachlani* SELYS (1869).

Prodasineura COWLEY (1934)

So far four species of this genus have been described, *P. vittata* (SELYS, 1886), *P. villiersi* FRASER (1948), *P. incerta* PINHEY (1962b) and *P. perisi* A. COMPTE SART (1964). From material in collections it is evident that this genus needs revision when possible in correlation with type material.

Moreover, in Bruxelles and Paris Museums there are two examples of ♀♀ (placed originally in the partially synonymic genus, *Alloneura* SELYS, 1860). Both these examples entirely lack a separate anal vein, a condition possible in the genus *Prodasineura* COWLEY, but not so far observed in any of the material in the National Museum, Bulawayo, where in all cases a vestigial anal vein is at least separated from the posterior margin. Descriptions of these two undescribed examples follow:

1. « *Alloneura simplificata* n. sp. », labelled by SELYS in SELYS collection, Bruxelles Mus. is a ♀ from Afrique Occidentale.

Head and face black with yellow transverse band on frons continued laterally to the eyes.

Prothorax brown, with yellow dorso-lateral stripe, linked to the incomplete antehumeral stripe; prothoracic hindlobe severed medially into two quadrate portions each bearing, anteriorly, a very slender vertical stylet. Synthorax brown to first lateral suture, with narrow yellowish antehumeral stripe, only on ventral half. Sides yellowish with broad brown band on second lateral suture. Legs yellowish brown with dark brown posterior stripes and long spines.

Abdomen long and slender, mainly yellowish brown; segment 8 without ventral spine.

Wings without separated anal vein; Cu_2 on forewing ending half a cell beyond quadrilateral, on hindwing one and threequarter cells beyond quadrilateral. The quadrilateral is typical of the family.

Arculus slightly beyond second Ax in all wings; Ac very close to level of 1st Ax. Longitudinal veins straight and brown. Pterostigma brown, with parallel edges.

Abd. 33 mm, hw. 24 mm.

Except for size this ♀ agrees very closely with the allotype ♀ allotted by FRASER to *Prodasineura villiersi* FRASER, the size of which was: abd. 38 mm, hw. 24 mm. There does not appear, however, that there is any certainty yet of this allotype (from Atok) being conspecific with FRASER's holotype ♂ (from Abidjan) and so it is only possible to indicate that *Alloneura simplificata* SELYS is the same species as the allotype of *Prodasineura villiersi* FRASER.

2. *Alloneura martini* SELYS MS, labelled by MARTIN, in the MARTIN Collection, Paris Mus., is a ♀ from Gaboon, differing from the previous example. The present Author is not in a position to decide whether this agrees with the female of any described species.

Face and head mainly black, with broad yellow transverse band on frons, extending laterally to the eyes.

Thorax black to second lateral suture with complete narrowish green antehumeral stripe and broad green lateral band. Femora black, orange at bases, tibiae yellowish.

Abdomen mainly black, with yellow basal annuli on most segments. Segment 2 with median dorsal yellow streak.

Wings without separate anal veins; Cu_2 , after forming lower edge of quadrilateral, extends about six cells beyond quadrilateral. Quadrilateral normal. Forewing with 15 Px; Ac close to first Ax. Pterostigma short, black, edged with white before the peripheral veins.

Abd. 36.5 mm, hw. 23 mm.

Chlorocnemis flavipennis SELYS

SELYS, 1863, *Bull. Acad. Belg.*, (2) 16: 176.

A ♂ in Bruxelles Museum (SELYS collection) is presumed to be the type and is from Sierra Leone, where the type was collected. It bears an unedited name « *Chloridia auripennis* D.S. », labelled by SELYS himself.

Ceriagrion katamborae PINHEY

PINHEY, 1961, *Occ. Pap. Rhodes-Livingstone Mus.*, 14: 20.

A melanic ♂ of this species, hitherto only known from the holotype ♂ from Katambora, Zambesi River, has now been taken near Chingola, Zambia. The dorsum of the head, thorax and most of the abdomen, red in the type, are black in this ♂. In life the face was pale blue; eye blackish above, pale yellow below. It was found in a deep swamp. Melanism seems to be rare in this genus.

Ceriagrion sanguinostigma FRASER

FRASER, 1955, *Rev. Zool. Bot. afr.*, 51: 33.

Syn. nov.: *Ceriagrion annulatum* FRASER, 1955, *ibid.* 51: 35.

Holotype ♂ of *sanguinostigma* is from Uele: Bambesa in the Equatorial Congo and is a mature ♂ in Tervuren Mus. Holotype ♂ of *annulatum* is also in Tervuren Mus., but it is a teneral ♂ (and thus paler in colour) and was collected in Elisabethville, southern Katanga. Both have a deep red, rhomboidal pterostigma, although FRASER describes that of *annulatum* as being more elongate, and the anal appendages

are very similar indeed. FRASER says of *annulatum* that it « also differs in most other characters » from *sanguinostigma* but, in fact, it only differs essentially in its body colour, which is due to its immaturity and in the more robust but fewer dorsal spines on the distal end of segment 10 in *annulatum*.

There seems no doubt that they are conspecific, although on the basis of the spine formation on abdominal segment 10 it is possible that *annulatum* is a variety or perhaps a southern race of *sanguinostigma*.

Aciagrion varians MARTIN

MARTIN, 1908, *Ann. Mus. Stor. nat. Genova*, 43: 660.

Type ♂ (Congo) in Paris Museum proves to be in the genus *Ceriagrion* SELYS 1876:

Comb. nov. *Ceriagrion varians* (MARTIN).

Moreover, this species is evidently conspecific with *Ceriagrion rubrocerinum* FRASER (1947), *Syn. nov.*

Aciagrion varians rubrostigma MARTIN (ined.)

A male from Portuguese Guinea is labelled as a type. Also on the pin are labels « *Ceriagrion glabrum* » and « *Aciagrion varians* MARTIN race *rubrostigma* ».

This example is a *Ceriagrion* and evidently of the same species as *C. sanguinostigma* FRASER (1955) which is the valid name (*Syn. nov.*).

Aciagrion ischnuroides MARTIN (ined.)

A ♂ (Sikasso) and a ♀ (Congo) in Paris Museum are labelled types. In British Museum (Nat. Hist.) there is a ♂ named *Enallagma ischnuroides* MARTIN (Nigeria) also labelled as a type.

These examples are identical with the species *Enallagma subtile* RIS (1921), which is the valid name. *Syn. nov.*: *E. subtile* RIS (1921) = *ischnuroides* MARTIN.

Aciagrion pallens MARTIN (ined.)

A ♀ (Congo) in Paris Mus. is labelled as a type but has been relabelled (probably by FRASER) as « ?*Enallagma* sp. ». It is in fact an *Enallagma*: *Comb. nov. Enallagma pallens* (MARTIN).

It is very like a ♀ *Enallagma subfurcatum* SELYS (1876) and may possibly prove to be this species.

Enallagma impunctatum MARTIN (ined.)

♂ in British Museum (Nat. Hist.) labelled a type is from Badeggi, Northern Nigeria. It is identical with *Enallagma glaucum* (BURMEISTER, 1839), which is the valid name (*Syn. nov.*).

Enallagma ifanicum FRASER (ined.)

♂ in Paris Mus. (Senegal) is labelled a type. It is identical with *Enallagma vansomereni* PINHEY (1956), which is the valid name (*Syn. nov.*).

Enallagma sudanicum FRASER (ined.)

♂ in Paris Mus. (M'Bao, Dakar) is labelled a type. It is also evidently identical with *Enallagma vansomereni* PINHEY, which is the valid name (*Syn. nov.*).

Enallagma schultzei RIS (1908)

Type ♂ in Berlin Mus. (deposition omitted in PINHEY's Catalogue, 1962). It has already been recorded as a synonym of *E. glaucum* (BURMEISTER, 1839) (vide PINHEY, 1962a: 134).

Pseudagrion hageni KARSCH

KARSCH, 1893, *Berl. ent. Z.*, 38: 38, f; KIMMINS, 1962, *Ann. Mag. nat. Hist.*, (13) 5: 331, ff.

As KIMMINS showed (1962) this species is distinct from *P. angolense* SELYS (1876) with which it had been confused for many years. However, when the present Author examined the ♂ holotype of *hageni* KARSCH (kindly loaned by Dr. K. GÜNTHER) in Berlin Museum it was evident that it differed slightly from series from subtropical and tropical Africa. The type of *hageni*, labelled « Cap. Krebs » no. 2950 (which gives as a Catalogue reference « Pr. b. sp. Krebs ») has the antehumerals orange like the facial markings; and on the thorax laterally there is more black than normal so that the two yellowish bands are foreshortened and well separated by black. Segments 8-9 of the abdomen are distinctly blue. This type, described from the Cape, was found to be similar to examples from Van Staden's in the Cape (Transvaal Mus. collection).

In examples from other parts of Africa the antehumeral stripes are green in life, strongly contrasting with the orange facial markings, and even in preserved males where the green has faded it is obvious that the antehumerals are not orange yellow but at least greenish to dull yellow. The lateral thoracic marking is variable in this widespread form but it is evidently a distinct subspecies.

PSEUDAGRION HAGENI TROPICANUM ssp. nov.

Holotype ♂ (Lubudi, Katanga). Differs from *hageni hageni* KARSCH in having greenish antehumeral stripes on the thorax. Thorax laterally with the black stripe on first lateral suture not reaching the black stripe on the second lateral suture, so that the lateral yellow stripes are not separated. Abdomen partially black on segments 8-9. Abdomen 39 mm, hindwing 27 mm.

This holotype, in National Museum, Bulawayo, is a large example (the abdomen is sometimes only slightly over 30 mm) and, as stated above, the lateral markings on the thorax vary, sometimes resembling that of the Cape race in having the black lateral stripes so broadly fused that the yellowish stripes are widely separated; that on the metepisternum being reduced to a triangular patch. Although this is not the usual condition in subspecies *tropicatum*, it does sometimes occur and KIMMIN's figure (1962: 332 fig. 2) shows an approach to this condition. Penes are identical in the two races and the only reliable male character is the colour of the antehumeral stripe of the mature ♂. The blue on segments 8-9 is only clear in teneral, and is gradually reduced with black in adults.

Distribution of subspecies *tropicatum*: Natal, Moçambique, Rhodesia, Zambia, Malawi, Congo, Tanganyika, Kenya, Uganda and probably certain West African territories. The female of this race is well known but the female of the nominotypical *hageni* has not been seen by the Author. Differences cannot, therefore, be expressed.

In another paper with Press it is shown that larger examples of *P. angolense rubridorsum* BALINSKY (1963) are synonymous with *hageni hageni*, so that the allotype ♀ is probably this race.

Argiagrion leoninum SELYS (1876)

Most of the generic characters of this insect have been recorded (vide PINHEY, 1962a: 121), but details of the specific features of this species, known only from the type ♀ (Sierra Leone) in the British

Museum (Nat. Hist.), might be of interest. ♀. A large species with projecting face, as in *Ceriagrion* SELYS (1876) but the frontal crest is not so distinct.

Face and head pale bluish. Posterior of occiput black.

Prothoracic hindlobe straightish posteriorly, without stylets. Mesostigmal lamina normal, not modified. Synthorax nearly all pale bluish green, with only a trace of a black dot and line on humeral suture and a blackish stripe on second lateral suture.

Mid-femur black, with 7 spines, tibiae yellowish brown.

Abdomen black dorsally; segment 2 with blue distal annulus; segments 1-2 blue laterally (segment 3 missing); segments 4-7 with short whitish lateral streak in the middle of each segment; segment 8 all whitish above.

Cerci short, conical and black. Segment 8 without a ventral spine.

Wings slightly fumose, venation brown, pterostigma a brown parallelogram.

Abd. (with segment 3 lost) 39 mm, hw. 28 mm.

The genus is close to *Ceriagrion* SELYS, less so to *Pseudagrion* SELYS (1876).

Argiocnemis solitaria (SELYS, 1872)

Holotype ♀ (Ile Rodrigue, 1818) in SELYS collection, Bruxelles. The example is probably slightly immature.

SELYS originally placed this in *Argiocnemis* SELYS (1869) but it is larger than most of this genus, with more postnodal crossveins. Little is known of this species which is redescribed below.

♀. Face and front of frons yellow, postclypeus browner. Vertex black, with large yellow postocular spots, linked at back of occiput.

Synthorax brown to first lateral suture (but paler brown below humeral suture); a yellow antehumeral stripe half the width of the mesepisternum. Sides yellow; a dorsal dot on second lateral suture.

Abdomen yellowish brown, scarcely marked with darker brown. Segment 8 without ventral spine. Cerci short, broadly conical.

Venation brown. Pterostigma pale brown, elongate. Arculus slightly distal to second Ax in all wings (less so than in *Argiocnemis* SELYS). Quadrilateral shaped as in *Argiocnemis* SELYS. Ac well beyond end of petiole. Forewings each with 11 Px. Ac halfway or beyond halfway between the antenodals. IR₃ rises at subnodus, R₄₊₅ slightly before this. Anal veins well developed.

Abd. 24.5 mm, hw. 17.3 mm.

Diastomma soror SCHOUTEDEN (1934)

A series of this distinctive brown species was collected on streams in Ikelenge, north Mwinilunga, Zambia, a new record for that territory, January, 1965. It was found to be rather common on a forested stream near the Congo border, settling on twigs or reeds outside the forested zones. At one small open patch which had been delineated with stakes to keep cattle away every visit disclosed an example of this dragonfly, sunning itself on one of the stakes or on low foliage.

Phyllogomphus schoutedeni FRASER (1957)

Described from the Congo, a few females were found at the Victoria Falls, near the confluence of the Maramba River with the Zambezi River, January, 1965. This, again, is the first Zambian record for the species. It is a difficult species to catch, very wary and flies for some time without settling. When settled, a cautious approach is liable to cause the dragonfly to fly up straight over the trees.

PARAGOMPHUS COWLEY (1934)

It is evident that there is some further synonymy amongst members of this genus.

Paragomphus cognatus (RAMBUR, 1842)

The following names may be considered in synonymy to this species:
Syn. nov.: *Mesogomphus bredoi* (SCHOUTEDEN, 1934), type ♂ (Uele - Itimbiri, Congo) in Tervuren Mus.

Syn. nov.: *Paragomphus interruptus* FRASER (ined.) ♂, labelled type (Kabongo, Lualaba, Congo) in Tervuren Mus.

All the above are more melanic than typical *P. cognatus* (RAMBUR), as in another recorded synonym, *P. nguelicus* (FÖRSTER, 1906).

Syn. nov.: *Paragomphus longiventris* FRASER (1955), type ♂ and ♀ (Congo) in Tervuren Museum. It is larger than normal *P. cognatus* (RAMBUR) and possibly represents a Central African subspecies. Moreover, the superior anal appendages are less robust than in the latter.

Paragomphus obliteratedus (SELYS, 1892), type ♂ (Madagascar) in SELYS collection, Brux. Mus. is also probably a race of *P. cognatus* (RAMBUR).

Paragomphus abnormis (KARSCH, 1890)

Syn. nov.: *Paragomphus moka* LONGFIELD (1936), Type ♂ (Barombi, Cameroons) in Berlin Mus.

Paragomphus fritillarius (SELYS, 1892)

Of this Madagascar species it seems probable that the following are Continental African subspecies of *P. fritillarius* (SELYS):

Syn. nov.: *Paragomphus acuminatus* FRASER (1949), type ♂ (Eala, Congo) in Tervuren Mus., which is smaller in size.

Syn. nov.: *Paragomphus sabicus* PINHEY (1950), type ♂ ♀ (Southern Rhodesia) in Transvaal Mus., of about the same size as *P. fritillarius* (SELYS), and with slightly different thoracic markings from *P. acuminatus* FRASER.

Paragomphus hageni (SELYS, 1870)

In the British Mus. (Nat. Hist.) *P. hageni* (SELYS) has been relegated to a synonym of *P. genei* (SELYS, 1841) and from material seen in European museums by the present author it seems probable that this synonymy is correct (vide PINHEY, 1962a: 184, where this has already been mentioned as a possibility).

Tragomphus seydeli SCHOUTEDEN (1934)

Type ♀ (Lubumbashi, Elizabethville, Congo) in Tervuren Mus. The present author after examination of an example in the SEYDEL collection (Elizabethville) considered this specimen to be identical with *Crenigomphus cornutus* PINHEY (1956) which is found in the type locality for *T. seydeli* SCHOUTEDEN and therefore placed *seydeli* SCHOUTEDEN in *Crenigomphus* (SELYS, 1892), with *cornutus* PINHEY in synonymy (PINHEY, 1964:112).

However, on examination of the holotype ♀ in Tervuren Museum the author now finds that this was an error, i.e. that the SEYDEL collection example was incorrectly named. It appears to be a species of the genus *Paragomphus* COWLEY, but without a male example it is not possible to determine whether there is any synonymy involved. In some features, including size, this ♀ is similar to *P. zambeziensis* PINHEY (1960).

Comb. nov.: *Paragomphus seydeli* (SCHOUTEDEN).

Onychogomphus angela MARTIN (1915)

In the present Author's Catalogue (1962a: 187) the generally accepted synonymy of *O. angela* MARTIN with *Onychogomphus supinus* SELYS (1854) was repeated and the type ♂ and ♀ were said to be in the Paris Museum.

After examining these specimens in the Paris Mus. the position can now be stated that the holotype ♂ of *O. angela* MARTIN is a synonym of *Onychogomphus supinus nigrotibialis* SRÖSTEDT (1908), not of *O. supinus supinus* SELYS (*Syn. nov.*).

The ♀ under the name *angela* in Paris Museum is not labelled as a type and is not, in fact, congeneric but is an example of the genus *Crenigomphus* SELYS (1892).

Gynacantha bullata KARSCH

KARSCH, 1891, *Ent. Nachr.*, 17: 305.

Gynacantha bullata elongata FRASER, 1957, *Rev. Zool. Bot. afr.*, 55:339.

This species, found in many equatorial African forests, varies in size and consequently in the length of the superior anal appendages. Types of *bullata* have been examined by the present author in Berlin Museum; and types of *elongata* in Tervuren Museum. FRASER considered *elongata* a separate race because of its longer abdomen and superior appendages. It should be emphasized, however, that the length given by FRASER for the superior appendage of holotype *elongata* was 9 mm, whereas it is in reality approximately 7 mm. This last figure is within the variable appendage length for *bullata*, which is from 6 to 7 mm.

It is evident that *elongata* is not a distinct subspecies but at most a variety. It may be significant that FRASER (1962) omits *elongata* from his revision of the African members of this genus.

Gynacantha flavipes FRASER, 1956, *Rev. Zool. Bot. afr.*, 54:386.

Type ♂ and ♀ in Tervuren Mus.

Of this species a slight correction should be made in FRASER's key to *Gynacantha* SELYS (1962). The length of the abdomen is stated to be 52 mm in the text, this length including the superior appendage which is very short. The actual length of the abdomen in the holotype ♂ is 47 to which 3-4 mm may be added for the superior appendage.

In his key (1962: 4) in couplet 11 he distinguishes *flavipes* by its large size and gives 57 mm as the length of the abdomen. This is far too large for the type and for other examples seen by the present Author.

MACROMIA RAMBUR (1842)

Macromia kochi (GRÜNBERG)

Macromia kochi (GRÜNBERG, 1911), *Ent. Rdsch.*, 28: 103.

In the present Author's Catalogue (1962a: 212) the reference in Zoological Record (1912: 400) was given as *Phyllomacromia trochi* GRÜNBERG. This was thought to be a *lapsus calami* in the *Zool. Rec.* but in fact in GRÜNBERG's original paper the name is « *trochi* », in obvious error for « *kochi* », since the Odonata from Sesse Islands described by GRÜNBERG in this paper (1911) were collected by Prof. Dr. R. KOCH.

It is suggested that the specific name of this species should, therefore, continue to be accepted as *Macromia kochi* (GRÜNBERG), in terms of the *International Code for Zoological Nomenclature* (1964) article 32 (a) (11).

There are several other printing errors in this paper, such as *Phyllo-macromia trifasciata* for *P. trifasciata*, *Crocothemis erythrae* BRULLÉ for *C. erythraea* (BRULLÉ) and *Rhystemis fenestralis* for *Rhyothemis fenestrina* (RAMBUR).

Macromia sophia SELYS

SELYS, 1871, *Bull. Acad. Belg.*, (2) 31: 550.

In recent years this species has been confused with another species of the genus which will be described below as new.

SCHOUTEDEN (1934: 52) referring to the series in Tervuren Museum said « Tous présentent très nettement la belle fascie d'un jaune vif sur les côtés du thorax que MARTIN omet de signaler dans la description qu'il donne de l'espèce dans le fascicule « Corduliinae » du Catalogue SELYS ». FRASER (1954: 52) in his revision of *Macromia* RAMBUR mentions the « citron yellow » band encircling the thorax laterally: Probably in later papers FRASER also assumed this yellow banded species to be *sophia* and determined a Uganda example collected by the present Author, which was similarly adorned, as this species (vide PINHEY 1961: 116).

The holotype ♂ (Cape Coast, Ghana) and the allotype ♀ (Isibu) in the British Museum (Nat. Hist.) are large and very black and entirely lack the yellow thoracic band on the thorax, which is, in fact, all black. The abdomen of the ♂ has a narrow yellow basal annulus, severed dorsally, on segment 3 and there are merely minute traces of yellow dots on segments 2, 3 and 8. Segment 10 has a robust cone and single

dorsal spine. The hamule is robust, the hamular hook long; the posterior lobe very large and incurved on its anterior edges (see fig. 3).

Abdomen 53 mm, hindwing 49 mm.

Macromia insignis (KIRBY, 1889) has already been considered as a synonym of true *sophia* SELYS (vide PINHEV, 1962a: 213), the holotype ♂ agreeing with *sophia* except for a broader yellow band on segment 3 of the abdomen, covering the basal two-thirds of this segment. Whether *insignis* is a form or a race of *sophia* is not yet certain. But numerous examples of both sexes examined by the present Author from the République Centrafricaine (the former Moyen Congo) all agree with *insignis* in having the broad band on segment 3. Moreover the allotype ♀ *sophia* is also similar to *insignis*. The type of *insignis* is rather larger (than the type of *sophia*): abd 59 mm, hw 50 mm.

Macromia aeneothorax (NUNNEY, 1895), *Ann. Mag. nat. Hist.*, 16:349.

This species is superficially very similar to *sophia*. The type ♂ in British Mus. (Nat. Hist.) also has an entirely black thorax. There is a slender yellow annulus around the middle of abdominal segment 3 and a yellow spot on the oreillet. There are a cone and a spine on segment 10; hamule robust but posterior lobe almost straight on anterior edges.

In the National Museum, Bulawayo, both sexes are represented (Eastern Nigeria and Cameroons).

Holotype, abdomen 45-46 mm, hindwing 44 mm.

Macromia aureozona sp. nov. (Fig. 1).

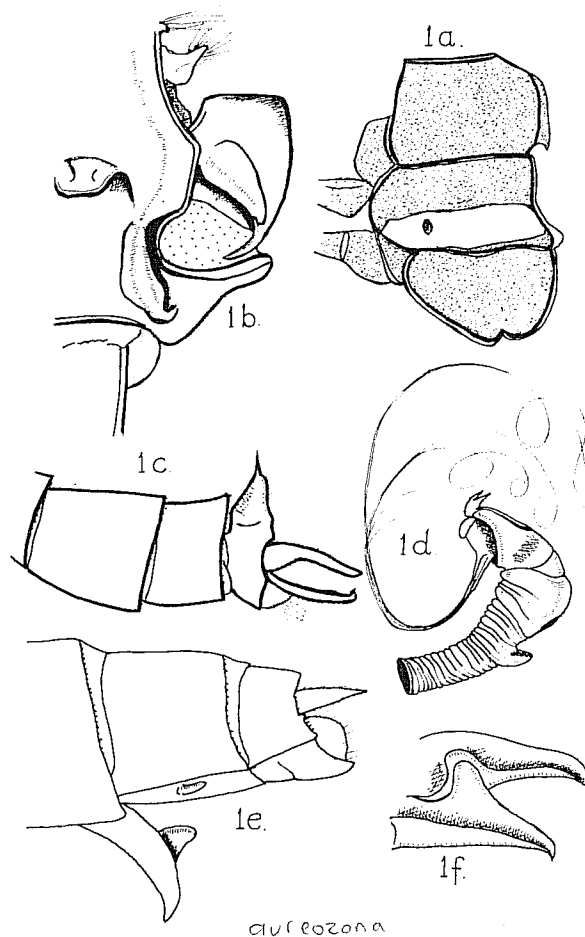
Macromia sophia Auctt. (nec SELYS).

A black species, with bright yellow band around the thorax, confused in the past with *sophia* SELYS. There is a long series in Tervuren Museum.

Holotype ♂ (mature). Face blackish ferruginous, frons and vesicle deep bluish violet.

Thorax (fig. 1a) entirely blackish ferruginous with metallic sheen, except for a deep lateral yellow band on metepisternum. This band tapers slightly ventrad, but dorsally crosses the interalar sinus. Legs black.

Abdomen all black. Segment 10 with dorsal cone and spine (fig. 1c). Anal appendages black, only slightly curved and without any basal swelling or tooth. Posterior lobe of accessory genitalia (fig. 1b) massive, somewhat cup-shaped; posterior hamule massive, with robust hook. Penis as in fig. 1d. Oreillet rounded, thick.



Venation and pterostigma black. Membrane pale grey. Discoidal field of two rows in basal half, expanding before nodus.

Abdomen (without appendages) 53 mm, hindwing 49 mm. *Paratype* ♂♂: similar. Examples which are slightly less mature have the thorax ferruginous, with less blackening. Segment 3 of the abdomen has a small yellow lateral triangle just anterior to the transverse carina, but this spot gradually vanishes with age. Wings may also become fumose, in *both* sexes.

Allotype ♀ (mature). Similar to the holotype except that the abdomen is more robust. Segment 8 (fig. 1 e) with very prominent and widely bifid ovipositor sheath (fig. 1 f), which evidently functions as a twopronged scoop when in use, and which has an interior, sub-basal triangular lobe. Wings with pronounced dark brown basal streaks, a subcostal ray in all wings to second Ax and, on hindwing, a trace in cubital space.

Abdomen 57 mm, hindwing 56 mm.

Variety: One of the paratype females (Ubangi-Businga) has no brown basal streaks on any wings.

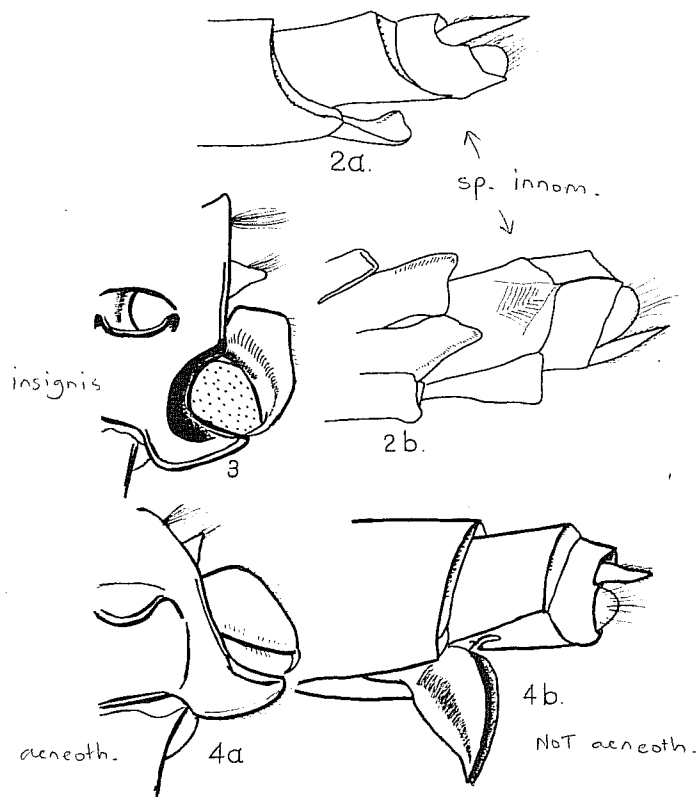
Fig. 1. — (a) thorax from left; - (b) accessory genitalia of ♂, from right; - (c) terminal segments of abdomen of ♂, from left; - (d) penis; - (e) terminal segments of abdomen and ovipositor of ♀; - (f) ovipositor seen obliquely from right, ventrally.

The name « *aureozona* » refers, of course, to the thoracic band.

Holotype ♂ (Bambesa, Congo, 1937, leg. VRLIDAGH); alloype ♀ (Uele: Bambesa, March 1938); 21 paratypes ♂♂ (Bambesa, September 1933, October 1933; Beni, November 1931; Ubangi: Businga, March 1932; Haut-Uele: Moto, May 1926); 7 paratypes ♀♀ (Ubangi: Businga, March 1932 (var.); Haut-Uele: Moto, May 1926; Stanleyville, October 1925; Sankuru-Comela, 1925; Bas-Congo: Lemfu, 1930); all in Teruren Museum. 2 paratypes ♂♂ (Uele-Bambesa, November 1938; Mwinilunga, Zambia, April 1963) and 1 paratype ♀ (Stanleyville, September 1925) in National Museum, Bulawayo.

Other described African *Macromia* with only a single yellow thoracic band are *seydeli* FRASER (FRASER 1954:49) (fig. 5) and *unifasciata* FRASER (1954:67) (fig. 6), both of which are less robust than the new species. In *seydeli* the markings and colour are similar but the yellow thoracic band is wider dorsally; the spine on segment 10 is less solid; the superior anal appendage is more down-curved and has a baso-ventral tooth (fig. 5); the posterior lobe is straight, not cup-shaped, and rather less massive; the posterior hamule is smaller, more rounded and has a smaller apical hook.

The ♀ is without the prominent ovipositor, having only small triangular vulvar scales. In *unifasciata* the thorax and abdomen are browner, the abdomen being marked with yellow spots or annuli on all segments. The thoracic yellow band is broad but tapers ventrally. The superior anal appendage is as curved as in *seydeli* and has a sub-basal



ledge (fig. 6), not a tooth. The posterior lobe is straighter, not robust, the hamule small but with broader hook. Segment 2 is partly yellow (dotted areas in fig. 6a) and the oreillet is smaller. In ♀ *unifasciata* segment 8 (fig. 6 c-d) has no prominent ovipositor and is like *seydeli*.

Neither *sophia* SELYS nor *aeneothorax* (NUNNEY), have any yellow band on the thorax. Both these, however, have a persistent yellow band on segment 3 of the abdomen, which is wide in *sophia* f. *insignis* (KIRBY) and *aeneothorax*, but narrow in the type ♂ of *sophia*. This band is wide again in the allotype of *sophia* which is evidently, therefore, the form *insignis*.

The abdomen in *sophia* and *aeneothorax* is black; the spine and cone on segment 10 and the anal appendages resemble *aureozona*. In *sophia* and f. *insignis* the accessory genitalia (fig. 3) are like *aureozona* but rather less massive: the posterior lobe is a smaller cup, the hamule is smaller with a less robust hook. The ♀ has a prominent bifid ovipositor as in *aureozona*. In *aeneothorax* the cone and spine on segment 10 and the anal appendages are again like *aureozona* but the posterior lobe, although robust, is *not* cup-shaped (fig. 4 a); the hamule is smaller and has only a slender hook. The ♀ *aeneothorax* has an exposed ovipositor (fig. 4 b) but the sheaths are very closely apposed, providing a *single* scoop for oviposition and there are no sub-basal triangular lobes.

Fig. 3. — *Macromia sophia* f. *insignis* (KIRBY). — Accessory genitalia of ♂, from right.

Fig. 4. — *Macromia aeneothorax* (NUNNEY). — (a) accessory genitalia of ♂, from right; - (b) terminal segments of ♀, from left.

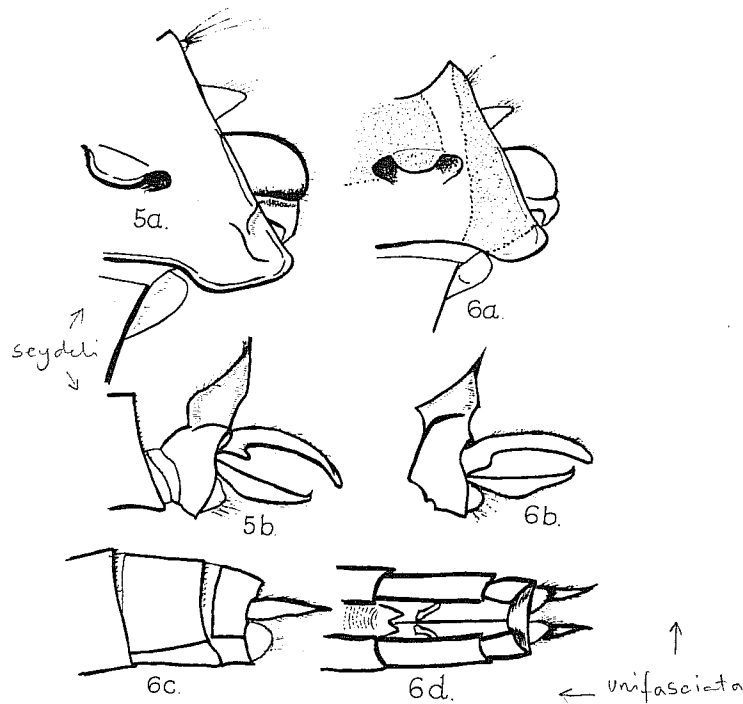
It is evident that *sophia*, and its form *insignis*, are closely allied to *aureozona*; *unifasciata* (fig. 6) and *seydeli* (fig. 5) differing in male and female characters form a different group but the two groups are bridged by *aeneothorax* which is more like the *unifasciata* group in the accessory genitalia and close to *sophia* in the ovipositor.

Fig. 5. — *Macromia seydeli* FRASER, ♂. — (a) accessory genitalia, from right; - (b) tenth segment of abdomen.

Fig. 6. — *Macromia unifasciata* FRASER. — (a) accessory genitalia of ♂, from right; - (b) tenth segment of abdomen of ♂; - (c-d) terminal segments of abdomen of ♀, from left and from below.

Macromia sp. innom.

Amongst the series of *aureozona* submitted by Tervuren Museum were ♀♀ of a very closely allied new species differing chiefly in ovipositor-formation. Without a ♂ it is inadvisable to describe this and name it as a new species; and because of the wide distribution of *aureozona* (Congo, Uganda, North West Zambia) it is unlikely that these females represent only a subspecies.



In size, build, body markings and brown rays on the wings this species resembles *aureozona*, but differs as follows: frons with less blue-violet; thorax ferruginous without the steely blue sheen. On the abdomen of one example there is a small yellow lateral spot before the transverse carina on segment 3 and there is a basal yellow band on segment 7. The ovipositor (fig. 2) is prominent but the two halves are not widely splayed and are broader than in *aureozona*, with the inner lobe less distinct and subapical instead of being subbasal. — Fig. 2 (a) Terminal segments of abdomen ♀ from left; — (b) the same, ventrally.

Localities: Bomboma: Giri, September 1935; Lulua: Thepaza, April 1934.

Tetrathemis polleni (SELYS, 1869)

An example of this species in Paris Mus. is labelled « *Neophlebia partita* SELYS ».

Thermorthemis madagascariensis (RAMBUR, 1842)

Mature ♂ of this large Madagascar species is easily recognized by the extensive deep brown wing markings reaching from base to or nearly to the nodus on each wing; it might be of interest to record two teneral ♂ in Edinb. Mus.

One of these has no brown on the wings at all (cf. immature *Tetrathemis polleni* (SELYS), only a very small amber trace at base of hindwing. In a slightly less teneral example there is a small pale brown patch on the anal field of the hindwing, this patch extending to the triangle. This is obviously one of the early intermediate examples between the hyaline teneral condition and the extensive brown marking of the adult. As is to be expected the teneral examples lack the pruinosity on the abdomen, found in the mature ♂.

ORTHETRUM NEWMAN (1833)

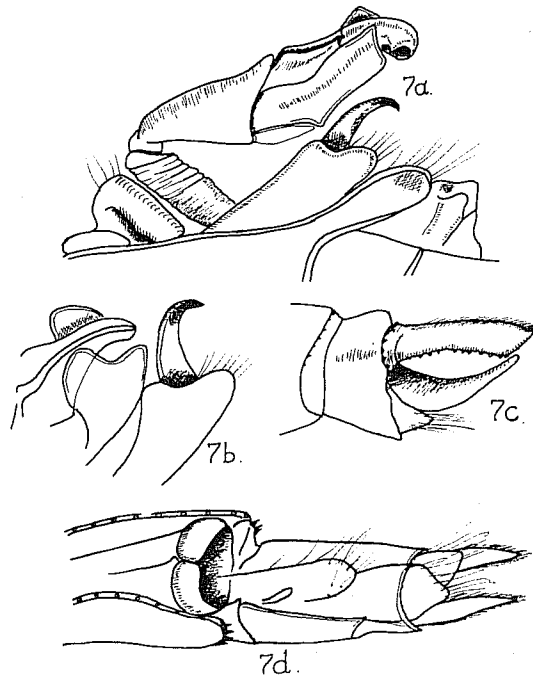
The following synonymy has now been found in the genus *Orthetrum* NEWMAN (1833):

Orthetrum abbotti CALVERT (1892)

Syn. nov. *Oxythemis villiersi* FRASER (1949) holotype ♂ (Portuguese Guinea) in Paris Mus.

This synonymy has been suggested previously (vide PINHEY, 1962a: 232) and now it can be definitely confirmed.

There is a ♀ in Institut des Parcs, collections, which has been labelled by FRASER « *Oxythemis spec. nov.* ». This ♀ (Lusinga, 1760 m, Upemba, Congo) is defective (abd. segments 4-10 lost) but it is almost certainly an example of *O. abbotti* CALVERT.



Lobelia ellioti Liefthoek 1969

Orthetrum hintzii SCHMIDT (1949)

Orthetrum vrydaghi FRASER (1954), holotype ♂ (Congo) in Tervuren Mus. This has already been recorded as a synonym (vide PINHEV, 1962a: 236) and further examination of the type has confirmed this.

Syn. nov.: *Aethiothemis paludinis* FRASER (1954), holotype ♂ (Congo) in Tervuren Mus. This is again exactly similar to *O. hintzii* SCHMIDT.

Hadrothemis camarensis (KIRBY, 1889)

As a matter of interest, a ♂ of this species in the MARTIN collection Paris Museum, has three labels, one of them « *Orthemis reticulata* (collect. SELYS Gabon) », another apparently « *Orthetrum cyanifulva* » (perhaps intended as *cyaneofulva*?) and the third « *Hadrothemis camerunense* ».

Lokia berenice FRASER (Fig. 7).

FRASER, 1953, *Rev. Zool. Bot. afr.*, 48: 248.

Holotype ♂, allotype ♀ (Eala, Congo) in Tervuren Mus. The holotype ♂ is teneral. A series of both sexes, tenerals and adults, have been taken now by the present author in swamps of the Ikelenge District, North Mvini'unga, Zambia. Most of them were found very locally in swamp near the Zambezi Rapids, but a few were found in another swamp East of Ikelenge, at the Congo border. A fresh description of mature examples may be of interest.

Mature ♂. Lips yellowish, face, frons and vertex greenish ochreous. Prothorax black. Synthorax and abdomen coated dorsally with pale blue pruinosity. Synthorax sublaterally yellowish with thinner pruinosity. (Abdomen ventrally yellow). Anal appendages (fig. 7c) black, accessory appendages figure 7a-b. Legs black, tibiae light brown posteriorly.

Wings hyaline. Costal edge and the antenodal crossveins yellow. Pterostigma yellowish brown, between brown veins. Traces of bright amber at bases of all wings. Membranule pale greyish brown.

Abdomen 26-28 mm, hindwing 30-32 mm, pterostigma 3.5-4 mm.

This is somewhat larger than the dimensions given by FRASER (abdomen 24 mm, hindwing 24 mm). In the teneral ♂ the entire thorax, legs (except tarsi) and base of abdomen are reddish brown, the rest of the abdomen yellow with its median carina narrowly black. The

basal amber on the wings is also slightly more extensive. In a later stage the thorax and abdomen become blackish, followed eventually by the pruinose condition.

Mature ♀. Head as in ♂. Thorax dorsally and abdomen dark brown to blackish, the abdomen thinly coated with blue pruinosity. Legs palish brown. Vulvar scale as in fig. 7d.

Wings with amber restricted to base in fully mature ♀. Wings in rather less mature ♀ more or less pale amber-coloured from base to nodus, particularly in the subcostal region. Pterostigma as in mature ♀.

In the newly emerged, teneral ♀ the body is coloured like the teneral ♂, thorax and abdomen reddish, the rest of the abdomen yellow, with black median carina.

Wings often very strongly and uniformly amber from base to nodus, then costa-subcostally to apex. Yet, in other very teneral examples the amber may be restricted to the base. It is difficult to suggest why there should be such variation in the extent of amber on the wings in teneral females caught on the same day and in the same swamp. Have the hyaline individuals withdrawn most of the amber pigment from the wings for some purpose?

Pterostigma very yellow.

In slightly older females the body remains in teneral colours but the amber on the wings is restricted to the basal-nodal area, although still intense.

Pterostigma more brownish yellow.

After this stage the body becomes more uniformly brownish.

Fig. 7. — (a-b) accessory genitalia of ♂, from right, latero-ventrally; - (c) anal appendages of abdomen of ♂, from left; - (d) terminal segments of ♀, from below, showing vulvar scales.

The size is in the same range as the ♂.

The genus *Lokia* RIS (1919) is not well represented in most collections, except Tervuren Mus. where there are very long series of *L. circe* (RIS, 1909) and moderately long series of *L. erythromelas* (RIS, 1909). The series of these two suggests that they were collected locally and gregariously. The present author has found that the species described here, *berenice* FRASER, as well as *L. coryndoni* FRASER (1953) are very local indeed. The latter occurs in abundance on the edge of Zika Forest, near Entebbe, Uganda. It is not necessary to wade through swamp to collect it since the swamp is within the forest area.

Brachythemis lacustris (KIRBY, 1889)

(Syn. nov.) *Brachythemis villiersi* FRASER (ined.)

♂ labelled type (Markala, French Soudan) in Paris Museum.

Trithemis kirbyi SELYS (1891)

The oriental nominotypical race of this species has the amber basal areas on the wings more restricted than in the well known African race *T. kirbyi ardens* GERSTAECKER (1891), which has been described in other papers (viz. PINHEY, 1951, *Transv. Mus. Mem.* 5: 261).

A series in Edinburgh Mus. from Saudi Arabia (leg. POPOV) seem to be intermediate between these races and the female differs in markings. In the ♂ the amber basal area on forewing reaches halfway to nodus, but on hindwing it extends to about three cells before nodus.

♀. Like *T. kirby ardens* GERSTAECKER there is a small isolated amber spot on the hindwing. In addition to this however, there are pronounced basal amber subcostal and cubital streaks on both wings extending to the level of the triangle on forewing and to the same level on hindwing.

In Northern Nigeria the form of the ♀ is andromorphous, the amber basal area extending as far in this sex as in the normal ♂ of the race *ardens*. An example of this ♀ is in the Edinburgh Mus., as well as a similar andromorphous ♀ from Mandritsana, Madagascar (MORTON Collection).

Trithemis longistigma FRASER (ined.)

Teneral ♂ labelled holotype (Moka, Fernando Poo, 1700-2000 m) in Paris Museum is very similar to *T. weneri* RIS (1912) but owing to its immature condition the synonymy cannot be confirmed without careful comparison. This was not possible when the present Author examined the above holotype in Paris Mus.

Trithemis arteriosa (BURMEISTER, 1839)

In the British Mus. (Nat. Hist.) KIMMINS has the type ♂ of *T. penelope* FRASER (ined.) under this species and there is no doubt of this synonymy.

Trithemis tropicana FRASER (1953)

Holotype ♂ and allotype ♀ in Tervuren Mus. FRASER designated a ♀ allotype to the closely allied species *T. africana* (BRAUER, 1867) but this ♀ is actually a *tropicana* and must be referred to that species, the « allotype » designation being an error.

Trithemis annulata (BEAUVOIS, 1805)

Like *T. kirbyi* SELYS this species is subject to much variation. The usual continental African form has a small brownish amber patch in the hindwing, rarely reaching much over halfway to the tornus, occasionally two thirds of this distance.

Arabian examples, however, may have much more amber on both wings and extending to the tornus on hindwing. In the series in the British Mus., however, it is evident that Arabian specimens are exceptionally variable in this respect, some having only small amber basal patches.

Trithemis pluvialis FÜRSTER (1906)

A rather melanic ♂ was collected on the Lisombo Rivier, North Mwinilunga, Zambia, January, 1965. The abdomen has a continuous black dorsal stripe, expanding distally, and the red of the terminal segments is much reduced by black: on segments 4 to 8 the red is restricted by the black median stripe, a lateral stripe and a transverse band at the distal end; segment 9 is black with a small red lateral spot, segment 10 is all black; superior appendage black with red basal annulus. The venation is much darker than normal, only the costal-subcostal areas remaining red. Accessory appendages typical.

DRAGONFLIES AND INANIMATE OBJECTS

An incidental note on an observation seen at Durban might be of interest. Dragonflies have on occasion been seen to be attracted to bright or metallic objects, such as motor vehicles and the metal rails of bridges over forest streams. Mr. T. MAHON informed the Author in November 1964 that he observed for some time an unidentified species of dragonfly investigating a model aircraft which was aloft. This might have been due to its glistening appearance or possibly it was endeavouring to chase the object away from its territory.

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Notes on Bird Distribution in South West Africa

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In a preliminary attempt to analyse bird distribution in South West Africa, I divided the territory up into seven divisions, as shown on Map 1. These divisions were based on the information contained in KEET (1949) and KEAY (1959) and were named as follows:

1. Namib
2. Kaokoveld
3. Ovamboland
4. Damaraland
5. Okavango Woodlands
6. Sandveld Kalahari
7. Great Namaqualand

I had already compiled a card index showing the recorded distribution of all species in South West Africa. From this a list was drawn up, eliminating all aquatic forms and non-breeding migrants; and also species recorded from South West Africa only in the eastern Caprivi Strip. The presence or absence of each species within each division was noted.

Unfortunately, these divisions have been unequally explored and information about the Sandveld Kalahari is particularly inadequate. I have therefore supplemented the list for this section by adding records from the adjacent parts of Bechuanaland (SMITHERS, 1964). The most complete information relates to Damaraland, of which the species list used amounted to 257. The Okavango Woodlands, although almost the sole information about the area comes from the Percy FitzPatrick Institute of African Ornithology - Windhoek State Museum