

THREE NEW SPECIES OF ETHIOPIAN ODONATA

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THREE species of *Nesocordulia* McLachlan have been described—viz., *flavicauda* McLachlan, *rubricauda* Martin, and *spiniicauda* Martin—and to these I now add another. The genus will probably prove to be a large one when more collecting has been done, and I suspect that it has run wild in Madagascar just as its near relatives in the genus *Ictonyx* have done in the Western Ghats of India. My new species was considered doubtfully as *flavicauda* by the late Mr. Morton, but now that I come to examine it critically I wonder why such a determination was ever considered: the inaccessibility of the type and perhaps Martin's rather misleading redescription may have led to this.

Two continental species are also described here, one belonging to the genus *Chlorocypha* Fraser, and nearly related to *C. tenuis* Longfield, the other to the genus *Prodasineura*. Hitherto, only a single species of this latter oriental genus has been found in Africa, and thus it occupied a rather anomalous position: the finding of a second species removes this isolation and shows that the genus, like others related to it, are widespread throughout the Old World tropics.

Nesocordulia masaremeica sp. n.

Male. Abdomen 34 mm. Hind-wing 31 mm.

Head: labium bright ochreous, labrum dark blackish-brown, epistome conspicuously bright chrome yellow flanked by metallic green, frons both in front and above, as well as the vertex, brilliant metallic emerald green, occiput dark brown, behind head and eyes glossy steely blue-black unmarked with yellow. Prothorax dark brown. Thorax brilliant metallic emerald green marked with citron yellow as follows: a short broad well-defined antehumeral stripe on the lower half of dorsum, a large triangular spot just posterior to the humeral suture, an upper and a lower spot on the mesepimeron and an elongate spot on the lower border of the metepimeron. All coxae bright yellow, legs otherwise black. Wings hyaline, uncoloured, membrane white, pterostigma small, black, 2.5 mm., covering one and a half cells; nodal index $\frac{9-13}{8-7}$ | $\frac{12-8}{7-10}$; anal-triangle 2-celled, anal-loop 14-celled,

2 to 3 accessory cross-veins to the bridge. Abdomen slender at base, broadening rather abruptly on segments 7 to 9 but narrowing on 10: dull black marked with citron yellow as follows: segment 1 with a small spot on the ventral border, segment 2 with an oblique oval dorsal basal spot on each side converging but not quite meeting across dorsum, and posterior to them and the jugal suture, two large oval dorsal spots, segment 3 with a linear dorsal spot on each side at base, tapering and inclined medially almost to meet its fellow from the opposite side: posterior to the jugal suture a lateral subdorsal stripe on each side quite out of alignment with the prejugal spot; segments 4 to 6 with similar basal spots but the postjugal ones absent: segment 7 with a broad basal ring covering rather less than the basal third of segment and broadly interrupted on the mid-dorsum by the black mid-dorsal carina: remaining segments unmarked. Anal appendages: supracoxal about twice the length of the mid-dorsal carina of segment 10, which latter is raised into a long thin keel with finely corrugated sides and ends in a strong beak-like spine at apical

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border of segment directed straight backwards. The superior appendages pale yellow but rather infuscated at base and apex and coated with long greyish hairs, cylindrical, slightly sinuous in profile, slightly constricted at middle and elongately clubbed at the apical half. Inferior appendage about three-fourths as long, blackish-brown, paler at apex, narrow, elongately triangular, its apex curved up and ending in a small black spine.

Female. Abdomen 35.5 mm. Hind-wing 34.5 mm.
 Colour and markings of head and thorax similar to the male. Wings (left fore-wing missing) hyaline, tinted reddish-brown; all triangles entire; nodal index $\frac{7}{11-8}$; two cubital veins in hind-wings. Membrane white. Abdomen: segment 2 with basal linear spots replaced by moderately large quadrate spots narrowly separated from the apical spot by the jugal suture; segments 3 and 4 similar to segment 3 in the male; segment 5 similar to the male, segment 6 with the basal stripe only but this running straight backwards instead of curved inward, the rest as for the male. Anal appendages shortly luneculate, citron yellow.

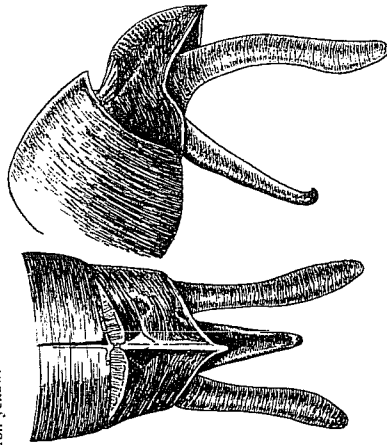


FIG. 1.—Anal appendages of *Nesocentella madaagascariensis* sp. n., dorsal and left lateral aspects

Habitat: A single male from MADAGASCAR: Mandritsara, without further data, purchased from Janson. A single female in the Paris Museum collection, with no data other than Madagascar: this specimen, along with another female, had been determined as *flavicauda* by René Martin, but only one belonged to that species. The male, in my collection, is the **type**: allotype female in the Paris Museum.
 This new species differs from *flavicauda* in the following points: a large quadrate citron yellow spot in centre of face instead of a narrow transverse citron yellow stripe bordered below by dark green metallic; hypervirgines traversed by a single vein in all wings (the wing-figure given for *flavicauda* by Martin, *Cat. Coll. Seligs*, shows the hypervirgine traversed by a vein; McLachlan gave as a generic character, all

triangles free): a higher nodal index (12 to 13 antenodals and 8 to 9 postnodals in *mascarentia* against 18 antenodals and 11 postnodals in Martin's wing-figure, but only 10 antenodals and 8 to 9 postnodals in the type of *flavicauda*: it may be said here that this is only one of the discrepancies existing between McLachlan's and Martin's respective descriptions). No basal spine to superior anal appendages (McLachlan's description gives a robust triangular spine at basal third of superior anal appendages; this is not shown in Martin's figure, although supposed to have been drawn from the type!), the black labrum and the black area behind the head quite unmarked with yellow. The female of *flavicauda* also has yellow rays in the costal and subcostal spaces which are quite absent in the new species: finally, the Paris female of *flavicauda* has all the triangles entire, which seems to be a specific character for this species, if McLachlan's description is correct. The new species differs from *rubricauda* by the head markings as well as those of the thorax and abdomen and by the different shape of the anal appendages; *rubricauda* also has dark basal markings to its wings. Finally the new species differs from *spiniicauda* Martin by the absent dorsal spine on segment 10 and the altogether different shape of the anal appendages: the markings of these two species, however, appear to be closely similar. The generic definition will need amendment to—
 "Hypervirgines free or traversed."¹

Protasineura villiersi sp. n.

Male. Abdomen 33 mm. Hind-wing 29 mm.
 Head velvety black, nuchal only by a narrow transverse creamy white stripe across lower front from eye to eye, its posterior border with three small notches. Prothorax thorax and legs black, the dorsum of thorax between the humeral sutures broadly creamy white except a short space alongside the anterior sinus (fig. 2, *h*). Laterally a narrow white stripe traverses the mesepimeron and a second shorter one the lower part of metepimeron. Abdomen black, segment 1 with an oblique stripe each side converging forwards towards the dorsum, segment 2 with a very narrow mid-dorsal elongate white spot not extending to base or apex, narrow hyaline, annulus distinctly distal to the distal antenodal, the remainder unmarked. Wings hyaline, areculus distinctly distal to the distal antenodal, *Ab* arising well proximal to the level of *Ac* and then rejoining the posterior border of wing at about the level of the middle of the quadrilateral as in *P. vittata* (Seligs); 15 to 16 postnodals to fore-wings, 14 in the hind; pterostigma small, nearly quadrate, black.

Female. Abdomen 38 mm. Hind-wing 24 mm.
 Head as in male, but the frontal stripe slightly interrupted at its middle; there is also an obscure dark ochreous spot on the outer side of each ocellus on the vertex. Prothorax black with a pale yellow stripe on each side broadening on the middle lobe but only just invading the anterior and posterior lobes. The latter with its posterior border infolded to form a medial notch which divides the lobe into two subquadrate lobes: at the base of the middle lobe of the prothorax and to the outer side of the posterior lobe, a fine digitate process springs and inclines forward so as nearly to impinge on the dorsum of the middle lobe (similar to the same processes found in *Edithanura pruinosa* (Seligs)). Thorax velvety black with narrow creamy yellow antehumeral stripes extending upwards for about five-sixths of the length of dorsum and tapering abruptly to a point just short of the anterior

¹ Since the above was written, both Miss Longfield and I have examined the type of *flavicauda* McLachlan in the McLachlan collection and we find the basal spine on the superior anal appendages present just as we described by McLachlan.

sinus. The sides pale yellow from a level just short of the humeral suture and traversed by a broad black stripe centred over the postero-lateral suture: a second narrower stripe borders the lower part of the metapleuron and border of pectus. Legs black, coxae and trochanters yellow. Wings hyaline: pterostigma olivaceous brown, framed narrowly in paler and then black nervures, covering one cell, diamond-shaped, very oblique and acutely pointed at both ends. Abdomen velvety black, the sides of segments 1 and 2 and extreme base of 3 yellow, forming a complete ring at base of latter. Venter scale robust, extending to end of abdomen, blueish.

Habitat: A single male from CÔTE D'IVOIRE: Yapo, 80 km. north of Abidjan, x.46 (coll. A. Villiers, after whom this new species has been named in recognition of much valuable material placed at my disposal). A single female from W. AFRICA: Atok, vii.39 (coll. Dr. Lepesme). The only other species of *Prodasineura* found in Africa is *vittata* (Selys), and this has a simple linear antehumeral stripe on each side of dorsum of thorax so cannot possibly be confused with the new species. Selys expressly stated that *vittata* female was without armament on the posterior lobe of prothorax although this is difficult to believe. Cowley's definition for the genus *Prodasineura* gives the female as possessing armature on the prothorax: it should be "with or without armature to posterior lobe of prothorax." Type male of *P. villiersi* in the Institut Français d'Afrique Noire, Dakar. Female allotype in the Paris Museum.

Chloroerypha molindica sp. n.

Male. Abdomen 20 mm. Hind-wing 22 mm. Head mainly velvety black, the extreme base of labium brownish, a bright yellow transverse stripe across vertex from eye to eye made up of a triangular spot against each eye and two medial angulated spots which partially enclose the ocellar space in front and at the sides: small triangular postocular spots and a narrow stripe bordering the ocellus. Prothorax with a large oval spot on each side, the middle lobe and a mere point at each outer end of the posterior lobe chrome yellow. Thorax velvety black marked with greenish-yellow as follows: complete antehumeral stripes expanded into a triangular spot at the upper part and very broadly confluent with a vesigial humeral stripe at the lower end, the hook thus formed facing outwards (i.e., quite opposite to what is found in nearly all other species); laterally a broad stripe on the mesepimeron and a large triangular spot on mesopleuron. Beneath thorax yellow traversed from side to side by three black lines. Legs entirely black. Wings hyaline tinted with pale amber yellow at bases as far out as veins along the costa and to end of quadrilateral at middle of wing: pterostigma black, 2 mm. in length: 10 to 11 antenodials and 18 to 23 postnodals in all wings: quadrilaterals traversed only once (rarely twice): petiole of wing ceasing at level of second antenodal vein. Abdomen blood red on dorsum, black beneath: segment 1 with a large oval spot each side and segment 2 with a narrow lateral stripe of chrome yellow; the latter segment also with a mid-dorsal blood-red spot shaped like an egg in an egg-cup, the stem and stand of the latter resting on apical border of segment. Segments 3 and 4 with narrow subapical horizontal projections of the lateral black on dorsum but not quite meeting in the middle line: all segments with fine apical black rings. Anal appendages black, of the usual stilet-like shape of the genus.

Female. Abdomen 19 mm. Hind-wing 25 mm.

Head very similar to that of the male but the markings rather more extensive and there is an additional rounded spot on the upper surface of epistoma; prothorax as in the male; thorax with the humeral stripe well developed and extending for about two-thirds the length

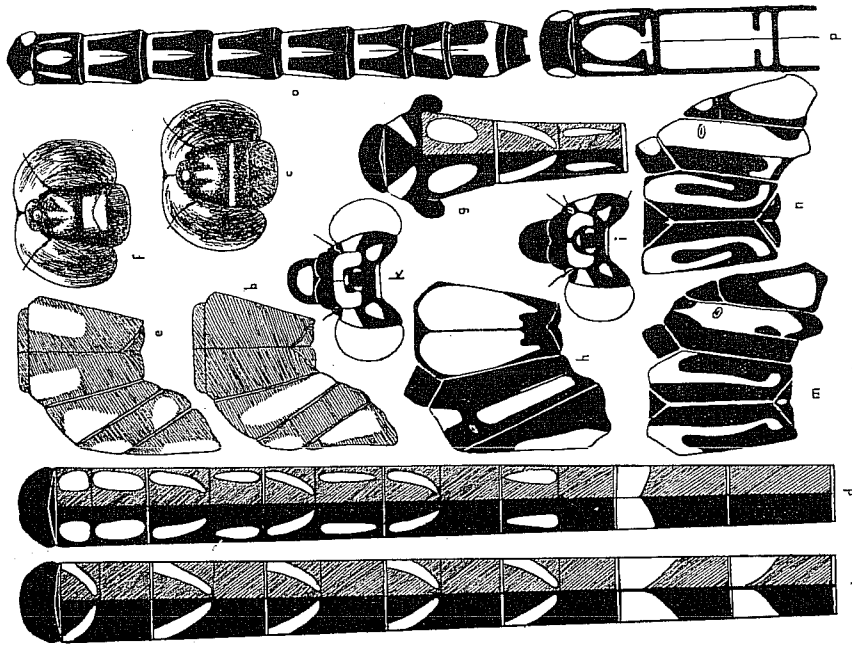


FIG. 2.—*Neoscarditia flavicauda* McLachlan: a, abdomen of female; b, markings of thorax; c, head. *Neoscarditia masera* sp. n.: a, abdomen of female; b, markings of thorax; c, segment of abdomen of *Neoscarditia masera* sp. n.; d, thoracic markings female; e, the same of male; f, thoracic markings of male of *Chloroerypha molindica* sp. n.; g, the same of female; h, abdomen of female; i, basal segments of abdomen of the male of the same species.

of dorsum; laterally there is an additional juxta-humeral spot on the upper part of sides and two additional small rounded spots below. Legs black but coxae and trochanters yellow. Wings hyaline, untinted, pterostigma and venation exactly as in the male. Abdomen of primitive colour and markings: segment 1 with a large yellow spot on each side, segment 2 with a mid-dorsal spot, and narrow lateral stripes of greenish yellow extending nearly the whole length of segment, segments 3 to 7 black on dorsum with yellow basal rings from which project three prongs extending nearly the whole length of segments and resembling inverted tridents; segment 8 black with a mid-dorsal triangular spot with its apex directed basalwards, segment 9 with a mid-dorsal stripe confluent with a broad apical stripe of greenish yellow, segment 10 and the long acuminate anal appendages black.

Habitat: Two pairs BELGIAN CONGO: R. Molindi, 11.v.34 (coll. Prof. G. F. de Witte). This species resembles *C. tenuis* in the reddish colouring of its long slender abdomen without conspicuous black markings: in this new species, however, segment 2 has a conspicuous mid-dorsal spot of the ground-colour enclosed by black. The dorsal marking of the thorax is also closely similar to that of *tenuis* so that these two form a small group apart from the rest of the genus. *Type* male and allotype female in the Congo Belge Museum.

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