

The Gynacanthas of tropical Africa

by F. C. FRASER

The Gynacanthas are a large and well recognized group of Odonata belonging to the superfamily *Aeshnoidea*, differing from all other Aeshnas by the formation of the ovipositor and by the larvae possessing setae on the labial mask; they also differ in their habits, which are crepuscular. They are largish to medium sized insects of sombre colouring as befits their nocturnal habits and are usually some shade of pale olive brown or dull olive green (Only two species have brighter colouring and diurnal habits, viz *Khasiaca* MCLACHLAN and *albistyla* FRASER, but both are Oriental in distribution). During the daytime, they rest in the deep shade of bamboo clumps or under the arched roof formed by overhanging trees; the arches formed by trees and bushes meeting over streams are favourite dormitories for these insects and here they are so self-assured in their retreats that I have frequently been able to catch them by simply seizing hold of the pendant abdomens. Correspondents from Africa inform me that they have never found these Gynacanthine dormitories, but then too, they have never found them sleeping elsewhere, so that I am assured that the habits of the Ethiopian species is similar to those of the Orient. In one particular dormitory in South Malabar, which I invariably called at and examined when passing, I always found it to be occupied by specimens of *G. hyalina* SALYS; it was like calling at a letter-box to collect one's letters.

Ovipositing is carried out by digging the eggs into dry soil, usually the sloping bank on the sides of a gully leading to a depression or actual pond below; here the eggs lie until the first freshet of rain turns the gully into a water-course and washes them down into the water below, a period of time which may run into weeks. Because of this habit of ovipositing, the anal appendages of the females are almost invariably fractured or actually broken off; it is rare to

from Uganda: Mr. GAMBLES sent me a pair of his *G. nigeriensis* from Nigeria and Prof. BALINSKY a pair of his *sultensis* from Natal. Thus I have been able to examine personally examples of every species except *ochraceipes* PINNEY, for the description of which, I have had to depend on the author's primary account. To all of these my grateful thanks are due. Lastly, Mr. D. E. KIMMINS has furnished me with some details of types in the British Museum when I have been unable to visit that institution myself for that purpose.

KEY TO THE AFRICAN SPECIES OF GENUS GYNACANTHA

1. Insular (Mascarenean) species 2.
- Continental (Ethiopian) species 6.
2. Anal-triangle 3-celled 3.
- Anal-triangle 4-6-celled 5.
3. Wing venation open; not more than 18 antenodals in forewings and only 4 secondary antenodals between the primaries; abd. 44 mm, hw 41 mm; superior anal appendages 5 mm long, with narrow blade, sides parallel and apex acuminate; smallish species (fig. 1) *hova* FRASER.
- Wing venation closer; more than 20 antenodals to forewings; 5 to 8 secondary antenodals between the primaries (figs. 2 and 3) 4.
4. Segment 3 markedly constricted in the male; toral angle obtuse confined to Mauritius *bispina* RAMBUR
- Segment 3 not constricted in the male; toral angle rounded; confined to Madagascar *madagassica* FRASER
5. Medium sized species; abd. and hw. less than 50 mm in length; confined to the Seychelles *sylata* MARTIN.
- Large species with abd. 60 mm and hw 50 mm *radana* SELYS.
6. Anal-triangle 3-celled 7.
- Anal-triangle 4 to 6-celled 14.
7. Wing venation open; not more than 18 antenodals in forewings; only 4 secondary antenodals between the primaries; abd. 44 mm, hw 41 mm; anal appendages very similar to those of *hova*, which latter may be an insular form *manderica* GRÜNBERG.
- Wing venation closer; more than 20 antenodals to forewings; 5 to 8 secondary antenodals between the primaries 8.
8. Legs pale yellow with sharply defined black rings on the knees; abd. 46 mm long, with narrow blade but broadening slightly and gradually towards the apex which is acuminate; inferior appendage one third as long *bullata* KARSCHT.

find an old female with intact appendages. The anal appendages of the female are merely complimentary to those of the male and serve no useful purpose as they do in the latter; they may serve to indicate to the Gynacanthine female in the first place, a suitable spot for ovipositing but from then onwards they appear to be a hindrance. These appendages are nearly always shorter in the female sex, very short in some species of *Gynacantha*, whilst very long in others, such as the female of *G. africana*, so that there appears to be an evolutionary trend to a reduction of these appendages in the female.

The wings of the African Gynacanthas are hyaline and colourless save in a few species, but in old adults, especially in *G. africana*, they tend to gradually darken until the whole wing is an uniform brownish tint, especially in the females. The change in colour is probably protective in value as it renders the insects practically invisible in the twilight in which they fly.

Twenty species have been described from the tropical zone of Africa and these fall into two quite natural groups, according to whether the anal appendages of the male are straight, lanceolate and taper to an acuminate apex, or are more or less undulate in outline and with truncated apices. Owing to the extraordinary variability of their venation, which often extends to the opposite wings of individual specimens, and also to the very homogeneous appearance of the species, considerable difficulty has been met with in defining species and in the construction of a key for their identification. Thus when any difficulty is met with, the information given by the key must be reinforced by consulting the notes on individual species. Allowing for the variability of the venation and also for the paucity of material of a number of species, it is indeed possible that some species have appeared under two names, and that some synonymy has crept in; only further work on the anatomy and genitalia of individual species can settle these problems. *G. manderica* and *hova* may be races of one species, the latter an insular form?; *nigeriensis* and *usambarica* may be western and eastern forms of one species? etc.

In collecting the data and material which has rendered possible the compilation of this short monograph, I have been greatly assisted by a number of willing helpers, without which a number of problems would not have been solved. The bulk of the material has been loaned or given from the rich collections of the Musée de l'Afrique Centrale, Tervuren and by Mr. E. PINNEY Curator of the Southern Rhodesian Museums. The late Prof. G. HALE CARPENTER collected for me a number of specimens, including some of *victoriae* PINNEY,

- Legs yellow or ferruginous but without well-defined black rings on the knees 9.
- 9. Legs ferruginous with knees darkened but not as well-defined rings; small species with abdomen 40 mm or less *victoriae* PINHEY.
- Legs yellow or ferruginous with knees not darkened; larger species with abdomen 45 mm or more 10.

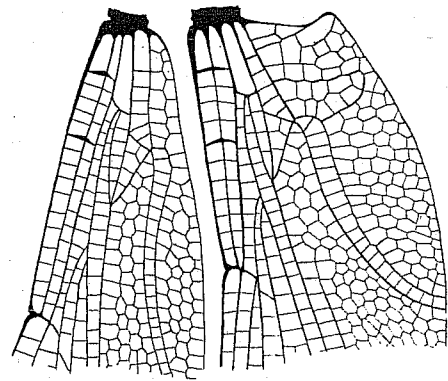


Fig. 1. - Base of wings of *Gynacantha usambarica* GRÜNBERR. Note that only 4 secondary antenodals separate the two primaries, and also, the short 3-celled anal-triangle.

- 10. Crest of frons with a dark T-shaped marking; superior anal appendages not greatly dilated at apex 11.
- Crest of frons without a black T-shaped marking; superior anal appendages greatly dilated at apex on the inner side, then tapering to an outwardly turned point *immaculifrons* FRASER.
- 11. Large species with abd. 57 mm or more; legs and pterostigma pale yellow; segment 3 constricted for the greater part of its length; T on frons with narrow stem *flavipes* FRASER.
- Smaller species with abd., plus appendages 50-53 mm or less; legs brownish yellow or dark ferruginous; segment 3 variably constricted; T on frons variable 12.

- 12. Amber tinted rays in the subcostal and median spaces at base of wings; anal-loop small, of only 2 rows made up of 9 cells; segment 3 greatly constricted for most of its length *sultienis* BALINSKY.
- Base of wings with or without amber rays; anal-loop of 3 to 4 rows of cells; segment 3 only moderately constricted 13.
- 13. Anal-loop of 17 to 19 cells arranged in 3 or 4 rows; T-marking on frons with convex head and very slim stem; face ferruginous changing above to dark olivaceous *sevastopoloï* PINHEY.
- Anal-loop of 10 cells arranged in 3 rows; T-marking on frons with poorly defined stem or this may be altogether absent; face dark olivaceous *nigeriensis* GAMBLE.
- Anal-loop of 10 cells arranged in 3 rows; T-marking on frons with head and stem very thick; face bright citron yellow or pale green *usambarica* SÖSTEDT.
- 14. Superior anal appendages with a deep subapical notch on the inner side preceded by a tuft of hairs surmounted on a tubercle, the whole shaped like a horse's hoof and fetlock; anal-triangle 4 or more rarely, 5-celled *cythirata* KARSCH.
- Superior anal appendages with an elongate convexity on the inner side but without the hirsute tubercle 15.
- 15. Costal border of wings between costa and radius tinted pale yellow or golden brown, deepening to dark reddish brown at base of wings; anal-appendages 7 mm long the outer border ending in a minute spine; venation very close, with ana-loop of 27 or more cells *sextans* MCLACHLAN.
- Costal border of wings colourless save where the whole wing is uniformly brownish; superior anal appendages with apical spine more or less obsolete but always on the outer side 16.
- 16. Very large species with abdomen plus the appendages over 60 mm in length; hindwing of about 60 mm; the whole adult wing evenly tinted reddish brown; anal-triangle very narrow, its costal side only one third as long as the distal; anal-loop narrow, of 20-22 cells *africana* (BEAUVOIS).
- Very large species with abdomen 60 mm and hindwing 56 mm; superior anal appendages without a small tubercle at base; T-marking on frons with head poorly defined, the short stem conical; over 30 antenodals in forewings (Closely resembles *africana* but the pterostigma is smaller, the anal appendages much shorter and with a small spine on the outer side of the apex (this latter absent in *africana*) *vesiculata* KARSCH.

admitted his error (KIRBY, 1897, *Ann. Mag. Nat. Hist.*, (6) 19:614.) and that McLACHLAN had also pointed out the error (McLACH., 1896, *Ann. Mag. Nat. Hist.*, (6) 17:411). KIMMINS (1936) disagreed with COWLEY but later resumed the use of the name *Acanthiagyna* without giving any reasons for his *voite facie* in print. However, *in litt.*, he stated that his action was based on Article 18 of the International Code of Zoological Nomenclature by which a name is not to be rejected even if inappropriate. However, a reference to Article 18 shows that KIMMINS had misinterpreted the meaning and that he has confounded « error » with « inappropriate ». The present case was due entirely to KIRBY's initial error and has nothing to do with the inappropriateness of the name *Acanthiagyna*. Two facts stand out that are incontestable; one that SELYS never cited or fixed a type for the genus *Gynacantha* in 1857, and a second that he raised, in strict accordance with the International Rules, in 1883, the two genera *Triacanthiagyna* and *Gynacantha*, the latter restricted by SELYS. He gave definitions for both, cited types and so placed them both on a sound basis. Thus *Gynacantha* SELYS, 1883, has priority over *Acanthiagyna* KIRBY 1890 and the latter becomes a synonym of the former.

GROUP I.

Superior anal appendages of the male more or less undulate and with obtuse apex.

Gynacantha africana (PALISSOT DE BEAUVOIS).

Aeshna africana BEAUVOIS, 1895, *Ins. Afric. Amer.*: 67, pl. 3. — Id. RAMBUR, 1842, *Ins. Neuropt.*: 196.
Acanthiagyna africana KIRBY, 1890, *Cat. Odon.*: 95.
Gynacantha africana McLACHLAN, 1895, *Ann. Mag. Nat. Hist.*, (6), 17: 17:413; — Id. MARTIN, 1907, *Mem. R. Espan. Hist. Nat.*, 1: 23; 427 (Blafra); — Id. 1909, *Cat. Coll. Selys, (Aeshnidae)*: 182, fig. 186 (anal appendages of male), W. Africa; — SCHOUTEDEN, 1934, *Ann. Mus. Congo Belge, Zool.*, 3, 2, 3, 1 (Odonates): 51.
Acanthiagyna africana PINNEY, 1961, « A survey of the Dragonflies of East Africa », *Brit. Mus.* 1961: 97.

Male. Abd. 56 mm. Hw. 51 mm. Female. Abd. 58 mm. Hw. 58 mm. General colouring a dull olive brown, possibly olive green on the sides of thorax in life; face and beneath thorax and abdomen ferruginous; occiput minute, yellow; legs bright ferruginous; abdomen dark blackish brown on dorsum with a broad bluish fascia across

- Rather smaller species with a tubercle behind base of superior anal appendages; less than 30 antennal segments to forewings 17.
- 17. Rather large species with abdomen about 60 mm long and hindwing over 50 mm; T-marking on frons forming a well-balanced « T » *villosa* GRÜNBERG.
- Smaller species with abdomen 52 mm and hindwing less than 50 mm in length; T-marking on frons with head arched and finely linear, its stem conical *ochraceipes*, PINNEY.

SYSTEMATIC

Gynacantha SELYS, 1883, *Bull. Acad. Belg.*, (3) 5:745. (definition); RAMBUR 1842 (pars), *Ins. Neuropt.*, 209.
Acanthiagyna KIRBY, 1890, *Cat. Odon.*, 94 (without definition or named type); — COWLEY, 1934, *Entomologist*, 67: 200; KIMMINS, 1936, *Ann. Mag. Nat. Hist.*, (10) 18: 74-75.
Gynacantha CALVERT, 1905 (sens. RAMBUR), *Biol. C. Amer., Neur.*: 189. (Type fixed as *G. nervosa* RAMBUR).

The genus was erected by RAMBUR in 1842 but was split into two subgenera by SELYS in 1883, according to whether the ovipositor ended in two (*Gynacantha*) or three spines (*Triacanthiagyna*); *trifida* RAMBUR was specifically cited as type for the latter but for *Gynacantha* a number of types were given, - *G. T-nigrum* SELYS, *nervosa* RAMBUR, *gracilis* RAMBUR, *subinterrupta* RAMBUR and *bispina* RAMBUR. There is no such species of *Gynacantha* as *G. T-nigrum* SELYS but it is probable that SELYS included a new species which he intended to, but never got down to describing, the trivial name evidently referring to the familiar black T-mark found on many species of *Gynacantha*. (There is a *Gomphidius T-nigrum* SELYS but this belongs to the family Gomphidae) KIRBY in 1890, labouring under a misapprehension that SELYS had fixed the type of *Gynacantha* as *trifida* in his paper of 1857 (SELYS, LA SAGRA, *Hist. fis. pol. y nat. Cuba*, 7 (2): 184 and *Hist. phys. pol. y nat. Cuba*, 5, *Ins.*: 459) came to the erroneous conclusion that *Gynacantha* was a mere synonym of *Triacanthiagyna* and so preceded to erect a new genus, *Acanthiagyna*, to contain all those other species which RAMBUR had included in *Gynacantha*. For good measure, he added two others, one an *Aeshna* and the other a *Triacanthiagyna*. He gave no definition and cited no type. It is clear that he never studied the species which he had included. COWLEY, 1934, supported KIRBY and gave *Gynacantha nervosa* RAMBUR as the type for *Acanthiagyna*, and this in spite of the fact that KIRBY had

dorsum of segment 2 and fine basal yellow rings on segments 3 to 6; small triangular yellow spots on the jugal sutures of the same segments. Wings colourless on first emergence but becoming uniformly brownish in old specimens; twin pale blue spots on the axes of all wings. Venational details rather variable as follows, antenodal index 32 to 34 in forewings, 22 to 25 in the hind; anal-triangle 4-celled; anal-loop of 18 to 22 cells; triangle forewings 8-12 celled, hindwings 7-9

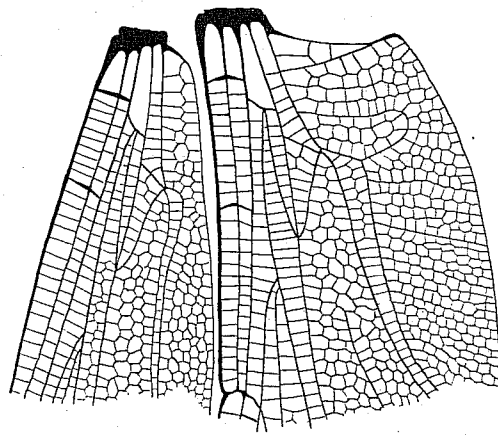


Fig. 2. - Base of wings of *G. africana* (BEAUVOÏS). Note that 9 antenodals separate the two primaries, and also the elongated 4-celled anal-triangle.

celled; radial and medial planates 5 to 6 cells deep. Anal appendages of male 7 mm long, (fig. 2); female 11 mm long, narrow and elongate like a willow leaf, expanding to as far as its middle, then tapering again to a fine point. Segment 9 in the male normal but four times the length of 10 in the female.

The type is apparently lost so that it is not certain that what we now regard as *africana* is that of BEAUVOÏS; however the species can only be confused with some of the larger species of *Heliaeschna*, which

have similar elongated anal appendages; however BEAUVOÏS' figure of the wings shows the basal space to be free of cross-veins, and this fact rules out species of that genus.

Habitat: TROPICAL AFRICA: CONGO: Lokando, Stanleyville, Inongo, Djamba and Eala. PINHEY gives Western Africa but without any specific places; also UGANDA: Kampala and Katera. It is essentially a congolese insect and may be distinguished by its great size, darkened wings and extraordinary long anal appendages, especially those of the female. No type appears to have been indicated for this species, so I name the male from Lokando, Congo, in the Museum Tervuren, as *lectotype*.

Gynacantha cylindrata KARSCHI, 1891.

Gynacantha cylindrata KARSCHI, 1891, *Ent. Nachr.*, 17: 282, 308, pl.; — *Id.* MARTIN, 1909, *Cat. Coll. Selys. Aeshnines*; 183, fig. 188 (states that type is in the Berlin Museum); — *Id.* NAVAS, 1922, *Trb. M.C.N. Barcelona*, 4, 3, 113. (Fernando-Po); — *Id.* PINHEY, 1961, *Survey of Oodnata of E. Africa*, Brit. Mus.: 98, Pl. 7, figs. 15 and 20.

Abdomen and hindwing 51 to 53 mm. Pterostigma 4 mm.

Overall colouring dull olive brown, the thorax probably olive green during life; face ochreous, the T-marking on frons sharply defined, with narrow curved head and stem bulbous near the vertex; legs bright ferruginous; abdomen dull olive brown, without visible markings. Wings hyaline, without colouring, venation close, a maximum of 27 antenodals in forewings, 19-21 in the hind; 7-8 secondary antenodals separating the primaries; 4 or rarely 5 cells in anal-triangle; 12-16 cells in the anal-loop arranged in 3 rows; relation of 1A to CuP at origins very variable, either closely parallel with I row of cells between or diverging and separated by 2 rows of cells; in some specimens, one type exists in one wing and 2 double row of cells in the other; 4 rows of cells between forks of Rs, and a similar number in Radial and Medial planates. Anal appendages castaneous, the superior of the male deeply notched near apex on the inner side, the notch preceded by a tuft of hairs, the apex broad and very oblique, the whole shaped like a horse's foot, hoof and fetlock, as viewed from the dorsum. Inferior appendage about half as long. Appendages of female very long as in *africana* but of very different shape, petiolated, then broadening blade-like, the outer side straight, the inner convex, the apex rather abruptly pointed, not tapering gradually as in *africana*. Segments 8 and 9 subequal, the latter almost three times as long as 10.

Habitat: Tropical Africa: rather widely distributed in the tropical zone; CONGO: Bambesa, Banana, Ettenne, Kani, Mataadi, Tolo, Inongo, Kotale, Stanleyville, Katongo. W. AFRICA: Fernando-Po, Biafra, Dahomey, Loango. E. AFRICA: Uganda; Bwamba Forest. The species is easily determined by the shape of the anal appendages of the male and the great size of those of the female which are blade-like and not tapered as in *africana*. The type in the Berlin Museum.

Gynacantha ochraceipes PINHEY.

Acanthiagyna ochraceipes PINHEY, 1960, *Odonata, Oxford Univ. Tanganyika Exp.*: 511, fig. 2 a, b and c.

I have not seen this species recently described by PINHEY, but it appears to fall between *villosa* and *vesiculata* being very close to the latter. PINHEY states that it lies nearest to *bispina* and *stylata* but both of these species belong to a different group with anal appendages tapering to a point at the apex. Its chief difference appears to be its smaller size, viz male; abdomen with appendages 52 mm, hindwing 46 mm. Female with abdomen and hindwing of the same length, wing 46 mm.

Habitat: E. AFRICA: Kasoge, 2550 ft. Type and allotype in the National Museum, Bulawayo, S. Rhodesia.

Gynacantha sextans McLACHLAN.

Gynacantha sextans McLACHLAN, 1895, *Ann. Mag. Nat. Hist.*, (6) 17: 414. — *Id.* MARTIN, 1909, *Cat. Coll. Selys, Aeshnines* 19: 185, fig. 190.

Gynacantha schultzei LI ROY, 1915, *Ergebn. zweiseit. D. Z. Afr. Exp.* 1: 347, Pl. 19.
Gynacantha maesi SCHOUTEEN, 1917, *Rev. Zool. Bot. Afric.*, 5: 104.
Gynacantha sextans FRASER, 1947, *Trans. R. ent. Soc. Lond.*, 98: 33.
Gynacantha schultzei PINHEY, 1961, *Survey of Dragonflies of East Africa*, Brit. Mus.: 99, Pl. 7, fig. 16.

Male. Abdomen 60 mm. Hindwing 52 mm. Labium and labrum ochraceous, face olivaceous brown or green, occiput minute, yellow. Thorax dull olivaceous brown, the abdomen similar but segment 1 a much paler tint and possibly bluish during life (now yellow). Segments 3 to 7 with the apical halves dark blackish brown forming broad dark rings on each segment. Legs uniform ferruginous. Superior anal appendages 7 mm in length, external border straight, internal undulate, the apical portion slightly the

broadest and with its outer border prolonged as a robust spine. Inferior appendage only one third as long. Wings hyaline, with a pale burnt-brown ray extending between the Costa and Radius to as far as the pterostigma in all wings, the colour quite deep in tint at extreme bases of wings; pterostigma pale brown, 4.5 to 5 mm long; 6 to 8 secondary antennodals between the primaries, usually 7;

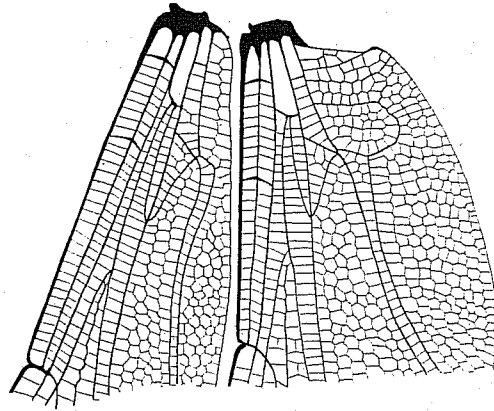


Fig. 3. - Base of wings of *G. sextans* McLACHLAN. Note the irregularly-celled anal-triangle.

26 to 30 antennodals in forewings, 20 to 22 in the hindwings; 4 to 6 cells in the anal triangle; 22 to 28 cells, in the anal-loop, arranged in 3 or even 4 rows; 3 rows of cells between forks of Rs; Radial and Medial planates 6 and 5 cells deep respectively. Abdominal segments 8 and 9 approximately of the same length in the female. Length of anal appendages of female unknown, as more or less broken or missing in the known specimens, but what remains suggests rather long, lanceolate structures as in *villosa*.

Habitat. Tropical Africa: Congo: Bambesa, Inongo. W. AFRICA, Guinea, Usumbura Mts. *B. schultzei* is undoubtedly a synonym of this species, as also is *maesi* SCHOUTEDEN according to its author. Type in British Museum. The female, hitherto unknown.

Gynacantha radama SELYS in FRASER.

Gynacantha radama SELYS (nom. nud.), 1869, POLLEN & VAN DAM, *Madagascar Ins.*, 24: 10. — *Id.*, 1872, *Rev. Mag. Zool.*, (2) 23: 183. FRASER, 1954, *Faune de Madagascar, Inst. Recherches Sci. Tananarive, Ins.* 1: 8.

Male. Abdomen 60 mm. Hindwing 52 mm. Pterostigma 6-7 mm.

Labium and labrum ochreous, face and frons olive green; the latter with a narrow but well marked T on its crest; occiput very small, yellow. Thorax olive brown but probably olive green during life; legs dull olive brown but the tibiae bright ferruginous; abdomen pale olive brown, the intersegmental nodes black. Wings pale uniform brown with dark brown neuraiton, the latter very close; 6 secondary antenodals separating the primaries; 25 antenodals in forewings, 17 to 20 in the hind; 4 to 5 cells in the anal triangle, usually 5; anal-loop of 10 to 14 cells arranged in a loose 3 rows; 3-4 rows of cells between the forks of Rs and a maximum of 4 cells in the Radial and Medial planes¹⁾. Anal appendages: superiors nearly as long as segments 9 and 10 together, narrow, undulate on the inner side, but straight on the outer, the apex very broadly and abruptly enlarged inwardly but the outer border prolonged as a spine beyond it. Inferior triangular, not quite half the length of superiors.

Female similar to the male save for its genitalia. Abdomen 56 mm. Hindwing 52 mm. The wings distinctly broader throughout, the venation rather more open in character; pterostigma of similar length.

Habitat: MADAGASCAR: Mandritsara, Tamatave, Ranomafana and Andovoranto. The type was described from a general damaged specimen; the present description has been made from a fully adult and nearly perfect example. The species is remarkable for the great length of its pterostigma and by the almost total absence of the usual constriction of segment 3 of the abdomen.

Gynacantha vesiculata KARSCCH, 1891.

Gynacantha vesiculata KARSCCH, 1891, *Ent. Nachr.* 17: 307. — *Id.* STÖßTEDT, 1909, *Kilimandjaro Exp.* 2, (14): 37, Pl. 1, fig. 1. —

¹⁾ « Planatus », WILLIAMSON'S term for the spaces between Rs and R₅₊₆ and MA and M₃₊₄.

Id. PINHEY, 1961, *Survey of Dragonflies E. Africa*, 99, Pl. 7, figs. 2, 11.

Gynacantha quadrina McLACHLAN, 1898, *Ann. Mag. N. H.*, (7).

Male. Abdomen 54.55 mm, hindwing 48 mm. Pterostigma 3.5 mm. Closely similar to the last species in colouring but the whole of the legs bright ferruginous and the cross-piece of the T-marking on the frons pale and the stem black and conical, tapering towards the cross-piece. Wings colourless or but faintly uniformly enfumed. Pterostigma relatively short, its costal border reddish brown, the posterior blackish. Venation close, 6-8 secondary antenodals between the two primaries in the forewings but only 5-6 in the hind; 11 to 12 cells in anal-loop, CuP and IA in the hindwing closely parallel, with only 1 row of cells separating them; 4 rows of cells between the forking of Rs and a similar number in the Radial and Medial planes; anal triangle of 4 cells. Constriction of segment 3 comparatively slight. Superior anal appendages slim, slightly undulate, the medial convexity very shallow and hardly perceptible, the apex broadened, its outer border extended into a spine. Inferior appendage less than half the length of superior. Female with lanceolate anal appendages 6 mm in length and very slim according to PINHEY.

Habitat. TROPICAL AFRICA: CONGO, Katanga, KENYA, TANGANYIKA, Kilimanjaro, Usumbura Mts. The species is liable to be confused with *villosa* GRÜNBERG from which it can be distinguished by its smaller size, the superior anal appendages slim, barely undulate and without the basal ventral swelling found in *villosa*. I have not seen a female of this species.

Gynacantha villosa GRÜNBERG, 1902.

Gynacantha villosa GRÜNBERG, 1902, *Sitzber. Ges. Naturf. Freunde, Berlin*, 9: 233. — *Id.*, 1903, *Ergebn. Nyassa, Zool. Jahrb.*, 6: 710.

— MARTIN, 1909, *Can. Coll. Selys, Aeshnines*, 19: 184, fig. 189.

Gynacantha bispinata Ris nec RAMBUR, 1908, *SCHULTZE'S Cat. S. Afr. Odonata*: 325, fig. 12 and 13.

Gynacantha villosa Ris, 1921, *Ann. S. Afr. Mus.*, 18: 358. — PINHEY, 1951, *Dragonflies of S. Afr. Mem. Transvaal Mus.*, 5: 181.

Acanthagyna villosa PINHEY, 1961, *Survey Dragonflies E. Afr. Br. Mus.*: 98, Pl. 7, figs. 1, 10.

Male. Abdomen 50.56 mm. Hindwing 48.50 mm. Pterostigma 4.5 mm.

Overall colouring similar to *vestitilata*, the thorax in well preserved specimens distinctly olive green; legs uniformly ferruginous; T-marking on frons well-defined, the cross-piece black and the stem of even thickness, with yellow spot on each side. Segment 3 of abdomen markedly constricted (in strong contrast to that of *vestitilata*); segments 8 and 9 equal or slightly subequal in length in the female, the 9th narrowing apically as in *africana*. Anal appendages; superiors 6 to 6.5 mm long, markedly undulated, the base swollen ventrally, the medial border strongly convex at its middle and the apex expanded and obtuse after a slight preapical narrowing of appendage. The medial border coated with long hairs, evidently of a sensory character as an aid to primary copulation. Wings hyaline, untinted or palely so in old specimens; pterostigma pale yellowish brown, 4 to 4.5 mm long, narrow. Venation close and markedly variable (as in most species), variations as follows. Anal triangle, 5-celled in both wings, 4- and 3-celled in opposite wings or 3-celled in both wings; anal-loop, 13 in one and as many as 20-celled in the other, and 17 and 19 respectively in another specimen; secondary antenodials separating the primaries either 6 or 7 but in some 6 on one side and 7 on the other; nodal index forewings varying from 22 to 27 antenodials; 1A and CuP in hindwing most often parallel but in some with 2 rows of cells separating them basally or a single row on one side and 2 rows in the opposite wing, or again 2 rows on both sides.

Habitat: TROPICAL AFRICA: UGANDA: Entebbe, Butolo, Buifumbu Forests, Kampala, Jinja and Kaicera. TANGANYIKA: Kimboza Forest. NYASSALAND: Langenburg. CONGO: Elisabethville. PORTUGUESE AFRICA: An East African species essentially.

GROUP II.

Superior anal appendages of the male lancetate and tapering to an acuminate apex.

Gynacantha bispina RAMBUR, 1842.

Gynacantha bispina RAMBUR, 1842, *Ins. Neuropt.*, 211 (Mauritius). SELYS, 1869, POLLEN & VAN DAM, *Ins., Madagascar*: 24, 10, Mauritius. — *Id.* 1872, *Rev. Mag. Zool.*, (2) 22: 183.

Acanthagina hispidata KIRBY, 1890, *Cat. Odont.*: 95.

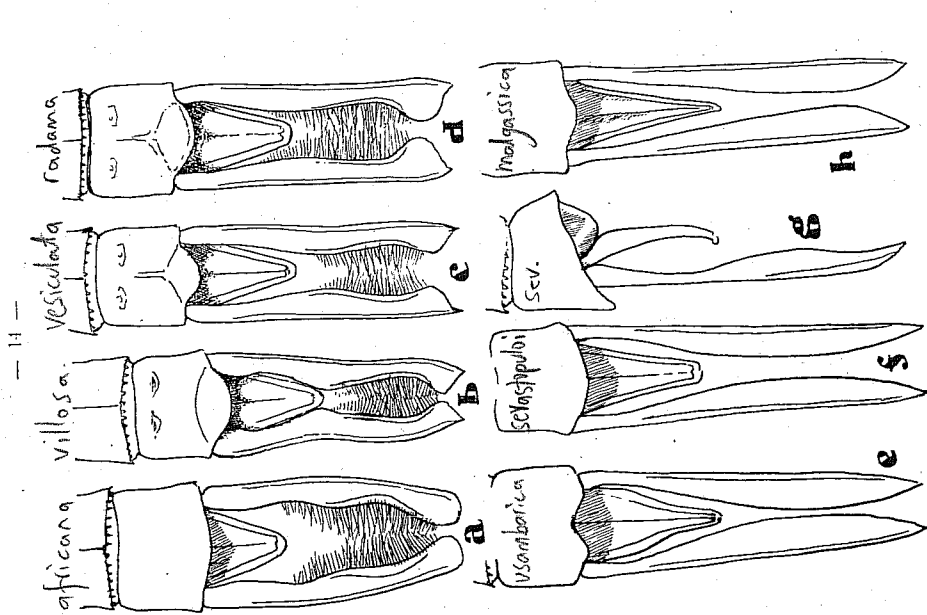


Fig. 4. - Male anal appendages of: - a, *G. africana* (BRAUVERUS), b, *G. villosa* GRÉVILLE, c, *G. vestitilata* KIRBY, d, *G. radama* Selys, e, *G. usambarica* Sjöström, f, *G. schizophobi* PINHEU, g, and h, *G. malgassica* n. sp.

Gynacantha bispina MARTIN, 1909, *Cat. Coll. Selys, Aeschnines*, 19: 180, fig. 184. (Anal appendages of male). — FRASER, 1950, *Proc. R. ent. Soc. Lond.*, B, 19, 72, 73.

Male. Abdomen with appendages 50 mm. Hindwing 45 mm. Pterostigma 5 mm. Head; labium and labrum dark ochreous, face dark olive brown, frons with thick T-shaped marking, the stem of even width and blackish, the cross-piece pale brown and rather indistinct. Thorax reddish brown, darker on dorsum, pale ventrally (possibly olive green on the sides during life). Legs bright pale ochreous especially the tibiae. Wings hyaline, palely and uniformly tinted with yellowish brown, this colour probably deepening with age; venation close; 8 secondary antenodals between the primaries in the forewings, 7 in the hind; 28 antenodals in forewings, 18-20 in the hind; anal triangle 3-celled; costal side more than half the length of distal; anal-loop 10-celled; 1A and CuP in the hindwing separated by 1 or 2 rows of cells; 3 rows of cells between forks of Rs; Radial and Medial planates with a maximum width of 5 cells in forewings, but 6 in the hind; pterostigma bright pale ochreous, 5 mm in length. Abdomen uniformly reddish brown, very slim, the base not greatly swollen, segment 3 moderately constricted. Anal appendages; superiors lanceolate, 6 mm in length and nearly as long as the last three abdominal segments, outer border straight, the inner convex, gradually broadening to as far as one fifth from the apex, then rapidly narrowing to an acuminate apex. Inferior triangular, broad at base but then narrowing rather abruptly to as far as apex, slightly more than half the length of superiors.

Female. Abdomen (without appendages) and hindwing 50 mm.

Colour similar to the male but the wings more deeply tinted with brownish yellow (in the single female examined). Venation of wings very variable, 7 secondary antenodals between the primaries in forewings but 8 to 9 in the hind; 25-26 antenodals in forewings; anal-loop 10-celled as in the male. Abdomen robust, in strong contrast to the slim character of the male, tapering from base to apical end, segment 3 not constricted, segment 9 only slightly longer than 8. Anal appendages apparently narrowly lanceolate but fractured and only the basal half left of each.

Habitat: Mauritius only. The references to this species as from Africa by GERSTAECKER and GRÜNBERG are surely wrong, the species being purely insular. RIS gave it from Grande Comoro but I think this to be doubtful also. RIS thought that *radana* SELYS, from Madagascar was the male of this species but the two species belong to

different groups. The species I described as *bispina* from Madagascar has proved to be a new species which I have named *malgasca*.

The additional references are, - *Gynacantha bispina* GERSTAECKER nec RAMBUR, 1891, *Jahrb. Ham. Wiss. Aust.*, 9: 7 (Zanzibar); — GRÜNBERG nec RAMBUR, 1903, *Zool. Jahrb., Syst.*, 18: 708 (Lindo, Zanzibar). — RIS, 1915, *Ent. Mitt.*, 4: 141 (Gr. Comoro). Also as *bispina*, RIS described a male of *villosa* from S. Africa (vide *villosa* supra).

Gynacantha bullata KARSCHI, 1891.

Gynacantha bullata KARSCHI, 1891, *Ent. Nachr.*, 17: 282. — *Id.*, *ibid.*, 17: 306. — *Id.*, *ibid.*, 1894, *Berlin, Ent. Ztschs.*, 39: 16; — McLACHLAN, 1895, *Ann. Mag. N. H.*, (6) 17: 413; — KARSCHI, 1898, *Ent. Nachr.*, 24: 344. — SIÖSTEDT, 1899, *Bih. t. K. Sv. Vet. Ak. Handl.*, 25: 4, 2: 38; — *Id.*, 1909, *Kilimandjaro Exp.*: 36. — FRASER, 1949, *Mission de WITTE, Expl. Parc Nat. Albert*, 61: 15 (Belg. Congo: Ondo). — PINHEY, 1961, *Survey Dragonflies E. Africa*, Brit. Mus.: 100.

Male. Abdomen 45-48 mm. Hindwing 40-42 mm.

Overall colouring olive brown, the sides of the thorax olive green. Leg colouring highly characteristic, the anterior femora mainly glossy black, the others bright yellow with glossy black annules at the distal end, the tibiae bright yellow, the tarsi black. A normal T-shaped marking on frons. Wings hyaline, becoming infuscated in old specimens; pterostigma pale yellow with costal and posterior borders black, 4 mm long. Venation rather close, normally 6 antenodals separating the two primaries; 24 to 26 antenodals in forewings, anal triangle 3-celled, its costal side more than half the length of the distal, 3 rows of cells between the forks of Rs; Medial planate with a maximum of 4 cells deep, Radial 5 cells deep; anal-loop of about 12 cells, narrow and rather elongate in breadth of wing. Abdomen with segment 3 markedly constricted and for the greater part of its length; segments 8 and 9 subequal, the latter not greatly exceeding the length of the former in the female; Anal appendages: superiors lanceolate, the petiole gradually expanding almost to apical end, the outer border straight, the inner slightly convex, the two borders converging at extreme apex and meeting in a point; inferior appendage narrowly triangular, only one third the length of superiors which are about 6.5 mm in length. Female appendages lanceolate, of the same shape as those of the male but barely two-thirds as long.

Habitat: TROPICAL AFRICA but mainly confined to the eastern half and eastern provinces. It is the dominant species of the African Gy-

nacanthas and is easily determined from all others save *victoriae* PINHEY by the black knees of the legs in both sexes. PINHEY gives the living colours as, - eyes, face, sides of thorax and the first two segments of abdomen as bright green. UGANDA: Kampala, Budongo, Bugoma, and Bwamba forests common, Entebbe, Katera, KENYA: Kisumu, Tanganyika: Kasulo. CONGO: Eala, Kars, Kapongo, Boma Yanga, Mayumba, Yambata, Kalina and Elizabetha.

Gynacantha flavipes FRASER, 1956.

Gynacantha flavipes FRASER, 1956, *Rev. Zool. Bot. Afr.*, 54: 34: 386, fig. 2, a and d.

Male: abdomen 52 mm. Hindwing 47 mm.
 Head: labium, labrum and sides of frons bright ochreous; face sides and beneath of thorax and the two basal segments of abdomen olive green, the rest of abdomen and dorsum of thorax dull olive brown. Legs bright ochreous throughout. T-marking on frons thick and sharply defined. Wings hyaline, costa beyond nodus and the pterostigma yellow, 3.5 mm long; venation moderately close, 6 secondary antenodals separating the two primaries in forewings, 7 in the hind; 23-24 antenodals and 16 postnodals in forewings; anal triangle 3-celled; anal-loop as broad as deep, of 8-10 cells; 2-3 rows of cells between the forks of Rs and a maximum of 4 cells deep in the Radial and Medial planates. Segment 3 constricted in the male. Anal superior appendages of male lanceolate, with straight outer border, inner border convex, the appendage expanding gradually to as far as the fourth fifth, the remaining portion tapering rapidly to a acuminate apex. Inferior appendage triangular, narrow, about half the length of superiors which are 5.5 mm long.

Female coloured similarly. Abdomen 47 mm. Hindwing 49 mm. The anal-loop (of type) made up of 12 cells; segment 9 about one third longer than 8. Anal appendages short, very narrow, spine-like structures, slightly shorter than segment 9.3 mm long.

Habitat: TROPICAL AFRICA: CONGO: Lubumbashi, Elisabethville. Apparently a rare species distinguished by the shape of its anal appendages and its bright yellow legs without dark markings.

Gynacantha hova FRASER, 1956.

Gynacantha hova FRASER, 1956, *Faune de Madagascar*, 1, *Insectes Odonates Anisoptères*: 10.

Abdomen 44 mm. Hindwing 41 mm. Pterostigma 4 mm.
 Head: labium, labrum and face pale olivaceous changing to pale

green and then bluish on frons where is found a thick black T-shaped marking, flanked by a bluish spot. Thorax pale olive brown (probably green during life), darker on the dorsum. Legs dark brown to black with a yellow line on the inner surface of the anterior femora

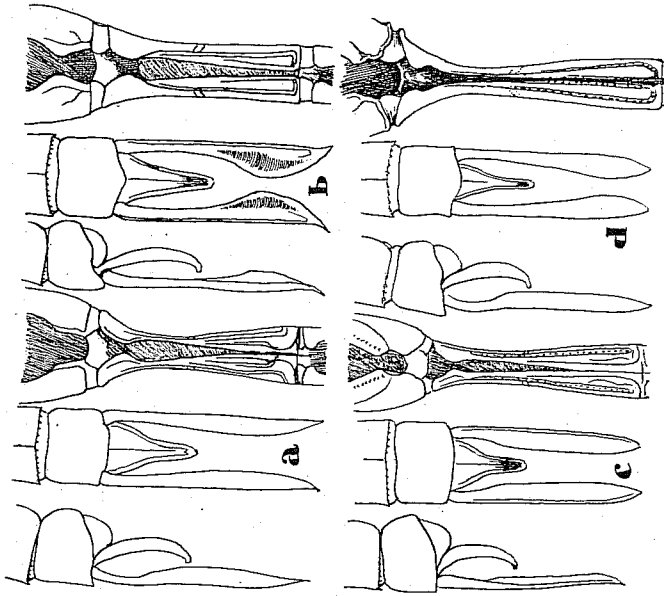


Fig. 5. - Male anal appendages of, - a, *G. flavipes* FRASER, b, *G. humaculifrons* FRASER, c, *G. nigeriensis* GAMBLIS, d, *G. victoriae* PINHEY. Lateral, dorsal and ventral aspects are shown.

and the base of the others reddish brown. Wings hyaline, extreme bases tinted with yellow and the whole wing, in old adults, becoming increasingly infuscated; pterostigma very dark brown; only 4 secondary antenodals separating the two primaries in forewings, but 5 in

than 8. Segment I and the base of 3 olive green, the remainder of the abdomen dull olive brown, with the nodes and jugal sutures darker. Apical lunules on segments 3 to 8; all these markings apparently bluish during life. Anal appendages: superiors dark ferruginous, 6.5 mm long, narrow at base but broadening to more than twice the width near the apex, the outer border straight, the inner markedly convex and turning outwards at the apical third to meet the outer border as a long tapered point. Inferior half as long as the superiors, triangular with rather obtuse apex.

Female. Abdomen 51 mm. Hindwing 49 mm. Similar to the male but the markings of abdomen more strongly defined. Anal appendages narrowly lanceolate, 6 mm in length.

Habitat: TROPICAL AFRICA: Congo, Lubumbashi, Elizabethville. This, the largest species of Group 2, appears to be rare and is described from a single pair now in the Belgian Congo Museum, type and allotype. It is to be distinguished by the absent T-shaped marking on frons and by the broadened apices of the male appendages.

Gynacantha malgassica sp. nov.

Gynacantha hispita FRASER nec RAMBUR, 1956, *Faune de Madagascar*, *car.* 1, *Ins. Odonates*, 9.

Male. Abdomen 50 mm. Hindwing 48 mm. Pterostigma 5 mm. Head; labium and labrum bright ochreous, face and frons dull olivaceous; black T-shaped marking on frons with blurred outline. Thorax dull olive green during life, fading to reddish brown after death; legs pale ochreous to ferruginous. Wings evenly unfurled with yellowish brown; venation close, 8 secondary antenodals between the two primaries, 24 antenodals to forewings, 10 to 12 cells in anal-loop, 3 cells in anal triangle which is almost equilateral, the tornus very broadly rounded. JA and CuP very close together at base in hindwings, with only 1 row of cells separating them; 3 rows of cells between forks of Rs and a maximum of 5 cells in the Radial plane and 4 in the Medial. Abdomen without constriction of segment 3, the whole dull reddish brown with a suspicion of paired yellow lunules at jugal sutures and apical ends of segments. Anal appendages: superiors 6 mm in length, lanceolate, basal third a narrow petiole, the remainder blade-shaped, expanding convexly medially to double the width of the petiole and to nearly as far as the apex, then narrowing to a point which is almost in line with the outer border of appendage. Inferior appendage triangular, very narrow, not quite half the length of superiors.

Female unknown.

the hind; 19 to 21 antenodals in forewings; anal triangle 3-celled; 11-12 cells in anal-loop; 3 rows of cells between forks of Rs; a maximum of 4 cells deep in the Radial and Medial planes; wings relatively broader and shorter with apices more rounded than in most species. Abdomen with segment 3 markedly constricted, segment 1 and basal half of 2 pale yellow, the rest dark olive brown with narrow lunules of yellow on the jugal sutures and apical ends. Anal appendages: superiors lanceolate, outer border straight, inner convex, the basal third narrow, then gradually broadening almost to as far as apex which ends in an acuminate apex. Inferior narrowly triangular, less than half the length of superiors, pale yellow with black apex.

Female. Abdomen 43 mm. Hindwing 40 mm. Pterostigma 3.5 mm. Coloured similarly to the male but head of T-marking on frons indistinct and yellow lunules on apical ends of segments 3 to 7 more conspicuous. Segment 3 as constricted as in the male; segments 8 and 9 of the same length; anal appendages unknown (lost in the only female known).

Habitat. MADAGASCAR: Ambilobe. Distinguished by the few antenodals separating the primaries, by the comparatively broad wings with rounded apices and by the equally long segments 8 and 9 in the female. Closely related to *manderica* by these characters but differing by the dark coloured legs, the better defined black T-mark on frons of the male, by the pale colouring of base of abdomen and the yellow lunules on segments 3 to 8. *Hova* also has 5 secondaries separating the primaries in the hindwings, instead of 4 in all wings of *manderica*. It is probably an insular race of the latter species.

Gynacantha immaculifrons FRASER.

Gynacantha immaculifrons FRASER, 1956, *Rev. Zool. Bot. Afr.*, 54: 3-4: 385, fig. 2, c and b.

Abdomen 56 mm. Hindwing 45 mm. Head: labium and labrum bright ochreous, face bright olive green, frons pale yellow without any conventional T-shaped marking. Thorax pale olive green. Legs ferruginous, the tibiae and tarsi bright yellow. Wings hyaline; pterostigma pale yellow with black borders, 5 mm long. Venation rather open, 5 to 6 secondary antenodals separating the primaries; 8-10 cells in anal-loop; 22-23 antenodals in forewings; anal-triangle 3-celled; 3 rows of cells between forks of Rs and a maximum of 4.5 cells in the Radial and Medial planes. Abdomen with segment 3 barely constricted (fig. 2, b), the pleurites strongly divergent; in the female, segment 9 about one-third shorter

Habitat: Madagascar: Maroansetra; Ambodivoanegy. The female mentioned by me was from Mauritius. The male differs from *bispina* by segment 3 of the abdomen not constricted and by the superior anal appendages gradually dilating instead of with a maximum breadth near apex. The T-marking on frons is less distinct and the pterostigma is shorter. Possibly the *bispina* reported from E. Africa belong here.

Gynacantha manderica GRÜNBERG.

Gynacantha manderica GRÜNBERG, 1902, S. B. Ges. natur. Fr. Berl. 9: 234; — Id. 1903, *Ergebn. Nyassa, Zool. Jahrb.*, 6: 711. — RIS, 1921, *Ann. S. Afr. Mus.*, 18: 360, Pl. 8, fig. 7. — PINNEY, 1951, *Mem. Transvaal Mus.*, 5: 180. — MARTIN, 1909, *Cat. Coll. Selys, Aeshnines*, 19: 187, fig. 192. — FRASER, 1949, *Mission de Witte, Parc Upeimba*, 38 (1): 17. — PINNEY, 1961, *Survey of Odonata E. Africa*, Brit. Mus., 161, Pl. 7, figs. 9, 19.

Male. Abdomen 42-44 mm. Hindwing 37-40 mm. Overall colouring olive green, fading to dull reddish brown after death; T-marking on frons with bulbous base and stem, the crossbar variably distinct. Wings broad and with markedly rounded apices. Venation as in *hova* but only 4 instead of 5 secondary antenodals between the primaries in the hindwings. Superior anal appendages blade-like, the basal two-fifths a rather thick petiole, the remainder of even breadth with parallel sides and the apex pointed (The figure in *Cat. Coll. Selys*, No. 192 loc. cit. is a good one).

Female. Abdomen 44-46 mm. Hindwing 46-48 mm. Similar to the male in colouring. Anal appendages lanceolate 6 mm in length. Segment 9 but little shorter than 8.

Habitat: TROPICAL AFRICA but far more common in the east. PINNEY states that in life, the alar axes are blue and the lunules at distal end of segment 3 are also blue. Segment 3 of the male abdomen is markedly constricted. The species is readily determined by the broad rounded wings and the reduced number of secondary antenodals (4 only) between the primaries. PINNEY gives the following localities, — TANGANYIKA: Rukwa Valley. KENYA: Merifano, Tana-Sahaki, Samburu, Thika. UGANDA: Aremo, Labwor Hills. I have specimens taken at "water-holes" by the late HALF-CARPENTER at Lake Albert, and others from Nigeria (Ibadan).

Gynacantha nigeriensis GAMBLE.

Gynacantha nigeriensis GAMBLE, 1956, *Ent. monthl. Mag.*, 92: 194.

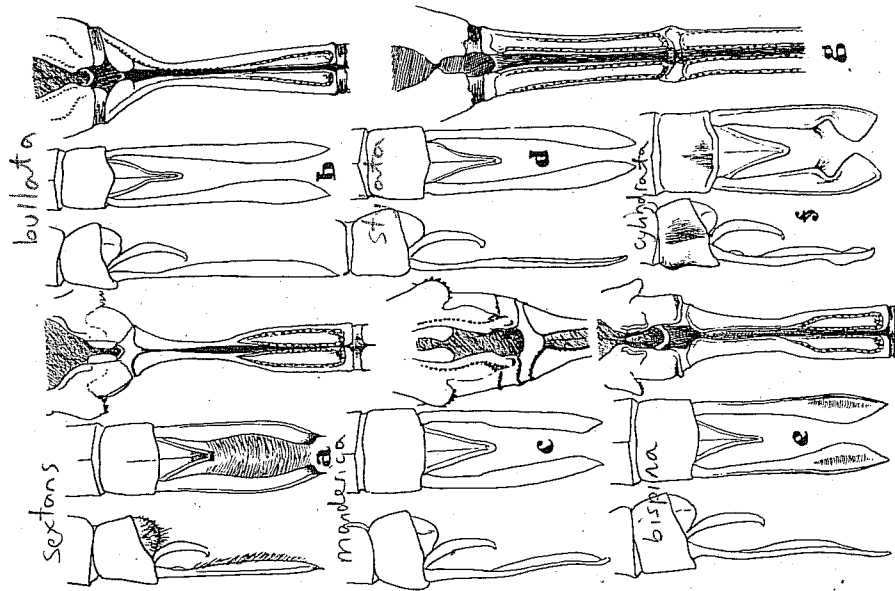


Fig. 6. — Male anal appendages of: — a, *G. sextans* McLACHLAN, b, *G. bullata* KARSCHI, c, *G. mandercica* GAMBLE, d, *G. bispina* MARTIN, e, *G. stylata* MARTIN, f, *G. cylindrata* KARSCHI, g. Ventral aspect of base of abdomen of *G. africana*.

pterostigma brown, 3.4 mm long; venation close, nodal index 17.25/23.16; 6-7 secondary antennodials between the two primaries in forewings, 7-8 in the hind; anal-loop 10-11 celled in the male but 11-14 in the female; anal-triangle 3-celled; 2-3 rows of cells between the forks of Rs; a maximum of 4 cells deep in Radial planate but 3 to 4 or 5 in the Medial. Abdomen olive brown, segment 1 yellow at its base, green along border, segment 2 with a broad green fascia at its base and a second green linear one along the apical border. Segment 3 markedly constricted. Anal appendages: superiors similar in shape to those of *mauriderica*, about 5.5 mm in length; inferior triangular with obtuse apex, less than half the length of superiors.

Female. Abdomen 50 mm. Hindwing 45-48 mm. Coloured similar to the male. Segment 9 nearly twice the length of 8; segment 3 not constricted.

Habitat. NORTH NIGERIA, Vom, 4000 ft.

Gynacantha sevastopoloï PINHEU, 1961.

Acanthagyna sevastopoloï PINHEU, 1961, *Survey of Dragonflies of East Africa*, Br. Mus. publ., 100, Pl. 7, fig. 6.

Male. Abd., and Hw. 45 mm. Pterostigma 4 mm.

A well marked T-marking on upper surface of frons; lips bright ochreous, face olivaceous. Thorax and basal two segments of abdomen green, changing to olive brown after death. Legs dark reddish. Wings hyaline, without yellow basal rays; venation extremely variable, close or moderately close; 5 secondary antennodials separating the primaries; anal-triangle 3-celled; anal-loop 10 to 17-celled, in 3 rows; 3 rows of cells between forks of Rs and a maximum of 4 cells in Radial and Medial planates; 1A and C1+P closely parallel, only 1 row of cells separating them at origin. Pterostigma golden yellow between black veins, 4 mm in length. Abdomen of the same length as wings, segment 3 markedly constricted at its base; superior anal appendages 6.5 mm long, blade-shaped, outer border straight, inner border convex for about its apical three fifths, apex acuminate; inferior appendage narrowly triangular, tapering from base to apex, slightly more than one third the length of superiors.

Habitat: UGANDA: Kampala forests. The species appears to be distantly related to *siyitata* but the appendages are broadened for the greater part of their length and the wings are devoid of basal amber rays. For other differences see the description of *siyitata* which follows immediately.

Male. Abdomen 50 mm (including appendages). Hindwing 45 mm. Head: labium, labrum and face olive brown to olive green, the frons bluish with an ill-defined black T-marking, the antealar sinus out as traced posteriorly. Thorax olive brown, the antealar sinus and wing axes dark green. Legs brownish yellow. Wings hyaline;

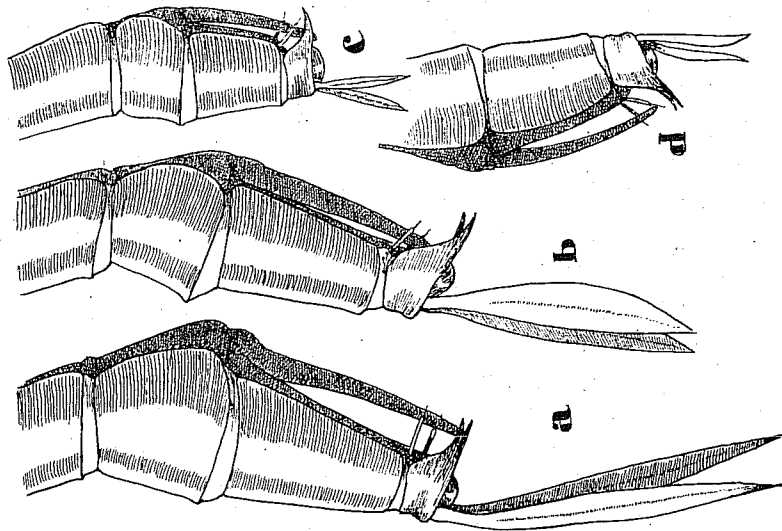


Fig. 7. - End segments, anal appendages and ovipositor of the females of a, *G. africana*, b, *G. cyathraia*, c, *G. nigeriensis* GAMBLES.

Gynacantha stylata MARTIN, 1896.

Gynacantha stylata MARTIN, 1898, *Mém. Soc. Zool. France*, 9: 106.
 — Id., 1909, *Crit. Coll. Selys*, 20: 181. — GARDINER in CAMPION,
 1913, *Percy Sladen Exp.*, 28: 440.

Male. Abd. 49 mm. Anal appendages 7 mm. Hw. 46 mm. Pt. 4 mm.
 Face olive green with a dark brown T-marking on frons; syn-
 thorax and the first two segments of abdomen olive green with a
 yellow subdorsal spot on segment 2 lining the oreillets; segment 3
 with linear jugal and apical paired annules; abdomen otherwise
 dark blackish brown. Legs reddish brown, extensor surfaces of
 tibiae bright yellow. Wings suffrornated at bases to as far as triangles,
 but in the costal field to as far as the nodus where the cells are
 infuscated at their middles; 6 secondary antenodals separating the
 primaries; 24-26 antenodals and 19 to 20 postnodals in forewings;
 18 antenodals and 20-21 postnodals in the hindwings; 89 *Cu₁* in
 forewings, 7 to 8 in the hind; anal-loop 10 to 12-celled; anal-triangular
 5-celled; *Rs* forking with 3 rows of cells and a maximum of 4 cells
 deep in the Radial and Medial planates. Superior anal appendages
 7 mm in length, narrow in basal two thirds, broadened in the apical
 third and then contracting again to a point in continuation of the
 midrib. Inferior appendage one third as long, very long and narrow.
 Female. Coloured similar to the male but yellow tint of wings ex-
 tends along the costa to as far as pterostigma which is 4.5 mm in
 length. Anal appendages 6.5 mm in length, lanceolate, narrow, red-
 dish brown.

Habitat: SEYCHELLES. The above description has been taken from
 a male collected by E. S. BROWN, Cascade, Praslin, 22.VII.52. That
 of the female from the allotype in the British Museum. The species
 is probably locally common but rare in collections owing to poor col-
 lecting in the Seychelles. It may be distinguished by the 5-celled anal-
 triangle, by the shape of the superior anal appendages which are like
 the outline of an Indian Club and by the yellow tinting of the costal
 border. The female, by the last character and by its very long flat
 anal appendages. The reports of this species having been taken on
 the mainland of Africa, I believe to be quite erroneous, as in the
 somewhat similar case of the insular species *bispinta* RAMBUR.

Gynacantha sulensis BALINSKY, 1960.

Male. Abd. 53 mm. Hw. 45 mm. Pterostigma 4 mm.
 Head: labium and labrum ochreous, face olivaceous. T-marking
 on frons with narrow stem and restricted cross-bar. Thorax and

basal two segments of abdomen olivaceous but probably green du-
 ring life. Wings hyaline, with sharply defined yellow rays in the
 subcostal and median spaces; pterostigma golden yellow between
 black nervures. Venation moderately close but variable, 6 secondary
 antenodals separating the primaries; anal-triangle 3-celled; anal-loop
 with only 9 cells, small and compact; 2-3 rows of cells between forks
 of *Rs*; and a maximum of 5 cells in the Radial and Medial planates.
IA and *Cu₁* closely parallel, *I* cell deep. Segment 3 of abdomen
 markedly constricted. Superior anal appendages 5.5 mm, rather si-
 milar to those of *usanibarica* but with a distinct although slight un-
 dulation of the medial border; otherwise blade-like and with pro-
 longed spinous apex. Inferior appendage half the length of superior,
 rather abruptly narrowed almost from base. Legs dull brown.

Female similar. Abd. 53 mm. Hw. 47 mm. Venation closer, 11-12
 cells in anal-loop. Anal appendages 4.5 mm long, lanceolate; segments
 8 and 9 of equal length, and segment 3 as constricted as in the male.

Habitat: NATAL: Umsingasi Swamp, Richard's Bay. Described
 from a pair taken by Dr. BALINSKY, 28.XII.59, and named by him as
sulensis. This pair differs from two specimens of *Gynacantha* sent
 to me by him in 1958 but which were also taken in the same habitat.
 I determined these as races of *manderica* or as a species close to
 that species. The present pair closely resemble *usanibarica* Störm.,
 differing by the more open venation and the slight but distinct un-
 dulated inner border of the superior anal appendages of the male.

Gynacantha usambarica Störm., 1908.

Gynacantha usambarica Störm., 1908, *Jahrb. Ver. Naturk. Mann-
 heim*, 71-72: 48. — Id. 1909, *Kilimandjaro-Meru Exp.*, 2 (14):
 36, pl. 2.

Acanthogavia usambarica PINNEY, 1961, *Survey of Dragonflies, E.
 Africa*, Br. Mus. pub.: 99, pl. 7, figs. 5, 14.

Male. Abd. 46 mm. Hw. 47 mm. Pterostigma 3.5 mm.

Overall colouring olive brown and green, the thorax and base of
 abdomen green (the latter bluish during life as also some punctured
 spots at axes of wings. Legs dull ferruginous; infuscated with black-
 ish. Wings usually limited brownish, deeply so in old adults and with
 yellow restricted rays in the subcostal and median spaces. Ptero-
 stigma yellow framed in black, 3.5-4 mm. Venation rather close: 6-7
 secondary antenodals separating the primaries; anal-triangle 3-celled;
 anal-loop 10-12 cells, in two rows; forking of *Rs* with 2 rows of
 cells increasing to 3 distally; Radial planates with a maximum depth
 of 5 cells, the Medial 4 to 5 cells deep. *IA* and *Cu₁* parallel, *I* row

of cells between proximally. Segment 3 markedly constricted. Superior anal appendages blade-shaped, 5 mm long and narrow, with borders nearly parallel and apex prolonged as a spine. Inferior appendage triangular, not quite half as long as superiors.

Female similar but more darkly coloured; anal appendages rather long for the sex, 4 mm, lanceolate.

Habitat: USAMBARA: Mombi; Kimbozo Forest, Morogoro Ty. May be separated from *sultensis* by the length of wings and abdomen approximately the same; the abdomen considerably longer in *sultensis* otherwise the two species are closely similar.

Gynacantha victoriae PINNEY, 1961.

Acanthagyna victoriae PINNEY, 1961, *Survey of Dragonflies, of East Africa*, Br. Mus. pub.: 101, pl. 7, figs. 4, 13.

Male. Abd. 40-45 mm. Hw. 38-42 mm. Pterostigma 3 mm.

Closely similar to *bullata* from which it can be separated only with difficulty. The black rings on the knees less well defined; tibiae and tarsi dark reddish and black. Wings with yellow tinting at bases and, in older specimens, the apices infuscated. 6-7 secondary antenodal separating the primaries; anal-triangle 3-celled; anal-loop with 10-11 cells; forking of Rs with 2 rows of cells and the Radial and Medial pinnates with a maximum depth of 5 cells; 1A and CuP separated by a single row of cells, closely parallel from origins. Segment 3 of abdomen constricted. Superior anal appendages similar to those of *bullata* but shorter, only 5 mm in length. Female similar but the anal appendages shorter, 3.5 mm, and narrower than in *bullata*.

Habitat: EAST AFRICA: Kateri, Entebbe. *G. victoriae* is quite the smallest species of African *Gynacantha* and its small size will usually be sufficient to determine it, along with its close resemblance otherwise to *bullata*. A specimen in my collection collected by the late Dr. HALE CARPENTER in Uganda has wings and abdomen under 40 mm in length.

Araignées recueillies en 1961 par la Mission Belge au Tibesti

par Jacques DENIS

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Le Tibesti est sans aucun doute, avec le Tassili n'Ajers, une des régions du Sahara les plus ignorées au point de vue arachnologique; en effet 7 espèces d'Araignées seulement en ont été citées (DENIS 1955) et, bien que plusieurs fois du nouveau matériel m'en ait été annoncé, je n'ai vainement attendu jusqu'à présent. Malgré son intérêt porté tout d'abord sur l'étude des sciences humaines, c'est à la Mission Belge de 1961 que nous devons de voir s'accroître un peu nos connaissances sur la faune du massif. La petite collection qu'elle a rassemblée et que m'a communiquée le Musée Royal de l'Afrique Centrale à Tervuren est certes très réduite; elle comprend 16 Araignées, dont quelques jeunes, qui appartiennent au moins à 8 espèces; une seule, *Arcosa cinerea* (F.), figurait déjà sur la liste précédente de sorte que le total passe à 14 espèces dont 12 identifiables; c'est encore bien peu, comparé aux autres massifs.

D'après ces maigres éléments cette faune semble essentiellement saharienne avec des affinités méditerranéennes. Un certain apport éthiopien existe cependant avec *Theridium cuneolatum* TULLIGREN et *Pardosa proximalis* (STRAND). Un *Zodarium*, espèce d'un genre dont le centre de dispersion se situe aux confins désertiques de l'Afrique du nord, paraît nouveau et est décrit ci-après.

LISTE DES ESPECES

Eusparassus waldknereri (SAVIGNY & AUDOUIN).

Bardai, 1 ♀, 4-VI (M.T. 119.351). Zoui, 1 ♀, 4-VI (M.T. 119.352).

La chétotaxie est assez instable chez cette Araignée; l'épine latérale