

P. kivuensis CAMERON, 1950, Rev. Zool. Bot. Afr., 43, p. 93.

5 ex. : Kivu : territoire d'Uvira, Itombwe, haute Kalimabenge, 2400 m, forêt de montagne (biotope 51), XII.1958.

Espèce largement répandue depuis les sommets à l'ouest du lac Albert jusqu'au nord du lac Kivu; existe également en Uganda.

Paederus Gowdeyi BERNH. n'a jamais été signalé tant au sud, aussi la capture de M. LELEUP est-elle fort intéressante.

Cette espèce se reconnaît aisément à la taille bien plus faible que celle des autres espèces du complexe, au sommet de l'abdomen jaune testacé avec la base du 6^e segment et la moitié terminale des lobes du 7^e tergite découvert nettement noirs.

Paederus Graueri FAGEL

P. Graueri FAGEL, 1958, Expl. Parc Nat. Upemba, Miss. G. F. DE WITTE 1946-1949, fasc. 51, p. 383.

40 ex. : Kivu : territoire d'Uvira, Itombwe, tête de source de la haute Kalimabenge, 2900 m, en forêt de montagne avec bambous (biotope 52, XII.1958; 190 ex. : territoire d'Albertville, Haute Kiyumbi, mont Kabobo, 1650-2200 m, dans l'humus en forêt (biotopes 30, 32, 38, 41, 44, 45, 46), X.1958.

Cette belle espèce n'était connue que par quelques spécimens également capturés dans cette région.

Elle paraît donc y être endémique.

Paederus ulindiensis FAGEL

P. ulindiensis FAGEL, 1958, Expl. Parc Nat. Upemba, Miss. G. F. DE WITTE 1946-1949, fasc. 51, p. 385.

16 ex. : Kivu : territoire d'Uvira, Itombwe, Haute Ngovi, 3200 m, en prairie subalpine marécageuse (biotope 53-55), XII.1958; 1 ex. : Mont Kahuzi, à l'ouest du sommet, 3200 m, dans l'humus sous arbustes, formations ouvertes (biotope 59), I.1959.

Paederus sp. apud *mwengensis* FAGEL

1 ♀ : Kivu : territoire d'Uvira, Mulenge, 2200 m, en forêt de montagne avec bambous (biotope 22), IX.1958.

Spécimen indéterminable avec certitude, appartenant peut-être à une espèce inédite.

The Crenigomphines of tropical Africa

(Order Odonata; family Gomphidae)

by F. C. FRASER

The genus *Crenigomphus* was erected by SELYS to contain two species, *denticulatus* SELYS and *abyssinicus* SELYS, the former known from both sexes; the latter, previously described as an *Onychogomphus*, from the female sex only. Subsequently other species were added by other authors, — *hartmanni* (FORSTER) in 1898, *occidentalis* MARTIN in 1912, *renzi* FRASER in 1936 and *cornutus* PINHEY in 1956.

In his definition of the genus, SELYS gave among other characters, that the venation of the wings did not include any incomplete basal subcostal antenodals; that the occiput was bordered with a row of minute black spines; that segments 8 and 9 had lateral foliations, and that the 10th abdominal segment was longer than the 9th. The addition of the four new species has shown that these characters are inconstant; basal subcostal antenodals are found quite occasionally in both *hartmanni* and *renzi*; although occipital spines are normally present in all females, they may be absent in the male as in *hartmanni*; lateral foliations are absent in both *renzi* and *cornutus*, and lastly, the relative lengths of segments 8,9 and 10 are subject to wide variations in the species.

Species of the genus may be easily recognized from other African Gomphines by the strongly contrasted black pterostigma and the bright yellow costal border, a character shared only by *Ceratogomphus pictus* SELYS, which species however has a well-defined anal-loop in the hindwings.

All species have been described as having a ground colour of yellow or ochreous, and this holds also for all specimens which I have examined. Mr PINHEY however informs me, that in the living state, the

ground colour is an olivaceous green, which after death changes to the duller ochreous tint.

Regarding the relationships to other genera of the *Gomphidae*, SELYS thought the genus fell between *Ophiogomphus* and *Ceratogomphus* but in both these genera, the hindwings show a well-developed anal-loop which points to a more recent development. Dr RIS thought that very little separated the genus from *Paragomphus* and suggested a fusion of the two, the name *Crenigomphus* having priority. It must be pointed out however that in *Paragomphus* the 10th segment is shorter than the 9th and that segments 8 and 9 possess very broad foliations; although the inferior appendage is very similar to that of *Crenigomphus*, the superiors are of great length and usually closely apposed. No specialist has so far suggested a close relationship between the genus and the New World one *Erpetogomphus*, probably on account of the widely separated habitats. A comparison made with a number of species belonging to both genera shows so little differences separating them, that if a species of *Erpetogomphus* were to be found in Africa, it would most certainly be classed as a *Crenigomphus*. The venation of the wings is exactly similar, as in also the strikingly contrasted black pterostigma and pale yellow costal border; the colour and markings of the thorax are very similar and the anal appendages are conformed to the same plan, the only difference being a deeper cleft separating the branches of the inferior appendage. Apart from this difference, the only others which I have been able to find are a total absence of the occipital spines in both sexes of *Erpetogomphus* along with an absence of the minute black tubercles or spines on the upper surface of the frons. In *Erpetogomphus*, the 10th abdominal segment is longer than the 9th, as in *Crenigomphus*, and this is a constant feature. It seems clear therefore that in spite of the widely separated habitats, the two genera are very closely related and that both originated from the same palaeartic stock.

The addition of other species has necessitated a broadening of the generic definition, which follows :

Crenigomphus SELYS, 1892, *Ann. Soc. Ent. Belg.*, 36 : 97.

Dentigomphus MARTIN, 1912, *Ann. Soc. Ent. France*, 80 : 480.

Bursigomphus MARTIN, 1912, *loc. cit.* : 482.

A small genus of Gomphine dragonflies belonging to the subfamily *Gomphinae*, that is, with *Rs* forked symmetrically and not more than one crossvein between the sectors of the areculus in the hindwing. Reti-

culuation of wings moderately open, 2 rows of cells between *MA* and *CuP* to about as far as the *Nodus*; all triangles free of cross-veins (except as a rare aberration); anal-loop absent; anal triangle of 4 cells, more rarely 3; tornus strongly angulated in the male and the base of wing excavate; pterostigma black and contrasted strongly with the pale yellow costal border; anal field of hindwing 5 to 6 cells deep; basal subcostal antenodals occasionally present in one or all wings. Head rather large, crest of frons prominent, shallowly and widely excavate above where are found numerous minute black tubercles. Occiput with or without spines in the male, spined in the female. Thorax bulky, palely coloured yellowish (green during life) and with more or less poorly defined darker stripes; legs short, robust, the hind femora extending to base of 2nd abdominal segment and furnished with two rows of short robust spines sloping distalwards and with a field of similar spines between the two rows at the proximal end of limb. Abdomen moderately broad at base, cylindrical thereafter, segment 10 longer than 9 and often much broadened to support the robust anal appendages; the latter forcipate, the superiors sloping downwards; the inferiors cleft for about half their length into two parallel branches which are strongly curved upwards and often project between the superiors. Genitalia much as in genus *Paragomphus*.

Type species of the genus *Crenigomphus denticulatus* SELYS.

Distribution : Tropical Africa.

KEY TO SPECIES OF GENUS *CRENIGOMPHUS* SELYS

- | | | | |
|----|---|---|------------------------|
| 1. | { | The 8th and 9th abdominal segments without lateral foliations; segments 9 and 10 subequal or equal in length | 2. |
| | { | Lateral foliations on segments 8 and 9; segment 10 usually markedly longer than 9 | 4. |
| | { | Segment 10 only slightly longer than segment 9; superior anal appendages with a robust subapical ventral tooth; inferior anal appendage with a robust medio-lateral tooth on each side and with its two branches closely apposed, curling upwards and ending in an acute spine (fig. 2, 3 and 5) | <i>renei</i> FRASER |
| 2. | { | Segments 9 and 10 of the same length; superior anal appendages terminating in a robust apical spine curled inwards and not visible from above; inferior anal appendage with its two branches divaricate at apices and with an upwardly directed latero-medial tooth on each side and two short horns situated just anterior to the medial fissure (fig. 2, 6 and 3, 4 and 5)..... | <i>cornutus</i> PINHEY |

2. Segment 10 half as long again as 9 : superior anal appendages without ventral subapical tooth; inferior anal appendage strongly angulated at its middle, its branches closely apposed and projecting upwards between the apices of the superiors, with latero-medial tooth on each side as in other species
- **occidentalis** MARTIN
- Segment 10 about twice the length of 9; superior anal appendages curled strongly downwards and ending in some small blackish teeth at apex; inferior anal appendage similar to that of *occidentalis* and with the branches closely apposed (fig. 3, 1 and 2)
- **denticulatus** SELYS
3. Segment 10 less than twice the length of segment 9; superior anal appendages curled strongly downwards and inwards; inferior anal appendage with its branches broadly truncate and with a tooth at the outer angles (fig. 2, 1 and 4) ... **abyssinicus** (SELYS)
- Segment 10 about one third longer than 9; superior anal appendages very similar to those of *abyssinicus*; inferior anal appendage similar to that of *denticulatus*, but broader and with the branches divaricate at apices (fig. 2, 2 and 3, 3)
- **hartmanni** (FORSTER)

1. Crenigomphus denticulatus SELYS

SELYS, E. L., 1892, Les Gomphines d'Afrique. — *Comptes rendus. Ann. Soc. Ent. Belg.*, 36 : 97.
NIELSEN, C., 1936, *Bull. Soc. Ent. Ital.*, 68, 8 : 125-127.

The species is known from very few examples, most of which, including the types (type male and allotype female) are in the Genoa Museum. The occiput is fringed with minute black spines in both sexes; segment 10 is twice the length of segment 9 and globular in shape; segments 8 and 9 have well-developed lateral foliations; the superior anal appendages are curved evenly downwards and somewhat inwards and the apex is furnished with a number of black obtuse tubercles. The markings of the thorax, which are not sharply defined as in most Gomphines, are an antehumeral and juxtahumeral stripes, the first incomplete above and below, the latter complete; laterally a blackish line on the first lateral suture and two incomplete ones following it. The abdominal markings are darker and increase to glossy black on the terminal segments.

Habitat : ABYSSINIA : Schoa, Kobbo, Farri and Ambukarra.

2. Crenigomphus abyssinicus SELYS

Onychogomphus abyssinicus SELYS, 1878, 4th Add. *Syn des Gomphines*, No. 17.
Crenigomphus abyssinicus SELYS, 1892, *loc. cit.*, 68, 8 : 99.

The species is extremely rare; only two females and a male being known. The former came from Abyssinia, the latter from Uganda and is regarded as the correct male of *abyssinicus* only on supposition. It agrees in colour, size and markings with the female type so that I do not think there can be much doubt as to its correct placing. It differs from other species markedly by the shape of the inferior anal appendage, which has the two branches shortened as broad lobes, one of which overlaps the other medially; a spine on the outer border corresponds to that found in other species and is strongly elevated; the superior anal appendages are closely similar to those of *hartmanni* but more strongly curled downwards. The 10th segment is rather less than twice the length of 9; the occiput is fringed in both sexes with small black spines; segments 8 and 9 have well-developed lateral foliations.

Habitat : ABYSSINIA; UGANDA, Swampy borders of Lake Victoria. The species is most closely related to *denticulatus*. Type female in the Selysian collection, Brussels Museum; cotype female and the allotype male in the British Museum (Natural History).

3. Crenigomphus hartmanni (FORSTER)

Onychogomphus hartmanni FORSTER, 1898, *Ent. Nachr.*, 24 : 166.
Crenigomphus hartmanni FORSTER, 1906, *Jahrb. Nassau*, 59 : 313
Bursigomphus pardus MARTIN, 1912, *Ann. Soc. Ent. France*, 80 : 482.

A far more common species than the two last and more widely distributed. Although belonging to the same group as the last two species by its possession of lateral foliations to segments 8 and 9, it differs by the absence of spines to the occipital crest in the males; they are however present and more robust than usual in the females. Segment 10 is only about one third the length of 9; the anal appendages are not greatly different from those of *denticulatus* but are less curled and the apices of the inferior appendage are divaricate. The type came from the Transvaal and is in the Förster collection, now housed in the Michigan Museum, Ann Arbor collections. The female allotype is from Zululand and is in the South African Museum. Paratypes are in the Musée du Congo Belge and British Museum (Natural History).

Habitat : TROPICAL and SUBTROPICAL AFRICA : M'Fongosi, Zululand; Limbe, Nyassaland; Komati-poort, Transvaal; Bunia (Ituri), Belgian Congo; Natal, Southern Rhodesia and Angola.

4. *Crenigomphus renei* FRASER

FRASER, F. C., 1936, *Proc. R. ent. Soc. Lond.* (B) 57 : 137 and 142.
Id., 19 , *Pap. Nat. de l'Upemba, I. Mission de Witte*, 38 (I) : 17.
Id., 1949, *Rev. Zool. Bot. Afric.*, 42, 1-2: 123.

Dentigomphus rubrithorax MARTIN, nom. nud.

Not a common species but widely distributed in East Africa and probably extending to the west. (MARTIN's material came mainly from French West Africa; the specimen of *D. rubrithorax* contains no data on the label but possibly came from Sikasso). The species is distinguished from the previous ones by not having any lateral foliations on segments 8 and 9 and by segment 10 being much the same length as 9; the occiput is spined in both sexes; the superior anal appendages have a very robust tooth situated subapically, which is poorly developed in other species. MARTIN's type in the Paris Museum has undergone post-mortem changes and is a bright reddish colour, which misled its author into naming it *rubrithorax*. Fortunately, being a *nom. nud.* it was possible to give it a more appropriate name. In life the ground colour is a pale olivaceous green which fades to yellow or even ferruginous after death.

Habitat : EAST AFRICA : Uganda and southwards. BELGIAN CONGO : Ishwa (Lake Albert) and Tang. Terr. Ukerewe. Type, a male from Uganda in the British Museum (Natural History); allotype in the Belgian Congo Museum, Tervuren, is from Ishwa.

5. *Crenigomphus cornutus* PINHEY (Figs 1, 3, 4 and 5)

PINHEY, E. C. G. 1956, *Occas. Papers Nat. Mus. S. Rhodesia*, No. 21B : 83.
Id., 1958, *Ibid.*, No. 22B : 109.

The species appears to be more local than any others of the genus and is distinguished by a number of characters — segments 9 and 10 are of the same length; there are no lateral foliations on segments 8 and 9, thus resembling *renei*; the occiput is denticulate in both sexes; the superior anal appendages end in a robust recurved spine, whilst the inferior is very similar to that of *abyssinicus*, the branches being both shortened and markedly truncate; there are also two additional short black spines on the upper surface just prior to the fissure.

Habitat : ZAMBESI : Victoria Falls and Katimbora. Type male and allotype female in the British Museum (Natural History), paratypes in the National Museum, Buluwayo, S. Rhodesia. This is the only species of which we have any account of its habits; PINHEY states that specimens were taken resting on tall grass stems or herbs on the banks of the river, December to January.

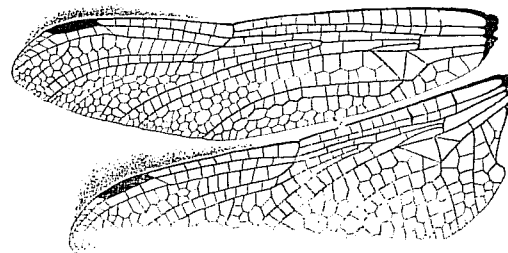


Fig. 1. - Wings of male *Crenigomphus cornutus* PINHEY.

6. *Crenigomphus occidentalis* MARTIN

Crenigomphus denticulatus occidentalis MARTIN, 1912, l. c. 80 : 482.

Described as a subspecies of *denticulatus* SELYS; the type being lost, all we have to go upon is the description by MARTIN, who described it as a robust one, without spines on the occiput and with the lateral foliations on segments 8 and 9 not fully developed; the abdomen cylindrical and segment 10 globular and relatively shorter than in *denticulatus*. The superior anal appendages were longer than segment 10 and slightly different in shape from those of *denticulatus*; the inferior appendage being similar to this last. The colour and markings, especially of the abdomen are given as similar to those of *renei* but the absence of spines on the occiput rules out this species (12 spines in *renei*) as well as does the relative lengths of segments 10 and 9. (In the collections of the Muséum d'Histoire Naturelle, Paris, was found a male specimen of *Crenigomphus* labelled « *Dentigomphus rubrithorax* », and this was evidently intended to be the type of the genus *Dentigomphus*, although not mentioned in the Martinian text; this species could not therefore

be the same as *occidentalis*, and is as a matter of fact a specimen of *C. renei*. MARTIN confirmed this by stating that *occidentalis* formed a link between the two genera *Crenigomphus* and *Dentigomphus* and might go equally well into either. In the definition of *Dentigomphus*, segment 10 is said to be one and a half times as long as 9 and shorter than segment 8, which character again disagrees with *renei*.

Bursigomphus MARTIN, 1912, loc. cit. : 482.

In his definition of the genus, MARTIN gives : « A subcostal basal nervure in the right forewing. It is evident that he erected this new genus on account of the presence of this subcostal antenodal, for the character had been given as a negative one for the genus *Crenigomphus* by SELYS. However, as seen under my notes for *C. hartmanni*, subcostal antenodals do occur in about 12 per cent of the wings as an aberrant character. Similarly the subtrigone of the forewings is occasionally traversed by a vein. With these two aberrations disposed of, the genus becomes a mere synonym for *Crenigomphus* and the species one of *hartmanni*.

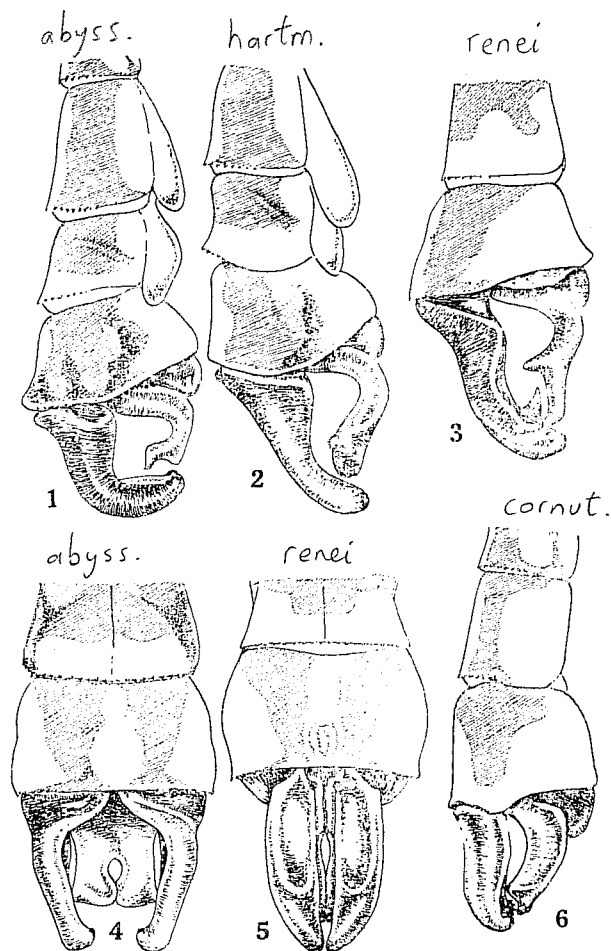


Fig. 2. - Anal appendages of 1. *Crenigomphus abyssinicus* SELYS; 2. *C. hartmanni* (FÖRSTER); 3. *C. renei* FRASER, all right lateral aspect; 4. *C. abyssinicus*, dorsal aspect; 5. *C. renei*, dorsal aspect; 6. *C. cornutus* PINNEY, right lateral aspect.

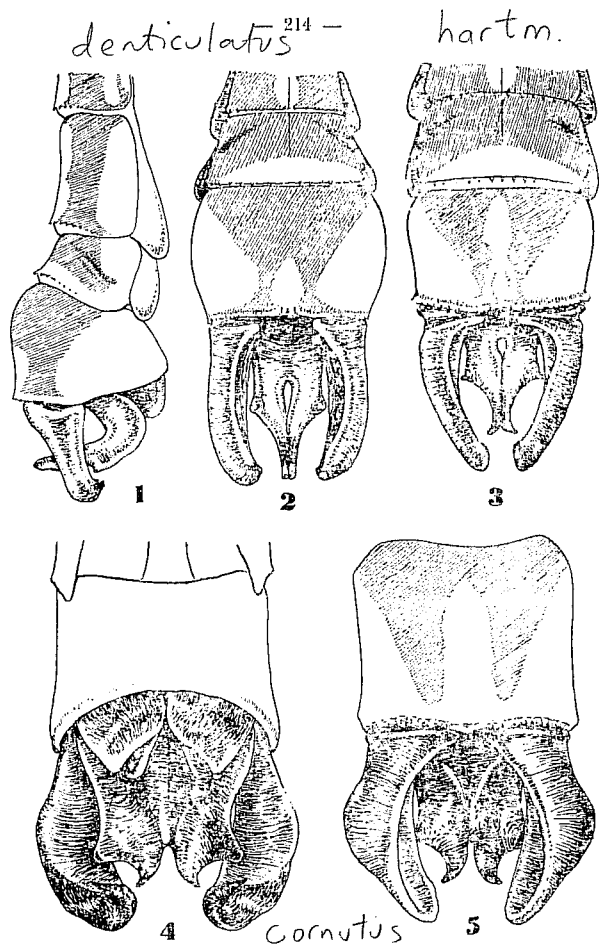


Fig. 3. - Anal appendages of 1 and 2, *Crenigomphus denticulatus* Selys, right lateral and dorsal aspects; 3, *C. hartmanni* dorsal aspect; 4 and 5, *Crenigomphus cornutus*, ventral and dorsal aspects.

Notes sur *Colobus polycomos cordieri* (RAHM) du Congo Belge

par U. RAHM et A. R. CHRISTIAENSEN

Cette nouvelle sous-espèce de *Colobus polycomos* (ZIMMERMANN 1780) a été décrite récemment par l'un des auteurs dans les *Folia Scientifica Africae Centralis* (T. V, N° 2, juin 1959) d'après un exemplaire vivant qui se trouvait chez M. CORDIER à Kabunga. Cet animal provenait de Kampungu (terr. de Pangi - Province du Kivu). Entretemps, un Colobe noir semblable a été décrit par W. VERHEYEN (*Rev. Zool. Bot. Afr.*, LX, 1-2, 1959) sous le nom de *Colobus polycomos prigoginei* provenant du Mont Kabobo (5°06' S, 29°01' 1).

L'un des auteurs s'est rendu dernièrement dans la région de Pangi et de Shabunda pour rassembler des documents plus précis sur cet animal et en a ramené quatre peaux et crânes. Nous avons envoyé au Musée Royal du Congo Belge une des dépouilles pour la comparer avec le spécimen de *Col. polycomos prigoginei*. Nous remercions vivement M. VERHEYEN qui a fait cette comparaison et qui nous a écrit à ce sujet : « La comparaison a clairement montré que la sous-espèce *prigoginei* est nettement différente de la forme *cordieri*. ». En outre, M. VERHEYEN nous a fait savoir que le Musée possède deux peaux de Colobe noir (N°s 26460 et 26461) de provenance de Wamaza (terr. de Kabambare), récoltés par M. ROELAAS, qui sont identiques à notre sous-espèce *Col. pol. cordieri* et qui diffèrent du *Col. pol. prigoginei* par la coloration de la queue. Il s'agit donc bien d'une nouvelle sous-espèce et nous donnons ci-dessous la description définitive d'après les exemplaires adultes en choisissant un de nos spécimens comme métatype. La description originale avait été faite d'après un animal vivant semi-adulte, actuellement perdu.