

sides, impunctate, antennae reaching basal third of elytra, surface closely punctate. *Prothorax* subcylindrical, two-thirds longer than wide, sides with a distinct border, hardly visible from above, slightly dilated at middle, where a long seta is present, gently sinuate at about a fourth from base, the hind angles projecting laterally, but somewhat indefinite; median line, hind transverse impression, and basal foveae all evident, though not deep, the foveae elongate, near the hind angles, surface closely punctate. *Elytra* only moderately convex, two and a quarter times wider than prothorax, four-fifths longer than wide, moderately dilated behind, and widest at a fourth from apex, which is truncate, with a short but sharp tooth on each side at the outer angle of the truncature; striae moderately deep and closely punctate, intervals a little convex, uniformly and fairly closely punctate, the punctures much smaller than those on the head and prothorax. Microsculpture isodiametric, fairly distinct on the prothorax and elytra, hardly visible on the head. Underside punctate, the sterna more coarsely than the venter.

About the same size as *flavipes* Wied., but blue in colour, the knees fuscous. The prothorax is evidently longer, and both it and the head are more coarsely punctate, the elytra more deeply striate.

ASSAM (*W. F. Badgley*), 1 ex. in the British Museum.

*Drypta cyanopa* sp. n.

Length, 11 mm.

Coloured like *D. aetheria*, except that the blue is slightly darker.

Head narrower, only as wide as prothorax, eyes much less prominent, the puncturation of the surface slightly finer. *Prothorax* much shorter, only a third longer than wide, more strongly dilated at middle, the lateral borders less distinct, basal foveae less evident, puncturation similar but a good deal less close. *Elytra* not quite twice as wide as prothorax, and as much longer than wide, the outer angle of the apical truncature obtuse, though sharp, the striae deep and much more strongly punctate, the intervals very finely and sparsely punctate. Microsculpture similar, though barely visible on either head or prothorax.

BENGAL (*F. W. Champion*), 1 ex. in the British Museum.

*Desera.*

*Key to the Species.*

- 1(2). Elytra bright metallic green, antennae and tibiae flavous, femora dark blue, elytra deeply striate, outer angles of the apical truncature angulate. Length, 10 mm. . . . . *nepalensis* Hope.
- 2(1). Elytra blue or greenish-blue.
- 3(4). Prothorax evidently depressed at sides, deeply constricted before base, elytra deeply striate, a sharp tooth on each side at the outer angles of the apical truncature. Length, 10 mm. . . . . *gestroi* Bates.
- 4(3). Prothorax vaguely longitudinally sulcate at sides and only lightly constricted before base, elytral striae not very deep.
- 5(6). Colour dark blue, greater part of joint 1 of the antennae, tibiae, and tarsi black or piceous, outer angles of the apical truncature of the elytra angulate. Length, 11 mm. . . . . *longicollis* MacL.
- 6(5). Colour blue to greenish-blue, sometimes with a brassy tint, joint 1 of the antennae (except at apex), tibiae, and tarsi ferruginous, outer angles of the apical truncature of the elytra shortly dentate. Length, 9 mm. . . . . *geniculata* Klug.

A NOTE ON THE IDENTIFICATIONS OF SOME OBSCURE GENERA AND SPECIES OF THE FAMILY GOMPHIDAE (ODONATA)

By Lt.-Col. F. C. FRASER, M.D., I.M.S., F.R.E.S.

THIS paper gives the results of a research into the validity and correct identifications of some obscure genera and species belonging to the family GOMPHIDAE which were either described or merely mentioned by name by the late René Martin. Mention of these is made in two publications—"Notes sur les Gomphines d'Afrique," 1912, *Ann. Soc. ent. Fr.*, 80, and 1915, *Voy. Alluaud et Jeannel, Afr. Orient.*, "Insectes Nevroptères, 2, Odonata," which will be referred to hereafter as *Notes Gomph. d'Afric.*, and *Voy. All. et Jean.*, respectively.

I am indebted to the authorities of the Museum d'Histoire Naturelle, Paris, for the loan of the Martinian types and more especially to Monsieur Lucien Berland, without whose kind co-operation the carrying out of this research would have been impossible. In addition my thanks are due to Dr. Cesare Neilsen for kindly examining and sending me photographs of the type of *Notogomphus agilis* Martin in the Genoa Museum.

During the course of the investigation some surprising facts have come to light, which will be best appreciated if dealt with under the respective genera and species which they concern.

*Dentigomphus* Martin, *Notes Gomph. d'Afric.* : 482.

A short definition of the genus is given by comparison with the characters of genus *Crenigomphus* Selys. A subspecies of the latter genus is mentioned and described as a link between the two genera, but, as the author goes on to say, to include *Dentigomphus* under *Crenigomphus* would necessitate a modification, in great part, of the characters of the latter. As a matter of fact, some such modification has become necessary, because, with the availability of more material for study, it is seen that the original Selysian definition of *Crenigomphus* was erroneous in a few important respects. Thus the small spines on the occiput are normally only present in the females and, when present in the males, are very inconspicuous and merely complementary to those of the other sex, for they serve no useful purpose to the male. So inconspicuous are these in the male that Martin failed to observe them in the genotype of *Dentigomphus* although they are actually present, and he thus gave their absence as a character to distinguish the genus from *Crenigomphus*. Ris, in his "Odonata of South Africa," describes the male of *Crenigomphus hartmanni* as without spines on the occiput but present in the female, and I find that this is true in regard to my own specimens. Secondly, in regard to the respective lengths of segments 9 and 10 and the development of lateral expansions on segments 8 and 9, such characters are subject to slight variations in the species of the genus *Crenigomphus* and form no grounds for erecting a new genus.

Although Martin named and defined the genus, he never mentioned or described any species belonging to it, so that it has remained till to-day without a genotype. Most fortunately Monsieur Berland, whilst searching in the Martin collection for species belonging to this genus, has come upon one labelled "Dentigomphus rubrithorax Martin, type, L. Tchad." This species has never been described and is undoubtedly a new *Crenigomphus*. Its colours have changed to a lobster red, due to postmortem decomposition, a change not uncommon in xerophilous forms, so that the name "rubrithorax" is a misnomer.

As the species has never been mentioned in the literature by name, I give it the name of *renei* after the late René Martin and transfer it to the genus *Crenigomphus*, the amplification in the definition of which automatically converts *Dentigomphus* into a synonym. The type of *C. renei* is a teneral male in rather poor condition, but I possess a duplicate in my own collection which was collected by Prof. Hale Carpenter in Uganda; a specimen in excellent condition and which I had been unable to identify up to date. The description of this new species follows:—

*Crenigomphus renei* sp. n.

♂. Abdomen 32 mm. Hind-wing 27 mm.

*Head*: labium pale creamy yellow; labrum, bases of mandibles and face bright chrome yellow deepening in colour on frons and to ferruginous along the crest of latter which is furnished with a row of minute black denticles. Base of frons above dark ferruginous, the ocelli lying in an area of the same colour; vertex and occiput yellow, the latter with straight

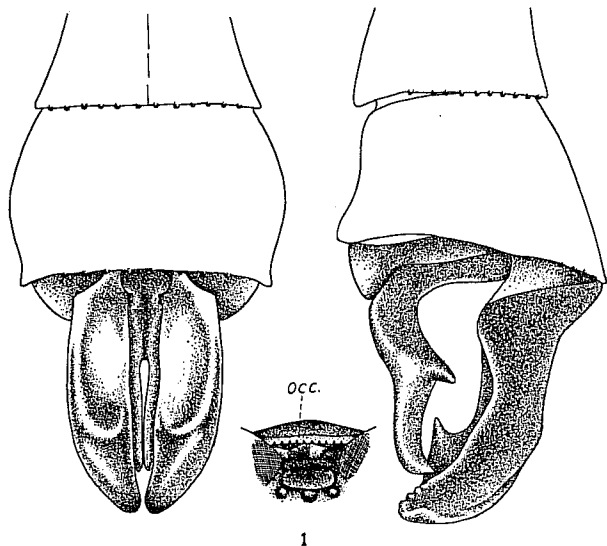


FIG. 1.—Anal appendages of *Crenigomphus renei* sp. n., dorsal and left lateral views. Occ. The occiput viewed from above.

border furnished with about ten to twelve minute black spines. Eyes ferruginous. *Prothorax* dark reddish-brown on dorsum, yellow laterally and for the whole of posterior lobe. *Thorax* chrome yellow with obscure ferruginous markings as follows—an equilateral triangle on middorsum with its apex at antealar sinus, fusiform antehumeral stripes converging above, a rather narrow humeral stripe lying on the suture of the same name, two narrow oblique stripes on each side mapping out the sutures, the anterior deepening to almost black

in its lower half. Unmarked beneath. *Legs* very short, sandy yellow; middle pair of femora with an obscure stripe on the outer side of the middle third and the hind pair with a blackish coloured subdistal annule. *Wings* tinted with pale yellow especially towards base; costa bright yellow to beyond the pterostigma which is black, rather narrow, braced, covering 4 cells; nodal index  $\frac{8-12}{8-9} | \frac{13-8}{9-8} | \frac{8-13}{9-10} | \frac{12-8}{10-8}$ ; all other details as for genus.

*Abdomen* yellow, tinted with ferruginous and marked with black and reddish-brown as follows—a dark reddish-brown annule at base of segment 1; two quadrate spots of the same colour on subdorsum of segment 2 situated at the inner ends of transverse stripes corresponding to the jugal suture; segments 3 to 7 with narrow black basal annules, diffuse dark reddish-brown lines on the jugal sutures and diffuse paired subapical dorsal spots of the same colour which deepen to black and become confluent with each other and with the basal annules of the following segments on 5 to 7; segments 8 to 10 black on dorsum, but this invaded on the dorsum of 8 by yellow spreading from the base and again on the apical margins of segments 9 and 10; on the latter segment, the yellow extending up to the base as a broad dorsal triangular mark. Segments 3 to 7 with broad lateral black stripes, replaced by a central spot on 8. Finally the apical border of segment 10 finely black and bearing minute black spines. *Anal appendages* ochreous margined with black on dorsum and with the apices of all and the tips of the lateral spines of inferior appendage blackish-brown. Superiors rather longer than segment 10, thick, curved down at apex which has several blunt molar-like teeth below and a very robust ventral subapical spine shaped like a bill-hook. Dorsally the two are seen to converge at the apex and are deeply excavate within, the two depressions forming together a cup-like cavity. Inferior appendage very broad in its basal half, narrow and tapering in its apical which is cleft into two closely apposed branches. At the point where the appendage narrows, a very robust spine arises which is directed outwards and somewhat upwards (fig. 1). Female unknown.

*Habitat*.—The type male in the Paris Museum is from Lake Tchad; another male in my own collection is from Uganda and was taken at "water holes at the south end of Lake Albert, 10.xii.29," by Prof. Hale Carpenter.

*Pseudictinus* Martin. *Voy. All. et Jean.*: 22. Nom. nud.

The name only is mentioned in a faunistic list; no definition of the genus and no species belonging to it has ever been given. Mr. Cowley informs me that in a letter written to E. B. Williamson by Martin (4 May, 1919) the following occurs—"Genus *Pseudictinus* is mine but it has never been published. I have simply noted the unique *P. tigris* from Nigeria and the description of the characters of the genus."

An attempt by Monsieur Berland to trace the species named "*Pseudictinus tigris*" in the Martin collection resulted in failure, although it is mentioned in the Museum list of Martin's species and was sought for under other African genera such as *Ictinus*, etc. Thus both names are absolute *nomina nuda* and invalid.

*Oxygomphus* Lacroix, 1921.

*Oxygomphus* Tillyard, 1917, *Biology Dragonflies*: table opp. p. 282. (Name only in a faunistic list.)

*Oxygomphus* Lacroix, 1921, *Ann. Soc. linn. Lyon*, 67: 48. (No description given but refers name to Martin MS.)

*Oxygomphus agilis* Lacroix, 1921, *loc. cit.* (Species mentioned as the genotype of *Oxygomphus* but no description given.)

*Oxygomphus martinianus* Lacroix, 1921, *loc. cit.* (Described as a new species.)

A search in the Martin collection revealed the presence of a specimen labelled—"Oxygomphus agilis Martin, Congo," in a good state of preservation. Martin had described another African Gomphine under the genus *Notogomphus*

with the same specific name *agilis*, and it occurred to me to compare its description with this undescribed species. The latter insect has a unique-shaped tenth abdominal segment, an equally unique development of the posterior hamules of the genitalia and a curiously elevated and curled occiput. All of these characters are described for *Notogomphus agilis*, and moreover the colour and markings were identical so that there could be no doubt but that the two insects were one and the same.

If *Notogomphus agilis* had proved to be a true *Notogomphus* then the position of *Oxygomphus* would be that of a mere synonym, but unfortunately its characters differ very widely from all other species of that genus and so a new genus becomes necessary to accommodate it. The late Dr. Ris who had examined the type of *Notogomphus agilis*, also expressed the opinion that it was not a true *Notogomphus* (1909, *Ber. Senckenb. Naturf. Ges.*, 40 : 25, 26).

Mr. J. Cowley has kindly given me his opinion as to the validity of the generic name *Oxygomphus*, which he expresses as follows:—"No generic description has ever been given, but Lacroix describes a species which therefore validates the name *but only as from 1921*. The genotype cannot be 'agilis,' as it is undescribed; the genotype is therefore automatically *martinivus*, the only described species." It was subsequent to this opinion being given that I discovered the synonymy of *O. agilis* with *N. agilis* and upon my informing Mr. Cowley of the fact he emended his opinion as follows:—"If Lacroix states that he had Martin's *O. agilis* before him, then *N. agilis* is the genotype." Lacroix in his description of *martinivus* states definitely that he has seen and compared his specimen with the type of *O. agilis*, so that no doubt remains about the genotype of *Oxygomphus*. It must, however, be mentioned that no generic definition of *Oxygomphus* has ever been given, nor does Lacroix mention any in his description of *martinivus*, which is founded on a female. The generic characters of *Oxygomphus* reside in the male and must be taken from those of the type of *N. agilis*, which was unknown to Lacroix at that time, it therefore becomes questionable whether the name *Oxygomphus* was at all validated by Lacroix's publication. The case is a curious and difficult one and will need thrashing out by the International Commission on Nomenclature, but meanwhile I give the genus as Lacroix's and define it as follows:—

*Oxygomphus* Lacroix.

Dragonflies of medium size belonging to the family GOMPHIDAE, subfamily GOMPHINAE, coloured black marked sparingly with greenish-yellow. Occiput raised, recurved forward and surmounted by two or more spines. Wings long, narrow, apices rather rounded, base of hind-wing very sinuous, deeply excavated; anal-triangle 3-4 celled; an incomplete basal antenodal nervure present in one or more wings; *Cu1* and *1A* very long and parallel to wing-border; 1-2 rows of cells in postanal area of fore-wing, 3 rows in the hind-wing; reticulation rather close; pterostigma very short, swollen and situated very close to apex of wings as compared to other species of the family. Legs short: hind femora extending to apical end of segment 1, furnished with rows of short but gradually lengthening and moderately widely spaced spines. Abdomen slightly tumid at base, narrow and cylindrical thereafter but slightly widened at segment 8 and apical end of 7; segments 9 and 10 cylindrical, the latter much longer than 9 and abruptly constricted and cylindrical in its basal half and appearing as if telescoped from the end of segment 9; the latter segment with a trace of a similar basal constriction. Anal appendages similar to those of genus *Gomphus*. Genitalia: lamina slightly depressed; anterior hamules very small and fine and more or less concealed beneath the lamina and the enormously lengthened posterior hamules which project far out and anteriorwards beneath the thorax; lobe rather large, spout shaped. Female characters unknown.

Genotype—*Notogomphus agilis* Martin.  
Habitat.—West Africa and Nigeria. The characters of the occiput, genitalia and shape of segment 10 will distinguish it from all other genera of the family GOMPHIDAE.

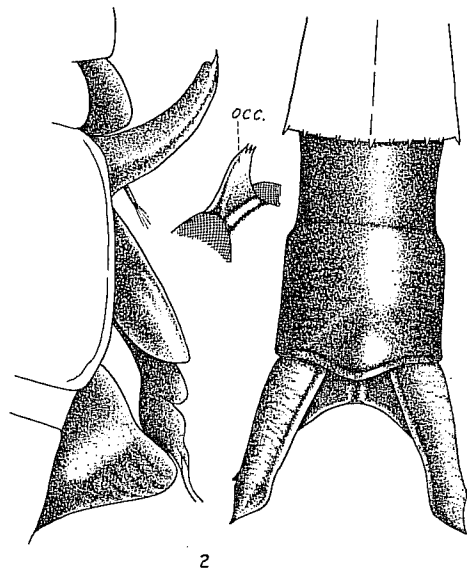


FIG. 2.—Male genitalia and tenth abdominal segment with anal appendages of *Oxygomphus agilis* (Martin). *Occ.* The occiput viewed from the right front.

The type of *N. agilis* is deposited in the Genoa Museum; the type of *O. agilis* is in the Paris Museum, and there is a third male in Mr. Morton's collection, Edinburgh. As regards the type of *Oxygomphus martinivus*, I wrote to Monsieur Lacroix and received from him the answer that he had sent the specimen to the late René Martin shortly before the latter's departure for Chile and that it had never been returned. A search made through the Martin collection by Monsieur Berland failed to find it, so that it must be presumed as lost. From its much larger size and the absence of anything strikingly characteristic about the occiput I am strongly inclined to consider that it is not congeneric.

*Onychogomphus angela* Martin, *Voy. All. et Jean.* : 38.

This specimen turns out to be a male of *Onychogomphus supinus* Selys. The curious anal appendages have been well figured by Hagen in 1854, *Mon. Gomph.*, so that it is surprising that Martin should have overlooked this species. Type of *O. angela* Martin in the Paris Museum.

*Lestinogomphus angustus* Martin, *Notes Gomph. d'Afric.* : 484.

A comparison of my *Echinopterogomphus africanus* with Martin's species shows that they are congeneric although different species. *Lestinogomphus* has priority, so that *Echinopterogomphus* becomes a synonym. The two species may be distinguished by the following key :—

Labrum and face uniform greenish-yellow; antehumeral stripe extending whole length of dorsum of thorax and almost confluent with the mesothoracic collar . . . . . *angustus* Martin.  
Labrum and face black marked with strongly contrasted bright yellow; antehumeral stripe reduced to a short linear spot at centre of dorsum . . . . . *africanus* Fraser.

*Bursigomphus pardus* Martin, *Notes Gomph. d'Afric.* : 482, 483.

The type proves to be a male of *Crenigomphus hartmanni* Förster. Martin has again been misled here by the Selysian definition of the genus *Crenigomphus* in which it is stated that the occiput is spined. This character is, however, unusual in the male although constant in the female. The type of *B. pardus* as well as four males of *C. hartmanni* examined by Dr. Ris and a fifth male of the same species in my own collection all have the occiput naked. Martin was also led astray by an additional factor, in that his type possessed aberrant venation, the subtriangles of both fore-wings being divided into two cells by a traversing nervure. I also observe that there are 2 cubital nervures in both hind-wings, a most rare aberration, and also that there are incomplete basal antenodal nervures present, characters which Martin overlooked. Such aberrations appear to be not uncommon in this species as my specimens of *C. hartmanni* possess incomplete antenodals at the base and one female has the subtrigones traversed as in *B. pardus*. Apart from these features, the colour, markings, genitalia, etc., are all similar to *C. hartmanni* and thus all the arguments for the erection of a new genus and species fall to the ground. *Bursigomphus* is thus a synonym of *Crenigomphus* which has priority, and *pardus* a synonym of *C. hartmanni*.

*Gomphus pilosus* Martin, *Notes Gomph. d'Afric.* : 485.

The venation and the shape of the superior anal appendages place this species in genus *Onychogomphus*. The type is a general male with the abdomen completely compressed and badly distorted; the appendages are in very fair condition, but the apices appear to be slightly shrivelled and may be longer in the adult insect than they appear here. The inferior appears cleft into two closely apposed branches, but these project straight back unlike what is seen in other species of genus *Onychogomphus*. Martin gives the anal loop as very irregular, but as a matter of fact that structure is absent and he appears to have confused the anal area with the anal loop as in other species described here. The anal triangle is four celled, the anal area four cells deep, whilst other details are similar to that found in genus *Onychogomphus*. Type in the Paris Museum from former German East Africa.

*Gomphus zebra* Martin. *Notes Gomph. d'Afric.* : 485.

The venation of this insect places it at once as an Epigomphine, the first of this subfamily to be recorded from the African continent, unless we except *Libyogomphus* which seems to bridge the gap between the GOMPHINAE and EPIGOMPHINAE. Apart from *G. lucasi*, which is restricted to the coastal area

of N. Africa, no species of *Gomphus* has been found in Africa. The present species will need a new genus to accommodate it and for this I propose the name *Africogomphus* with the following definition :—

#### Africogomphus gen. n.

Dragonflies of small size belonging to the family GOMPHIDAE, subfamily EPIGOMPHINAE, coloured black marked sparingly with bright yellow. Occiput simple. Wings rather narrow, with moderately open reticulation; base of hind-wing very oblique, tornus angulate, anal triangle 3-celled, the two dividing nervures separated at free border of triangle; no incomplete basal antenodal nervures present; *Cu<sub>1</sub>* in fore-wing flat; *1A* not pectinate and only a single row of cells between it and border of wing; *Cu<sub>2</sub>* and *1A* in hind-wing almost parallel, only 2 cells between their distal ends; anal loop absent; only 3 rows of cells in anal area of hind-wing; forking of superior sector of triangle unequal, 5 traversing nervures between the sectors in fore-wing, 3 in the hind; pterostigma rather short, about one-fourth the distance between node and its proximal end, unbraced, but slightly dilated. Abdomen slightly dilated at end segments; genitalia: posterior hamules broad, short, ending in a short recurved spine; bulb of penis bulbous; penis with very small end segment from which two long feelers extend. Anal appendages closely similar to those of *Anisogomphus*, superiors straight and parallel, inferior broadly bifurcated, with widely divaricate branches. Legs short, hind femora extending to base of segment 2, furnished with numerous short minute spines.

Genotype—*Gomphus zebra* Martin.

Habitat.—W. AFRICA: Cameroons. Type of *A. zebra* (Martin) in the Paris Museum.

*Nilogomphus* Fraser. 1928, *Trans. ent. Soc. Lond.*, 76 : 132-134.

This genus was founded on specimens from Uganda collected by Prof. Hale Carpenter and named *N. carpenteri*. I find now that this species is synonymous with *Notogomphus dorsalis* Selys, the male of which was hitherto unknown. *Nilogomphus* therefore becomes a synonym of *Notogomphus* Selys, and *N. carpenteri* falls to *N. dorsalis*.

#### TWO NEW ANACTINOTHRIPS FROM SOUTH AMERICA (THYSANOPTERA)

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(Professor of Zoology, University of Rochester, U.S.A.)

Communicated by Dr. S. A. NEAVE, O.B.E., F.R.E.S.

#### *Anactinotrips nigricornis* sp. n. (fig. 1, a).

♀ (macropterous).—Length about 5.1 mm. (distended, 6.7 mm.). Colour very dark, certainly nearly or quite black in life, the tarsi and antennae little, if any, paler, the latter with intermediate segments not at all yellow basally; wings nearly uniform light brown, the fore pair without a submedian dark streak, the hind pair apparently brown in about basal third of anterior margin\*; all major setae black, many of them with pointed, pale tips.

\* The three specimens which serve as types of this species were all treated with caustic and mounted upon slides before they were sent to me many years ago. However, a comparison with other similarly treated specimens of the same genus, whose true colour is known, makes it possible to describe with a fair degree of accuracy the approximate coloration of the present species.

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