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An Introduction to the Robber Flies (Diptera: Asilidae) of Southern Africa

by

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SYNOPSIS

The area covered by this paper comprises South Africa, South West Africa, Botswana, Rhodesia, Moçambique, Lesotho and Swaziland. After a brief account of morphology, a key to tribes is followed by keys to the genera in each tribe; some extralimital genera are included. The tribes follow in the same order as in the first key, and the genera in each tribe are in alphabetical order, with a few exceptions among Asilini. Keys to species are given where possible, with the original reference, location of type, type-locality, and distribution. In many of the bigger genera I consider that existing knowledge is insufficient for a meaningful key to be attempted. The following new taxa are proposed: GENERA—*Prytania*, type-species *P. albida* n. sp.; *Laphystotes*, type-species *Dasythrix albicans* Engel, 1932. SPECIES—*Acnephalum cylindricum*; *Daspletis salicior*; *Gonioscelis ceresae*, *truncatus*; *Holopogon vumba*, *tomentosus*; *Hypenetes morosus*, *rotundus*, *irwini*, *nigrispina*, *galactodes*, *greatheadi*, *miles*, *sturmias*; *Pycnomerinx cogani*, *moremensis*, *gweta*; *Rhabdogaster meilloni*, *rusticus*; *Sisyrnodytes sericeus*, *vestitus*, *defusus*, *diplocus*; *Stenopogon trivialis*, *atrox*, *armatus*, *braunsi*, *confrontus*; *Stichopogon umkomaasensis*; *Anypodetus arachnoides*, *rigidus*, *unicolor*; *Gerrolasius krugeri*; *Lamyra rossi*, *greatheadi*; *Laphria multipunctata*; *Laxenecera cooksoni*, *engeli*; *Nusa ingwavuma*; *Prytania albida*; *Trichardia terminalis*, *lucifer*, *turneri*, *apicalis*; *Oligopogon enigmatus*; *Ommatius harlequin*; *Congomochtherus acuminatus*; *Oxynoton arnaudi*.

INTRODUCTION

Robber flies are among the most attractive of Diptera, not only by their structural variety, but even more by their hunting behaviour. Each individual seems to be absorbed in its daily business of catching other insects, and to go about it methodically, in a pattern that is characteristic of the genus and species concerned. Some robber flies find a point of vantage and sit there with endless patience until a moving object draws them in pursuit; others patrol, usually along a line, by the side of a path, or the edge of a belt of vegetation, returning again and again to the same series of perches. Some robber flies are huge, and powerfully armed to tackle dangerous prey such as wasps; others are tiny, and find their prey among other insects as tiny as themselves. Empididae, which are often confused with Asilidae, and with some biological similarity, are much less completely predatory, spending much more time either in continuous flight, or feeding from flowers. Asilidae seem to be exclusively predatory; apart from mating and egglaying they spend their adult life in tireless pursuit of prey.

Robber flies are recognized principally by the way in which the eyes bulge upwards, leaving the ocellar tubercle at the bottom of a more or less deep groove. This enlargement of the eyes is undoubtedly associated with the predatory habit, and in most species the facets of the eyes directed forwards are bigger than the others (cf. figs 80–82). The shape of the head varies enormously, as the various drawings in this paper will show, but always the head and forelegs together constitute an efficient apparatus for catching other insects and sucking them dry. This habit is the same in both sexes; there is no question in this family of the females taking extra nourishment to provide yolk for

the eggs—the reason why female mosquitoes and horse-flies suck blood—and since adult robber flies of both sexes are so elaborately designed for predation it seems that asilid larvae must feed poorly, and do not lay up an adequate supply of nutrient to support them in adult life.

Because of this fact, there is generally little sexual dimorphism among robber flies. The sexes are usually easy to distinguish by means of their prominent genitalia but if the tip of the abdomen is broken off this becomes quite difficult, with rare exceptions. The most conspicuous exception is *Laxenecera albicincta*, the males of which are smaller than the females, and almost entirely black, looking like a different species from the larger females with their broad grey abdominal bands (fig. 99).

Robber flies are attractive to collectors, and most museums have drawers of unnamed specimens. They are not, however, as easy to identify as might seem. They are the opposite of, say, Tabanidae, which have few structural characters and depend upon intuitive recognition of a pattern. Asilidae have almost excessive structural characters, but these vary a great deal, and it is always difficult to decide how much individual variation is credible within the range of one species. When he heard that I contemplated publishing a paper on the Asilidae of southern Africa, Dr Hesse of the South African Museum, Cape Town, wrote to warn me that his own tentative sorting of unnamed material forced him to conclude that in most genera—including, for example, *Teratopus*, assumed to consist of only one striking steel-blue species, *Asilus cyaneus* Fabricius—the number of forms, whether species or subspecies, is immensely greater than so far described.

Dr Hesse correctly emphasized that any attempt to name Asilidae from southern Africa meets with two great obstacles. One is the diversity of the material, and the other is the paucity of literature. I am only too well aware of the complexity of the problem, since I have studied African Asilidae on and off since 1937, and most of the genera still remain intractable. I do not think it is possible for one man to make a critical study of all of them. The present paper, therefore, is a small attempt to overcome the second obstacle, and to provide a means by which an interested person can begin to study robber flies from southern Africa. My limited aim is to help such a person to identify the genera, and perhaps some of the more common or better authenticated species, and to give him some indication of the probable size of the genus. I hope that this may encourage naturalists living in southern Africa, and having access to preserved material as well as to the living insects, to study a genus, or a generic complex; such, for example, as the *Neolophonotus* group.

The only comprehensive account of the Asilidae of southern Africa is that given by Loew in his classic paper *Die Dipteren-Fauna Südafrikas*, which was published more than a century ago, and which poses certain bibliographical problems. It appeared in *Abhandlungen des naturwissenschaftlichen Vereines für Sachsen und Thüringen in Halle*, Zweite Band, 1858–1861: 438 pp., 15 plates. This volume contains three papers, of which Loew's is the middle one, and by far the longest. Its pagination is given in the Contents as 57–402, but each of the three papers is also given a separate pagination, with the consecutive pagination in square brackets. Loew's paper therefore has the double pagination xii + [73]1–[402]330; there are four pages unaccounted for between Loew's and the previous paper.

Loew's paper has its separate title-page, dated 1860, and appears to have been

freely issued as a separate; this must have been anticipated in the provision of double pagination. References to it should properly quote *either* the title of the journal together with the page-number in square brackets: *or* '*Die Dipteren-Fauna Südafrikas*' with the smaller page-number that is not in square brackets. For the sake of brevity I have adopted the latter.

There are two more complications:

(*a*) The title-page says 'erste Abtheilung', but as far as I am aware there is no other part.

(*b*) Although many species are stated to be new it will be observed that below the Latin diagnosis there is a line such as this:
'synon. Laparus melasomus Loew. Öfvers. af. K. Vet. Akad. Förhandl. 1857: 344.8.'

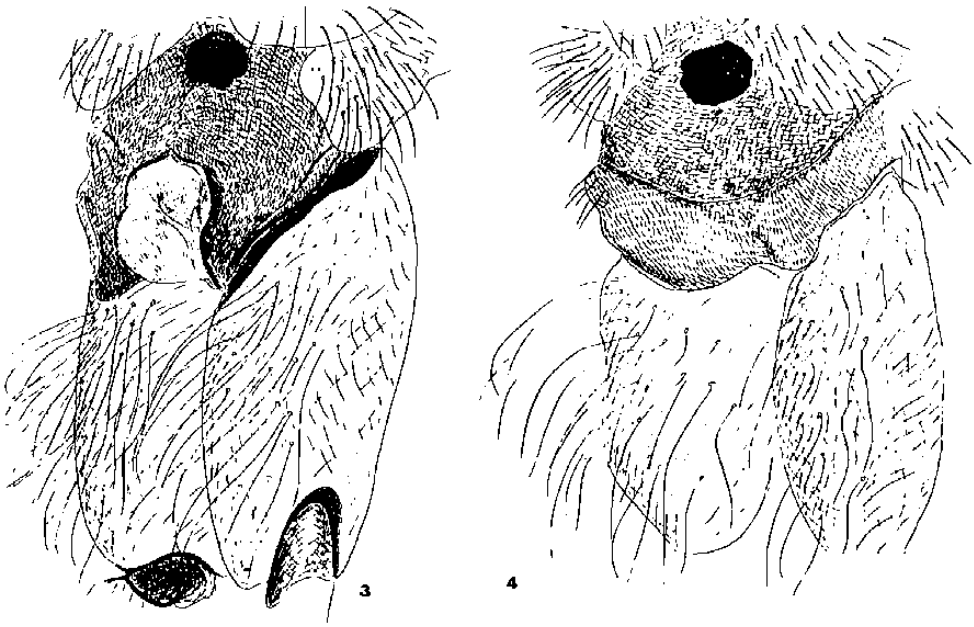
This means that the identical Latin diagnosis was given preliminary publication in the journal cited, volume 14, issued in Stockholm on 14 October 1857. Hence for purposes of priority the earlier paper must be cited, but the *Dipteren-Fauna Südafrikas* is indispensable for practical use because it gives long and detailed descriptions in German, in addition to the Latin diagnoses.

Since 1860 only isolated papers have appeared, and these almost entirely by workers in Europe or North America. Some have appeared in South African journals, but their use was limited by the inaccessibility of the older works with which they needed to be compared. The treatment has been fragmentary, and the results frustrating, if not actively misleading.

Although for many years I have contemplated the possibility of ultimately writing something about the Asilidae of southern Africa, the project would not have taken a tangible form without the eager co-operation of Dr Brian Stuckenberg. He not only promised to try to arrange publication in South Africa of anything I might write on this topic, but immediately, and with great energy, enlisted the aid of the authorities of the various museums to send me lists of the named species in their collections, and large numbers of unnamed specimens. I am deeply grateful to Mr J. van Reenen at the Transvaal Museum, Mr F. Gess at the Albany Museum, and Dr A. J. Hesse at the South African Museum, Cape Town, and of course in particular to Brian himself.

I am all the more regretful that all of them may have received an erroneous impression of the scale on which I would be able to work. Several letters refer to 'the formidable task of monographing the Asilidae of southern Africa', and Dr Hesse gave me a most valuable analysis of the taxonomic difficulties involved. I was only too well aware of these myself, and my original letter said that 'the idea was to give people an idea of the genera, keys to some at least of the species, and references to other described species'.

I have in fact been able to do just this, but it falls a long way short of a monograph. I can only hope that an introductory synopsis of this kind will prove helpful to other people who afterwards work on particular genera, and that such identifications as I have been able to make among the material sent to me on loan will also contribute to this end. The most obvious defect of the paper is that I have made no attempt to provide keys for the specific identification of the big genera: *Microstylum*, *Neolaparus*, *Scylaticus*, *Ommatius* are obvious examples. Keys already exist to some of these, but they are frustrating to use, unless one has a male with distinctive genitalia, which the



Figs 3–4. (3) Prosternum isolated and surrounded by membrane: Saropogonini (*Microstylum*); (4) prosternum 'bridged' to pronotum: Laphriini (*Laxenecera*).

thoracic structure feature little in keys, apart from the shape of the prosternum (figs 3, 4), which is small, and obscure, and invisible to the naked eye. An exception is the *Neolophonotus*-group of Asilini, most of which have a thoracic 'mane' of dense, erect hairs along the crest of the mesonotum.

ABDOMEN. Like the thorax, contributes to the general habitus of the insect, and is sometimes distinctive, chiefly when it is clavate, with a constriction or 'waist' at the 2/3 segments. The chaetotaxy and the superficial pattern of the abdomen are often a ready means of separating two closely similar species, even if, once more, it is easier to appreciate by eye than to describe in words.

GENITALIA. Usually, though not invariably, the genitalia of both sexes are exposed at the tip of the abdomen.

Males. The *hypopygium*, or male genitalia, exhibits a very wide range of variation within the family, but it is always made up from the same elements (fig. 5). Dorsally the ninth tergite or *epandrium* may be complete, but most often is divided into a pair of *upper forceps*, above and beyond which protrude the *anal lamellae* of the tenth/eleventh tergites. The eighth is annular and inconspicuous, and so is the seventh, to a varying extent. Ventrally the eighth sternite is usually evident, triangular in profile, and equipped with long hairs, if not with an actual projection of the sclerite. The ninth sternite is almost invariably split into a pair of *lower forceps*: Hull prefers to call these *gonopods*, to avoid a second use of 'forceps', but I see no objection to this. On the contrary, the use of 'upper' and 'lower' forceps reminds one to check on the extent of

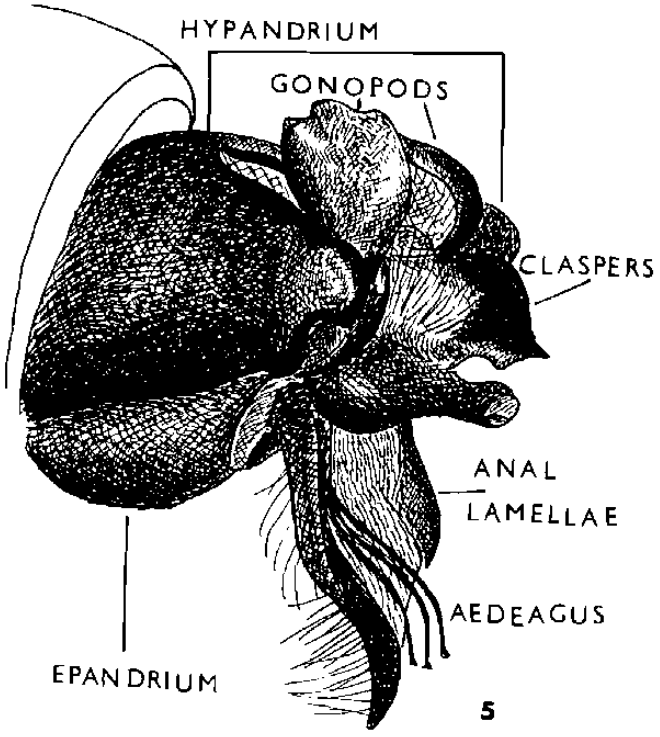


Fig. 5. Male genitalia of *Hyperechia consimilis* Wood; components named.

rotation of the hypopygium, discussed below. On their inner faces the lower forceps bear the *claspers* which act as guides to the trifid *aedeagus*, consisting of penis and parameres, which may be largely fused together, or separated and whip-like. The entire ventral complex is collectively known as the *hypandrium*. Upper and lower forceps have external colouring, similar to that of the rest of the abdomen, though often more bare and shining. Claspers and aedeagus, in contrast, are clear and translucent, and look like structures that are normally concealed.

Rotation of the male genitalia is common in Asilidae, and it is essential to look upon the whole andrium (i.e. epandrium + hypandrium) as being completely mobile about the longitudinal axis. Sometimes the rotation is fixed and permanent, but more often it seems to come about when the two partners change relative positions during coition. The morphological dorsum of the andrium can be established by the position of the anal lamellae, and the morphological venter is that which permits a view into the complex of claspers and aedeagus. Laphriini are characterized by an undivided epandrium, which forms a boat-shaped receptacle for the hypandrium (figs 87–110); rotation through 180° is a normal state in this tribe, but individuals may be preserved with the hypopygium twisted to other angles. The hypopygium shows little or no adaptive modification, and perhaps because of this it is subject to a riot of specific variation. Because the components, especially the two pairs of forceps, are strongly convex, it is

difficult to mount dissected genitalia on a slide, and three-dimensional drawings are needed to compare one species with another. For this reason I have drawn genitalia *in situ*. Specific differences are usually so great that they can be seen without dissection; or at least one should say that there exist many differences that can thus be seen. It would be a mistake to assume that only one species has genitalia of a given shape, however complex that may be. I had an instance of this when a collector in Nigeria brought me a male that agreed with a figure in my paper on Asilidae of the Congo Basin, but the two species differed sharply in other respects.

Females. The ovipositor is nearly always restricted to the eighth and subsequent tergites; only rarely do the seventh and sixth participate (e.g. *Astochia*). Unlike the

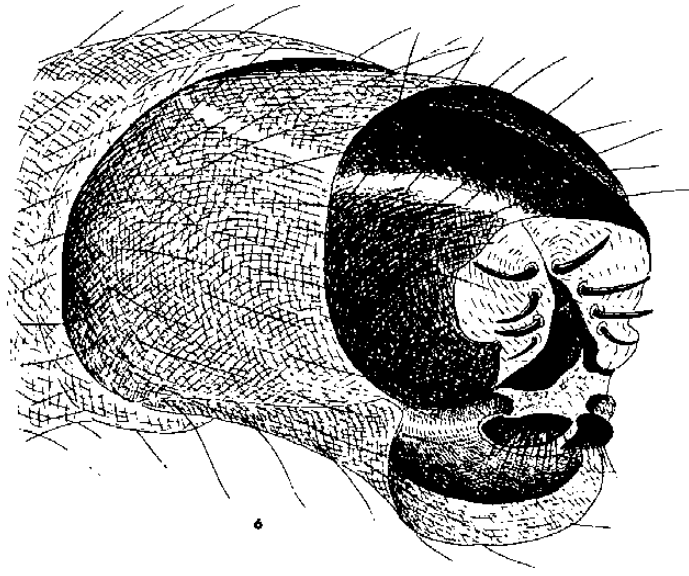


Fig. 6. Acanthophorites in female Saropogonini.

hypopygium, the ovipositor is highly adaptive to the egglaying habits of the fly. Except for Laphriini, which live in wood, larval Asilidae live in soil or sand, and the wide diversity in ovipositors reflects the diversity, not of larval feeding habits, but of the actual sites where the eggs are deposited. The aim here is protection from desiccation and concealment from predators. Most of the apparently more primitive tribes either just drop the eggs (Leptogasterini), or push them into loose soil or sand. The most characteristically adaptive structure in these groups—though it is by no means universal—is the division of the ninth tergite into a pair of *acanthophorites*, or spine-bearing plates, visible as a crown of strong spines pointing backwards at the tip of the abdomen (fig. 6). These are used to hold back the soil or sand while the egg is emerging, releasing

it then to fall in and cover the egg. Acanthophorites are found in several related families of Brachycera, and in Bombyliidae have been associated with the possession of a sand-chamber, an internal cavity in which the eggs are coated with sand before being deposited. Presumably this is an aid to concealment (Mühlenberg 1971). Asilini, which are probably the tribe of most recent evolution, never have acanthophorites. Some genera, notably *Heligmoneura* (and the closely related *Ommatius* of the tribe Ommatiini), have a simple, downturned ovipositor, but in most Asilini the eighth segment is more or less elongate, and may be either laterally compressed (*Synolcus*, figs 159, 160) or cylindrical, with spiny lamellae (not to be confused with acanthophorites), as in *Alcimus*. Ovipositors of these types are a kind of syringe, developed for inserting the eggs either deep into the soil, or into the tissues of plants (Melin 1923).

LEGS. The legs of Asilidae are highly developed for seizing prey. Most Asilidae hunt in flight, with the legs hanging down to form a spiny basket in which the victim is engulfed. A few genera have developed a formidable leg armature, the extreme example being *Gonioscelis* (fig. 26), with mantid-like, raptorial forelegs. Many genera have the hind femora enlarged, most often with the concave surface dorsally, and the ventral surface flat (figs 87, 126), and perhaps armed with bristles or spines. Developments of the hind legs are perhaps often related to sexual display, or to the mating position, and to seizure of prey. Thus in *Ommatius* (figs 125, 126) the males have the more dilated hind femora. The tarsi always have five 'segments' (properly called 'tarsomeres') of which the first, or basitarsus, is nearly always longer than the others. There are two tarsal claws, usually with a pair of pulvilli and a median empodium which is a bristle except in *Empodiodes* (Appendix). Pulvilli are absent in the entire tribe Leptogasterini, and in isolated genera from other tribes: for example *Anypodetus* in Laphriini, *Sisyrnodytes* and *Acnephalum* in Saropogonini and *Sporadothrix* in Stichopogonini. The empodium is absent in *Euscelidia* (Leptogasterini). (Figs 77, 85, 162, 163).

WINGS AND WING VENATION. Most Asilidae are strong fliers, and have relatively narrow wings: a few, e.g. *Rhipidocephala* (fig. 111), have broad, lightly loaded wings, which they flap slowly as they flit about among grass stems, or in the shade. The venation is complete, with all branches of R and M present, and sometimes (*Promachus*-group of Asilini) a supplementary vein from the fork of R_{4+5} completes three submarginal cells (figs 135–8). The presence of so many veins makes for the maximum number of possible variations, and since venation is extremely constant in asilid species it is of major importance as a taxonomic character. The principal variations are closures of cells along the wing margin, that of the marginal cell (by the meeting of veins R_1 and R_{2+3}, figs 12, 53, 84, 131) being the first thing one looks for in an asilid wing. This enables the eight tribes recognized in the Key on p. 10 to be divided into two groups of four, and I know of no exceptions, apart from the genera related to *Laphystia*, which many authors place in a tribe Laphystiini, but which I merge with Laphriini. Here the tip of R_{2+3} is curved back on itself to a varying extent, and may or may not make contact with R_1 (figs 97, 108).

The other cells that are commonly closed are the first posterior (by the meeting of R_5 and M_1) and the fourth posterior (by meeting of M_3 and M_4, fig. 108). The latter is a relatively constant character which can usually be relied upon, whereas the closure of

the first posterior cell is subject to individual variation, and may even differ between the two wings of the same insect. Nevertheless this can be a useful spot character, which speeds up identification.

SIZE AND GENERAL APPEARANCE. The range of size among Asilidae is greater than that of almost any other family of flies except Tipulidae, and the variation in appearance goes far beyond the limited range of crane flies. The tiniest *Stichopogon* is only 3 mm long, but robustly built, with short, broad abdomen and strong legs. *Microstylum magnum* Bromley, from Madagascar, is a huge fly, with a wing-span of 80 mm. This fly has a narrow, cylindrical abdomen, but there are other big *Microstylum* that are 40 mm and robust, like a much enlarged version of *Stichopogon*. The relative volumes of these two flies are in the ratio $40^3 : 3^3 = 64\,000 : 27 = 2\,370 : 1$. Some robber flies are very slender and fragile. The whole tribe Leptogasterini exhibit what Janssens has called 'agrionism', that is they have the elongate body, wings and legs that we associate with zygopterous dragonflies (damselflies). This appearance is not exclusive to Leptogasterini: *Rhabdogaster* and *Heteropogon* in Saropogonini, and *Oligopogon* in Xenomyzini are small and elongate, but the presence of pulvilli distinguishes them at once from Leptogasterini. On the other hand a few genera without pulvilli that are not Leptogasterini are distinguished at once by their more robust shape.

Generally speaking, Leptogasterini are slender, elongate, mostly small, and all without pulvilli, or the alula of the wing; Stichopogonini are mostly small, grey, dusty, with the vertex of the head hollowed into a saddle-shaped depression (figs 81, 82); Xenomyzini 'goggle-eyed', mostly small and dark; Laphriini looking like bees or wasps; Atomosiini like tiny bees, or sawflies; Asilini dull, grey, bristly, with relatively elongate abdomen, more clearly 'flies' than the rest; Ommatiini similar, but with feathered antennae; and finally Saropogonini, difficult to define in a sentence, but a wide variety of genera, not clearly belonging to any of the other tribes, and united by the completely isolated prosternum (fig. 3).

The drawings of whole insects in this paper have been made under a zoom binocular microscope, to a scale convenient for recording detail. They give no indication of the natural size of the fly compared with others. An approximate figure in millimetres for the overall length is given in the caption, but this should be used with reserve, making allowance for the considerable individual variation that occurs in some species, for example *Stiphrolamyra diaxantha*, fig. 106.

KEY TO TRIBES

1. Marginal cell of the wing open: veins R_1 and R_{2+3} reaching the wing-margin quite independently (figs 12, 53), or else tip of R_{2+3} curved forwards and even towards base of wing (figs 97, 108) 2
- Marginal cell of wing closed by the union of veins R_1 and R_{2+3}, which continue as a single vein, forming a short stalk (figs 84, 127, 156) 6
2. Very elongate flies (fig. 7) with long, slender legs. Puvilli entirely absent, and tarsi curved into a grasping organ, especially those of hind legs. Third antennal segment short, ovoid, with a bristle-like arista ..... **Leptogasterini**
- Pulvilli nearly always present. If they are absent, then third antennal segment is stout, often elongate, and ends in a short style (fig. 86). A few genera are slender and elongate, but mostly they are robust 3

3. Prosternum isolated and surrounded by membrane (fig. 3). Female always with ninth tergite divided into two spine-bearing plates (acanthophorites: fig. 6). A wide variety of shapes, from small, furry species to very large and bare flies..... **Saropogonini**
- Prosternum completely developed, touching sides of pronotum and fore coxae, leaving little or no membrane visible between them (fig. 4).....4
4. Vertex more or less saddle-shaped (figs 80–82), or at least with the eyes much more widely separated at vertex than they are at antennae. Dusty grey flies, cryptically coloured, and well concealed in the sandy and stony habitats in which they are found. Often very small (4–5 mm), only rarely bigger and more robust (*Clinopogon*, on sea beaches) ..... **Stichopogonini**
- Vertex not saddle-shaped, and frons not divergent in this way. Not dusty grey flies, but either matt brown or bare and shining.....5
5. 'Goggle-eyed' flies (fig. 2): eyes flattened in a fore-and-aft direction, so that most facets face forwards, and the centre ones are even bigger than usual; frons much reduced and deeply sunken between the eyes. Either robust, shining brown flies often with strong bristles on hind femora (*Xenomyza*), or very tiny, fragile, matt-brown flies with dark wings (*Rhipidocephala*); if elongate with acanthophorites and small discal cell, see *Oligopogon* ..... **Xenomyzini**
- Not 'goggle-eyed'. Robust flies with cylindrical, well-rounded abdomen and usually inverted, boat-shaped male genitalia. A general resemblance to *Laphria*, but vein R_{2+3}, instead of completely closing the marginal cell, curves round towards costa in a characteristic way (figs 97, 108)..... **Laphriini**: genera related to *Laphystia* [Hermann's *Prytaniinae*: Hull's *Laphystiini*]
6. Antennae blunt, third segment club-shaped, with only a tiny apical style. If antennae are broken, look for one or more bristles on *posterior* margin of mesopleuron, just in front of wing-base and a robust, blunt-ended abdomen, often bare and shining, perhaps punctate.....7
- Antennae with a slender arista, sometimes feathered. If antennae are broken, then no mesopleural bristles *posteriorly*, but sometimes present on *dorsal* margin of mesopleuron. Elongate, bristly flies, of dusty grey appearance, rarely bare and shining 8
7. Small flies resembling sawflies. Vein M_3 straight, and parallel with outer margin of discal cell, often in line with it (fig. 122) ..... **Atomosiini**
- Usually bigger, often like wasps or bees; sometimes very small. Vein M_3 only rarely in line with outer margin of discal cell (one South African genus: *Anypodetus* (figs 84–86), a bee-like genus with no pulvilli), and usually distinctly curved ..... **Laphriini**
8. Arista of antennae feathered. If the antennae are broken, members of this tribe can often be recognized by their smoothly rounded, rather bare head, and in particular by often having a series of paired bristles extending upwards from mystax towards antennae. Postoccipital bristles usually proclinate (abruptly curved forwards over eyes: fig. 125) ..... **Ommatiini**
- Arista of antennae bare. If the antennae are broken, head not of the shape shown in fig. If postoccipital bristles are proclinate (*Neoitamus*; some of *Neolophonotus*-

group), then the fly is very bristly, and may have a strongly developed facial tubercle (figs 155, 158) ..... **Asilini**

KEY TO SOUTH AFRICAN GENERA OF *LEPTOGASTERINI*

1. Pronotum with a bifid process standing vertically between the two processes of the fore margin of the mesonotum (fig. 8). Bare, shining flies with little tomentum, pattern mainly arising from differently coloured sclerites .. **Euscelidia** Westwood
- Pronotum without such a process; quite flat between the two mesonotal processes. Thorax and abdomen sometimes bare, usually with dusty tomentum, which sometimes forms a pattern 2
2. Hind femora and tibiae strongly swollen, with thick, erect hairs (fig. 7) ..... **Lasiocnemus** Loew
- Hind femora and tibiae never covered with thick, erect hairs, and usually quite slender ..... **Leptogaster** Meigen; **Lobus** Martin

KEY TO SOUTH AFRICAN GENERA OF *SAROPOGONINI*

If the empodium of the tarsus is pad-like (figs 162, 163), see *Empodiodes*, Appendix.

1. Pulvilli absent. Small bee-like flies with oval abdomen (fig. 66) 2
- Pulvilli present, even if reduced in size 3
2. First and fourth posterior cells closed and stalked; stalked veins fail to reach hind margin, which has no ambient vein along its edge much beyond vein R_4 (fig. 66) .. **Sisyrnodytes** Loew
- First posterior cell open, and fourth usually so. Veins all reach hind margin of wing, which is bordered by an ambient vein (a continuation of costa) as far as anal cell ..... **Acnephalum** Macquart
3. Fore tibia with spur; this takes a variety of forms, and is sometimes difficult to distinguish among the normal hairs and bristles (figs 55, 57) 4
- Fore tibia without spur 6
4. Abdomen club-shaped, constricted basally and expanded towards tip. Third antennal segment also clubbed. Body and legs often elongate 5
- Abdomen and antennae not clubbed. Abdomen stout, not constricted basally. Third antennal segment ribbon-like ..... [*Saropogon* Loew]
5. Head and thorax obscured by long, furry, soft hairs (fig. 57) .. **Pegesimallus** Loew
- Bare flies, with only a few macrochaetae and no soft hairs (fig. 55) ..... **Neolaparus** Loew

Species in which the male has conspicuous, scaly fringes on the hind legs are often segregated into **Lagodias** Loew, but the females are doubtfully distinct from *Neolaparus*.

6. Epistoma projecting, giving a nose-like appearance in profile (fig. 51). Proboscis straight ..... **Lycostomus** Hermann
- Epistoma not projecting in this way, though there may be a large facial swelling (cf. *Teratopus* and some *Ancylorrhynchus*) 7
7. Facial knob very prominent, its upper margin arising very abruptly (fig. 71). Body entirely metallic blue, wings black ..... **Teratopus** Loew
- Facial knob not of this shape; if it is swollen, then body is not metallic blue 8
8. Proboscis of strikingly unusual shape 9
- Proboscis of varying length but of normal shape 10

9. Proboscis curved like a parrot's beak (figs 16–20) .... **Ancylorrhynchus** Berthold
– Proboscis straight, but apparently forked, with hypopharynx protruding..... [*Hynirhynchus* Lindner]

As yet known only from TANZANIA: Dar-es-Salaam and KENYA: Diani Beach; possibly a littoral genus.

10. Fourth posterior cell closed with a stalk, thus bringing vein M_3 almost into line with outer margin of discal cell (figs 23, 53).....11
– Fourth posterior cell open, or barely closed on wing margin.....17
11. First posterior cell closed and stalked (fig. 23).....12
– First posterior cell open (fig. 53).....13
12. Costa ending at tip of wing, just beyond vein R_4 ..... [*Eclipsis* Becker]

Described from CONGO: not yet recorded from southern Africa.

– Costa containing round hind margin of wing as an ambient vein (fig. 23)..... **Daspletis** Loew [including *Dioctobroma* Hull]
13. Vein M_1 strongly arched forwards, second posterior cell protruding far into first (fig. 53) 14
– Vein M_1 almost straight; second posterior cell not protruding into first (fig. 54)..1
14. Third segment of antenna hairy on dorsal surface. Second posterior cell peduncu-late at base ..... [*Epiblepharis* Bezzi]

Recorded from CONGO: not yet found in southern Africa.

– Third segment of antenna not hairy on dorsal surface. Second posterior cell sessile, or with short stalk only (fig. 53) ..... **Microstylum** Macquart [including *Oratostylum* Ricardo]
15. Face and frons very narrow; head in front view circular, or even higher than broad (fig. 67).....16
– Face and frons not unusually high; head in front view transversely elliptical, i.e. much broader than high (fig. 65) ..... **Scylaticus** Loew (including **Neodysmachus** Ricardo)
16. Face strongly swollen, with a spiny tubercle ..... **Stenopogon** Loew, *s. stricto*
– Face almost without tubercle ..... **Rhacholaemus** Hermann
17. Head in front view circular, with eyes, frons and face all high and narrow.....18
– Head in front view broader than high.....19
18. Fore femora of both sexes as in figs 26–32, armed below with spines..... **Gonioscelis** Schiner
– Fore femora not armed in this way..**Stenopogon** (Subgenus **Scleropogon** Loew)
19. Basitarsi of fore and middle legs short, not longer than one of the other tarsal segments. Head as in fig. 58 ..... **Pycnomerinx** Hull
– Basitarsus of each leg longer than any one succeeding segment.....20
20. Antennae elongate; third segment straplike, followed by a two-segmented style of similar shape, with an apical notch and spine. Proboscis, in contrast, very short and thick (fig. 33) ..... **Hermanella** Hull
– Antennae not like this. If they are very elongate, then apex differently formed..21
21. Face in profile distinctly swollen.....22
– Face in profile not swollen, though a dense mystax may give this impression....24
22. Third antennal segment strongly clubbed. Robust flies, usually with spotted wings, and the general appearance shown in fig. 39 ..... **Hypenetes** Loew
– Third antennal segment not clubbed, but flattened and ribbon-like (fig. 65)....23

23. Frons divergent, so that vertex is more than three times as broad as frons at level antennae. Abdomen dull, mostly tomented, not punctate (see also couplet 15) .... **Scylaticus** Loew
- Frons not divergent. Abdomen shining black, strongly punctate at base of each hair ..... **Cyrtopogon** Loew
24. Head, body and legs covered with long, dense, erect hairs. Abdomen flattened from side to side ..... **Spanurus** Loew
- Head, body and legs bare; or if soft hairs, then abdomen elongate, dorso-ventrally flattened 25
25. Mystax continued at least half-way towards antennae (fig. 38) .. **Holopogon** Loew
- Mystax confined to mouth-margin, or just above it 26
26. Abdomen very narrow and cylindrical (fig. 59). Postmetacoxal arch sclerotized (fig. 34) ..... **Rhabdogaster** Loew
- More robust flies (figs 36, 37). Postmetacoxal arch partly membranous (fig. 35).. **Heteropogon** Loew

KEY TO AFRICAN GENERA OF *STICHOPOGONINI*

1. Pulvilli absent 2
- Pulvilli present, even if reduced 3
2. First tarsal segment hardly longer than second ..... [*Rhadinus* Loew]
- First tarsal segment as long as next three segments together (fig. 77) ..... **Sporadothrix** Hermann
3. Eyes separated at vertex by only about twice width of ocellar tubercle. Pulvilli reduced to narrow vestiges ..... [*Psilinus* Loew]
- Eyes separated at vertex by a great saddle-shaped space, 4–5 times as wide as ocellar tubercle. Pulvilli normal 4
4. A pair of well-developed ocellar bristles. Fourth posterior cell with a long stalk at base. Usually small, or even tiny flies (fig. 78) ..... **Stichopogon** Loew
- Ocellar bristles weak or absent. Fourth posterior cell with a short basal stalk, or none. Larger flies, about 11 mm long, dusty grey, with virtually no pattern. Littoral in habit ..... **Clinopogon** Loew

KEY TO SOUTH AFRICAN GENERA OF *LAPHRIINI*

1. Proboscis flattened from side to side, resembling a blade like a paper-knife on edge (fig. 94) ..... ***Laphria** Meigen
- Proboscis with triangular cross-section, a flat surface below and a ridge above; sometimes curved upwards into a sickle shape (fig. 104) 2
2. Costa of wing extending as far as tip of vein R_5, and entire margin of wing beyond this point membranous. First posterior cell closed and stalked 3
- Costa of wing extending at least as far as vein M_4, and often further 5
3. Hind femora very strongly swollen. Third antennal segment, elongate, distinctly hairy on dorsal surface (fig. 99) ..... **Laxenecera** Macquart
- Hind femora not strongly swollen. Third antennal segment bare above 4
4. Scutellum with long, strong marginal bristles. Third antennal segment club-shaped with a two-segmented style (fig. 100) ..... **Nusa** Walker (**Dasythrix** Loew)

* *Storthyngomerus tridentatus* Fabricius, with exceptionally long antennae occurs from the GAMBIA around to MOÇAMBIQUE.

– Scutellum without marginal bristles. Third antennal segment not club-shaped, and with a one-segmented style and an apical spine (fig. 103)..... **Perasis** Hermann

5. Pulvilli absent; claws long and slender. Vein M_3 parallel to outer end of discal cell, and often in line with it (fig. 84) [cf. also *Sporadothrix* (Stichopogonini) and Hull 1962: 347] ..... **Anypodetus** Hermann

– Pulvilli present (if only half as long as claws, see **Prytania**, gen. n.).....6

6 Costa extends round margin of wing at most as far as vein Cu + 1A; axillary cell has no veins along its outer margin (fig. 108).....7

– Costa extends round axillary cell.....12

7. First posterior cell of wing open on margin.....8

– First posterior cell closed on or before wing margin.....9

8. Hind femora slender. Male genitalia large and conspicuous (fig. 95)..... **Laphystia** Loew

– Hind femora distinctly swollen. Male genitalia small, largely concealed..... **Gerrolasius** Hermann

9. Hind femora conspicuously swollen, and with ventral spines, with or without tubercles 10

– Hind femora plump, but not conspicuously swollen, and without any ventral spines 11

10. Hind femora ventrally with spines standing on large tubercles. Face not much swollen. Third antennal segment elongate. Very bee-like, with dense, recumbent, golden hairs (fig. 87) ..... **Hoplistomerus** Macquart

– Hind femora swollen, and with bristles ventrally, but these stand on inconspicuous tubercles. Face distinctly swollen. Third antennal segment short, clavate (fig. 107). Small, rather bare, without golden hairs..... **Trichardis** Hermann

11. Palpi large and inflated, ovoid. A large, furry, bee-like species (fig. 83)..... **Afromelittodes** Oldroyd & van Bruggen

– Palpi not inflated. Bee-like, but quite small..... *Gerrolasius*, see couplet 8

12. Lower occiput with a backwardly projecting flange (fig. 93), partly concealed among long hairs of beard. Proboscis with a dorsal tuft of bristles. Abdomen more or less club-shaped, constricted at base (Hull's tribe *Ctenotini*).....13

– Lower occiput without such a flange. Proboscis without dorsal tuft of bristles. Abdomen sometimes constricted basally, but usually not obviously so.....14

13. Very large, bare flies, with elongate hind legs, and with a very well-marked abdominal 'waist', segments 2/3 being narrowly cylindrical (fig. 93)..... **Lamyra** Loew

– Normal sized, *Laphria*-like flies, hind legs not notably elongate, and basal segment of abdomen not constricted in this clear fashion (fig. 106).... **Stiphrolamyra** Engel

14. Palpi flattened and leaf-like (Hull's tribe *Andrenosomini*).....15

– Palpi normal, cylindrical or slightly inflated, but not flattened.....17

15. Plumb, bare flies, mimicking carpenter-bees (*Xylocopa*)..... **Hyperechia** Schiner

– Elongate, bare flies.....16

16. Proboscis curved upwards, sickle-shaped (fig. 104). Often large, powerfully built flies, resembling giant wasps, upon which they prey..... **Proagonistes** Loew

– Proboscis straight. More compactly built flies, perhaps generally resembling bees, but not *Xylocopa* (cf. *Hyperechia*, couplet 15, above).... **Andrenosoma** Rondani

17. Third antennal segment with hairs dorsally. First posterior cell closed..... *Laxenecera*, couplet 3
- Third antennal segment without hairs dorsally. First posterior cell open (figs 96–98) ..... **Laphystotes**, gen. nov.

KEY TO SOUTH AFRICAN GENERA OF *XENOMYZINI*

1. Third antennal segment small, seed-like, with a very long, fine arista, which often has a white tip (fig. 116). Venation as in fig. 118; fifth posterior cell making contact with discal cell. Robust flies, often shining yellow-brown with glistening wings.. **Xenomyza** Wiedemann
- Third antennal segment elongate, with a distinct apical style (fig. 111), not an arista. Venation as in figs 111, 113: fifth posterior cell not making contact with discal cell at any point. Tiny, fragile flies.....2
2. Elongate little flies with a cylindrical abdomen. Female with *acanthophorites (fig. 6). Discal cell small (fig. 113).....**Oligopogon** Loew
- Tiny black flies, usually with black wings, both body and wings being short and broad (fig. 111). Female without *acanthophorites. Discal cell normal..... **Rhipidocephala** Hermann

KEY TO SOUTH AFRICAN GENERA OF *ATOMOSIINI*
[translated from Hermann 1912: 30–31]

1. First antennal segment twice as long as second. Facial hairs of male mingled with glistening scales. Mesonotum bare, polished, with punctation confined to certain small areas; scutellum entirely without punctation. Pincers-like hypopygium and ovipositor free-standing ..... **Goneccalypsis** Hermann
- First and second antennal segments of equal length, or second somewhat longer than first. Genitalia turned underneath.
2. Face produced into a tubercle close to mouth-margin. Male genitalia rounded, prominent. Ovipositor protected laterally by exceptionally spiny acanthophorites (fig. 122).....**Loewinella** Hermann
- Face completely plane. Genitalia very small, without any special features. [Oriental] .....[*Opeatocerus* Hermann]

KEY TO SOUTH AFRICAN GENERA OF *OMMATIINI*

1. Large, stout, yellow and brown flies. Scutellum with two marginal bristles. Face wide. Upper forceps of male with a long, curved prong. [Islands of Indian Ocean; perhaps locally on coast] ..... **Cophinopoda** Hull
- Small or very small, blackish flies. Face narrow (fig. 124). Male genitalia very varied, and sometimes extremely complex, but never with the characteristic hooked prong of *Cophinopoda*.....**Ommatius** Wiedemann *sensu lat.* 2
2. Abdomen narrowed at base and distinctly clubbed. Hind femora usually swollen, with strongly convex upper surface, especially in males..... subgenus **Emphysomera** Schiner
- Abdomen cylindrical. Hind femora sometimes swollen, but usually slender..... subgenus **Ommatius** Wiedemann *sensu stricto*

* If thorax is strongly humped, compare *Oxynoton*, in Appendix.

KEY TO SOUTH AFRICAN GENERA OF *ASILINI*

1. Three submarginal cells (figs 135–138); fork of R_{4+5} is joined to R_{2+3} by an extra short vein 2
- Only the usual two submarginal cells (figs 156, 158) 4
2. The pseudo-crossvein, which is actually the base of R_4, comes before tip of discal cell as in figs 136, 137. Antennae placed close together 3
- The pseudo-crossvein, which is actually the base of R_4, comes beyond tip of discal cell, giving pattern shown in fig. 135; specially characteristic is shape of radial fork, with veins R_4 and R_5 running close together, straight and parallel for a considerable way before abruptly diverging. Antennae usually widely separated **Promachus** Loew
[for group characters see p. 142]
3. Forks of R_{2+3} and R_{4+5} separated, so that R_3 is much longer than R_4. Dull, grey flies relatively compact in shape and of drab appearance (fig. 136) ..... **Philodicus** Loew
- Forks of R_{2+3} and R_{4+5} closely approximated, so that R_3 and R_4 are nearly equal in length (fig. 137). Graceful, elongate flies, with oval thorax—usually with grey, yellow or black stripes—and slender, tapered abdomen, which often extends beyond tips of wings ..... **Alcimus** Loew
4. Metanotal callosities (beneath and lateral to scutellum, fig. 134) bare; i.e. covered with tomentum, but without any tufts of hair or bristles. See key on p. 149..... **Neolophonotus** group
- Metanotal callosities hairy, and sometimes bristly; it is necessary to look carefully to avoid confusing these with adjacent areas 5
5. One or more segments immediately before genitalia are bare and shining; in females these form part of a telescopic ovipositor 6
- Pregenital segments at least partly covered with tomentum. Ovipositor not telescopic, consisting only of elongate eighth segment 7
6. Occipital bristles proclinate (cf. fig. 155). Basitarsi normal ..... [*Neoitamus* Osten Sacken]
- Occipital bristles not proclinate. Basitarsi stout, and unusually bristly, especially those of fore legs ..... [*Astochia* Becker]
7. Dorsocentral bristles on posterior part of mesonotum only, ceasing abruptly at about level of transverse suture 8
- Dorsocentral bristles continuing in front of transverse suture, though they sometimes merge gradually into hairs 10
8. Ovipositor short and downturned (fig. 149). Upper forceps of male forked, and often elaborately developed (figs 152, 153). Face nasiform (fig. 151)..... **Heligmoneura** Bigot
- Ovipositor not short and downturned. Face not nasiform, but with normal facial tubercle 9
9. Ovipositor flattened from side to side, blade-like, and usually longer than two preceding segments ..... **Neomochtherus** Osten Sacken
- Ovipositor rounded, lamellae densely spiny (fig. 147)..**Congomochtherus** Oldroyd
10. Dorsocentral and acrostichal bristles strongly developed into a thoracic mane. Cerci of ovipositor forming a knife-edge ..... [*Dysmachus* Loew]

– Cerci of ovipositor free, not inserted into ninth tergite to form a knife-edge. Dorsocentral and acrostichal bristles not developed into a thoracic mane..... [*Machimus* Loew]

[Extra-territorial genera which might have species in southern Africa.]

Tribe *LEPTOGASTERINI*

Excessively elongate and slender flies, often small or even tiny, with long, prehensile legs with which they cling to stems of grasses (fig. 7). Collectively they are recognized by the complete absence of pulvilli, and of the alula of the wing. Venation is simple, with all cells open to the wing-margin, including often the anal cell.

Many authors have commented on the distinctness of these genera, and two modern authors have given particular attention to this group. Most of the work on African species has been carried out by Janssens, in a series of papers, and he (Janssens 1954) devoted one paper to what he called the phenomenon of 'agrionism', by which members of several diverse families of Diptera have come to look vaguely like zygopterous dragonflies (damsel flies).* Janssens regards this as convergent evolution towards a shape suited to their particular habitat, but he more than once hinted at the possibility that these genera ought to be removed from the family Asilidae. Martin (1968) carried this idea to its conclusion, and marshalled over forty reasons why there should be a separate family Leptogastridae (the grass flies).

In my opinion this is not a helpful step, nor is it justified by the evidence put forward. In an earlier paper (Oldroyd 1969) I examined Martin's arguments in detail, and concluded that: '. . . the family Asilidae, as it has been used previously, is a natural and convenient taxonomic unit, and should be preserved.'

Leptogasterini are rather poorly represented in the collections from southern Africa that I have examined, perhaps because they require rather specialist collecting. Hidden away among grasses, they are too small and elusive to be stalked like bigger Asilidae, and they tend to fly away and evade the sweep-net. Two genera, *Leptogaster* and *Lasiocnemus*, are easily separated from each other, but *Euscelidia* can be troublesome, and may need to be redefined (see below).

Genus *Euscelidia*

Euscelidia Westwood, 1849, *Trans. ent. Soc. London* 5: 232. Type-species: *Euscelidia rapax* Westwood, monotypic.

The diagnostic character of this genus is difficult to see, particularly for the first time. Leptogasterinae have a pair of lobes extending forwards beneath the anterior overhang of the mesonotum, and in addition *Euscelidia* has a third, vertical process, arising from the surface of the pronotum (fig. 8). The general appearance is usually characteristic of the genus, particularly the mesonotum, which is oval in plan view, bare and shining. I have previously pointed out (1970: 216) that the distinction between *Euscelidia* and *Leptogaster* is not as clear as might be wished, and that species occur which might be either *Euscelidia* without the pronotal process, or *Leptogaster* without occipital bristles.

If we confine *Euscelidia* to those species with a definite pronotal process then four or possibly five species have been recorded from southern Africa, as follows:

* That this is not entirely fanciful is shown by the note attached to the paratype of *Leptogaster nitens* Bromley (1947: 4): 'Dragonfly mimic.'

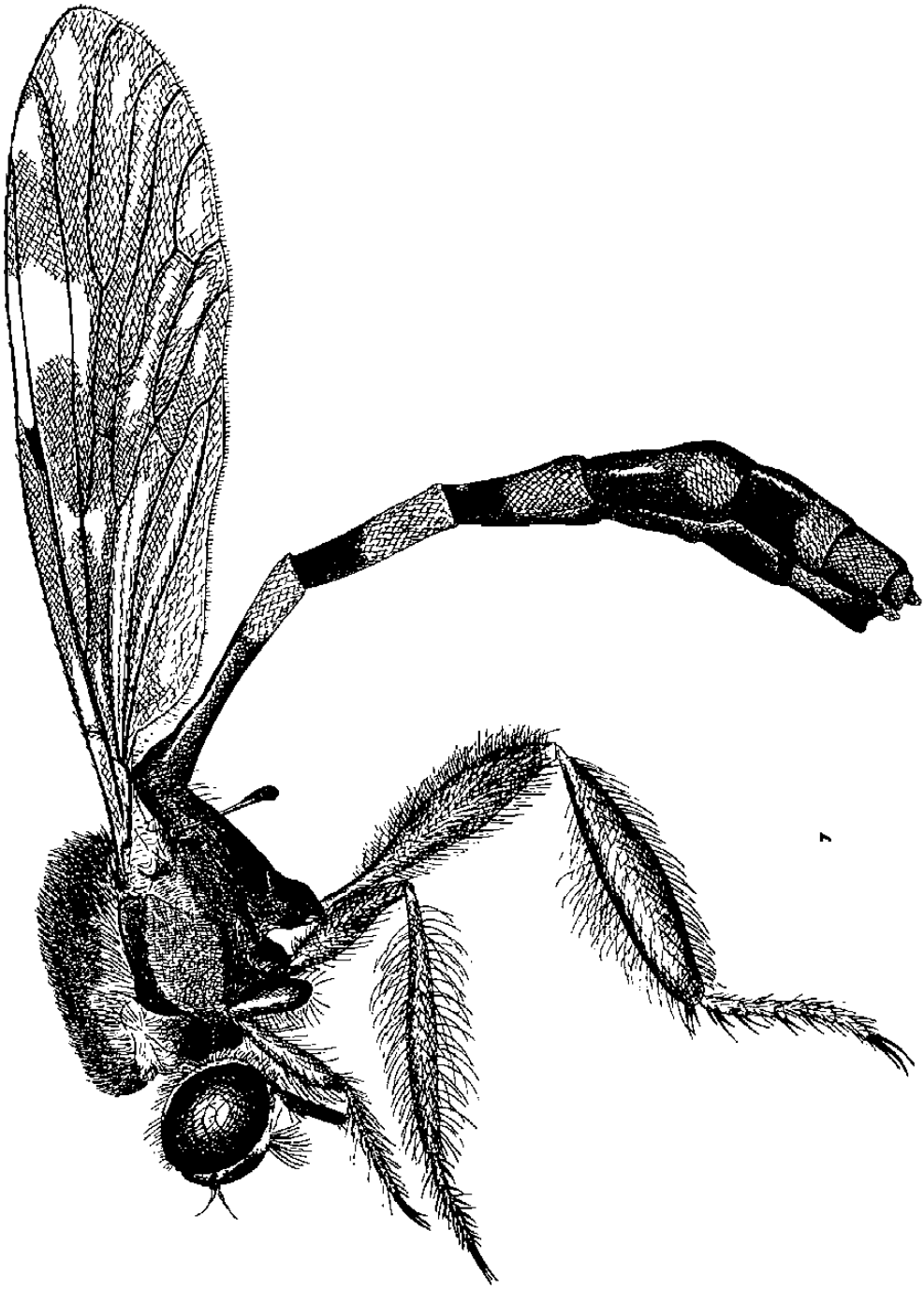


Fig. 7. *Lasiocnemus lugens* Loew ♀. 13 mm.

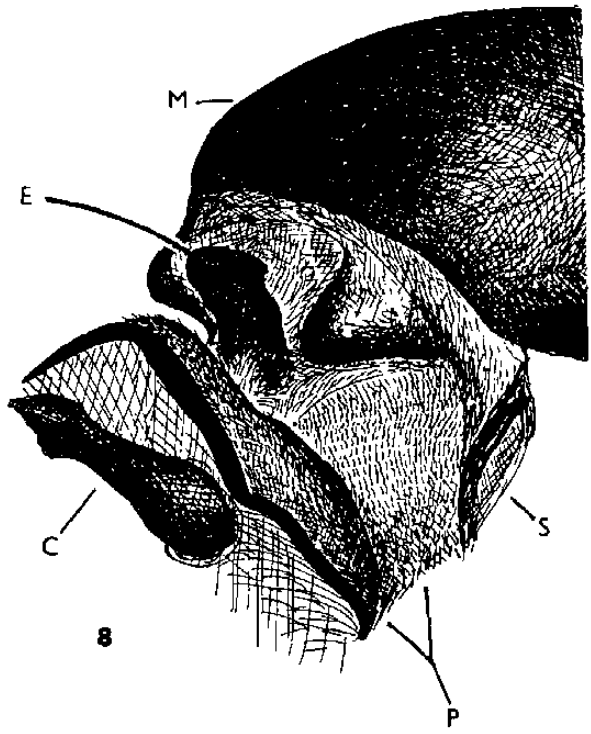


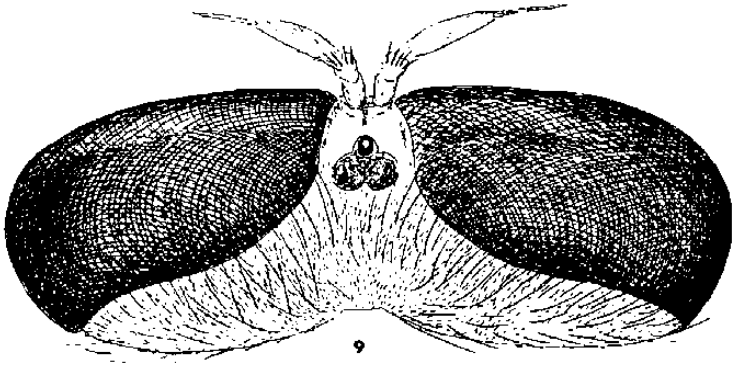
Fig. 8. Pronotum of *Euscelidia*, showing pronotal process (E), characteristic of this genus. P = pronotum; M = mesonotum, with paired anterior lobes; S = spiracle; c = condyle from which head has been removed.

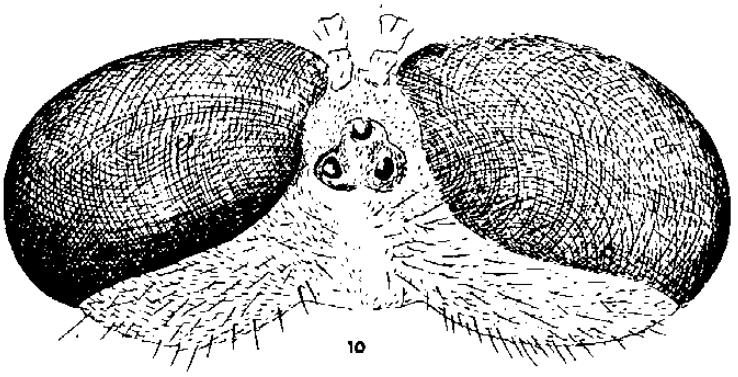
anthrax Janssens, 1957: 2 . . . . . Botswana
? *nitida* Wiedemann, 1828: 535, according to Engel
stigmaticalis Loew, 1852: 658; 1860: 100 . . . Moçambique; Caffraria
valida Loew, 1857: 352; 1860: 99 . . . . . Caffraria
zumpti Janssens, 1957: 3 . . . . . Transvaal

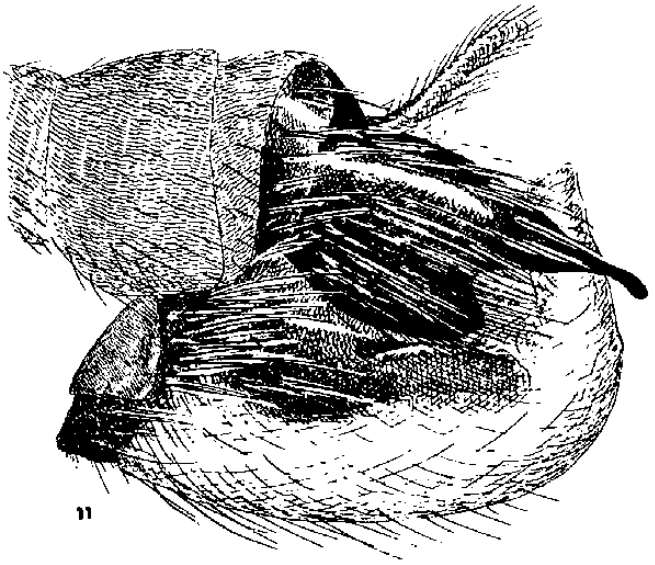
In addition to these, Janssens (1957: 5) recorded *E. proculus* (Walker) from the Kruger National Park and Botswana, *E. festiva* Janssens from Johannesburg, and *E. bicolor* Janssens from Moçambique, Maputo. These last three are all far from their type-localities, which are the Congo Basin for the two Janssens species, and Sierra Leone for the Walker species.

The *Euscelidia* of southern Africa cannot be understood without much more study. Two prominent species that are relatively large and shining, with dark legs, can be provisionally identified as the two species described by Loew, the larger with stained wings and a flatter occiput (fig. 9) being *stigmaticalis*, and the smaller with almost clear wings and more inflated occiput (fig. 10) being *valida*. I have not seen enough specimens to comment on their probable distribution.

Janssens (1957: 2, 3) gives drawings of the genitalia of his two species *anthrax* and *zumpti*. *E. anthrax* should be easily recognized from the darkened basal half of the







Figs 9–11. (9) Head of *Euscelidia stigmaticalis* Loew; (10) head of *Euscelidia valida* Loew; (11) male genitalia of *Euscelidia zumpti* Janssens.

wing, but I have seen a complex of small specimens that might fit the description of *zumpti*, including the drawing of the male genitalia. As shown in fig. 11, the hypopygium is generally bigger than the preceding segments, but this could be an artefact produced by shrinkage of the dried specimen. There are certainly three or four species here, but I am not prepared to define them. Differences can be seen in the shape and colour of the frons, as well as in the rather variable colour and pattern of the legs.

Genus *Lasiocnemus*

Leptogaster, subgenus *Lasiocnemus* Loew, 1851, *Progr. Realschule Meseritz:* 2. Type-species: *Leptogaster* (*Lasiocnemus*) *obscuripennis* Loew, monotypic.
Lasiocnemis Hermann, 1926, *Verh. z.-b. Ges. Wien* **74/75**: 140. Unnecessary change of name.

Janssens (1952), who revised this genus, aptly comments that: 'The genus *Lasiocnemus* is immediately recognizable from any other genus of Leptogastrinae: the hind legs present a characteristic club-like swelling, not only of the femur as happens in other representatives of the group, but also of the tibiae. On both femur and tibia the swelling is accompanied by a dense pilosity which is enough to identify the genus at first glance.' This is not always strictly correct, since Janssens himself expresses amazement that Curran (1927) failed to recognize the distinctive *Euscelidia rapax* Westwood, a species of West and Central Africa, and mistakenly described it as a new species of *Lasiocnemus*. Yet in general there is little danger of confusing *Lasiocnemus* (fig. 7) with any other genus, even the Oriental *Ophionomima* Enderlein, which has a *scaly* fringe on the hind femora.

There are five species of *Lasiocnemus* that occur, or may occur, in southern Africa, and these are separable mainly by the pattern of the wings. These differ only in degree, and there is considerable variation within each species, so that specimens should not be expected to match the figures precisely. Yet the general character of the wing-pattern can be relied upon for identification.

Key to the South African species of *Lasiocnemus*

[partly after Janssens (1952: 5)]

1. Wings almost clear, except for a brown cloud which extends backwards from tip of subcostal vein (fig. 12). Mystax white. Legs clear red; pile of legs mostly *white*, but hind femora and tibiae with a band of black hairs.

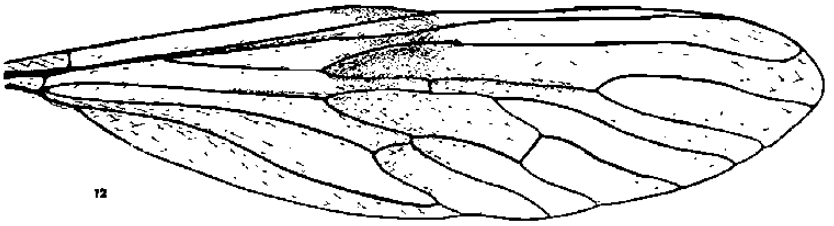
hyalipennis Janssens

Lasiocnemus hyalipennis Janssens, 1952, *Bull. Inst. R. Sci. nat. Belg.* **28**: 6.
Type in Brussels. Type-locality: ZAÏRE, Katanga, Kapiri.
Distribution. ZAÏRE: Katanga, Kapiri, near Jadotville. RHODESIA: S. Vumba (Cookson: in NM).

– Wings mainly dark brown or black, with some clear areas 2

2. Wings almost completely dark (fig. 13): usually any paler areas tend to be in front of the stem of R_{4+5}, but sometimes centres of cells generally are lighter in colour; no clear banding. Mystax black. Halteres black. Legs dark brown, their pile all black. Mesonotum black, with humeri only moderately reddish.

Janssens named this species *hermanni* after examining the 'types' of *violacea* and *affinis*, which are in the British Museum; the names appeared as *nomina nuda* in Hermann's posthumous paper (1926).



Figs 12–15. (12) Wing of *Lasiocnemus hyalipennis* Janssens; (13) wing of *Lasiocnemus hermanni* Janssens; (14) wing of *Lasiocnemus fascipennis* Engel & Cuthbertson; (15) wing of *Leptogaster maculipennis* Janssens.

[hermanni Janssens]

'*violacea*' Hermann; '*affinis*' Hermann *nomina nuda*

Lasiocnemus hermanni Janssens, 1952, *Bull. Inst. R. Sci. nat. Belg.* **28**: 7.
Type in Brussels. Type-locality: MALAWI.
Distribution. Known to me only from MALAWI and TANZANIA: Morogoro (Loveridge). It is included here as possibly spreading into Moçambique, and as a contrast to the picture-winged species, below.

– Wings 'pictured', i.e. with well-marked fenestrations in the dark colouring (figs 7, 14) 3

3. Mystax white. Fore and middle tibiae straw-yellow dorsally.

obscuripennis Loew

Leptogaster (Lasiocnemus) obscuripennis Loew, 1851, *Progr. Realschule Meseritz*: 2.
Type in Berlin: Type-locality: MOÇAMBIQUE: Delagoa Bay.
Distribution. Known with certainty only from the type material. Although Janssens (1952) includes it in his key without comment, I suspect that his key characters are merely translated from the fuller description given by Loew in 1860, which was also the first mention of a locality. I have not seen any specimen that I can confidently assign to this species.

– Mystax black. Tibiae without a yellow dorsal streak 4

4. Mesonotum distinctly red anteriorly, and on humeri, and with some white hairs, especially posteriorly. Pleura red. Face with grey tomentum. Wings as in fig. 14, showing distinct light and dark crossbands, apex all dark. Larger species (20–26 mm).

fascipennis Engel & Cuthbertson

Lasiocnemus fascipennis Engel & Cuthbertson, 1939, *J. ent. Soc. S. Afr.* **2**: 185.
Type in Munich. Type-locality: N.W. TANGANYIKA.
Distribution. TANZANIA. RHODESIA: Lomagundi. MALAWI: Monkey Bay; Chiromo. I am not sure that the specimens I have seen from Tanzania are conspecific with those from Rhodesia and Malawi. If they are not it would raise difficulties about the specific name, since the type and allotype were from 'N.W. Tanganyika', and the paratype from Lomagundi.

– Mesonotum and pleura heavily blackish, with dense, short, black hairs. Face with dark brown tomentum. Wings as in fig. 7, more distinctly spotted with pale areas, which include cells at the wing-tip. Smaller species (14–15 mm).

lugens Loew

Lasiocnemus lugens Loew, 1857, *Öfvers. K. Vet.-Akad. Förhandl.* **14**: 353.
Type in Berlin. Type-locality: 'Caffraria' (Wahlberg).
Distribution. CAPE PROVINCE (?). NATAL: Weenen. ZULULAND: M'fongosi (Jones). ORANGE FREE STATE: North Bank Halt; Norvalspont (Ogilvie). RHODESIA: Bulawayo.

Genus *Lobus*

Lobus Martin, 1972, *J. Kansas ent. Soc.* **45** (1): 8. Type-species: *Leptogaster pallipes* Janssens, by original designation.

Founded by Martin entirely upon structure of the male genitalia: '*Lobus* (m) is a Latin and Greek word meaning an elongate rough projection, which described the long horizontal podlike ventral organ of the male genitalia . . . of the genus *Lobus* Martin.' 'The term lobus is proposed for the flat, disclike to conelike structure formed when the suture between the basistyli and hypandrium completely, or sometimes partially, disappears.'

The originally included species number 10 African (3 old, 7 new) and some Oriental, but as noted below, under *Leptogaster*, it is likely that some of the species recorded from South Africa should be transferred to *Lobus*, and this cannot be done without further study.

Genus *Leptogaster*

Leptogaster Meigen, 1803, *Magaz. Insekt.* **2**: 269.
Gonypes Latreille, 1805, *Hist. nat. Ins.* **14**: 309. Type-species of both genera: *Asilus cylindricus* Degeer, 1776, as *Asilus tipuloides* Fabricius, 1775, monotypic.

Hull (1967: 250) writes that 'nineteen species of these slender flies have been described from South Africa', and he describes three more, making a total of 22. In the Catalogue of Diptera I have recorded only 11, including Hull's three. The discrepancy arises because a number of species originally described in *Leptogaster* have been transferred to *Euscelidia* or *Lasiocnemus*. This process is by no means complete. It is extremely difficult to say whether a species belongs to *Leptogaster* or *Euscelidia* without minute examination, and even then the decision can be uncertain. I think, for example, that *Leptogaster globopyga* Hull (1967: 250) is probably a *Euscelidia*: Hull says that it is apparently not closely related to known species of *Leptogaster*, and the type of hypopygium is more suggestive of the *zumpti* group of *Euscelidia*.

A further complication is the introduction by Martin (1972) of the genus *Lobus* based entirely upon detailed structure of the male genitalia. I think several of the smaller South African *Leptogaster* may fall into *Lobus*. For all these reasons a key to species is not at present feasible. Here is a list of the 11 species:

albitarsis Macquart, 1846: 96 (*Gonypes*)	'Caffraria' (Delegorgue)
brunnea Loew, 1857: 353	'Caffraria' (Wahlberg)
flavobrunnea Hull, 1967: 253	C.P., Hout Bay, Skoorsteenkop
globopyga Hull, 1967: 250	C.P., Hout Bay, Skoorsteenkop
maculipennis Janssens, 1957: 4	Transvaal, Johannesburg
megafemur Hull, 1967: 251	C.P., Hout Bay, Skoorsteenkop
nitens Bromley, 1947: 109	Zululand and Natal
ochricornis Loew, 1857: 352	'Caffraria' (Wahlberg)
pictipennis Loew, 1857: 353	'Caffraria' (Wahlberg)
rufirostris Loew, 1857: 353	'Caffraria' (Wahlberg)
tenuis Loew, 1857: 353	'Caffraria' (Wahlberg)

Tribe *SAROPOGONINI*

This is a miscellaneous assembly of convenience, sharing the simple character of having the pronotum as a small sclerite, surrounded on three sides by membrane (fig. 3). It corresponds to Hull's Stenopogonini plus the genera that he puts into Dasypogonini because they have a spur at the apex of the fore tibia (fig. 55). The status of several smaller tribes recognized by Hull, notably those peculiar to the Australian continent, need not be discussed here. Dioctrini, a very controversial tribe, is represented in Africa only by *Hermannella*, a genus here included in Saropogonini. Some Laphystini have the marginal cell open, but do not have the saropogonine structure of the pronotum; I prefer to merge Laphystini with the tribe Laphriini.

Practical recognition of Saropogonini is mainly negative. If a genus has an open marginal cell, and is not obviously Leptogasterini, Xenomyzini, Stichopogonini nor, of course, Laphystini, then it should be looked for in Saropogonini. In such a varied assembly most genera are individually distinctive after only a short acquaintance with the group. The key to genera is useful mainly on first encounter.

Genus *Acnephalum*

Acnephalum Macquart, 1838, *Dipt. exot.* 1 (2): 51. Type-species: *Acnephalum olivierii* Macquart, 1838, by designation of Engel, 1929, *Flieg. pal. Reg.* 29: 276.

Placed alongside *Sisyrnodytes* because the two genera share the characters of little or no trace of pulvilli combined with a black-and-white, bee-like appearance. The two genera are easily distinguished from each other by the entirely different wing-venation, that of *Acnephalum* being the more generalized, with all cells open on the margin except the anal, and the costa continuing as an ambient vein as far round the wing as the apex of the anal vein. Usually *Acnephalum* is bigger and more robust, but species of the two genera overlap in this respect.

Curran (1934, *Amer. Mus. Nov.* **696**: 5) published a useful short key to the species of this genus 'with the exception of the two described by Walker'. In fact Walker did not describe any *Acnephalum*, but two of his species of *Dasypogon* were catalogued in *Acnephalum* by Kertész. *Dasypogon coon* Walker had an unknown locality, and the type was lost long ago (*ms* note by Miss G. Ricardo). The type of *Dasypogon decula* Walker still exists in the British Museum, and is a teneral specimen of *Laphria lateralis* Fabricius, from West Africa.

The type species of the genus, *Acnephalum olivierii* Macquart, is a Palaearctic species, described from the Aegean island of Naxos. Macquart himself based his genus principally upon the South African species, and pointed out that *olivierii* differed from these in having the fourth posterior cell closed. The selection of this as genotype by Engel was an irrational act, consistent with Engel's casual attitude to zoogeography: he records the distribution of *olivierii* as 'Ins. Syra, Africa mer', on the basis of five specimens, three from the island of Syra, near Naxos, and two from Dunbrody, in Cape Province, South Africa. After eliminating the Walker species mentioned above, the only other species not from South Africa is *Acnephalum futile* Wulp, from Aden.

In his very helpful letter to me Dr A. J. Hesse wrote: '*Acnephalum*, for example, has five species for the Ethiopian Region. In our collection I have sorted out 40 new species or subspecies, excluding the four known species for South Africa.'

Key to South African species of *Acnephalum*

1. Abdomen cylindrical, tapering slightly posteriorly. Body and legs covered with coarse, recumbent hairs; abdominal segments 6–8 bare, shining. Femora black, with broad red bands basally and apically. Wings hyaline, less broad than is usual in genus, but with same venation.

cylindricum sp. n.

Holotype ♂ in Pretoria. Type locality: S.W. AFRICA, 128 km S. of Gobabis, January (W. D. Haacke).
Distribution. S.W. AFRICA.

– Abdomen and wings both broad (cf. *Sisyrnodytes*, fig. 66, but note different venation). Hair covering not uniformly recumbent; either furry or with a pattern of recumbent hairs 2

2. Legs entirely black ..... **platygaster** Loew

Acnephalum platygaster Loew, 1860, *Dipterenfauna Südafr.*: 170.
Type in Berlin. Type locality: S.W. AFRICA, Swakop.
Distribution. S.W. AFRICA.

– Legs not entirely black. Femora, especially hind femora, black dorsally and reddish ventrally 3

3. Wings sharply divided into a brown basal area and an entirely hyaline tip. Abdomen covered with silky hairs, which become longer and denser posteriorly. Pile of head silvery, that of mesonotum greyish white, with some admixture of red hairs.

cockerelli Curran

Acnephalum cockerelli Curran, 1934, *Amer. Mus. Nov.* **710**: 5.
Type in New York. Type locality: CAPE PROVINCE, Nieuwoudtville, November.
Distribution. CAPE PROVINCE: Nieuwoudtville (Cockerell); Clanwilliam, September (Dr Brauns).

– Wings not so distinctly marked; if they show evidence of a basal staining, then forks in apical half of wing are also stained, and abdomen is not uniformly covered with silvery pile 4

4. Wings almost uniformly dark brown, sometimes faded. Abdomen on each side with a fringe of long, soft, dense white or yellow hairs, about one-third as long as breadth of abdomen. Hairs in posterior fringes on tergites long and shaggy. Hairs of thorax and legs predominantly pale, though some brownish-red hairs are mixed with them.
? Male of *andrenoides*. **quadratum** Wiedemann

Dasypogon quadratum Wiedemann, 1828, *Auss. zweifl.* **1**: 404.
Type in Berlin. Type-locality: *Ins.* 'Kap'.
Distribution. CAPE PROVINCE: Somerset East, Ceres; Worcester; Montagu; Prince Albert Road (R. E. Turner). Michel's Pass (Simmonds). Middelburg (H. J. S. Kruger). September–December. Graaff-Reinet; Middelburg; Cradock; Norvalspont; Grahamstown (Greathead). September–January. Resolution, Albany Dt. (A. Walton).

– Wings not uniformly dark brown, and a lateral fringes of abdomen inconspicuous, though longer in males than in females 5

5. Hairs of posterior fringes of tergites short, crisp and white (cf. *Sisyrnodytes*, fig. 66), typically with a short break medially, and no median patch. Hairs of thorax white, liberally mixed with brownish red, giving a grizzled appearance. Wings variously stained, but irregularly, not uniformly brown.
? Female of *quadratum*. **andrenoides** Wiedemann

Dasypogon andrenoides Weidemann, 1828, *Auss. zweifl. Ins.* **1**: 403.
Type in Berlin. Type-locality: 'Kap'.
Distribution. CAPE PROVINCE: same localities as *quadratum* (R. E. Turner). Willowmore; Malmesbury (Dr Brauns). Elandsberg Mts, S. of Cockscomb Peak; Vanrhynsdorp; Clanwilliam Dt.; Haarlem; Langekloof (Stuckenberg); Grahamstown (Greathead). Resolution, Albany Dt. (A. Walton). July–December.

– White hairs of abdomen in three distinct groups on each tergite, enclosing a small bare area which is deep black; the median tufts of white hairs are characteristic of this species.

dorsale Macquart

Acnephalum dorsale Macquart, 1838, Dipt. exot. **1** (2): 52.
Type in Paris. Type-locality: 'du Cap (M. Serville)'.
Distribution. CAPE PROVINCE: Malmesbury (Dr Brauns). Cape Peninsula, Milnerton (H. K. Munro). November–December. Nr Addo (Greathead); Botterkloof Pass; Resolution, Albany Dt. (A. Walton); S. of Elandsbaai (Irwin).

Genus *Ancylorrhynchus*

Ancylorrhynchus Berthold in Latreille, 1827, *Fam. nat. Thierr.*: 498. Type-species: *Ancylorrhynchus laufferi* Strobl, 1906 (= *limbatus* Fabricius, 1794), the first included species.
Xiphocera Macquart, 1834, *Suites à Buffon* **1**: 279. Type-species: *Xiphocera percheronii* Macquart, 1834, monotypic.

The circumstances of original publication of this name and the designation of a type-species are complex, and difficult to interpret according to the Rules of Nomenclature. They are set out at length in the *Catalogue of Diptera of the African and Malagasy Regions*, and need not be further discussed here. Fortunately the genus *Ancylorrhynchus* is instantly recognizable by its unique, downturned proboscis, like a parrot's beak (fig. 16). This is the meaning of the name *Ancylorrhynchus* ('hooked nose').

The proboscis of *Ancylorrhynchus* is perhaps the most interesting in all Asilidae. The shape is clearly functional, since the curve of the labium is closely followed by that of

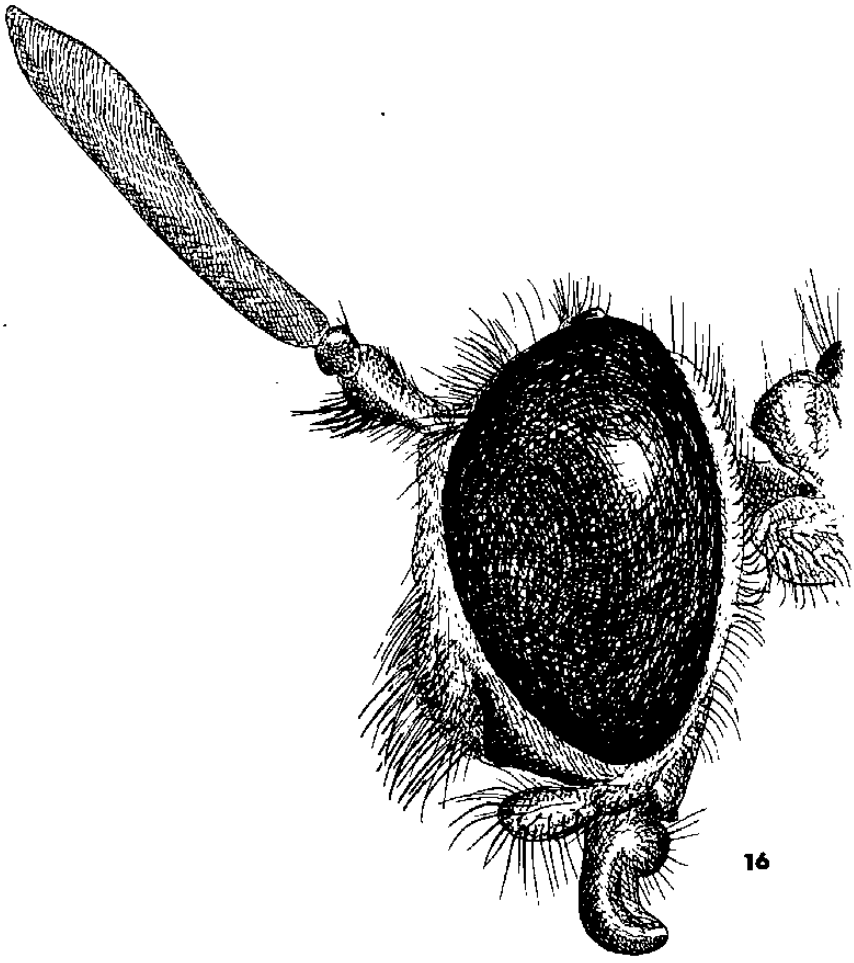
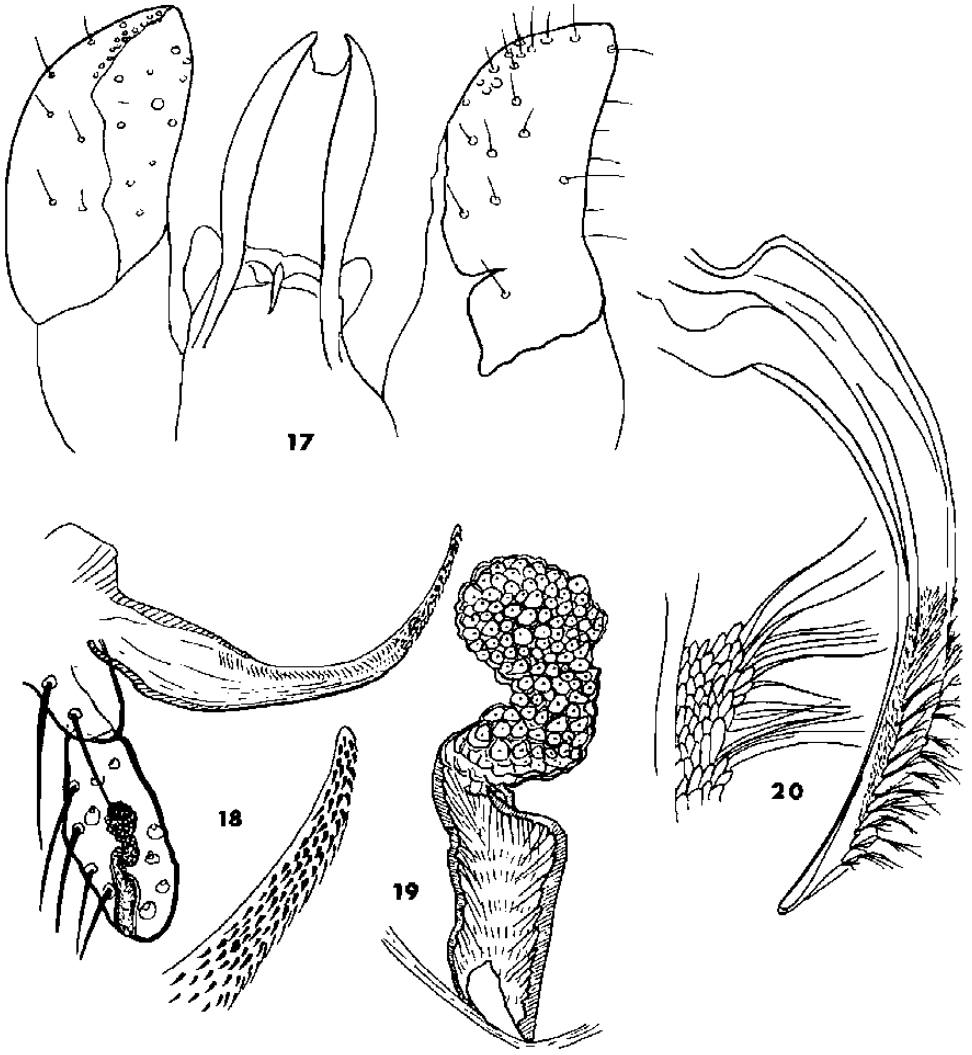


Fig. 16. Head of *Ancylorrhynchus crux* Bezzi.



Figs 17–20. Dissections of the proboscis of *Ancylorrhynchus*: (17) labium and palpi; (18) maxilla with teeth, and palp with sensory hairs and apical sensory pit; (19) sensory pit of palp, showing large cells and vestibule with hairs; (20) hypopharynx, with detail of scales and reflexed hairs.

the hypopharynx and maxillae. The palpi are rather bulbous, and are equipped with large pores, one of which opens into a glandular organ of the type shown in figs 17–20. There is no evidence that this structure in any way implies an aborted or impaired efficiency; on the contrary the proboscis has every appearance of being a specialized organ for feeding upon some unusual kind of prey. It looks as if the prey must be pierced by a downward and backward stroke, instead of by the forward stab that is usual in Asilidae. This suggests that the prey must be exceptionally difficult to penetrate, since such genera as *Proagonistes* and other big Asilidae successfully pierce heavily sclerotized Hymenoptera and Coleoptera by a forward thrust. The distribution

of *Ancylorrhynchus* in the Palaearctic, Ethiopian and Oriental Regions shows that the prey, whatever it may be, must be widely distributed, and hence not something rare, of limited occurrence.

Although the generic character of *Ancylorrhynchus* is so definite, the species are not easy to separate from each other. There are two obviously different types of antenna, one tipped with a small microsegment, and the other with only a pit and spine, but it is difficult to use this as a primary key character because the antennae are so often broken off. There is some degree of correlation with the shape of the head when seen from above (figs 21, 22). It may be that *Ancylorrhynchus* is not a single genus, but this cannot be decided without a more complete study of allied genera such as *Scylaticus*, *Teratopus* and *Spanurus* (q.v.).

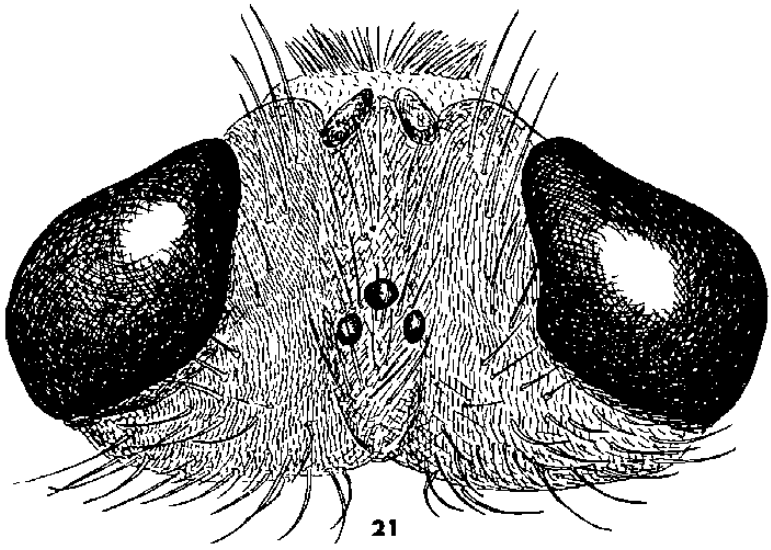


Fig. 21. Head of *Ancylorrhynchus braunsi* Bromley.

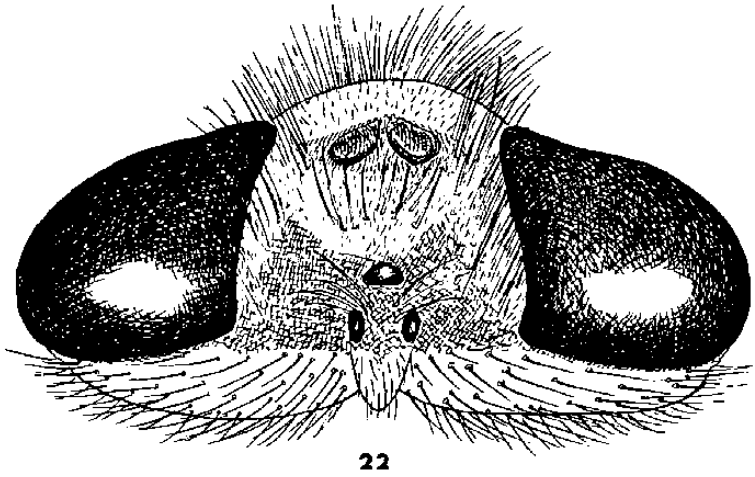


Fig. 22. Head of *Ancylorrhynchus crux* Bezzi.

There are about 14 Palaearctic species, five or six in the Oriental Region, including New Guinea, and 25 or so from Africa, nearly all of them from southern Africa. Lack of good series makes it difficult to judge the extent of intra-specific variation, and the following provisional key is based largely on that published by me (1970: 271–273), and the earlier key by Bromley (1936: 134).

Key to South African species of *Ancylorrhynchus*

[after Bromley, 1936 and Oldroyd, 1970]

1. Fourth posterior cell closed, with or without stalk 2
– Fourth posterior cell open, though usually narrowed 3
2. Wings bicoloured, with tip distinctly darker than rest of wing. Mesonotum red, with a black cross (common to most species of the genus), often supplemented by two short black stripes opposite ends of scutellum. Abdomen matt black, with yellowish spots on each side of hind margins of segments 2, 3, 4, and with reddish hind margins; segments 5, 6 entirely covered with white tomentum.

cruciger Loew

Dasypogon cruciger Loew, 1857, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **14**: 344.
Type in Berlin. Type-locality: 'Caffraria'.
Distribution. Doubtful. Bromley (1936: 134) gave no new records, and rather mysteriously wrote 'only female known', although Engel (1929: 164) had already recorded two males from RHODESIA: Hope Fountain. A male in the B.M. from TRANSVAAL: Pretoria (Miss J. Brincker) is rather doubtfully assigned to this species, but it does not agree very well with Loew's description. It seems probable that more than one species exists with closed fourth posterior cell and bicoloured wings.

– Wings uniformly dark. Abdomen black to sixth segment; segments 5–8 red posteriorly; 3, 4, 5, 6 with narrow white hind margins; 2, 3 with large white pollinose lateral spots.

funebris Bromley

Ancylorrhynchus funebris Bromley, 1936, *Ann. Transvaal Mus.* **18**: 135.
Type in Pretoria. Type-locality: MOÇAMBIQUE: Lourenço Marques.
Distribution. Not known from elsewhere.

3. Wings entirely pale 4
– Wings either bicoloured or irregularly smoky 5
4. Mesonotum red, with a narrow black median stripe; scutellum red with median black spot. Halteres black.

pretoriensis Bromley

Ancylorrhynchus pretoriensis Bromley, 1936, *Ann. Transvaal Mus.* **18**: 135.
Type in Pretoria. Type-locality: TRANSVAAL: Pretoria.
Distribution. TRANSVAAL: Pretoria, February (H. K. Munro).

– Mesonotum black with red colour on humeri and posteriorly; scutellum red with black base. Halteres tawny yellow.

maculatus Bigot

Xiphocerus maculatus Bigot, 1878, *Ann. Soc. ent. France* (5) **8**: 428.
Type in Oxford. Type-locality: CAPE PROVINCE: 'Cap de Bonne Esperance'.
Distribution. CAPE PROVINCE (assumed).

5. Legs entirely black. Wings substantially black, only indistinctly paler in centres of cells, or basally 6
– Legs not entirely black. Wings may be either bicoloured or irregularly smoky .. 7

6. Mystax black. Scutellum black, reddish at sides; mesonotum black, red at all four corners. Second abdominal segment with broad lateral yellowish patches; 3, 4 with interrupted reddish hind margins, complete on posterior segments.

unifasciatus Loew

Xiphocerus unifasciatus Loew, 1857, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **14**: 349.
Type in Berlin. Type-locality: 'Caffraria' (Wahlberg).
Distribution. CAPE PROVINCE: Caffraria.

– Mystax pale. Abdomen dull matt black, with broad triangles of cinereous tomentum laterally. Mesonotum appearing black to the naked eye, but under a spotlight it is a dull plum-red, and contrasts with black scutellum.

prunus sp. n.

Holotype ♂, 1 ♀ paratype in Pietermaritzburg. Type-locality: MOÇAMBIQUE: Amatonga Forest, February (D. Cookson).
Distribution. Only type material yet known.

7. Wings entirely dark, or irregularly marked; not distinctly bicoloured.....8
– Wings bicoloured, with distinct dark tip.....9
8. Abdomen black, with sharply defined yellow hind margins, interrupted on earlier segments. Second segment, and sometimes others, with a broad band of white tomentum interrupted in middle.

♂ mystax black, wing more uniformly coloured. **munroi** Bromley
♂ mystax pale, wing more patchily coloured. **zonalis** Bromley

Ancylorrhynchus munroi Bromley, 1936, *Ann. Transvaal Mus.* **18**: 135.
Ancylorrhynchus zonalis Bromley, 1936, *Ann. Transvaal Mus.* **18**: 137.
Types in Pretoria. Type-localities: *munroi*—TRANSVAAL: Pretoria. *zonalis*—TRANSVAAL: Moordrift.
Distribution. TRANSVAAL. I think that these two are probably variants of one species, since a series in the B.M. from various localities in CAPE PROVINCE: Aliwal North; Katberg; Ceres (R. E. Turner) agrees quite well with both descriptions, and includes one male which has the mystax white above and black below.

– Antennae and humeri reddish. Abdomen shining black dorsally, reddish ventrally. Legs bicoloured, black and reddish.

humeralis Wiedemann

Dasypogon humeralis Wiedemann, 1821, Diptera Exotica: 235.
Type in Copenhagen. Type-locality: 'vom Kap'.
Distribution. Presumably CAPE PROVINCE, but otherwise unknown.

9. Legs bicoloured.....10
– Legs entirely reddish.....11
10. Mystax and scutellum black. Abdominal segments 2, 3, 4, 5 yellowish white posteriorly.

quadrimaculatus Loew

Xiphocerus quadrimaculatus Loew, 1857, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **14**: 348.
Type in Berlin. Type-locality: 'Cap. Tollin'.
Distribution CAPE PROVINCE: Stellenbosch [Recorded by Bromley, 1936: 135].

– Mystax pale, scutellum black. Basal segments of abdomen black. Abdomen black, with some patches of white tomentum: segments 2, 3 with broad orange triangles in posterior angles; fourth segment onwards with broad orange posterior bands.

Fore legs black, with reddish yellow knees; middle tibiae reddish with black tip; hind legs black, base of femur and most of tibia except tip, yellowish.

variegatus Bigot

Xiphocerus variegatus Bigot, 1878, *Ann. Soc. ent. France* (5) **8**: 428.
Type in Oxford. Type-locality: 'Cap. B. Sp.'
Distribution. Unknown.

11. Scutellum entirely reddish or tawny. Wings light brown, with costal border yellow. Second abdominal segment with a pair of large grey patches.....12
- Scutellum partly black, usually at base, often with a ∩-shaped black mark. If scutellum without black markings, then wings are sharply divided into black tip and pale centre and base.....13
12. Lateral borders of mesonotum black from behind humeri to transverse suture. Abdomen black, posterior segments with orange hind margins, expanded laterally. Palpi with black or brown hairs.

braunsi Bromley

Ancylorrhynchus braunsi Bromley, 1936, *Ann. Transvaal Mus.* **18**: 136.
Type in Pretoria. Type-locality: TRANSVAAL: De La Rey, January (Dr Brauns).
Distribution. TRANSVAAL: De la Rey: Lichtenburg. NATAL: Pietermaritzburg, City Centre, April (L. Kelsall; B. & P. Stuckenberg). LESOTHO: Maseru Dt., Roma Mission, January (B. & P. Stuckenberg).

- Lateral borders of mesonotum broadly red. Abdominal segments 1–4 black, with narrow red hind margins; fifth segment much brighter red. Palpi with red hairs.

tricolor Loew (? *reynaudii* Macquart)

Xiphocerus tricolor Loew, 1863, *Wiener. ent. Monatschr.* **7**: 11.
Xiphocerus reynaudii Macquart, 1838, *Dipt. exot.* **1** (2): 48.
Types *tricolor* in Berlin; *reynaudii* in Paris.
Type-localities: *tricolor*, ORANGE FREE STATE; *reynaudii*, 'du Cap'.
Distribution. CAPE PROVINCE: Gxulu River, December (J. G. H. Londt); Otterford Reserve, Hankey Area, December (B. & P. Stuckenberg). ORANGE FREE STATE: ?. NATAL: Estcourt, Sept./Oct. (G. A. K. Marshall).

13. Yellow base and brown tip of wing sharply divided.....14
- Yellow and brown of wing indistinctly merging, or dark area of indefinite extent, even though it may contrast with yellow base.....15
14. Abdomen entirely black, segments 2–5 grey-dusted. Large, robust species (25 mm). Pteropleuron red. Dark tip of wing comprising more than half total area, *including entire discal cell.*

magnificus Bromley

Ancylorrhynchus magnificus Bromley, 1936, *Ann. Transvaal Mus.* **18**: 136.
Type in Pretoria. Type-locality: TRANSVAAL: Barberton.
Distribution. TRANSVAAL: Barberton, November (L. S. Hulley). NATAL: St Lucia Lake. December (H. W. Bell-Marley). RHODESIA: Sawmills. MALAWI: Zomba (Stannus). MOÇAMBIQUE: Hola Valley (S. A. Neave).

- Abdomen orange; when in good condition, tergites almost completely covered with silky yellow hairs, but when greasy they appear dull or even blackish. Pleura partly red.

crux Bezzi

Ancylorrhynchus crux Bezzi, 1908, *Ann. Soc. ent. Belge.* **52**: 377.
Ancylorrhynchus apicalis Curran, 1934, *Amer. Mus. Nov.* **710**: 7.
Ancylorrhynchus splendens Bromley, 1936, *Ann. Transvaal Mus.* **18**: 137.

Types: *crux* in Tervuren, Belgium; *apicalis* in New York; *splendens* in Pretoria. Type-localities: *crux*, Congo Belge; *apicalis*, RHODESIA, Matetsi; *splendens*, TRANSVAAL, Barberton.
Distribution. This is the commonest species of *Ancylorrhynchus*, and the most widespread, extending from the Transvaal to the Congo.

15. Mesonotum mostly black; red colour confined to humeri, postalar calli, and apex of scutellum. Abdomen black, all segments broadly margined with reddish colour.
fulvicollis Bigot

Xiphocera fulvicollis Bigot, 1879, *Ann. Soc. ent. France* (5) **9**: 183, 234.
Type in Oxford. Type-locality: NATAL.
Distribution. Not known apart from type.

– Mesonotum mainly red with a black cross. Abdomen black, with segments 2–5 with a yellowish spot at each side; 6, 7 and genitalia reddish; segment 2 with a white pollinose spot on each side.
insignis Bromley

Ancylorrhynchus insignis Bromley, 1936, *Ann. Transvaal Mus.* **18**: 137.
Type in Pretoria. Type-locality: CAPE PROVINCE.
Distribution. CAPE PROVINCE: Willowmore, January (Dr Brauns).

Genus *Cyrtopogon*

Cyrtopogon Loew, 1847, *Linn. ent.* **2**: 516. Type-species: *Asilus ruficornis* Fabricius, 1794, by definition of Rondani, 1856.

Cyrtopogon is a Holarctic genus of stoutly built, rather *Laphria*-like flies, body usually bare and shining black, obscured by a more or less dense covering of long hairs. They are typically flies of cool uplands, Alpine meadows in Europe, and mountain valleys in southern Asia. In the Himalayas there are very big species of *Cyrtopogon*, and of the related genus *Oldroydia* Hull, 1956.

One African species has been assigned to *Cyrtopogon*, but Hull (1962: 171) wrote that it is atypical '. . . but I prefer to leave it in this genus at present.' I can only concur in this verdict. It certainly looks like *Cyrtopogon*, but I feel we should be suspicious of such an isolated species.

A compact, *Laphria*-like species. Body mostly shining black. Abdomen heavily punctate. Mystax black. Hairs of thorax mostly yellowish, but with black hairs anteriorly on mesonotum. Legs wholly red-brown, hardly darkened at tips. Wings stained brown, tips slightly paler; fork of R_{4+5} with an appendix.
africanus Ricardo

Cyrtopogon africanus Ricardo, 1925, *Ann. Mag. nat. Hist.* (9) **15**: 275.
Type in Cape Town. Type-locality: 'CAPE COLONY'.
Distribution. CAPE PROVINCE: Ceres; Tulbagh, 1 370 m; S.W. AFRICA: Windhoek.

Genus *Daspletis*

Daspletis Loew, 1858, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **15**: 337. Type-species: *Daspletis vulpes* Loew, monotypic.

A small genus of very bristly flies, related to *Microstylum*, but distinguished by the closed and stalked first posterior cell. As remarked under *Microstylum*, there are several small genera that differ only slightly from *Microstylum*, but perhaps *Daspletis*, with its general bristliness, differs more than most.

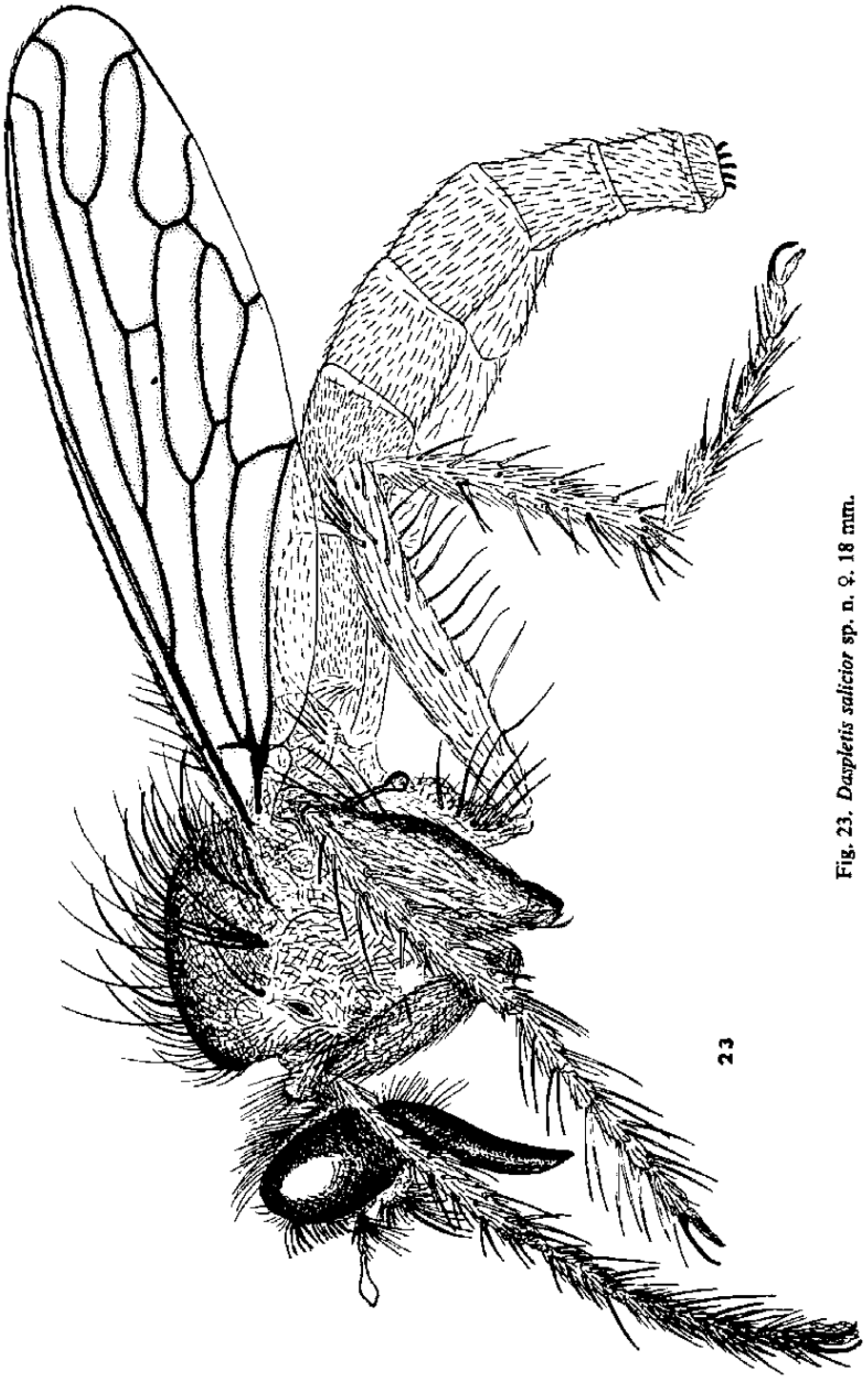


Fig. 23. *Daspletis salicior* sp. n. ♀. 18 mm.

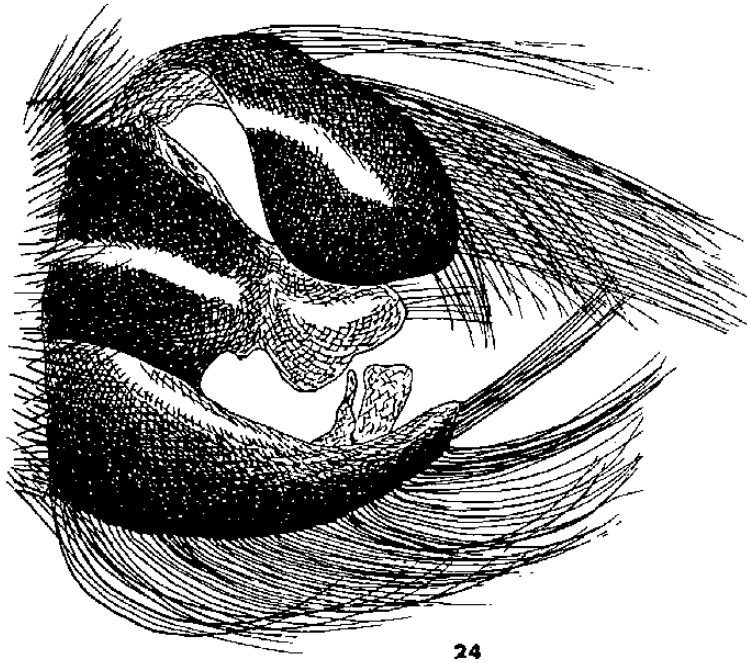


Fig. 24. Male genitalia of *Daspletis vulpes* Loew.

Key to species of *Daspletis*

1. A large, robust species, about 22 mm long, heavily covered with long, dense, bright red hairs. Femora in particular with long, dense red fringes, like a red setter dog. Male genitalia as in fig. 24.

vulpes Loew

Daspletis vulpes Loew, 1858, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **15**: 337.
Type in Berlin. Type-locality: BOTSWANA, Ngami.
Distribution. BOTSWANA. ZAMBIA: Livingstone.

– Smaller, slenderer species, 16–20 mm long, no conspicuous long red hair.....2

2. Hind femora with black stripe *dorsally*, red ventrally. Wings clear.

hirtus Ricardo

Daspletis hirtus Ricardo, 1925, *Ann. Mag. nat. Hist.* (9) **15**: 263.
Type in London. Type-locality: RHODESIA, Sawmills.
Distribution. RHODESIA. BOTSWANA: Ghanzi. TRANSVAAL: Pretoria.

– Hind femora with black stripe *ventrally*, or more uniformly blackish. Wings may be more or less brown along veins.....3

3. Dorsum of abdomen with coarse, white hairs, denser on hind margin of each segment. Femora dark red-black.

albosetatus Hull

Daspletis albosetatus Hull, 1967, *S. Afr. Anim. Life.* **13**: 234–283.
Type in Lund, Sweden. Type-locality: S.W. AFRICA, Kaokoveld.
Distribution. S.W. AFRICA: Kaokoveld, Sanitatas, 136 km S.W. of Ohopoho; 56 km E. of Gobabeb; Oshikango. ANGOLA: Hulla District.

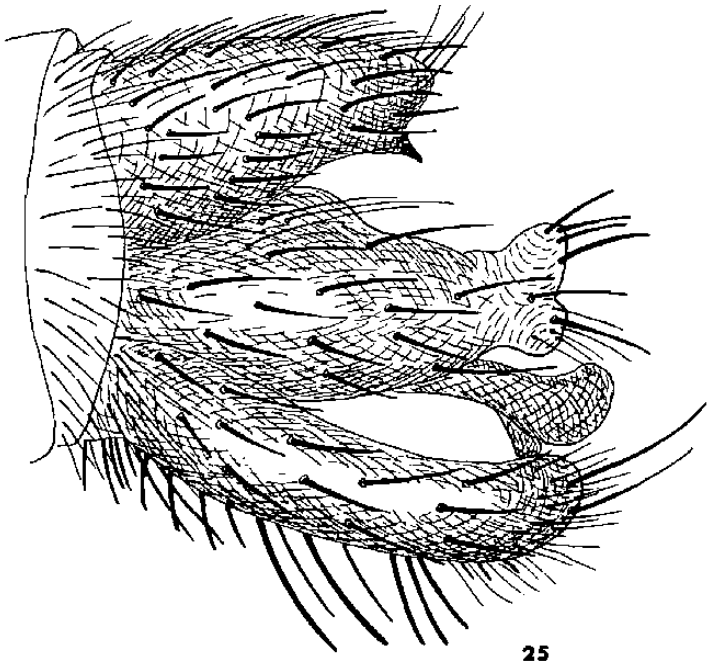


Fig. 25. Male genitalia of *Daspletis salicior* sp. n.

- Dorsum of abdomen with fine white hairs, uniformly scattered. Femora clearly red dorsally, black ventrally. Male genitalia as in fig. 25.

salicior sp. n.

Type in Pretoria. Type-locality: CAPE PROVINCE, Willowmore (Dr Brauns) ♂, Twee Rivieren ♀.
Distribution. Type material only.

Genus *Gonioscelis*

Gonioscelis Schiner, 1866, *Verh. Zool.-bot. Ges. Wien* **16**: 670. Type-species: *Dasypogon hispidus* Wiedemann, by original designation.

This is probably one of the most distinctive genera of Asilidae, recognized at once by the characteristic structure of the fore femora (fig. 26). The femur is flattened and expanded basally, and armoured ventrally with serried rows of stout spines. Together with the unusually armoured fore tibia, this femur constitutes a raptorial apparatus of considerable power. It would seem that the evolution of such a complex structure would indicate prey that is particularly hard to hold or to penetrate, but I do not know of any relevant information about the prey of *Gonioscelis*.

Engel (1925) published a paper devoted to *Gonioscelis*, but in the same year Miss Ricardo had described several species from material presented to the British Museum by the South African Museum. Engel figured the male genitalia of several species, and I have found that the spinulation of the fore legs can be distinctive, with the additional advantage that it is the same in both sexes. Even so I am unable to present a key to all the described species. There is a good deal of individual variation even in leg structure,

Fig. 26. Head and fore-legs of *Gonioscelis*, showing armature of spines beneath fore femora.

and more so in colouring. About twenty species are recorded from southern Africa, and Engel (1925: 163) wrote that they were especially characteristic of the dry river beds of the Karoo.

There is a good opening for a comprehensive study of *Gonioscelis*, preferably combining the taxonomy with field observations of biology, and particularly choice and handling of prey.

Key to some South African species of *Gonioscelis*

1. Long bristles of mesonotum—dorsocentrals and acrostichals—distinctly extending anterior to transverse suture.....2

– Long bristles of mesonotum—dorsocentrals and acrostichals—posterior only, those anterior to transverse suture being contrastingly short 9

2. Mystax entirely black 3
– Mystax entirely pale, or with a few black hairs in upper part only 4

3. Thorax and abdomen shining black, with only small areas of grey tomentum on abdomen. Wings black-brown.

nigripennis Ricardo

Gonioscelis nigripennis Ricardo, 1925, *Ann. Mag. nat. Hist.* (9) **15**: 269.
Type in London. Type-locality: S.W. AFRICA: Erikson's Drift, Kunene R.
Distribution. S.W. AFRICA: Kunene R., Erikson's Drift; Otjimbumbe.

– Thorax and abdomen covered with brown and grey tomentum. Wings no darker than smoky brown.

hispidus Wiedemann

Dasypogon hispidus Wiedemann, 1819, *Zool. Magaz.* **1**: 3; *Auss. zweifl. Ins.*
Type in Berlin. Type-locality: CAPE.
Distribution. CAPE PROVINCE: Vanrhynsdorp; Stellenbosch; Klaver.

4. Facial tubercle strong, ending abruptly, nearer to antennal bases than length of first antennal segment 5
– Facial tubercle smaller, merging gently into face, ending further from antennal bases than length of first antennal segment 6

5. Bristles of mesonotum unusually strong; black dorsocentrals and acrostichals extend to anterior margin, while behind suture the bristles and a few intermingled hairs are yellowish white. Wings tinged with brown, especially along veins, but not heavily stained. Venter of abdomen with greyish brown tomentum.

haemorhous Schiner

Gonioscelis haemorhous Schiner, 1867, *Verh. zool.-bot. Ges. Wien* **17**: 362.
Type in Vienna. Type-locality: 'Afrika'.
Distribution. CAPE PROVINCE: Namaqualand, O'Okiep.

– Mesonotum covered with soft, fine red hairs, mixed with slender bristles of the same colour. Venter of abdomen posteriorly shining red, like genitalia. Fore tibiae with a prominent row of stout black spines (fig. 27).

ceresae sp. nov.

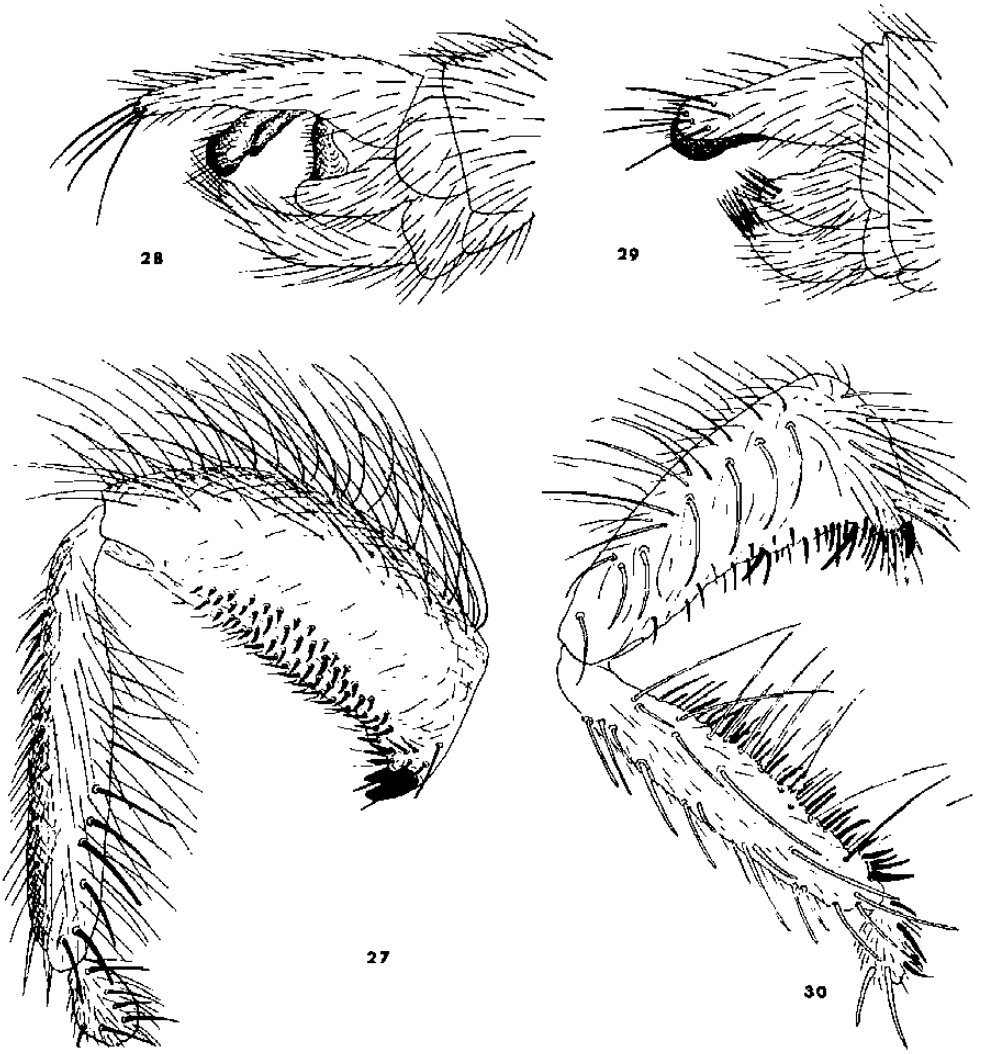
Type in London. Type-locality: CAPE PROVINCE: Ceres (R. E. Turner).
Distribution. Known only from the type-locality.

6. Bases of fore femora broadly black, and rest of legs extensively black 7
– Legs predominantly yellow, though with some black on anterior faces of fore legs 8

7. Thorax, legs and abdomen with long, shaggy hair. Male upper forceps long and acute (fig. 28). Fore femora, fig. 30.

genitalis Ricardo

Gonioscelis genitalis Ricardo, 1925, *Ann. Mag. nat. Hist.* (9) **15**: 271.
Type in London. Type-locality: S.W. AFRICA: Ongandjere.
Distribution. S.W. AFRICA. ORANGE FREE STATE: Harrismith; Bosrand. RHODESIA: Salisbury. ZAMBIA.



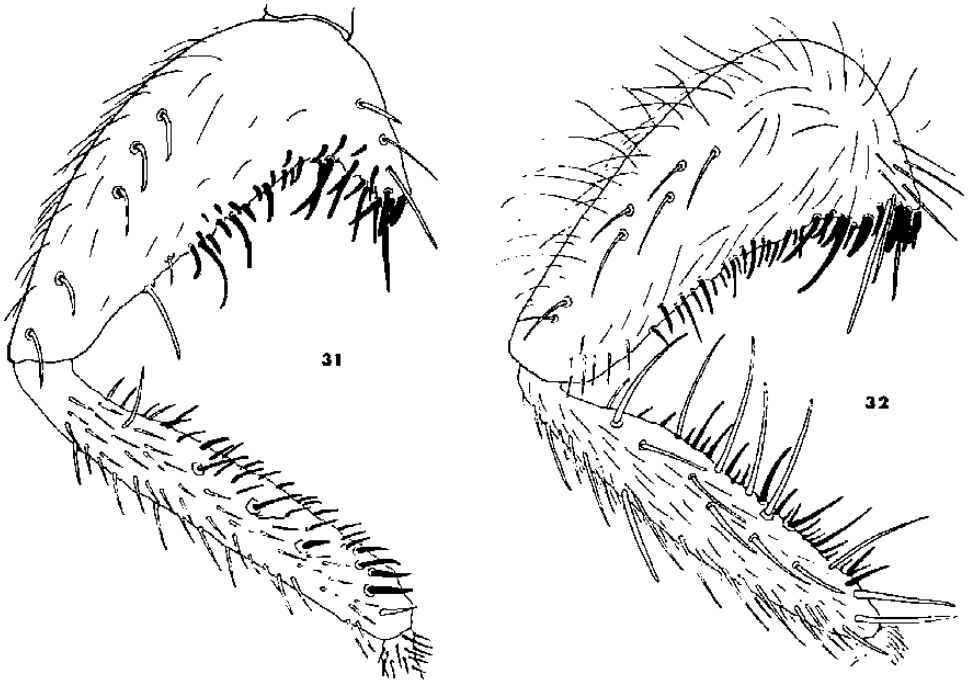
Figs 27–30. (27) Fore femora and tibia of *Gonioscelis ceresae* sp. n.; (28) male genitalia of *Gonioscelis genitalis* Ricardo; (29) male genitalia of *Gonioscelis truncatus* sp. n.; (30) fore femur and tibia of *Gonioscelis genitalis* Ricardo.

– Hairs of body short, especially so on thorax, where dorsocentral bristles stand out because they are not lost among hairs. Male upper forceps narrow, but short (fig. 29).

truncatus sp. nov.

Type in Pietermaritzburg. Type-locality: LESOTHO, Maseru District, Roma Mission, Upper Cave Sandstone Level, 1 830 m, Jan. 1963 (Stuckenberg).
Distribution. LESOTHO: 10 paratypes from same locality. TRANSVAAL: Piet Retief.

8 Fore femora with a hook-like projection (fig. 31); fore tibiae with short black



Figs 31–32. (31) Fore femur and tibia of *Gonioscelis longulus* Ricardo; (32) fore femur and tibia of *Gonioscelis mantis* Loew.

spines, and few or no long pale hairs or bristles. Femora without posterior black stripe.

longulus Ricardo

Gonioscelis longulus Ricardo, 1925, *Ann. Mag. nat. Hist.* (9) **15**: 270.
Type in London. Type-locality: ZULULAND, M'fongosi (W. E. Jones).
Distribution. ZULULAND. NATAL: Drakensberg, Little Berg summit, Themeda Grassland (Stuckenberg).

– Fore femora broadly triangular at base, without a hook-like projection (fig. 32). Fore tibiae with long, pale bristles as well as black spines. Femora with well defined black stripe.

mantis Loew

Stenopogon mantis Loew, 1857, *Ber. Vergl. K. Preuss. Akad. Wiss.* **1852**: 659.
Type in Berlin. Type-locality: MOÇAMBIQUE (Peters).
Distribution. The identity and specific limits of *mantis* are by no means certain, and nothing useful can at present be said about its distribution.

9. Abdomen shining red, contrasting with dull brown thorax 10
– Abdomen covered with yellowish grey tomentum, not contrasting with thorax . . 11
10. Fore tibiae with a row of five strong black spines, very prominent. Mystax pale, contrasting with orange occipital hairs. Upper forceps of male short and blunt.

lacertosus Engel

Gonioscelis lacertosus Engel, 1925, *Mitt. zool. Mus. Berlin* **12**: 166.
Type in Berlin. Type-locality: CAPE PROVINCE, Uniondale.
Distribution. CAPE PROVINCE: Uniondale; Port Elizabeth; Elandsberg Mts, S. of Cockscomb Peak, Patensie Area (B. & P. Stuckenberg).

– Fore tibiae with weak spines, not conspicuous among hairs. Mystax and occipital hairs of the same yellow colour.

rufescens Ricardo

Gonioscelis rufescens Ricardo, 1925, *Ann. Mag. nat. Hist.* **(9) 15**: 268.
Type in London. Type-locality: RHODESIA, Bulawayo.
Distribution. RHODESIA: Bulawayo and Sawmills, December.

11. All femora with stiff black bristles; fore femora in particular with a conspicuous row on posterior face. Resembling *rufescens* Ricardo, but with the abdomen dorsally covered with yellowish-grey tomentum, except for the last two or three tergites, which are partly bare and shining yellow. Male upper forceps pointed and downturned at tip.

ventralis Schiner

Gonioscelis ventralis Schiner, 1866, *Verh. zool.-bot. Ges. Wien* **16**: 363.
Type in Vienna. Type-locality: 'Afrika'.
Distribution. Recorded by Engel (1925: 167) from TRANSVAAL: Waterberg; Lichtenburg. In the Natal Museum from ZULULAND: Ndumu Reserve and Nohlangosi. BOTSWANA: Mahalapye (Schofield). ?RHODESIA.

– Without these prominent black bristles.

[several undescribed species]

Genus *Habropogon*

Habropogon Loew, 1847, *Linn. Ent.* **2**: 463. Type-species: *Dasypogon exquisitus* Meigen, by original designation.

Both the name of the genus and that of the type-species refer to the neat, compact appearance of *Habropogon*, with rounded head, vertex scarcely excavated, and characterized by the short, sturdy legs, with contracted tarsi. On the fore and middle legs, at least, the basitarsus is not appreciably longer than the following segment.

Habropogon is a Palaearctic genus, common in scrubby areas in southern Europe and the Mediterranean subregion. Wulp (1899) described a species from Aden, and Miss Ricardo (1925: 274) described *Habropogon rhodesii*, a large species, very different in general appearance from the small or tiny European species. A moment's consideration shows that this is the same species that Hull (1962: 145) described, from the same locality, as *Pycnomerinx annulatus*. He brings *Habropogon* and *Pycnomerinx* to different parts of his key to genera, on the basis of the differently shaped antennae, but Ricardo drew attention to precisely this fact. Hull also listed *Dasypogon antigenes* Walker as a *Habropogon*, but he was mistaken: it is a *Stenopogon*.

Dr Irwin's material contains a genuine *Habropogon*, apparently undescribed, from the Cape Province, near Hondeklipbaai.

Genus *Hermannella*

Hermannella Hull, 1962, *Robber Flies of the World*: 34. Type-species: *Hermannella engeli* Hull, 1962, by original designation.

A single species, characterized by the structure of head and antennae (fig. 33), was labelled by Engel as belonging to the Holarctic genus *Myelaphus* Bigot. During his revisionary work for his world monograph, Hull removed this (undescribed) species from *Myelaphus*, to which its resemblance is probably only superficial, and created for it the new, monotypic genus *Hermannella*.

Apart from its unique antennae, *Hermannella* seems closely allied to *Scylaticus* in general, though it has the smooth face, without tubercle, of *Spanurus*. The few specimens that I have yet seen appear to belong to a single species, with the reservation mentioned below, under distribution.

Head structure as in fig. 33; in profile face only gently rounded, and merging dorsally into an antennal tubercle. In front view, face is broad, and vertex even broader, expanding to twice its breadth at antennae, and hardly excavated at all between eyes. Face, frons, vertex and occiput clothed in long, fine white hairs. Body patterned in red and black, like a *Scylaticus*, with large triangles of grey tomentum on the abdomen. Legs reddish yellow, including tarsi; only hind femora blackish. Wings clear in basal half, apical half more or less infuscated, especially along veins.

engeli Hull

Hermannella engeli Hull, 1962, *Robber Flies of the World*: 35.
Type in London. Type-locality: RHODESIA, Bulawayo.
Distribution. RHODESIA: Bulawayo; Bazely Bridge (Cookson). NATAL: Weenen (Thomasset).
A male from LESOTHO: Mamathes (Jacot-Guillarmod) has the legs all black and the wings almost

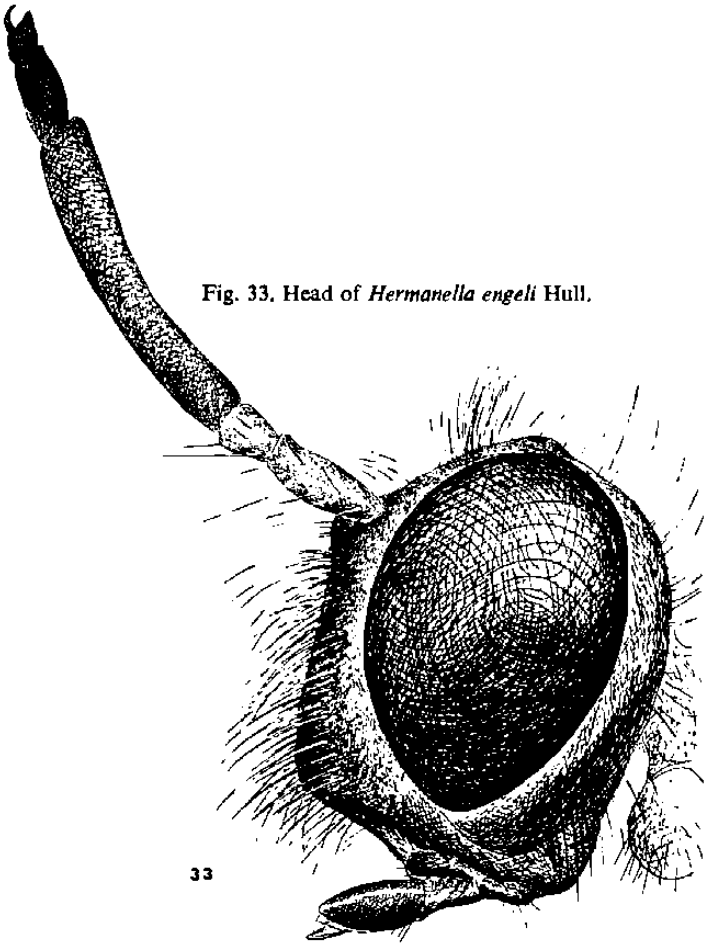


Fig. 33. Head of *Hermanella engeli* Hull.

uniformly brown. It quite possibly represents a second species, but there is sufficient variation among the four specimens known to me to make it impossible to define specific limits until more material is available.

Genus *Heteropogon*

Heteropogon Loew, 1847, *Linn. Ent.* **2**: 488. Type-species: *Dasypogon manicatus* Meigen, by designation of Back, 1909.

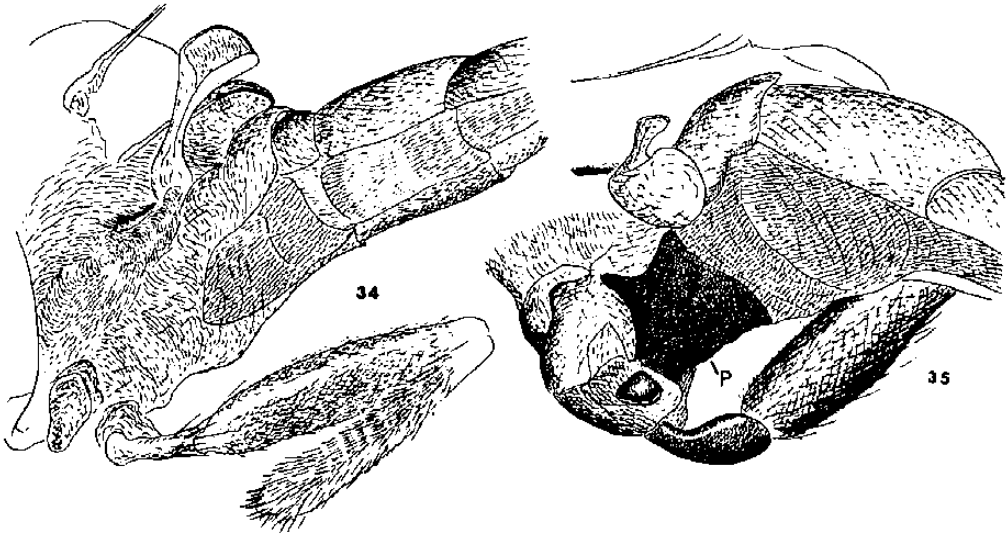
This Holarctic genus is difficult to define, or at least to delimit, and there has been uncertainty as to whether or not it is synonymous with *Anisopogon* Loew, 1874. Hull (1962: 194) declined to express an opinion as to whether the two species recorded from South Africa were correctly placed, but it seems to me that *peregrinus* Engel certainly belongs here. It has the membranous post-metacoxal area which, in Hull's opinion, separates it from *Rhabdogaster* (figs 34, 35). It is a well-defined species, and should be easily distinguished from *gracilis* Engel & Cuthbertson, though at the time of writing I am not sure that I have correctly identified the latter.

Key to South African species of *Heteropogon**

1. A robust, black species with dark wings (fig. 36). Mystax mainly or wholly black; face covered with whitish tomentum, and contrasting strongly with bare, shining black frons and vertex. Thorax and abdomen shining black, with only a little grey tomentum at sides. Femora mainly blackish, mid and hind femora red ventrally; rest of legs red. Wings almost uniformly dark, a little paler on axillary lobe.
peregrinus Engel

Heteropogon peregrinus Engel, 1929, *Ann. Transv. Mus.* **13**: 168.
Type in Pretoria. Type-locality: CAPE PROVINCE: Willowmore.
Distribution. CAPE PROVINCE: Willowmore; Garcias Forestry Station (van Son).

* See also *H. flavidus* Lindner (1973) and *H. oldroydi* Lindner (1973).



Figs 34–35. Postmetacoxal area: sclerotized in *Rhabdogaster nudus* Loew (34); membranous in *Heteropogon peregrinus* Engel (35).

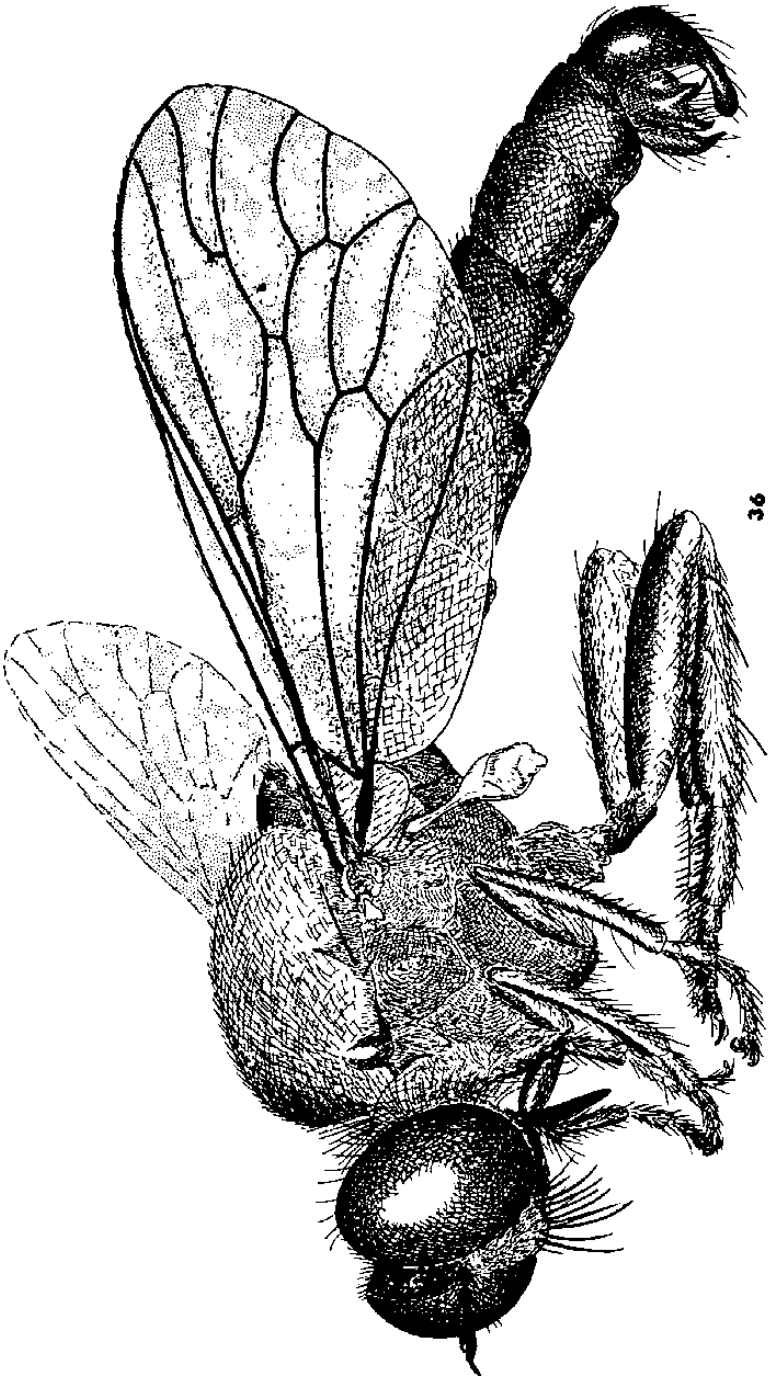


Fig. 36. *Heteropogon peregrinus* Engel, ♂. 10 mm.

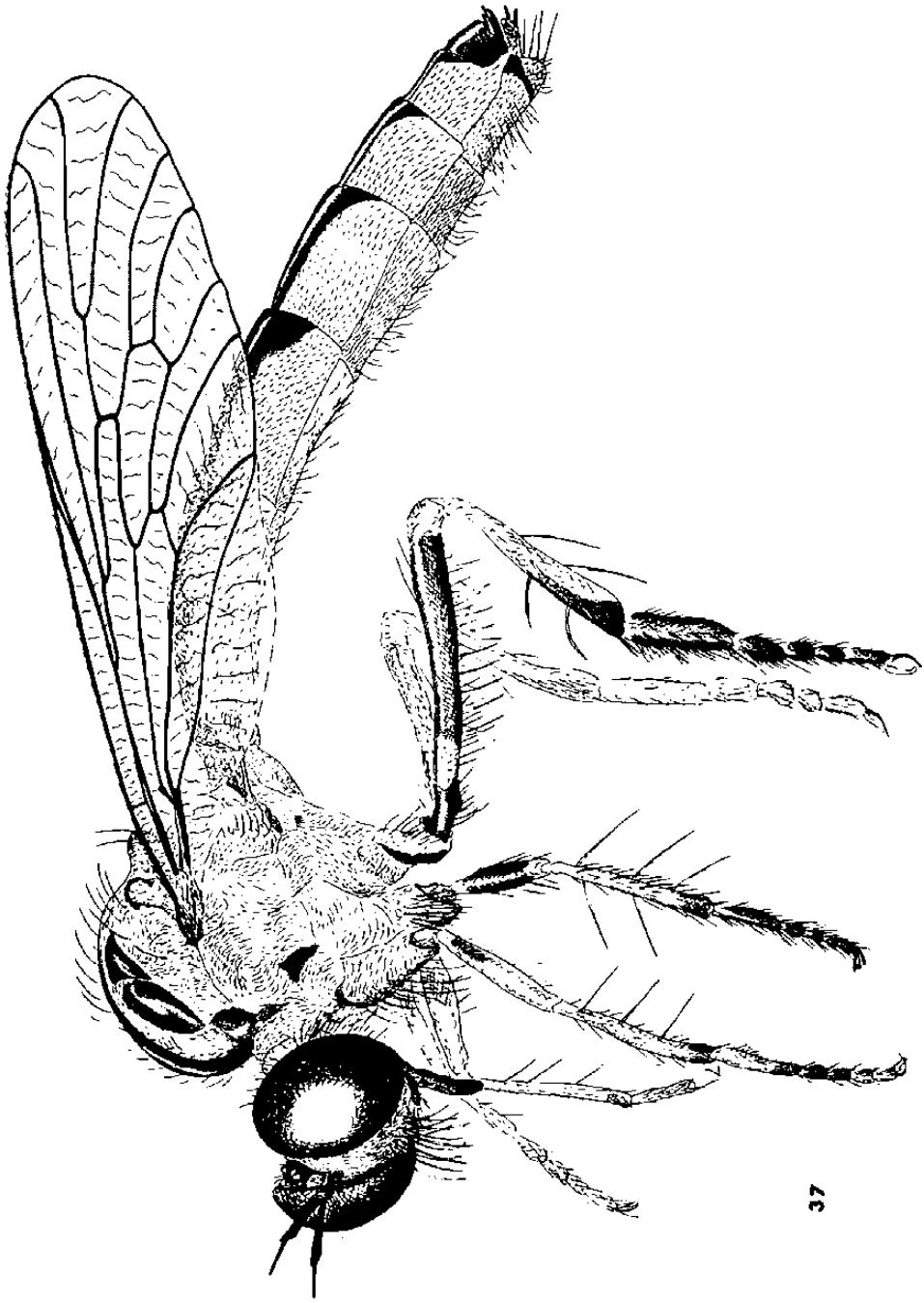


Fig. 37. *Heteropogon gracilis* Engel & Cuthbertson ♀. 8 mm.

– A small, grey-dusted species, with clear wings and long, slender abdomen (fig. 37). Mystax white; face and frons not contrasted. Mesonotum covered with dense ashy-grey tomentum, except on humeri, on middle stripe ending at suture, on two lateral spots and on postalar callosities. Mesopleuron with a conspicuous triangular jet-black spot. Legs shining black, bases of femora and tibiae yellowish brown. Wings hyaline.

gracilis Engel & Cuthbertson

Heteropogon gracilis Engel & Cuthbertson, 1937, *Trans. Rhod. Sci. Ass.* **35**: 13.
Type in Bulawayo. Type-locality: RHODESIA, Lomagundi, Trefonan Farm, near Trelawny.
Distribution. RHODESIA. ? S.W. AFRICA: 25 km E. of Gobabis (B.M. A. Afr. Exped., 1972).

Genus *Holopogon*

Holopogon Loew, 1847, *Linn. Ent.* **2**: 473. Type-species: *Dasypogon nigripennis* Meigen, by designation of Coquillet, 1910.

A 'negative genus', in the sense that it comes near the end of keys, and is chiefly recognized by not having any of the preceding positive characters. From adjacent genera *Holopogon* is distinguished by the abundance of soft hairs forming the mystax, which extends most of the way from epistoma to antennae.

There are two described species from southern Africa, and two more are now described.

Key to South African species of *Holopogon*

1. Wings clear, glassy. Mystax soft, white. Body and legs black, except for tibiae which may be bright reddish with black tips. Covered with long, soft hairs, giving the whole fly a furry appearance (fig. 38).

fugax Loew

Holopogon fugax Loew, 1857, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **14**: 350.
Type in Berlin. Type-locality: Caffraria (Wahlberg).
Distribution. CAPE PROVINCE: Willowmore (Brauns). Resolution, Albany Dt. (Walton). S.W. AFRICA: Seeheim (van Son). TRANSVAAL: Kruger National Park (Potgieter & Strydom).

– Wings greyish or brownish. Hairs and bristles of head black 2

2. Legs uniformly black. Mesonotum with a rhomboidal spot of conspicuous silvery pollen. Scutellum with 2 pairs of long, very slender black bristles.

niveoscutum Hull

Holopogon niveoscutum Hull, 1967, *S. African Animal Life* **13**: 239.
Type in Lund. Type-locality: LESOTHO: Mamalapi Mts (Jacot-Guillarmod).
Distribution. Known only from unique type.

– Legs extensively yellow or red. Scutellum with more than 2 pairs of black bristles 3

3. Body more elongate, shining black. Humeral calli bright orange. Mesonotum shining black, with golden tomentum only at sides, in triangular patches above humeri, and in a bifid patch before scutellum. Mesopleuron orange in ground colour, and covered with greyish tomentum. Legs without conspicuous whitish hairs. **vumba** sp. n.

Type and 6 paratypes in Pietermaritzburg. Type-locality: RHODESIA, Vumba Region, 1 830 m (Cookson).
Distribution. Known only from types.

Fig. 38. *Holopogon fugax* Loew ♂. 7 mm.

– Body more compact, more heavily tomented. Humeral calli and mesopleura not orange. Tomentum of mesonotum united into a single area, leaving only paired stripes and lateral spots bare. Legs with conspicuous soft white hairs, especially on femora.

tomentosus sp. n.

Type ♂, 1 ♀ paratype in Pietermaritzburg. Type-locality: CAPE PROVINCE: Elandsberg Mts, S. of Cockscomb Peak, Patensie area, (B. & P. Stuckenberg).
Distribution. Known only from types.

Genus *Hypenetes*

Hypenetes Loew, 1857. *Öfvers. Kongl. Vet.-Akad. Förhandl.* 14: 349; 1860, *Dipterenfauna Südafr.*: 161. Type-species: *Hypenetes stigmatias* Loew, 1857, monotypic.

The South American genus *Clavator* Philippi (1865: type-species *Clavator punctipennis* Philippi, preoccupied Martens, 1860, Mollusca) has been synonymized with *Hypenetes*, and although Hull (1962: 152) separated the South American species into subgenus *Tillobroma*, the authors of the South American Catalog (1970: 35b, 18) merged them again. The African and South American species resemble each other in so many ways, including the general structure of the inverted hypopygium (figs 44–50), that it seems unlikely that they could be merely convergent. In that case *Hypenetes* suggests a Gondwanian link between the two continents.

Hypenetes is distinctive enough to be recognized by its general appearance (fig. 39), and is one of the most handsome genera of African Asilidae. The head structure in profile, with very prominent facial tubercle, and the clavate antennae, together with the spotted wings, all give *Hypenetes* a characteristic appearance. The large, quadrate and heavily marked stigma (S, fig. 39) is a striking feature of this genus, unusual in Asilidae, and accounting for the name of the type-species, *Hypenetes stigmatias* Loew. The male genitalia are inverted, and the hypandrium undivided, giving a characteristic structure as shown in figs 44–50. The superior forceps (ventral in position because of inversion of the terminalia) show considerable, and sometimes conspicuous, specific differences.

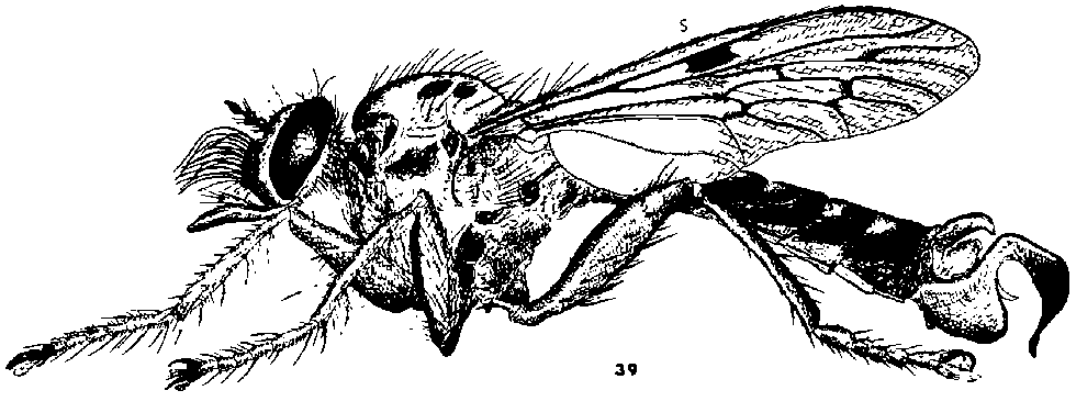


Fig. 39. *Hypenetes galactodes* sp. n. 16 mm.

Key to South African species of *Hypenetes*

1. Wings heavily stained, appearing almost uniformly brown to the naked eye, but centres of some cells paler, and stigmal spot (in base of marginal cell, close against fork of radial sector) visible 2
- Wings more or less clear, with a distinct stigmal spot, and a variable number of other brown spots 3
2. Body covered with fine, soft hairs, particularly obvious on occiput, abdomen and legs. Male genitalia resemble those of *nigrispina*, fig. 46; superior forceps with an internal process.

morosus sp. n.

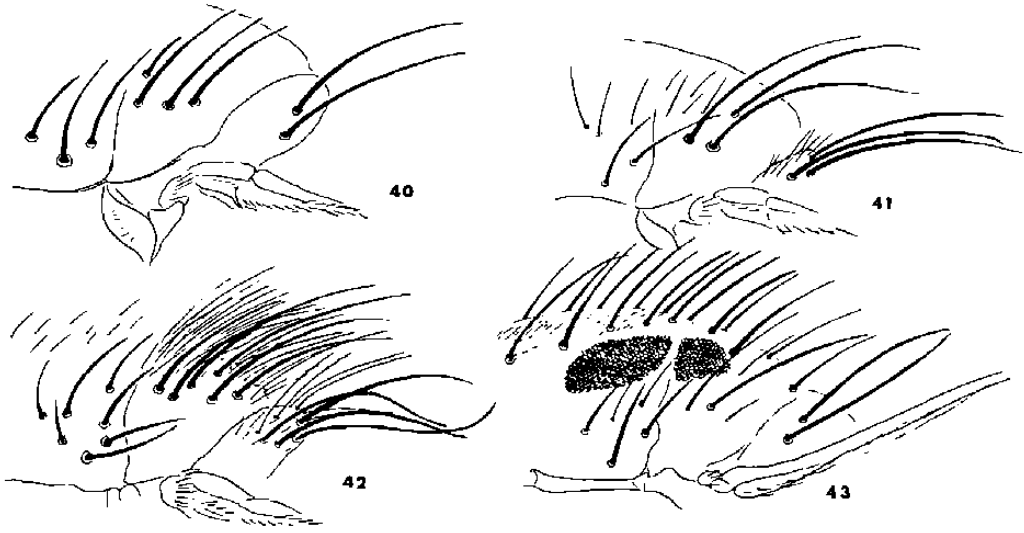
Type ♂ in Pretoria. Type-locality: CAPE PROVINCE: Willowmore, September (Dr Brauns).
Distribution. Known from type only.

- Body not conspicuously hairy, lacking fine, soft hairs on occiput, abdomen or legs. Male genitalia as in fig. 49, superior forceps smoother and more convex, without internal process.

rotundus sp. n.

Type in Pretoria. Type-locality: CAPE PROVINCE, Willowmore (Dr Brauns).
Distribution. Known only from type. Certainly distinct from preceding.

3. First two segments of antennae black 4
- First two segments of antennae reddish 6
4. A small, fragile, black species. Dorsocentral bristles long, but weak, indistinguishable from long hairs. Fore legs black posteriorly as well as anteriorly, with a bright red ring at knee and perhaps at mid-tibia 5



Figs 40–43. Thoracic bristles of *Hypenetes*: (40) *nigrispina* sp. n. (*morosus* sp. n. similar); (41) *stigmatias* Loew (*miles* sp. n. similar); (42) *grisescens* Engel; (43) *galactodes* sp. n.

– A larger, more robust species, patterned in yellow and brown tomentum, and with abdomen extensively orange on both sides. Dorsocentrals very strong (cf. *galactodes*, fig. 43). Male genitalia with both epandrium and hypandrium more elongate; superior forceps not curved inwards.

grisescens Engel

Hypenetes grisescens Engel, 1929, *Ann. Transvaal Mus.* 13: 166.
Type in Munich. Type-locality: CAPE PROVINCE, Stellenbosch.
Distribution. Known only from type-locality.

5. Male genitalia with long process, and males with anal area of wing white (cf. *galactodes*, fig. 39). Wings of both sexes boldly spotted on forks and crossveins. All tibiae with a median red ring, though this is sometimes obscure in females. Bristles of legs entirely black, except for a few *red* ones.

irwini sp. n.

Type in Pietermaritzburg. Type-locality: CAPE PROVINCE, Nuwedam (Irwin). Distribution. Known only from type ♂, 1 ♀ and 2 ♀ paratypes.

– Male genitalia blunt, without long process (fig. 47). Male wings not strikingly white. Wings of both sexes almost uncoloured except for stigma. Tibiae black except for red knees. Bristles of legs mostly *white*. Thoracic bristles, fig. 41.

***stigmatias** Loew

Hypenetes stigmatias Loew, 1857, *Öfvers. Kongl Vet.-Akad. Förhandl.* 14: 350.
Type in Berlin. Type-locality: 'Caffraria' (Wahlberg).
Distribution. CAPE PROVINCE: Cape Flats, Rapenburg (R. E. Turner); Stellenbosch (R. I. Nel). NATAL: Natal Drakensberg, Cathedral Peak, Indumeni River, Fynbos, Consocies, 1 920 m (Stuckenberg). March, August, October.

6. Second segment of palpi orange, contrasting with black first segment. Males often with milky white anal and axillary cells (fig. 39) 7
– Second segment of palpi black 9
7. Dully marked species; wing markings greyish brown, not sharply defined. Mesonotum blackish, with ill-defined pattern, but distinct grey margins. Dorsocentral bristles weak anteriorly (fig. 40). Male genitalia as in fig. 46, superior forceps nearly twice as long as hypandrium.

nigrispina sp. n.

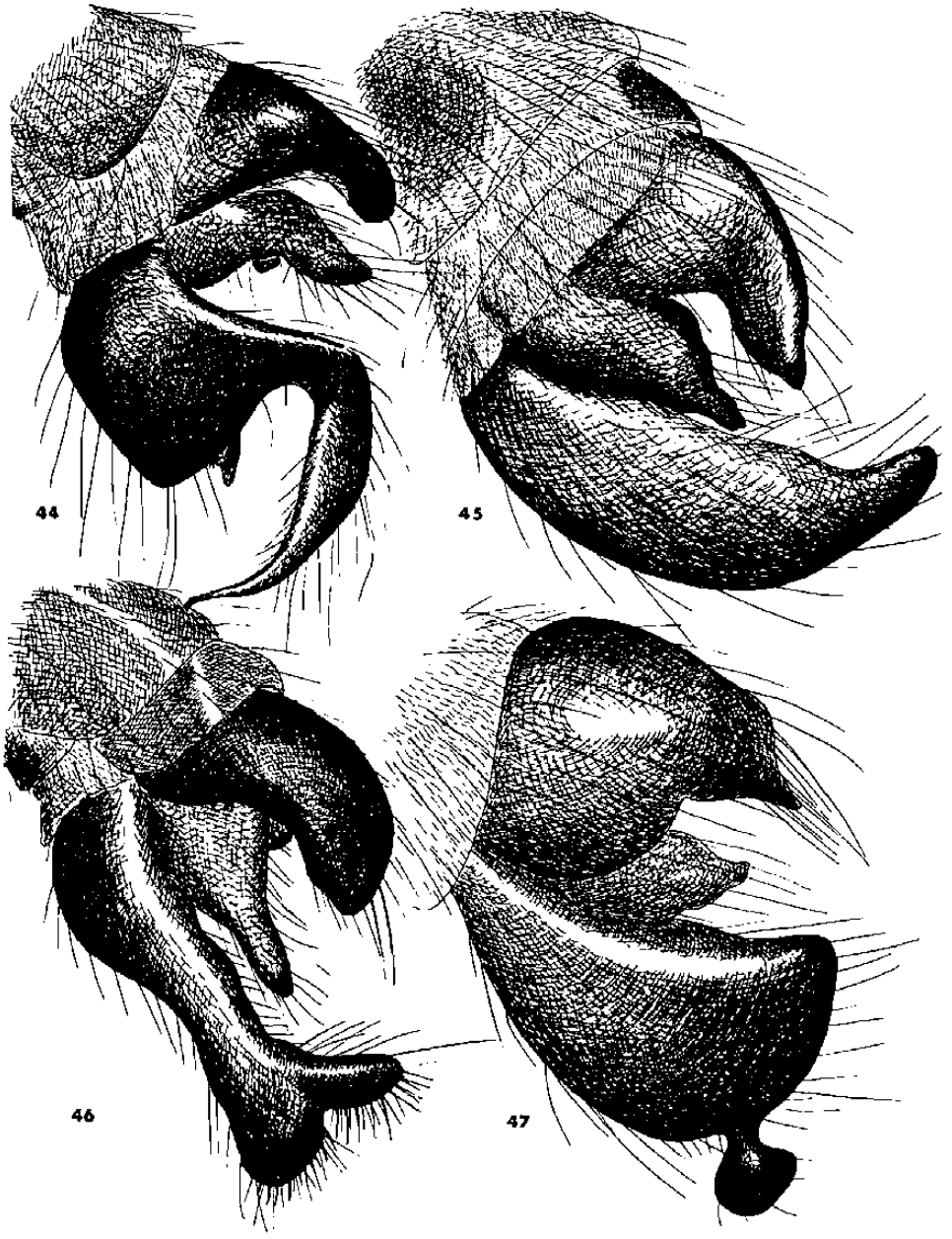
Type ♂ in London. Type-locality: EAST CAPE PROVINCE: Katberg, 1 220 m. October (R. E. Turner).
Distribution. CAPE PROVINCE: Katberg; Somerset East (R. E. Turner). NATAL: Malvern; Ulundi (G. S. K. Marshall). Zululand, Ndumu Reserve (T. Oatley). Durban (G. Burn).

– Boldly marked species, both mesonotum and wings with conspicuous pattern . . 8
8. Male genitalia as in fig. 44, with conspicuously hooked superior forceps. Lateral patches of mesonotum well defined, and dorsocentral bristles long, extending to fore margin of mesonotum, especially in males (fig. 43).

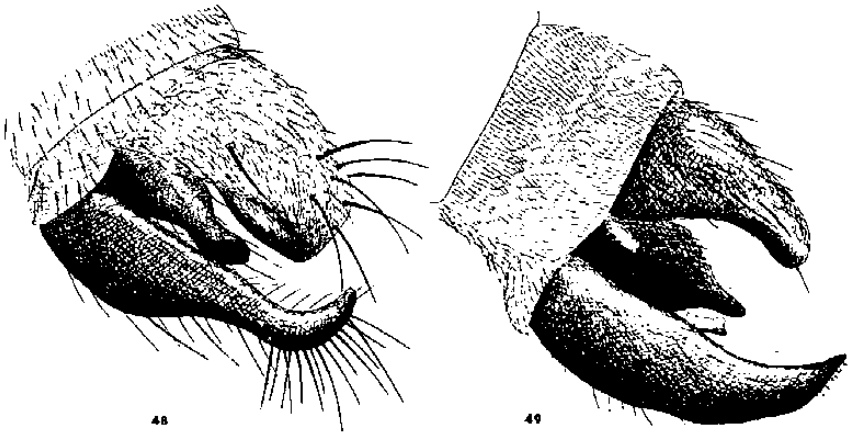
galactodes sp. n.
(Hermann in litt.)

Type ♂ in London. Type-locality: CAPE PROVINCE: Port St Johns, Pondoland, September (R. E. Turner).
Distribution. CAPE PROVINCE: Port St. Johns; Somerset East; Port Alfred: Coffee Bay (J. G. H. Londt).

* Note the spelling of this name, which is often misspelled in collections.



Figs 44–47. Male genitalia of *Hypenetes*: (44) *galactodes* sp. n.; (45) *sturmias* sp. n.; (46) *nigrispina* sp. n. (also *morosus* sp. n.); (47) *stigmatias* Loew.



Figs 48–49. Male genitalia of *Hypenetes*: (48) *greatheadi* sp. n.; (49) *rotundus* sp. n.

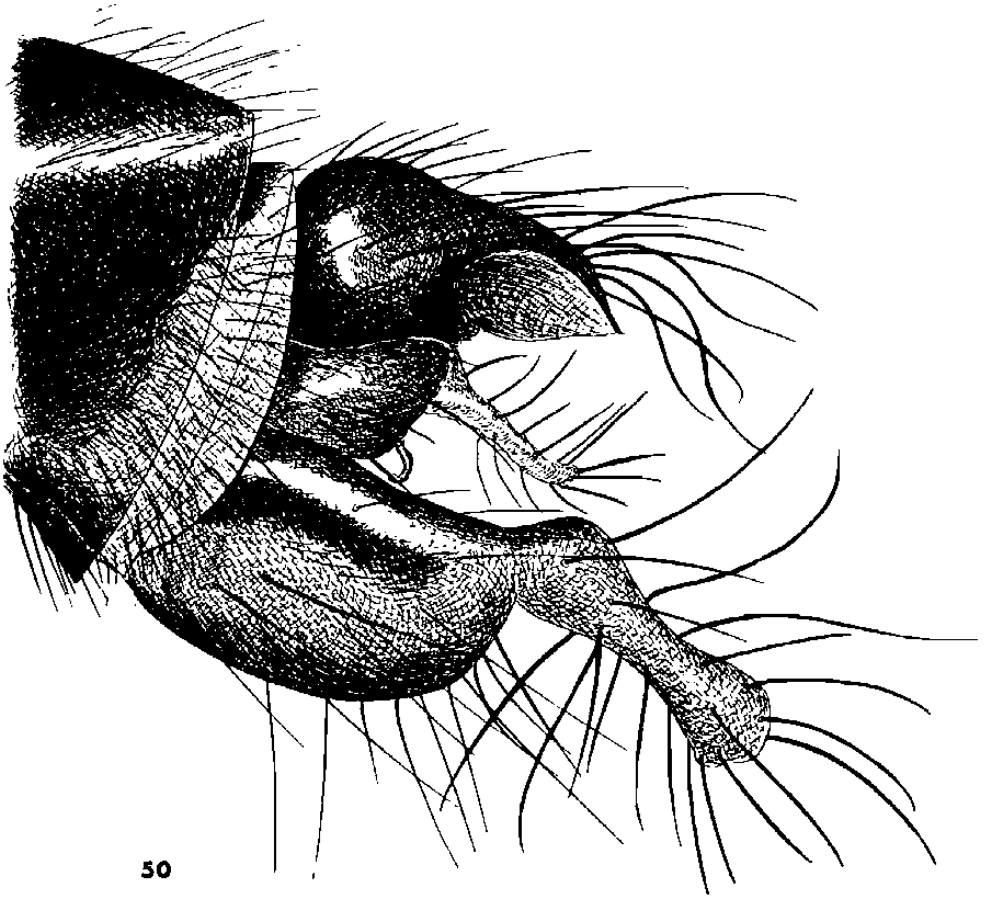


Fig. 50. Male genitalia of *Hypenetes irwini* sp. n.

– Male genitalia as in fig. 48; resembling those of *nigrispina*, but superior forceps shorter and with less prominent process. Lateral patches of mesonotum not unusually prominent; dorsocentral bristles long in front of suture, but weaker anteriorly.

greatheadi sp. n.

Type ♂ in London. Type-locality: CAPE PROVINCE: Nr Addo, 15.x.1959 (D. J. Greathead). Distribution. Known to me only from unique type male.

9. A small, black species, the humeral lobes conspicuously red by contrast. Coxae and pleura blackish, without pattern. Similar to *stigmatias*, but has strong dorsocentrals anteriorly, where *stigmatias* has only soft hair, and also has the fore tibiae red posteriorly, instead of entirely black (fig. 41).

miles sp. n.

Holotype ♂, 1 ♀ paratype in London. Type-locality: CAPE PROVINCE: Mossel Bay, May (R. E. Turner).
Distribution. CAPE PROVINCE: Mossel Bay, May (R. E. Turner); Resolution, Albany (A. Walton).

– A larger species, with handsomely marked thoracic pattern; humeral lobes not contrasting with rest of mesonotum. Coxae and pleura with large red and black patches, and yellowish tomentum, forming a bold pattern. Male genitalia, fig. 45.

sturmias sp. n.

Type ♂, 2 ♂, 1 ♀ paratypes in Pretoria. Type-locality: CAPE PROVINCE: Resolution, Albany Dt., 20.iv.1924 (A. Walton).
Distribution. CAPE PROVINCE: Resolution, Albany (A. Walton). Grahamstown. March (D. J. Greathead), 4, 3 ♀. Committee's Drift, August, 1 ♀. Nr Fort Brown, September, 1 ♀ (D. J. Greathead). 27 km S. of Ft. Beaufort (E. S. Ross & R. E. Leach). Dunbrody, 13 km S. E. of Kirkwood. All paratypes.

Genus *Lycostomus*

Lycostomus Hermann, 1907, *Zeitschr. Syst. Hymen. Dipt.* 7: 4. Type-species: *Lycostomus albifacies* Hermann, 1907, by original designation.

Easily recognized by the unique profile of the face (fig. 51), which slopes strongly forwards and is cut off horizontally below. The words used in the key could be mistakenly interpreted as applying to other genera with a prominent face of a more usual type, but not after this genus has once been seen. It is one of the few Asilidae in which the vertex is not sunken between the eyes, which are small, and separated by an exceptionally broad frons and face, of greater width than one eye. This head structure, including the strong proboscis and the well-developed palpi with a conspicuous sensory pit, implies a specialized prey which is neither caught in active flight—because of the small eyes of *Lycostomus*, nor aggressive—because of the lack of strong defensive bristles. Compare the head of *Lycostomus* with that of *Proagonistes*, which often catches very big wasps (fig. 104).

Hermann and Hull (1962: 215) saw only males of the typical species, and Hull figures a hypopygium with a single process dorsad and paired forceps ventrad (his fig. 1786). There is some confusion whether the genitalia are inverted or not, since the text says 'the *epandrium* is not split or cleft', and fig. 1862 shows this as dorsal but fig. 1755, which shows this process in plan, is labelled as ventral view.

The four specimens available to me at the time of writing are all females, and have

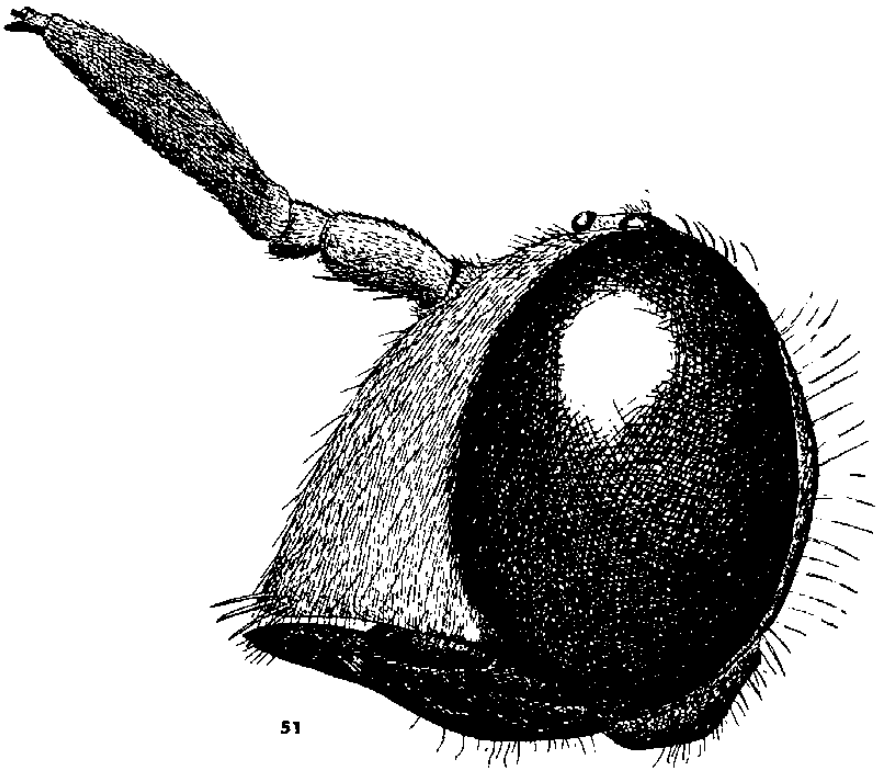


Fig. 51. Head of *Lycostomus albifacies* Hermann.

well-developed acanthophorites in typical Saropogonine manner. They show some variation from the pattern described in the males, as discussed below.

Head and thorax black in ground colour, except for reddish humeri; all covered with greyish white tomentum, and with only fine hairs and weak bristles. Abdomen black-brown, with narrow yellow hind margins to all segments: Hermann remarks that these are visible only from the side in dried specimens, but may be more conspicuous in life. Fore and middle legs reddish brown, hind legs black-brown. Wings clear, only faintly brownish around tip of first basal cell.

albifacies Hermann

Lycostomus albifacies Hermann, 1907, *Zeitschr. Syst. Hymen. Dipt.* 7: 5.
Type in Munich. Type-locality: CAPE PROVINCE, Kimberley.
Distribution. CAPE PROVINCE: Kimberley (type); Belmont, February (J. & L. Ogilvie); ORANGE FREE STATE: Boshof, February (T. T. Fourie). S.W. AFRICA: Otjiwarongo January (L. Ogilvie); Plateau Farm, 3,5 km E. of Aus (B.M. S. Afr. Exped., 1972).

The four females in the British Museum differ somewhat from Hermann's description of the male. The females from S.W. Africa have all three pairs of legs black-brown, and on the abdomen triangular posterolateral patches of grey tomentum are more conspicuous than the reddish hind margins. Variation among the four individuals suggests that in spite of this there is only one species present, but it is possible that the female from SW. Africa may eventually prove to belong to a second, dark-legged species.

Genus *Microstylum*

Microstylum Macquart, 1938, *Dipt. exot.* **1** (2): 26. Type-species: *Dasypogon venosum* Wiedemann, 1821, by designation of Back, 1909.
Mimoscolia Enderlein, 1914, *Wien. ent. Z.* **33**: 168. Type-species: *Mimoscolia fafner* Enderlein, 1914, by original designation.

The peculiarity of wing-venation that distinguishes *Microstylum*—the bulging forward of the second posterior cell into the first, as shown in figs 52, 53—is a reliable diagnostic character, in spite of a considerable range of size. The biggest *Microstylum* occur in Madagascar, culminating in *M. magnum* Bromley with a body-length of over 50 mm, whereas the smallest species are drab, inconspicuous flies of about one-quarter this length. All have a general sturdiness of shape, with clubbed antennae and longish-sharp proboscis, which makes them readily recognizable after only a little study. They

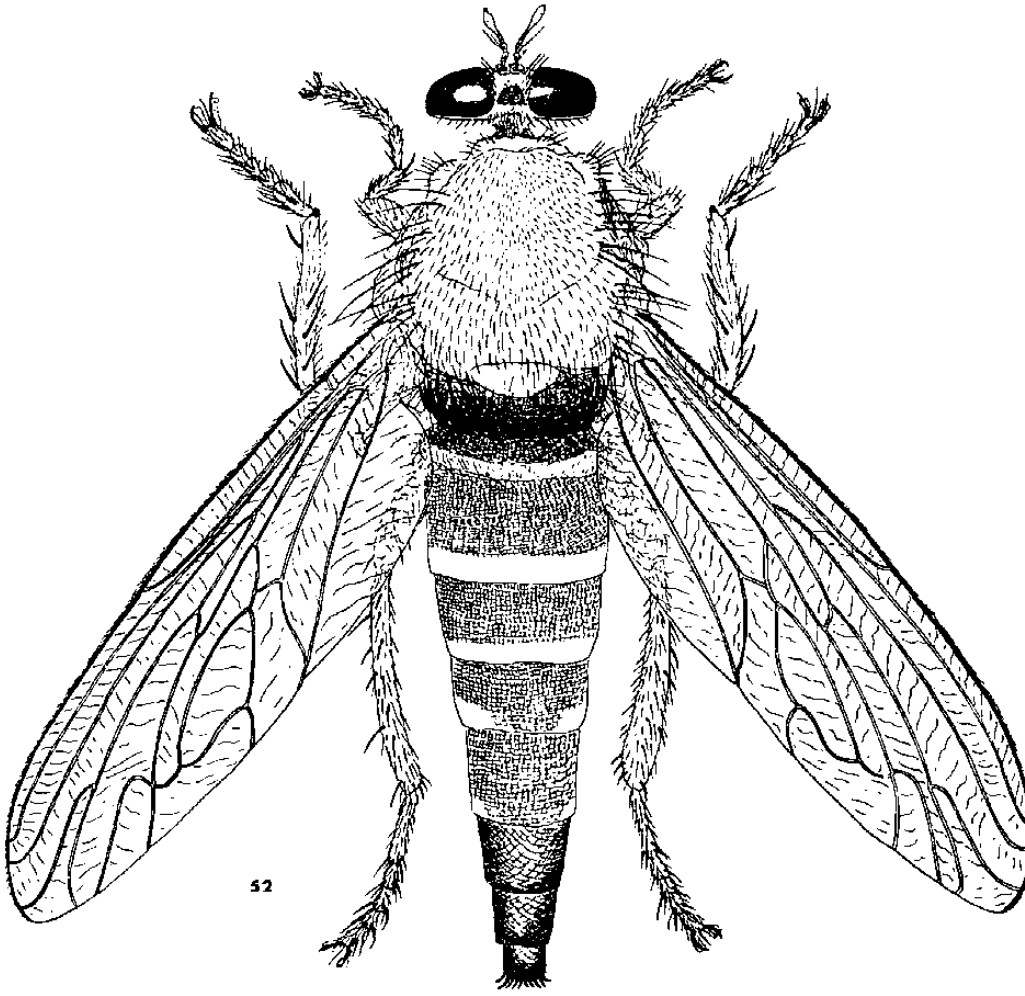
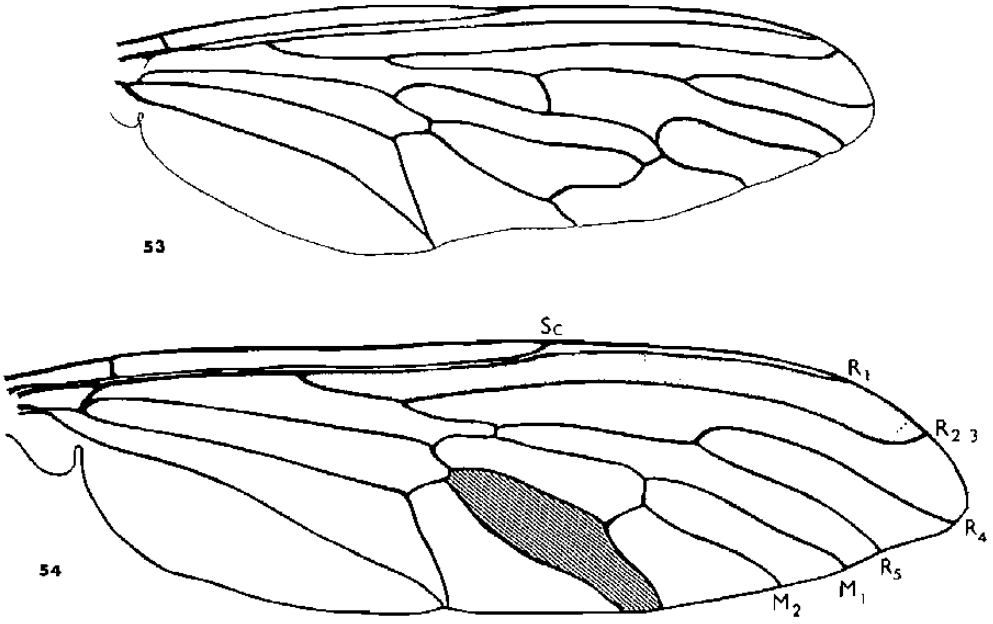


Fig. 52. *Microstylum helenae* Bezzi ♀. 30 mm.

are numerous in collections, and common as individuals, throughout the Old World tropics.

About 45 species occur in southern Africa, and although a few have been recorded on both sides of the Moçambique Channel it is probable that these are mistaken identifications, and that the Madagascar fauna is distinct from that of the mainland.

In my paper on the Asilidae of the Congo Basin (Oldroyd 1970: 264–6) I gave a key to species, which included many, but not all of the species that occur in southern Africa. This key is useful for tentative identification, but the characters of pteropleural bristle and of the preponderance of bristles or hairs on the coxae have not proved entirely satisfactory. The genus is in need of a special study, based on genitalia in both sexes.



Figs 53–54. (53) Wing of *Microstylum*, showing characteristic shape of second posterior cell (shaded); (54) wing of *Neolaparus*, showing marginal (stippled) and fourth posterior (cross-hatched) cells, both open.

One species, *M. helenae* Bezzi (fig. 52) is easily recognized by its bold grey abdominal bands, combined in the female with bare, shining red posterior segments; the male is smaller, with more shrunken abdomen, with the grey bands, but without the red tip. Among the rest there are one or two with grey banded abdomen, but this is noticeably more elongate, and there is a complex of species with dull, dusty black appearance, and wings darkened to various degrees. Two or three species (*pica* Macquart; *aterrimum* Loew; *lacteipenne* Wiedemann; *ustulatum* Engel & Cuthbertson) have the base of the wing milky to a greater or lesser extent.

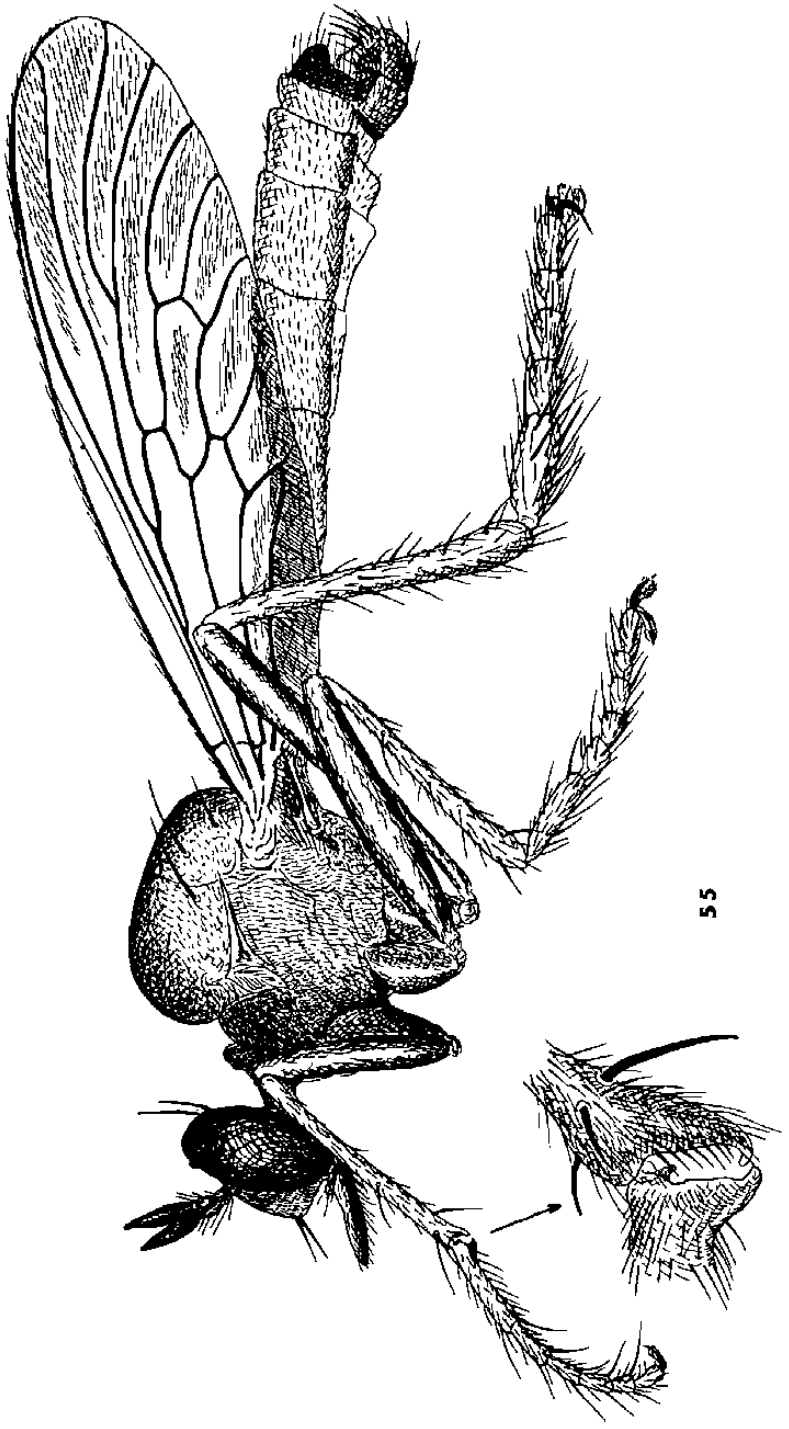


Fig. 55. *Neolaparus* sp. ♂. Detail of spur and process on fore tibia and basitarsus.

Genus *Neolaparus*

Laparus Loew, 1851, *Progr. Realschule Meseritz*: 4. Type-species: *Dasypogon* (*Laparus*) *tabidus* Loew, by original designation. Preoccupied in Lepidoptera.
Lagodias Loew, 1857, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **14**: 345. Type-species: *Lagodias albidipennis* Loew, monotypic.
Neolaparus Williston, 1899, *Psyche* **5**: 255. Change of name for *Laparus* Loew.
Cenopogon Wulp, 1899, *Tijdschr. Ent.* **41**: 120. Type-species: *Cenopogon bifidus* Wulp (= *volcatus* Walker), monotypic.

In my experience this is the most intractable genus of Asilidae. In the first place the type-species *tabidus* Loew was originally said to have been from Brazil, but later Loew altered this locality to '?Cap'. The second species that he originally included, *Dasypogon gracilis* Macquart, is a *Stenopogon* from Algeria.

In spite of this initial confusion the interpretation of the genus *Neolaparus* is not in doubt. It consists of a large number of species of elongate, bare flies, with open marginal cell and spurred fore tibiae (fig. 55). It is not very closely allied to any other African genus except *Lagodias* and *Pegesimallus*, and Dr Papavero (personal communication) suggested to me that it should be placed in the tribe Megapodini. This tribe at present consists exclusively of South American genera of rather miscellaneous and

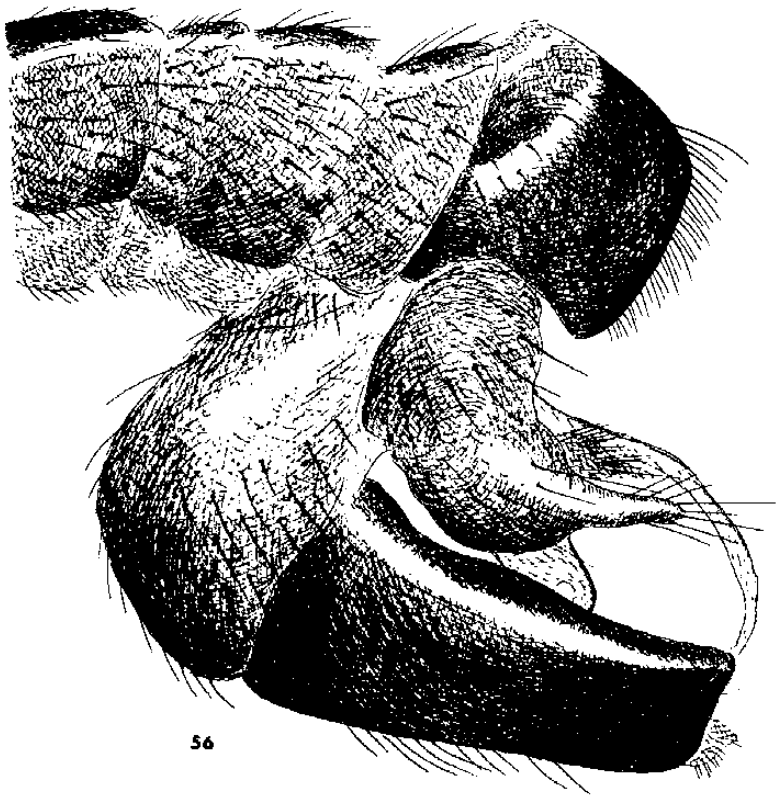


Fig. 56. Male genitalia of *Neolaparus* sp., possibly *funestus* Loew.

peculiar habitus, whereas *Lagodias* and *Neolaparus* are widespread in the Old World tropics.

Lagodias comprises a number of species of which the males have the hind legs conspicuously ornamented with fringes of long scales. It seems likely that these are a sexual ornament used in mating recognition, but I have not met anyone who has observed this. Apart from the fringes, *Lagodias* is inseparable from *Neolaparus*. Hull (1962: 256) points out that both sexes of *Lagodias* lack the small patch of dense pile that is almost universally present in Asilidae, on the hypopleuron, just above the hind coxa, and this seems to hold good. I feel, however, that *Lagodias* is so very similar to *Neolaparus* that it cannot be treated as more than a subgenus, if that.

Loew (1860: 58, 62) divided his species of *Neolaparus* into two groups, those with only two bristles in the very reduced mystax, and those with four or six. Curran (1934: 2) followed a similar plan in his key to 23 species of *Neolaparus* which gives some indication of the probable names, but because of widespread individual variation the key should not be trusted without reference to original descriptions. Bromley (1936: 138) also gave a key, which is more accessible to workers in South Africa, as well as giving more complete coverage to the species of that region.

The characters used in both keys are those of superficial colouring only. There are quite striking differences within the genus, which ranges from very small, fragile, pale species to large, robust species with dark brown body and infuscated wings. It is easy to make a provisional segregation of species, but impossible at present to define these with any precision. Male genitalia are well developed (fig. 56), but in many years of intermittent study I have not been able to find useful specific differences there.

For these reasons I have not thought it profitable to offer any key that would claim to improve upon that of Bromley (1936).

Genus *Pegesimallus*

Pegesimallus Loew, 1857, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **14**: 344. Type-species: *ursinus* Loew 1857: 345 (= *Dasypogon claelius* Walker, 1849), monotypic.

As pointed out by Ricardo (1925, *Ann. Mag. nat. Hist.* (9) **15**: 246), both from the description and from examination of the type in the British Museum, *Dasypogon claelius* Walker (1849) is an earlier name for the type-species, *Pegesimallus ursinus* Loew (1857). Its close relationship to *Neolaparus* is apparent, from the fore tibial spur to the form of the genitalia. Its general hairiness is shared by some of the smaller, dark species of *Neolaparus*, and only the broad, smoothly rounded face, covered with soft hairs, is a marked difference. It seems doubtful if this is a valid generic character, but it is convenient to retain *Pegesimallus* for species of such an immediately recognizable habitus.

Three valid species of *Pegesimallus* are known, separable as follows.

Key to South African species of *Pegesimallus*

1. Wings quite uncoloured, glistening, hyaline. Head brown with long dark hairs; antennae dull brownish red with black hairs. Mesonotum black-brown in middle and at extreme sides, with paler sublateral areas which appear as yellow-grey stripes to the naked eye. Humeri and postalar calli yellowish brown. Abdomen

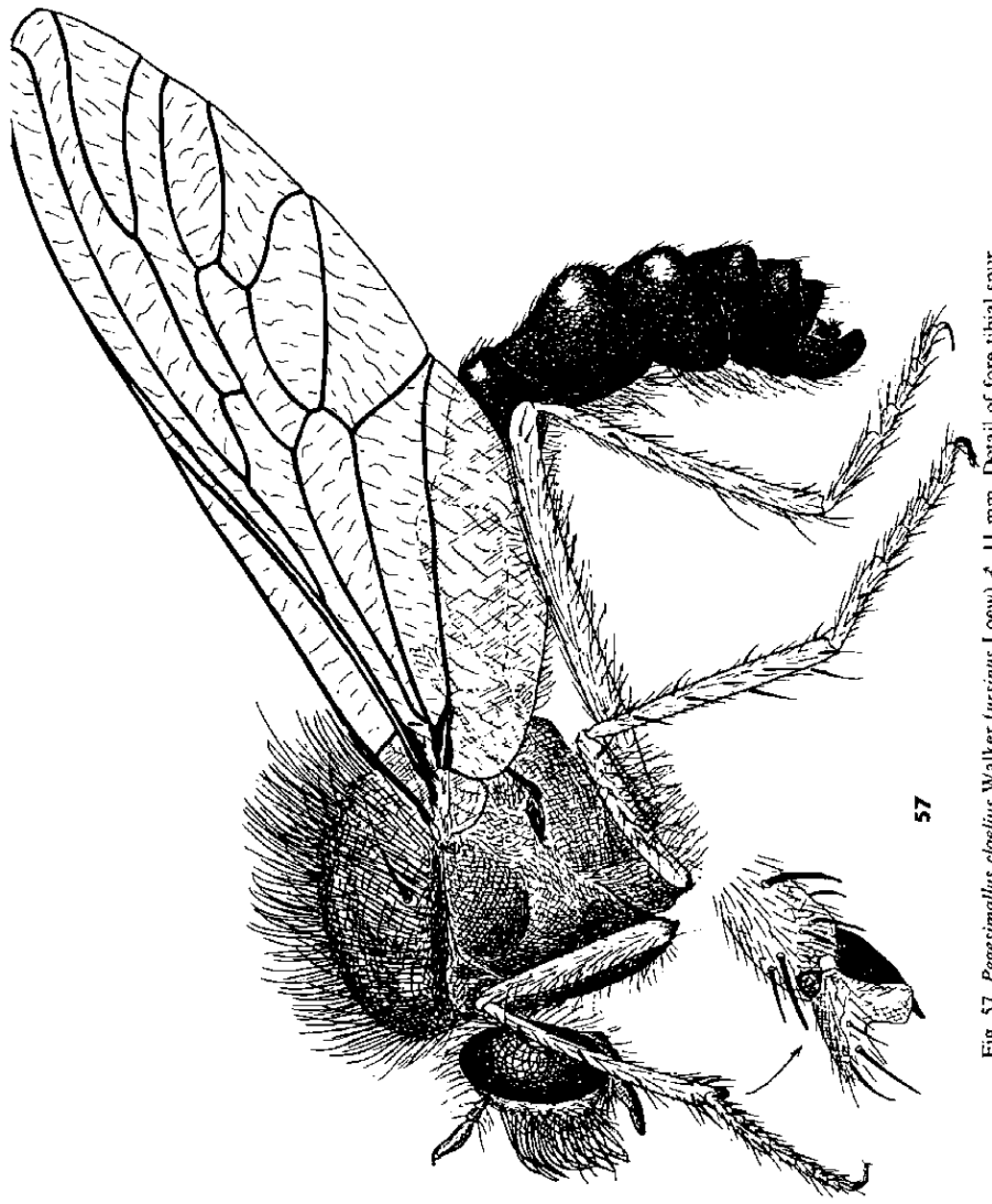


Fig. 57. *Pegesimallus claelius* Walker (*ursinus* Loew) ♂. 11 mm. Detail of fore tibial spur.

shining black with a purplish bloom, and very long black-brown hairs, especially ventrally. Legs dull yellow-brown with black hairs (fig. 57).

claelius Walker
(*ursinus* Loew)

Dasypogon claelius Walker, 1849, *List Dipt. Brit. Mus.* **2**: 351.
Type in London. Type-locality: 'Cape'.
Pegesimallus ursinus Loew, 1957, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **14**: 345.
Type in Berlin. Type-locality: 'Cap. B. sp.'
Distribution. Various localities in Cape Province, but uncommon.

– Wings with some colour pattern.....2

2. Wings hyaline with brownish tips. Face silvery with fine white hairs. Scutellum with bluish-grey bloom. Hind tibiae with only normal covering of bristles and short, bristly hairs.

apicalis Bromley

Pegesimallus apicalis Bromley, 1947, *Ann. Durban Mus.* **3** (8): 110.
Type in Durban. Type-locality: NATAL, Upper Tongaat, Nov. 1919 (C. N. Barker).
Distribution. Known only from type.

– Wings almost uniformly yellow-brown, but without darker tip. Face grey-brown, with black hairs. Scutellum without bluish-grey bloom. Hind tibiae with long, soft, dense hairs matching those on femora.

[*saegeri* Oldroyd]

Pegesimallus saegeri Oldroyd 1970. *Bull. Brit. Mus. Nat. Hist.* **24** (7): 262.
Type in Brussels. Type-locality: ZAÏRE: Garamba National Park.
Distribution. Not known from southern Africa.

Genus *Pycnomerinx*

Pycnomerinx Hull, 1962, *Robber Flies of the World*: 145. Type-species: *Pycnomerinx annulatus* Hull, by original designation.

Hull described his genus and type-species so clearly that there is no doubt in my mind that he was describing *Habropogon rhodesii* Ricardo, from the same locality. As explained under *Habropogon*, I suggest that the generic name *Pycnomerinx* might be used for all the South African species that would seem to fall into the Palaearctic genus *Habropogon*. Hull describes the unusual palpi and proboscis (fig. 58), which, however, are not aberrant enough to be coupled with *Ancylorrhynchus* and *Hynirrhynchus* in the key to genera.

Key to the South African species of *Pycnomerinx*

1. Legs entirely black. Abdomen in both sexes sharply divided: first four segments black with broad, grey hind margins; segments 5–7 bright orange; terminalia black. Wings strongly spotted on forks and crossveins.

cogani sp. n.

Type in London. Type-locality: BOTSWANA, 16 km N.E. Ghanzi, 14.iv.72 (B.M. S. Afr. Exped., 1972).

– Legs at least partly red or reddish.....2

2. Femora as well as most of tibiae bright orange. Wings distinctly spotted on forks and crossveins. Abdomen (♀) with broad posterolateral grey spots; otherwise first four tergites black, rest dull reddish, terminalia black. **moremensis** sp. n.

Type in London. Type-locality: BOTSWANA, Moremi Reserve (B.M. S. Afr. Exped., 1972).
Distribution. BOTSWANA. Known only from type ♀.

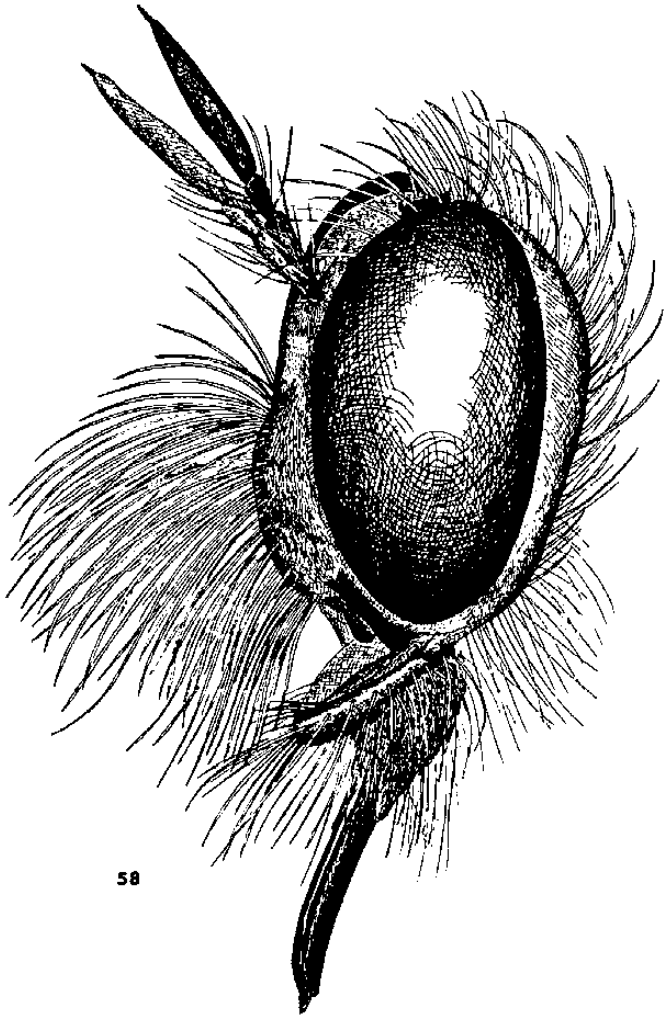


Fig. 58. Head of *Pycnomerinx rhodesii* (Ricardo) (*annulatus* Hull).

– Femora not entirely red.....3

3. Femora all black, tibiae dull red in a dorsal streak. Legs as well as head, thorax and abdomen largely obscured by tawny yellow hairs. Wings moderately spotted on forks and crossveins. Male abdomen black at base, rest red, including genitalia; female abdomen all black with broad white bands.

rhodesii Ricardo
(*annulatus* Hull)

Habropogon rhodesii Ricardo, 1925, *Ann. Mag. nat. Hist.* (9) **15**: 274.
Type in London. Type-locality: RHODESIA, Bulawayo.
Pycnomerinx annulatus Hull, 1962, *Robber Flies of the World*: 145, NEW SYNONYMY.
Type in Bulawayo. Type-locality: RHODESIA, Matopo Hills.
Distribution. RHODESIA. At present known to me from both Bulawayo and the Matopos Hills (J. Ogilvie).

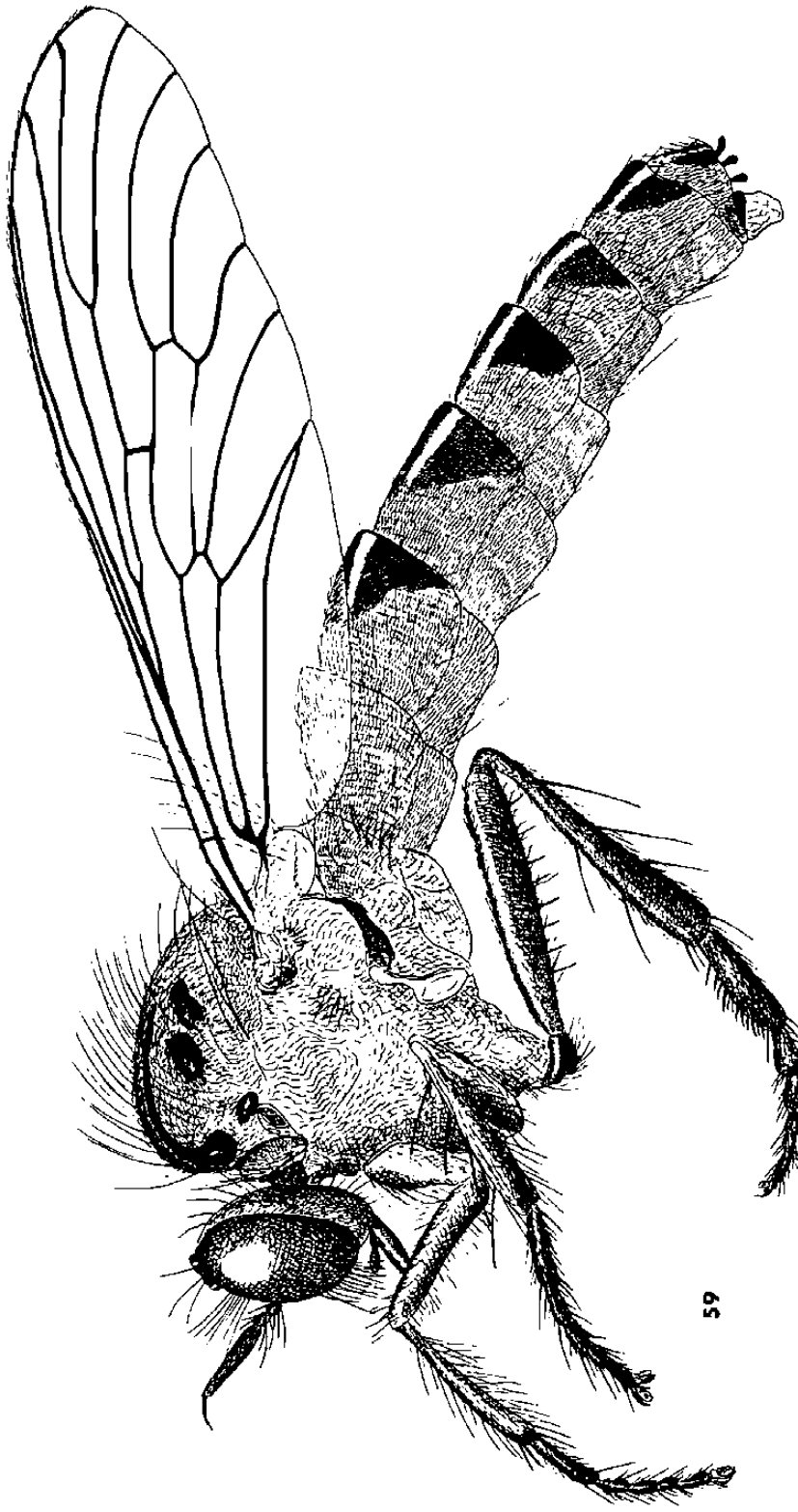


Fig. 59. *Rhabdogaster nudus* Loew ♀. 12 mm.

– Femora and tibiae both with black anterodorsal streak. Male abdomen entirely red; female abdomen completely covered with yellowish grey tomentum, except for shining black terminalia. Wings clear.

gweta, sp. n.

Type in London. Type-locality: BOTSWANA, 8 km N. Gweta (B.M. S. Afr. Exped., 1972). Distribution. BOTSWANA, various localities.

Genus *Rhabdogaster*

Rhabdogaster Loew, 1857, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **14**: 351. Type-species: *Rhabdogaster nudus* Loew, monotypic.

Engel's account (1929: 168) of his *Rhabdogaster maculipennis*, and the types in the British Museum, led me mistakenly to assume that all members of this genus would be tiny, *Leptogaster*-like flies, but this is not quite true. The other species, including the type-species, *R. nudus* Loew, are elongate, but not very much like *Leptogaster*; they are more like *Ommatius*, though of course they lack the fringed antennae as well as the closed marginal cell of the latter.

Hull (1962: 212 and 1967: 237) emphasized the significance of the complete arch of chitin on the metasternum, behind the posterior coxae, and indeed this proves to be a

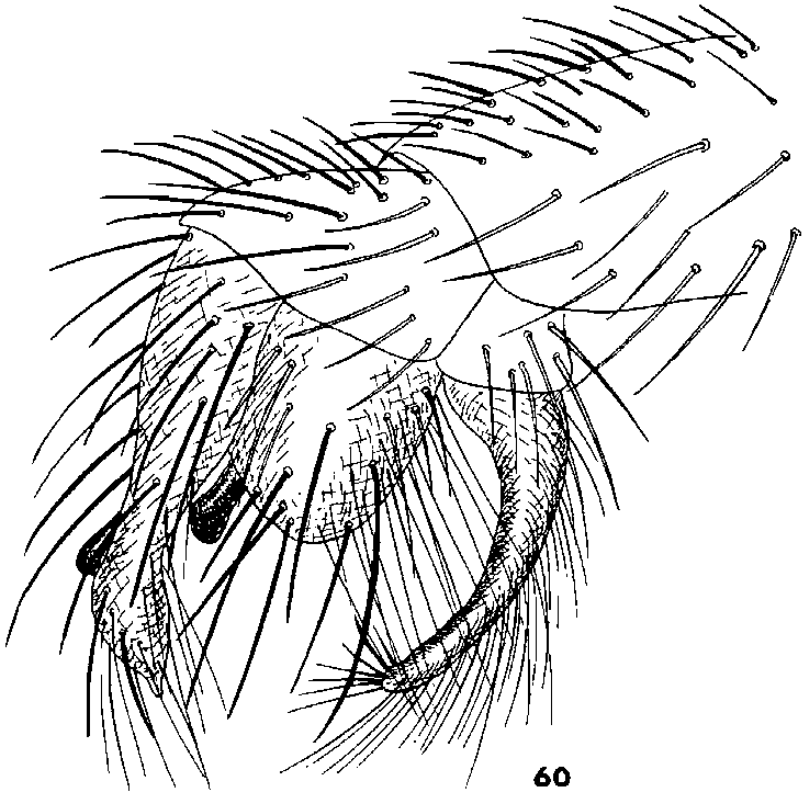
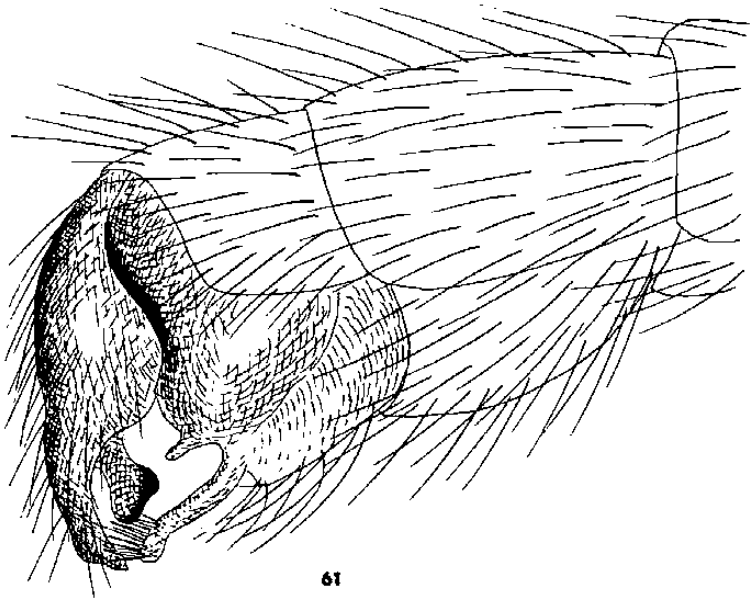
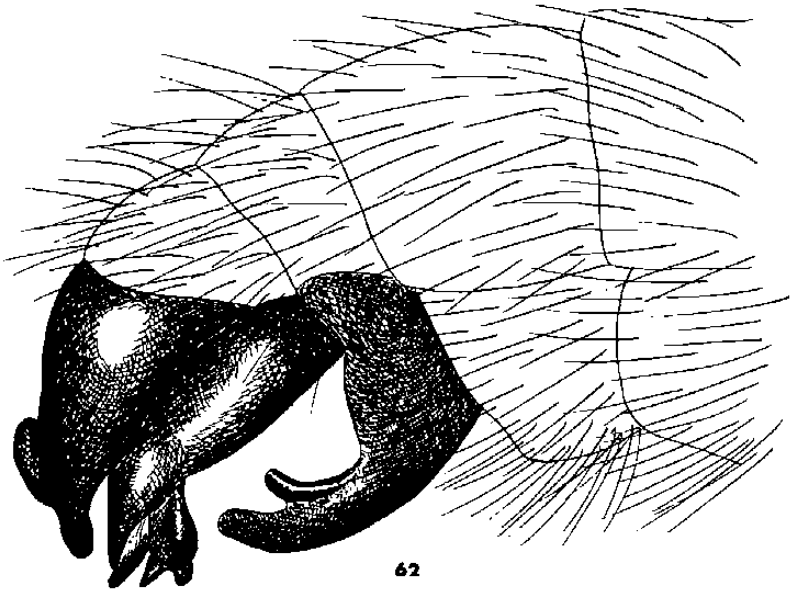


Fig. 60. Male genitalia of *Rhabdogaster maculipennis* Engel.





Figs 61–62. (61) Male genitalia of *Rhabdogaster meilloni* sp. n.; (62) male genitalia of *Rhabdogaster rusticus* sp. n.

most useful character for separating members of this genus from *Heteropogon* and *Habropogon* (figs 34, 35). Using this as a definitive character, five species of *Rhabdogaster* can now be distinguished, and a damaged specimen in the British Museum may belong to a sixth. A greasy specimen from S.W. Africa: Aus, in the Transvaal Museum material, also appears to be undescribed.

Key to species of *Rhabdogaster*

1. A particularly tiny fly, 6 mm long; wings spotted with brown on costal margin, forks and crossveins. Body black with grey-brown pubescence; legs yellow-brown. Male genitalia fig. 60.

maculipennis Engel

Rhabdogaster maculipennis Engel, 1929, *Ann. Transvaal Mus.* **13**: 169.
Type in London. Type-locality: RHODESIA, Sawmills.
Distribution. Known to me only from the type series.

– Less diminutive flies, 9 mm or more long, with wings not spotted, though they may be more or less uniformly infuscated 2

2. Mystax sparse, black. Mesonotum with brown tomentum leaving bare paired longitudinal stripes and two black spots on each side. Abdomen shining black dorsally, with triangles of grey tomentum in extreme corners of segments; ventrally entirely covered with grey tomentum. Fore and middle legs reddish; hind femora and tibiae black anteriorly, red posteriorly. Wings faintly infuscated. Male genitalia fig. 61.

meilloni sp. n.

Type in London. Type-locality: NATAL, Zululand, Eshowe (B. de Meillon).
Distribution. Known to me only from type series.

– Mystax pale 3

3. Body covered with long, shaggy yellow hairs, especially noticeable posteriorly on mesonotum. Abdomen covered with rusty yellow tomentum dorsally and ventrally. Legs black with bright red knees, especially obvious on fore and middle legs, where femora may be extensively orange. Wings rather heavily infuscated. Male genitalia fig. 62.

rusticus sp. n.

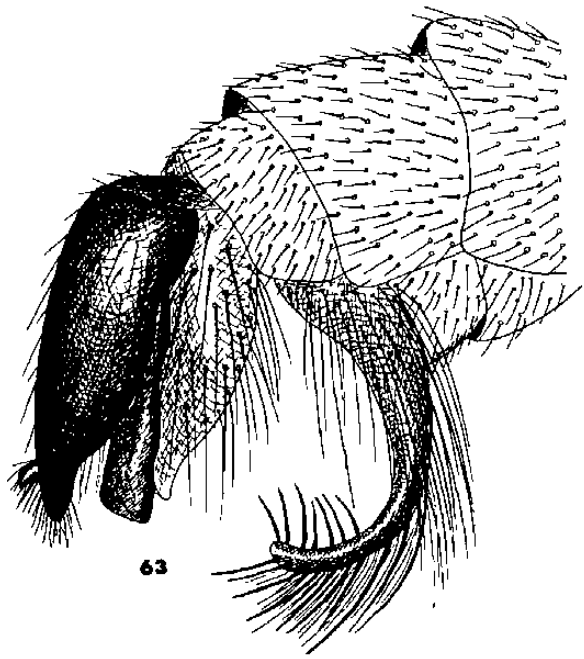
Type in London. Type-locality: TRANSVAAL, Johannesburg, 1 830 m.s. 1895 (J. P. Cregoe).
Distribution. TRANSVAAL: type-series. NATAL: Willow Grange, 16.iv.1914 (R. C. Wroughton).

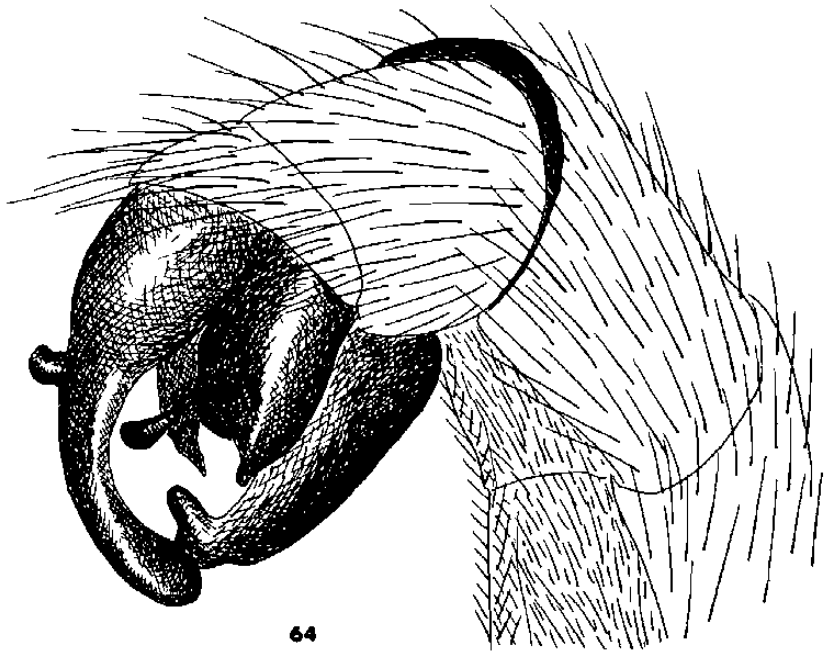
– Hairs of body not conspicuously shaggy, often very short 4

4. Dorsum of abdomen mostly with grey tomentum, and triangular, bare shining spots on each segment (fig. 59). Wings quite clear. Slender species. Male genitalia fig. 63.

nudus Loew

Rhabdogaster nudus Loew, 1857, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **14**: 351.
Type in Berlin. Type-locality 'Cap. B. Sp.'
Distribution. CAPE PROVINCE: Mossel Bay; Willowmore; Vanrhynsdorp; Camps Bay. NATAL: Willow Grange. RHODESIA: Salisbury, Birchenough Br. (O'Neil).





Figs 63–64. (63) Male genitalia of *Rhabdogaster nudus* Loew; (64) male genitalia of *Rhabdogaster nitidus* Bromley.

– Dorsum of abdomen shining black [? or red], grey tomented only on sides and ventrally. Wings distinctly infuscated. Male genitalia, fig. 64.

nitidus Hull

Rhabdogaster nitidus Hull, 1967, *S. Afr. Animal Life* **13**: 237.
Type in Lund. Type-locality: CAPE PROVINCE, 20 m. N. of Matatiele.
Distribution. A series in the B.M., apparently belonging to this species, is from S.W. AFRICA: Okahandja, ii.1929 (R. E. Turner).

Genus *Rhacholaemus*

Rhacholaemus Hermann, 1907, *Z. syst. Hymen. Dipt.* **7**: 12. Type-species: *Rhacholaemus variabilis* Hermann, by original designation.

This monotypic genus was erected for a species from the Transvaal, which Hermann compared with *Habropogon*. He went on to say that '. . . für Vergleiche kein anderes Genus der Dasypogoninen in Frage kommen dürfte', but it is clear from his description that the relatively small, almost circular head, and the closed fourth posterior cell relate it rather to *Stenopogon*. Hull (1962: 127) does not say where he was able to see a specimen of *Rhacholaemus*, but he gives detailed drawings which, with his description, agree closely with Hermann's account. Mike Irwin collected a single male in the western Cape Province which agrees, too, so perhaps other specimens will be discovered from other parts of southern Africa.

The generic characters lie principally in the head, which has the narrow face and flat vertex of *Stenopogon*, but almost no facial tubercle. The eye in profile narrows to a point below, thus leaving a very broad lower occiput visible. The collar region and fore coxae have unusually strong bristles.

Small (9 mm), with very thin, cylindrical abdomen. Body generally bare, but dorsocentrals are long and prominent, and bristles of neck region and fore coxae also strong. Mystax mostly white, surmounted by a separate clump of black hairs. Mesonotum with bronze tomentum. Abdomen mostly yellow, especially basally. Legs orange, femora dusky. Wings smoky brown.

variabilis Hermann

Rhacholaemus variabilis Hermann, 1907, *Z. syst. Hymen. Dipt.* 7: 13.
Type in Munich. Type-locality: TRANSVAAL.
Distribution. TRANSVAAL. CAPE PROVINCE: 18 km N.N.E. of Hondeklipbaai, reddish sand, shrubs (Irwin). This specimen has extra crossveins in both wings, one in the right and two in the left; they are individual aberrations.

Genus *Saropogon*

Saropogon Loew, 1847, *Linn. Ent.* **2**: 439. Type-species: *Dasypogon luctuosus* Wiedemann by definition of Coquillet, 1910.

Saropogon is a large and relatively uniform genus, of worldwide distribution, but essentially subtropical. The Palaearctic fauna has abundant species in North Africa, Asia Minor and southern Asia, and species related to this complex enter the Ethiopian Region in the Arabian Peninsula. Climatically, the genus might be expected to occur in southern Africa, but only one doubtful record exists.

Dasypogon tragicus Wiedemann, 1828, *Auss. Zweifl. Ins.* **1**: 400.
Type in Copenhagen. Type-locality: 'Aus dem Kafferlande'.

Schiner (1866: 679) recorded this species as '?Saropogon, ?Scylaticus', but the description suggests one of the dark species of *Neolaparus*, with conspicuous yellow

Fig. 65. *Scylaticus costalis* Loew ♀. 11 mm.

sides to the mesonotum. In any event there is no evidence that any genuine *Saropogon* exist in southern Africa.

Genus *Scylaticus*

Scylaticus Loew, 1857, *Öfv. K. Vet. Akad. Förhandl.* **14**: 349. Type-species: *Scylaticus zonatus* Loew, 1857, by designation of Engel, 1939: 369.

The original description of *Scylaticus* states simply that it is in every way similar to *Xiphocerus* (= *Ancylorrhynchus*), except that the proboscis is straight instead of being curved downwards. The fourth posterior cell is open, but narrowed towards the apex.

These are bristly flies, rather small to quite small in size, and varying in shape from compact to somewhat elongate. *Scylaticus costalis* Wiedemann (fig. 65) represents one extreme of the genus, with elongate abdomen, and face strongly swollen in its lower half, bare between the dense mystax and the antennae; the opposite extreme is represented by *Scylaticus leoninus* Engel, a black species with compact abdomen, covered with dense yellow hairs, the long mystax on the almost plane face extending up to the antennae.

This is an attractive genus, with rather numerous species, perhaps about 30 in all. Engel (1932: 276) gave a key to the nine species known to him. I have segregated species in the material that I have studied, but there appear to be so many undescribed ones that I think they should be left for some future student to make a comprehensive study of the genus, with freshly collected material and biological information. The single conspicuous species is *Scylaticus costalis* Wiedemann (fig. 65) a relatively large and elongate species, with the anterior third of the wing darkened.

Genus *Sisyrnodytes*

Sisyrnodytes Loew, 1856, *Neue Beiträge zur Kenntnis der Dipteren* **4**: 40. Type-species: *Sisyrnodytes floccus* Loew (= *nilicola* Rondani), monotypic.

Small, or even tiny flies, looking very much like stingless bees (*Trigona*) (fig. 66). The genus is easily recognized by the absence of pulvilli, and by the wing-venation with open marginal cell, but closed first and fourth posterior cells, as well as anal. The longitudinal veins mostly fail to reach the wing-margin, which is membranous, and without its usual supporting vein. This genus shows confusing sexual dimorphism, which sometimes makes the two sexes look like different species.

Sisyrnodytes is found throughout Africa, including North Africa and the Arabian Peninsula, where the described species show a confusing variation, which may be an effect of isolation following upon the desiccation of the Sahara. A revision of *Sisyrnodytes* was published by Oldroyd, 1957, *Proc. R. ent. Soc. London* **B26**: 79–88.

Key to South African species of *Sisyrnodytes*

1. Fork of R_{4+5} with a well-developed appendix. Tarsi with small, but distinct pulvilli (do not confuse with empodium, which is always present). Abdomen usually mostly brick-red, with white hairs mainly at sides 2
- Fork of R_{4+5} with no more than a trace of appendix. Pulvilli absent, though a median empodium remains. Abdomen black, often with extensive covering of white hairs 3

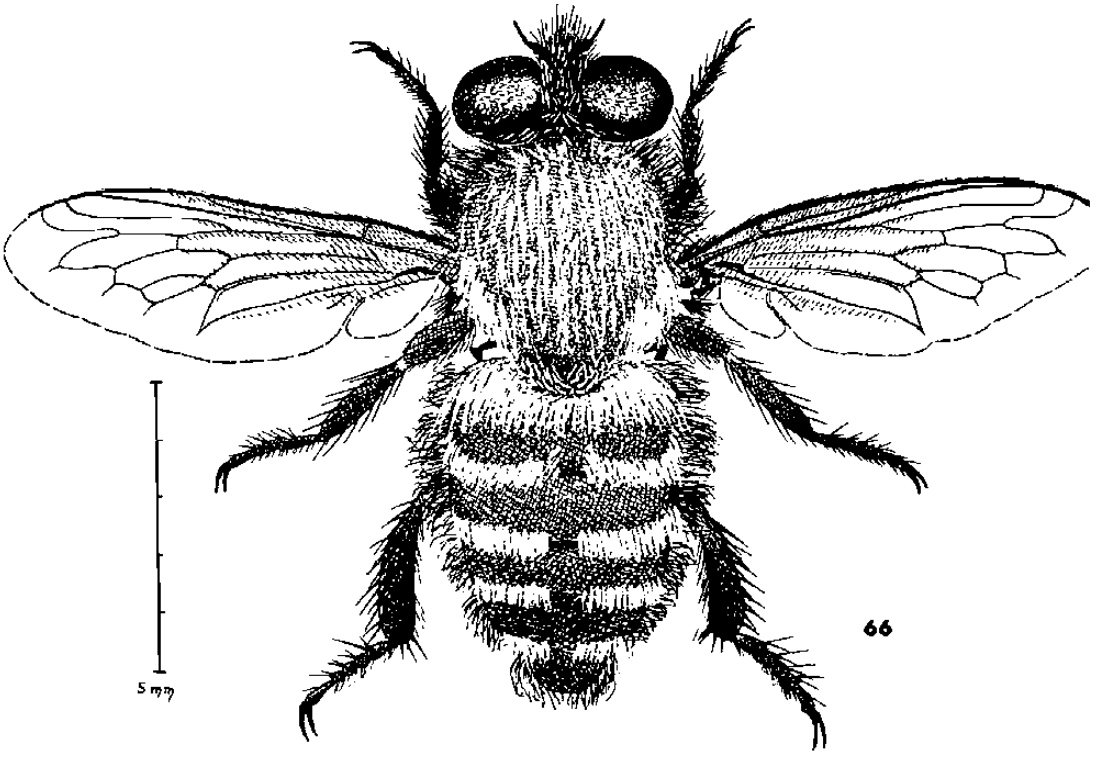


Fig. 66. *Sisyrnodytes major* Adams ♂. 10 mm.

2. Scutellum bare, except for a row of 12–14 stiff marginal bristles, strongly convex. Head with black bristles on occiput and ventrally in mystax. Abdomen predominantly brick-red, white hairs almost entirely confined to sides.

luscinius Walker

Dasypogon luscinius Walker, 1849, *List Dipt. Brit. Mus.* **2**: 360.
Type in London. Type-locality: SOUTH AFRICA (Dr A. Smith).
Distribution. CAPE PROVINCE: Worcester, Jan. (R. E. Turner); Stellenbosch, Oct. (Dr Brauns); Knersvlakte, N. of Vanrhynsdorp, Oct. (B. & P. Stuckenberg). M. E. & B. P. Irvin

– Scutellum obscured by soft, white hairs, and margin fringed with white hairs and weak white bristles. Head with silky white hairs, among which a few white bristles are inconspicuous. Abdomen black, heavily punctate, white hairs extending across hind margins of segments.

sericeus sp. n.

Holotype ♂ in Pietermaritzburg. Type-locality: CAPE PROVINCE, Hankey Area.
Distribution. Known only from type.

3. Hind tibiae with at least some of the strong bristles black.....4
– Hind tibiae with all strong bristles pale or reddish, except for a few at tip.....8
4. Abdomen without conspicuous lateral tufts.....5
– Abdomen with conspicuous lateral tufts, forming a fringe along each side (fig. 66).....7

5. Wings entirely clear 6
- An all-black species (♂), shining, with short black clothing hairs. Wings blackish basally, clear only beyond discal cell.

irwini sp. n.

Type in Pietermaritzburg. Type-locality: CAPE PROVINCE, 38 km S.W. Brandkop (Irwin).
Distribution. Known only from male type.

6. Abdomen with interrupted hair fringes on all visible segments. Wings stained only as far as anterior crossvein. Mesonotum without any clearly defined spots of black hair anteriorly.

major Adams

Sisyrnodytes major Adams, 1905, *Kansas Univ. sci. Bull.* **3**: 155.
Sisyrnodytes niger Bezzi, 1906, *Bull. Soc. ent. Ital.* **37**: 283.
Sisyrnodytes disjunctus Séguy, 1930, *Bull. Mus. Hist. nat. Paris* (2) **2**: 654.
Types in Lawrence, Kansas; Udine, Italy; and Paris, France, respectively. Type-localities: RHODESIA, near Salisbury; ERITRAEA, Hallibaret; RHODESIA, Pompue Valley.
Distribution. Widespread, from ERITRAEA to RHODESIA and MOÇAMBIQUE.

- Abdomen with interrupted hair fringes on first three segments only, others with exclusively black hairs. Wings stained faintly as far as tips of closed posterior cells. Mesonotum with two pairs of distinct spots anteriorly, formed by clusters of black hairs.

apicalis Oldroyd

Sisyrnodytes apicalis Oldroyd, 1957, *Proc. R. ent. Soc. London* **B26**: 82.
Type in London. Type-locality: CAPE PROVINCE, Cape Town, Milnerton (R. E. Turner).
Distribution. Known from type only.

7. Mesonotum only sparsely haired, and hairs predominantly whitish. Pleura with black hairs and bristles (♂) or yellow (♀). Strongly dimorphic species.

aterrimus Engel

Sisyrnodytes aterrimus Engel, 1929, *Ann. Transvaal Mus.* **13**: 170.
Type in Pretoria. Type-locality: RHODESIA, Bulawayo (R. Stevenson).
Distribution. RHODESIA. MALAWI. ? ZAMBIA.

- Mesonotum densely covered with hairs, which are closelying, and mixed dark red and white. Pleura, especially mesopleuron, with red hairs (♂); female colouring unknown, and may be quite different (cf. *aterrimus*, above).

vestitus sp. n.

Holotype ♂ and 1 ♀ paratype in Pretoria. Type-locality: CAPE PROVINCE, Kalahari, Gemsbok Park, April–May (? collector). Paratype from 35 km up R. Auob, April (G. van Son).
Distribution. As above.

8. Hind tibiae black, or only obscurely dark reddish 9
- Hind tibiae clear red in ground colour 11
9. Females with head and thorax densely covered with hairs, mixed red, white and yellow; abdominal tergites with white-haired hind margins and sparse red hairs on disc. Males with hairs of thorax and abdomen white, except for yellow hairs on scutellum and posterior mesonotum.

brevis (Macquart)

Acnephalum breve Macquart, 1838, *Dipt. exot.* **1 (2)**: 52.
Type in Paris. Type-locality: 'Cap' (Delalande).
Distribution. S.W. Africa: Aus; Neels Post. CAPE PROVINCE: Ceres Dt.; Aliwal North (R. E. Turner); Wit River Valley, Cambria Area (Stuckenberg); Kimberley (Greathead).

– Hair pattern of thorax and abdomen different 10

10. Male with clear wings and hairs and bristles almost entirely silvery white; notable are silvery scales in mystax and on each side of antennae, and silvery hairs thick along sides of abdomen, especially posteriorly (cf. *subater*). Female not yet known to me.

defusus sp. n.

Holotype ♂ in London. Type-locality: CAPE PROVINCE, Worcester, Jan. (R. E. Turner).
Distribution. Known only from type locality.

– Hairs and bristles not silvery, but varying from yellowish to red; red hairs especially long and striking on mesonotum of male. Wings faintly infuscated basally in male, and more generally brown along veins in female.

diplocus sp. n.

Holotype ♂ in Pretoria; paratype ♀ in Pietermaritzburg. Type-locality: CAPE PROVINCE, Malmesbury, December (Dr Brauns).
Distribution. CAPE PROVINCE: Malmesbury, December (Dr Brauns); Wit River Valley, Cambria Area, December (B. & P. Stuckenberg).

11. Mesonotum with hairs longer and more erect than usual, a mixture of white, red and black; in males these hairs form a mane, white anteriorly, where it is as long as height of head. Abdomen of female with red hairs and a white posterior band on each segment; in male with yellow hairs only.

niveipilosus Ricardo

Sisyrnodytes niveipilosus Ricardo, 1925, *Ann. Mag. nat. Hist.* (9) **15**: 247.
Types in London and Bulawayo. Type-locality: RHODESIA, Bulawayo Dt.
Distribution. RHODESIA: Bulawayo Dt., Matopos Hills. BOTSWANA: Ghanzi, Mongolabela. TRANSVAAL: Soutpansberg Dt.

– Hairs of mesonotum close-lying and short 11

12. Femora red, with a dorsal black stripe. All visible abdominal segments with hairs mainly blackish, and with two widely separated white fringes on each segment.

curtus (Wiedemann)

Dasypogon curtus Wiedemann, 1819, *Zool. Mag.* **1** (3): 6.
Type in Copenhagen. Type-locality: 'Cap.'
Distribution. CAPE PROVINCE: Cape Point (Simmonds).

– Femora blackish with red tip. First three abdominal segments with blackish hairs; last three tergites obscured by silvery white hairs.

subater Oldroyd

Sisyrnodytes subater Oldroyd, 1957, *Proc. R. ent. Soc. London* **B26**: 87.
Type-locality. RHODESIA, Bulawayo.
Distribution. RHODESIA: Bulawayo. CAPE PROVINCE: Kimberley (Greathead).

Genus *Spanurus*

Spanurus Loew, 1857, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **14**: 350. Type-species: *Spanurus pulverulentus* Loew, 1857, monotypic.

Rather small flies, resembling the smaller species of *Scylaticus*, but with even longer hairs obscuring the thorax and abdomen. The most characteristic feature of *Spanurus* is the laterally compressed abdomen, but lateral compression sometimes occurs in other genera, particularly in museum specimens which have been gripped by the

abdomen between finger and thumb when they were caught! The most certain distinction between *Scylaticus* and *Spanurus* is that the latter has no pronounced facial tubercle, the face in profile being smoothly and imperceptibly rounded, and evenly covered with soft hairs up to the antennae.

Four species have been described:

compressus Karsch, 1886: 56. Type-locality: ANGOLA, Pungo Andongo.
pallidus Ricardo, 1925: 276. Type-locality: S.W. AFRICA, Cunene River.
pulverulentus Loew, 1857: 250; 1860: 92. Type-locality: 'Caffraria'.
tellinii Bezzi, 1906: 282. Type-locality: ERITRAEA, Asmara-Cheren.

The last, besides the remoteness of the locality from the others, is distinguished by its all-black legs, if, indeed, it is correctly placed in the genus at all. The descriptions of the other three are very similar, and material in collections is so very sparse and in such bad condition, that I can offer no opinion at the present time whether or not all the South African *Spanurus* are variants of one species.

Genus *Stenopogon*

Stenopogon Loew, 1847, *Linn. Ent.* **2**: 453. Type-species: *Asilus sabaudus* Fabricius, by original designation.
Scleropogon Loew, 1866, *Berlin ent. Z.* **10**: 26. Type-species: *Scleropogon picticornis* Loew, monotypic.

The distinction between *Stenopogon* and *Scleropogon* was originally thought to be the closure of the fourth posterior cell in *Scleropogon*, but Hull (1962: 124) replaced this by the less tangible character of the presence (*Scleropogon*) or absence (*Stenopogon*) of hairs on the metapleuron, immediately in front of the halteres. With one exception the South African species have a closed fourth posterior cell and hairy metapleuron, and might thus be classed as *Scleropogon*, but I prefer to leave them all provisionally in *Stenopogon*.

Only one species of *Stenopogon* has so far been described from South Africa: *Stenopogon holoxanthus* Hermann, 1907, a clear synonym of (*Dasypogon*) *dilutus* Walker, 1851. *Dasypogon antigenes* Walker, 1849, is also a *Stenopogon*, and the material before me includes five new species, making seven in all.

Key to South African species of *Stenopogon*

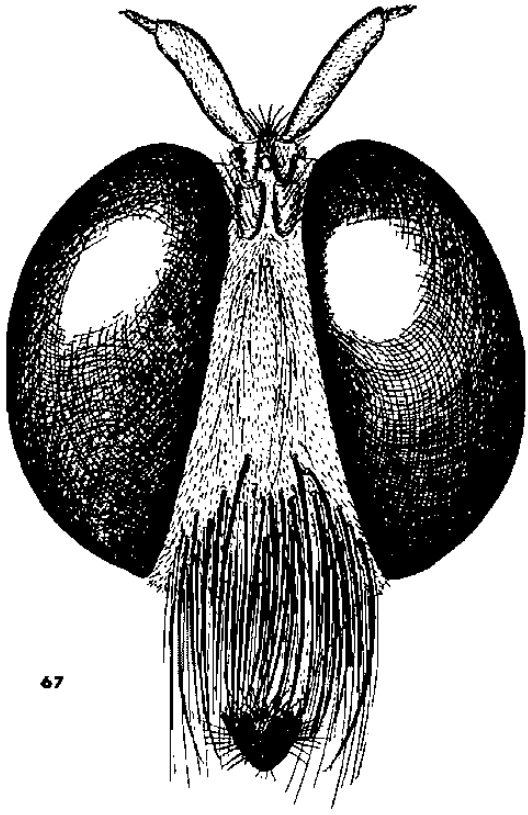
1. Fourth posterior cell of wing open. No obvious bristles on metapleuron (subgenus *Stenopogon*). A small, dark brown species (8–10 mm). Mystax and bristles mainly black. Wings almost uniformly dark brown, sometimes only smoky. Legs usually black, but in the series from Cape Flats yellow-brown with black stripe; female of type pair also has yellowish legs.

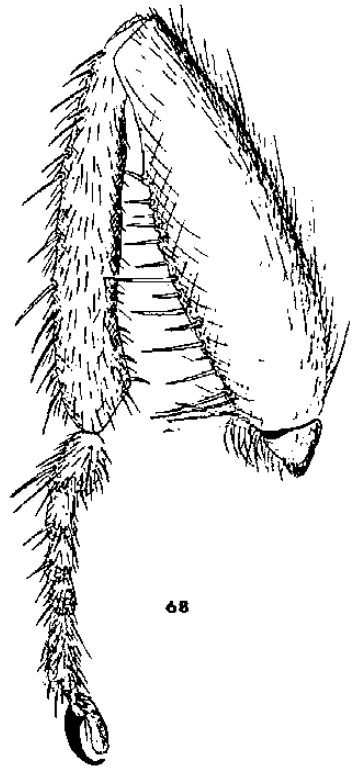
trivialis sp. n.

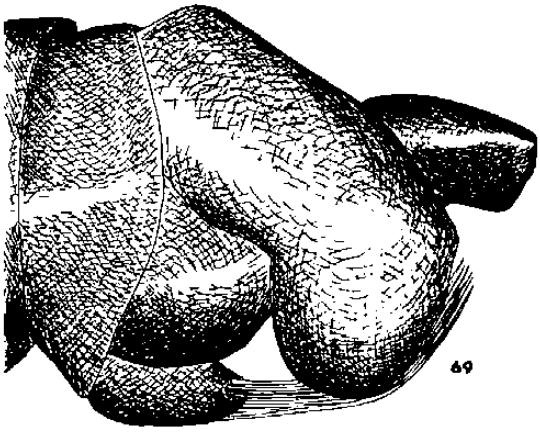
Type in Pietermaritzburg. Type-locality: CAPE PROVINCE, 3 km S.E. of Elandsbaai (Irwin), a pair in cop.
Distribution. From various coastal localities in western CAPE PROVINCE: near Elandsbaai; Langebaan; Hondeklipbaai; Lambert's Bay (all Irwin); Cape Flats (Greathead).

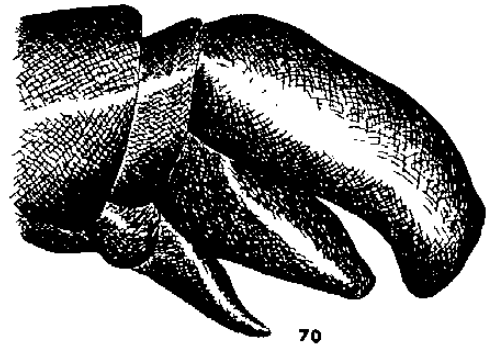
– Fourth posterior cell of wing closed. Metapleuron with normally developed fan of bristles (subgenus *Scleropogon*) 2

2. Wings heavily stained yellow, with brownish areas in most cells. Mesonotum









Figs 67–70. (67) Head of *Stenopogon*, showing high, narrow frons and face; (68) leg of *Stenopogon armatus* sp. n., showing spines beneath fore femur—compare with *Gonioscelis*, figs 26–32; (69) male genitalia of *Stenopogon braunsi* sp. n.; (70) male genitalia of *Stenopogon dilutus* Walker.

striped yellow and brown, with a short white median stripe anteriorly. Mystax deep yellow. Male genitalia, fig. 70.

dilutus Walker
(*holoxanthus* Hermann)

Dasypogon dilutus Walker, 1851, *Ins. Saunds. Dipt.* **1**: 98.
Type in London. Type-locality: 'Cape'.
Stenopogon holoxanthus Hermann, 1907, *Z. Syst. Hymen. Dipt.* 7: 1.
Type in Berlin. Type-locality: Capland, Willowmore (Dr Brauns).
Distribution. CAPE PROVINCE: Willowmore, December (Dr Brauns); Cradock, January (Miss J. Brincker); Hex River; Port Alfred, January (J. G. H. Londt); Resolution, Albany District, January (A. Walton); Grahamstown, Settler's Dam; Alicedale (D. J. Greathead).

– Wings clear, or at least not obviously infuscated. Mystax white. Mesonotum not obviously banded, except in *braunsi*, though greasy specimens may appear so . . 3

3. Bristles, except for mystax, black or brown, especially on frons and pronotum. A small, blackish species, with short wings. Some parts of body may be dark reddish, but general appearance is dark. [Probably more than one species, unless male genitalia are unusually variable.]

atrox, sp. n.

Type in Pretoria. Type-locality: CAPE PROVINCE, Willowmore (Dr Brauns).
Distribution: CAPE PROVINCE: Willowmore; Albany District, Resolution; Somerset East.

– Bristles white or yellow; if generally greyish (*antigenes*), then fly is bigger, and not with conspicuously short wings 4

4. Fore femora ventrally with a row of well defined yellow bristles (fig. 68). Thorax and abdomen thickly covered with brown tomentum, without pattern other than indistinct posterior margins to abdominal segments. Legs clear yellow-brown; hind femora and tibiae a little darker anteriorly.

armatus, sp. n.

Type in Pretoria. Type-locality: TRANSVAAL: N.E. Soutpan District (H. G. Beyer).
Distribution. At present known from type locality only.

– Fore femora not obviously armed ventrally 5

5. A predominantly yellow species, with moderately long yellow hairs on mesonotum. Closely resembles *dilutus*, but smaller (10 mm instead of 13–14 mm). Wings scarcely infuscated, mystax white. Male genitalia with upper forceps blunter (fig. 69). Coxae with weak white bristles.

braunsi, sp. n.

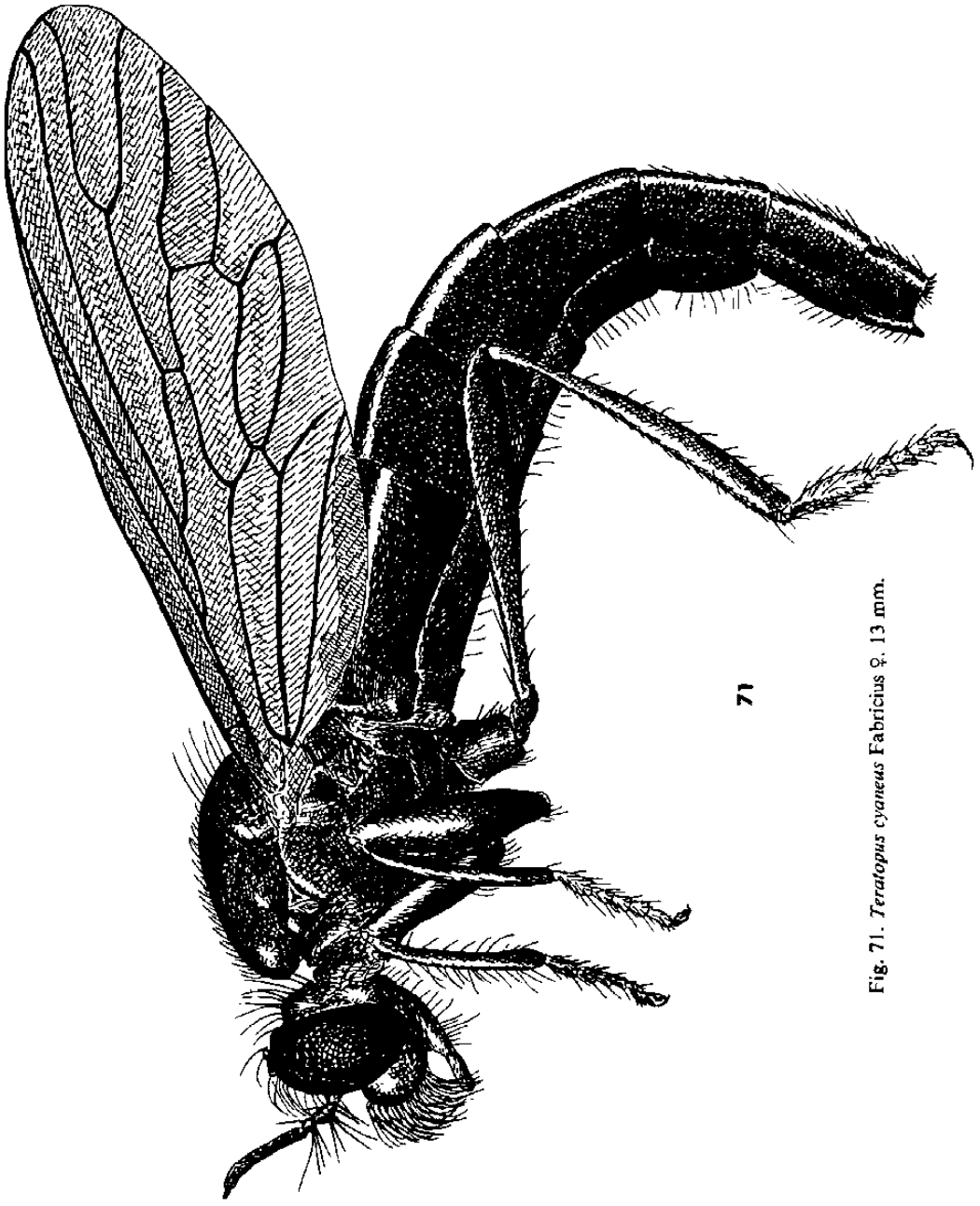
Type in Pretoria. Type-locality: CAPE PROVINCE: Willowmore (Dr Brauns).
Distribution. CAPE PROVINCE: Willowmore; Ceres; Mossel Bay. S.W. AFRICA: Aus.

– At least mesonotum greyish with short, black microspines 6

6. A small, more compact species (10 mm), blackish thorax contrasting with more orange abdomen. First two antennal segments orange, third segment blackish. Female with seventh abdominal segment bare and shining, with forwardly inclined yellow hairs. Femora with black dorsal or anterodorsal stripe. Wings not milky.

confrontus sp. n.

Type in Pretoria. Type-locality: CAPE PROVINCE, Willowmore (Dr Brauns).
Distribution. Known only from type-locality.



71

Fig. 71. *Teratopus cyaneus* Fabricius ♀. 13 mm.

– A larger, more elongate species, predominantly grey, thorax not contrasting with abdomen. Antennae orange. Femora without dorsal blackish stripe. Wings distinctly milky.

antigenes Walker

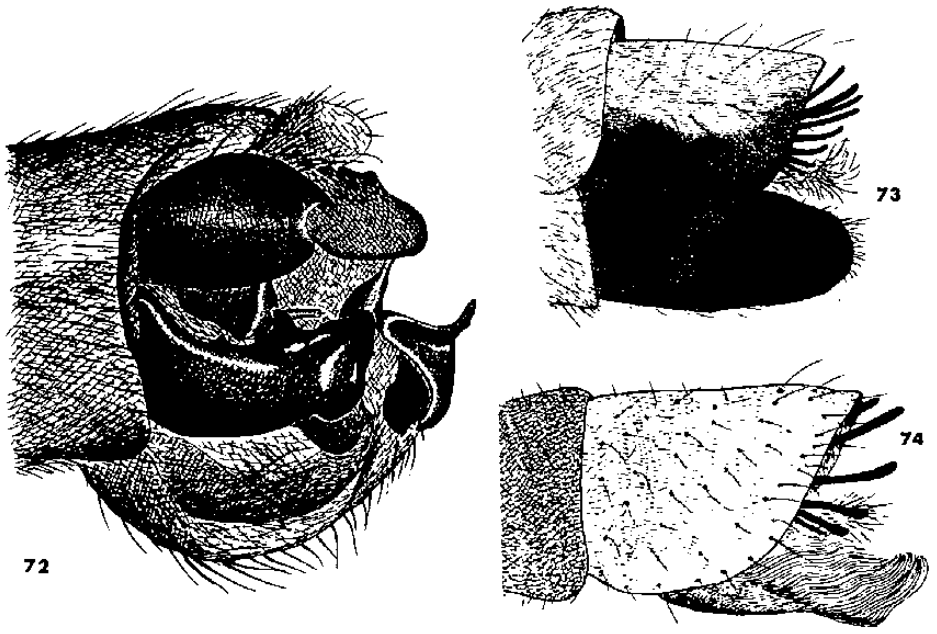
Dasypogon antigenes Walker, 1849, *List. Dipt. Brit. Mus.* **2**: 312.
Type in London. Type-locality: 'S. Afr.' (Dr Smith).
Distribution. CAPE PROVINCE: O'Kiep; Bitterfontein; Matjiesfontein. S.W. AFRICA: Okahandja.

Genus *Teratopus*

Teratopus Loew, 1858, *Öfvers. K. vet.-Akad. Förhandl.* **14**: 346. Type-species: *Asilus cyaneus* Fabricius by original designation.

Teratopus (fig. 71) is small and compact, 12–14 mm long, and evidently related to *Scylaticus* and *Gonioscelis*, but lacks the distinctive fore femora of *Gonioscelis*, and its excessively prominent facial tubercle is a difference from both genera.

Loew (1858: 346 and 1860: 81) described the genus for *Asilus cyaneus* Fabricius, and authors generally have assumed that only the one species existed. Dr Hesse told me in a letter that he could distinguish four other species besides the type. The limited material at my disposal certainly shows individual variation: in the fourth posterior cell, which is usually closed with a short stalk, but occasionally open; in the mesonotum, which may be virtually bare, or may have clear longitudinal stripes of black-brown tomentum; in the length of the hairs of the abdomen, which may obscure the genitalia. Nevertheless I have not been able to find consistent differences, even in the



Figs 72–74. (72) Male genitalia of *Teratopus cyaneus* Fabricius; (73) female genitalia of *Stichopogon caffer* Hermann; (74) female genitalia of *Stichopogon punctum* Loew.

genitalia (fig. 72). I think it is very likely that geographical forms exist, if not distinct species, but I am unable to define these at present. I therefore continue to record just the one species.

cyaneus (Fabricius)

Teratopus cyaneus (Fabricius), 1781, *Species Insect.* **2**: 465.
Type in Copenhagen. Type-locality: 'Prom. bon. Sp.'
Distribution. CAPE PROVINCE: widely distributed in the Province. LESOTHO: Mokhotlong, April (Brinck & Rudebeck) (recorded by Hull, 1967: 240).

Tribe *STICHOPOGONINI*

Genera included in this tribe are some of the most obviously adaptive of all Asilidae, being cryptically coloured to suit their habitat. They are flies of arid places, particularly sand, whether on beaches or elsewhere, and the stony beds of streams. They are united by having a bridged pronotum (fig. 4), and by the shape of the male and female genitalia (figs 73, 74). The last feature brings into this tribe the genus *Lasiopogon*, which differs from the others in general appearance and in habitat, being a typical robber fly of low vegetation and scrub. *Lasiopogon* is characteristic of the north temperate zone; it is mentioned here because isolated species from other regions have been assigned to it, though probably incorrectly.

The typical genus of the tribe, *Stichopogon*, is worldwide in warmer countries, and is remarkable for the saddle-shaped vertex (fig. 78) and for its small size. Some *Stichopogon* are as little as 3 mm long. *Clinopogon* is a bigger and more robust relative, typical of sea-beaches round the Indian Ocean from the Malagasy Region to Queensland. A number of small, little-known genera have been described from the arid regions of the Middle East.

True Stichopogonini, besides the broadened vertex, are bare, dusty grey in appearance; they have little pile, and few bristles, but those that are present tend to be stiff and spiky. The mystax is usually described as being 'rooflike', and is more like a military moustache than the mystax of most Asilidae; its bristles are often either thick and silky, or mixed with scales (fig. 77).

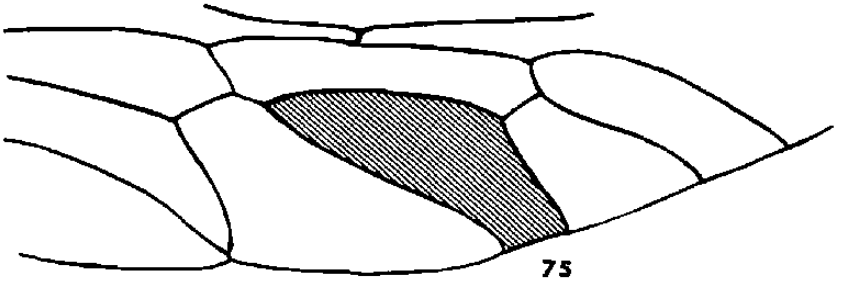
Genus *Clinopogon*

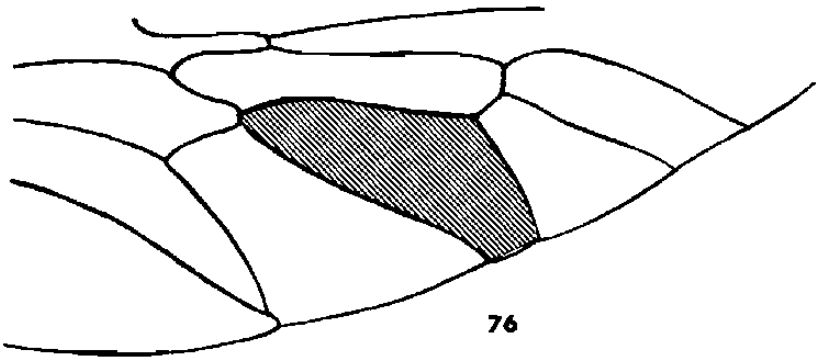
Clinopogon Bezzi, 1910, *Ann. Mus. nat. Hung.* **8**: 153. Type-species: *Clinopogon sauteri* Bezzi, by original designation.

Clinopogon is instantly distinguishable by eye from *Stichopogon* by its much larger size and stout appearance, and by being less conspicuously bristly. Vein M_4 of the wing arises from the second basal cell and not from the discal (figs 75, 76).

Becker (1913) described a *Clinopogon maroccanus* from the Mediterranean, but this species is unknown to me, and I have no information whether or not it is correctly placed in this genus. Apart from that *Clinopogon* is entirely a littoral genus round the Indian Ocean and into the Pacific as far as Fiji. I have suggested earlier (Oldroyd 1959, 1972) that most if not all the *Clinopogon* on the beaches round the Indian Ocean belong to one variable species, first described by Schiner, 1868, as *Stichopogon nicobarensis*.

Clinopogon also occurs on the eastern littoral of mainland Africa, in Kenya, Tanzania and further south. It probably occurs all down this coast, like the tabanid *Adersia oestroides* Karsch. These littoral flies are not often collected because relatively





Figs 75–76. Wings of Stichopogonini: (75) *Stichopogon*; (76) *Clinopogon*—to show difference in fourth posterior cell (cross-hatched).

few collections of flies are made on the beach itself. I am not prepared to assert dogmatically that the mainland *Clinopogon* are also *nicobarensis*, though this is very likely. There is another name available for those from South Africa. *Stichopogon grossus* Bromley, 1947 was said to be: 'An unusual species of *Stichopogon* much more robust than any other I have seen.' There is no doubt whatever that this is a *Clinopogon*, and for the present at least it is convenient to retain the name *grossus* Bromley for any specimens from the South African beaches.

Entirely black, covered with uniformly grey dusting. Mystax yellowish, other hairs, and the sparse, weak bristles, white. Length about 12 mm.

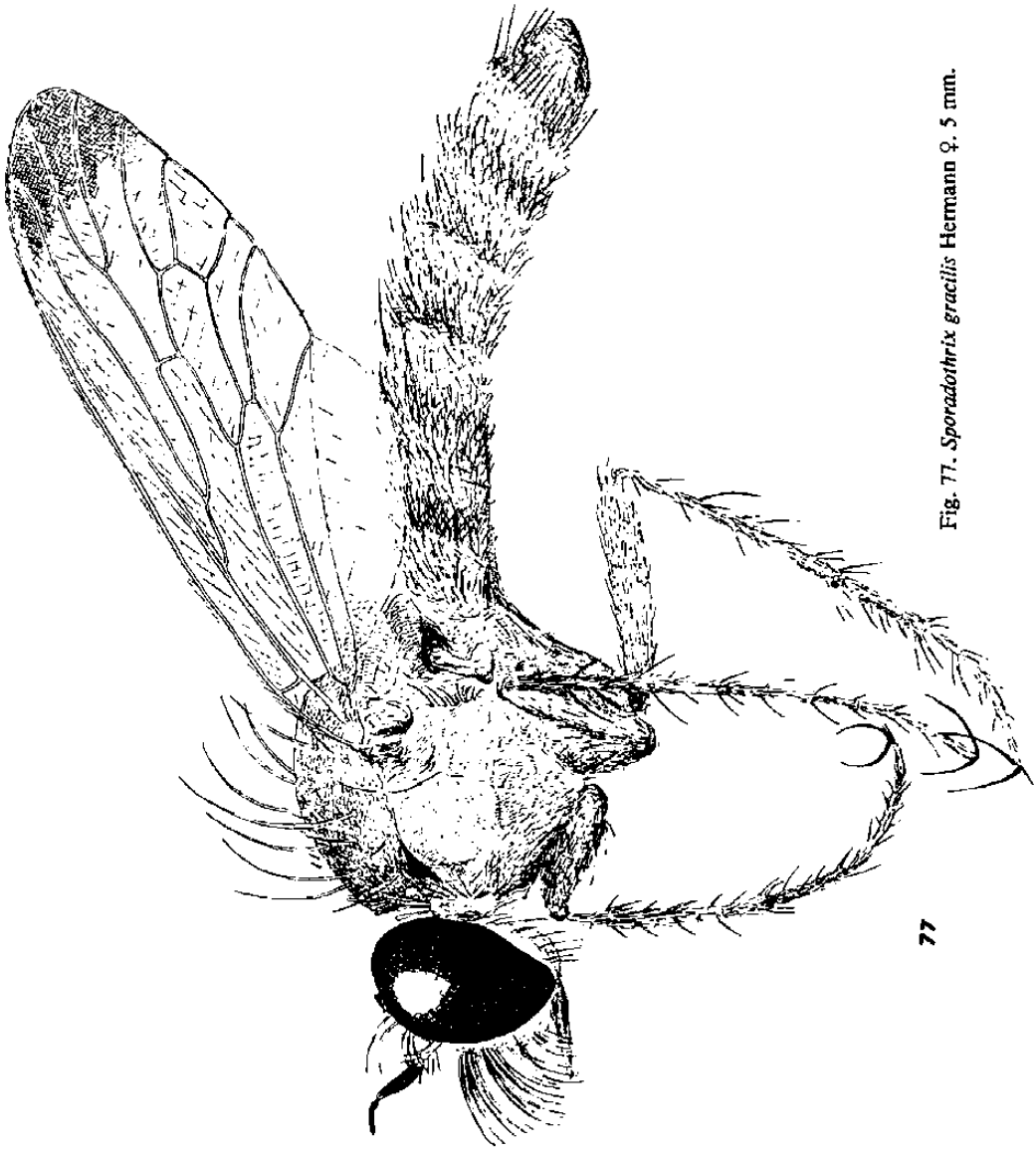
grossus Bromley

Stichopogon grossus Bromley, 1947, *Ann. Durban Mus.* 3 (8): 112.
Type in Durban. Type-locality: NATAL, Durban Bluff (H. Bell Marley & C. N. Barker).
Distribution. Probably all down the eastern seaboard of Africa, on the beach or adjacent sand-dunes.

Genus *Sporadothrix*

Sporadothrix Hermann, 1907. *Z. syst. Hymen. Dipt.* 7: 8 Type-species: *Sporadothrix gracilis* Hermann, by original designation.

This monotypic genus was unknown to Hull (1962: 347), who gave a translation of Hermann's description, but quoted the later reference of 1908. Hermann saw only a damaged and completely wingless specimen. The B.M. Expedition of 1972 collected a



77

Fig. 77. *Sporadothrix gracilis* Hermann ♀. 5 mm.

single male of a beautiful little asilid which, while not agreeing perfectly with Hermann's description, has so many points of resemblance that I feel confident that it must be the same. The following description, and fig. 77, are based upon this specimen.

This is one of the small genera of Stichopogonini mentioned under the discussion of *Prytania* (p. 112), in which the body hairs have a strong tendency to become scaly. Hermann expresses this as follows: '. . . Wenn, gleichwol . . . der ganze Tierchen stark behaart erscheint, so beruht dies mehr auf der Länge und Dicke der einzelnen Haare als auf deren dichter Anordnung.' *Sporadothrix* is especially characterized by the graceful, elongate tarsi of all legs, which end in long, almost straight, very slender claws, and have no trace of pulvilli.

A tiny, fragile, robber fly, 8 mm long, black in ground colour, covered with tomentum that is white laterally and brownish dorsally on thorax and abdomen. Hairs and bristles snow-white, thickened and scale-like in many areas, notably in mystax, on legs, pleura, sides of abdomen and posterior margins of abdominal segments, as well as anteriorly on mesonotum. Legs black beneath scaly hairs; tarsi elongate, first segment almost or quite as long as next three together; claws very long, slender, almost straight, no trace of pulvilli. Wings with all cells open except anal; extreme tip with a conspicuous dark patch (fig. 77), which may be peculiar to male.

gracilis Hermann

Sporadothrix gracilis Hermann, 1907, *Z. syst. Hymen. Dipt.* 7: 10.
Type in ? Munich. Type-locality: Kalahari Desert.
Distribution. I have seen one male that I assign to this species, from S.W. AFRICA: Noachabeb, 43 km N.N.E. Grunan, 10–12.i.1972 (B. M. S. Afr. Exped., 1972).

Genus *Stichopogon*

Stichopogon Loew, 1847, *Linn. Ent.* 2: 499. Type-species: *Dasypogon elegantulus* Wied. by designation of Back, 1909.

These mostly tiny, grey Asilidae are attractive both in appearance and habits. They are found on open sand, or bare stones in the bed of a stream, where at rest they are very difficult to see in the glare of sunlight. The best way to catch them is to wait until one makes a capture flight, and to drop the net over it, mouth downwards, afterwards retrieving the fly carefully from the net into which (one hopes) it has risen.

The broadly excavated, saddle-shaped vertex (fig. 78) probably has some significance in relation to vision under such trying conditions, but the mechanism of this is not known. The species are few, but the common ones at least—*punctum*, *caffer* and *hermanni*—are widely distributed, seeming to occur throughout southern and eastern Africa. They extend well into the Congo Basin, along the river itself, and not merely in the Katanga Highlands, but there seem to be few, if any records from West Africa. It is hard to believe that *Stichopogon*, a world-wide genus, does not occur there, and one must conclude that its small size and specialized habitat have led to its being overlooked by collectors.

Key to the South African species of *Stichopogon**

(partly after Oldroyd 1970: 283)

1. Heavily grey-dusted. Mesonotum with a bold black pattern, consisting of a median stripe and two pairs of lateral spots (fig. 79). Abdomen grey-dusted all over, but

* See also *S. engeli* Lindner (1973).

Fig. 78. *Stichopogon punctum* Loew ♀. 5–8 mm.

78

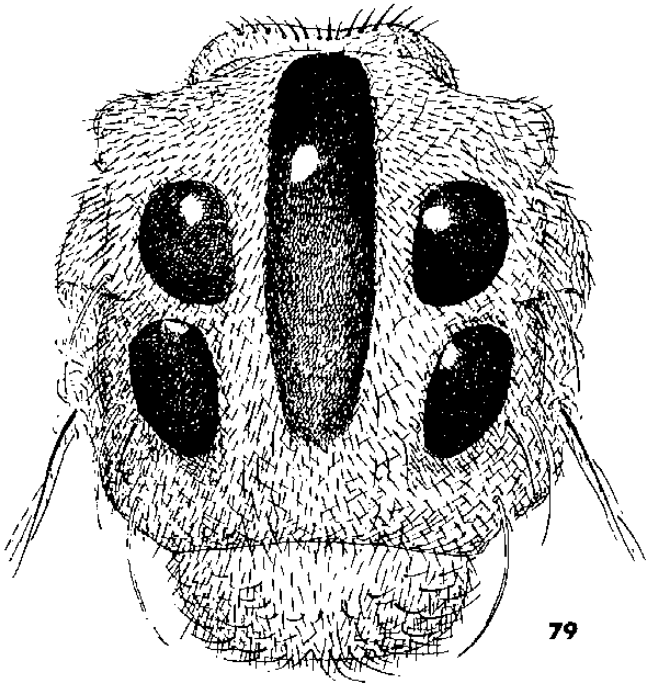


Fig. 79. Thoracic pattern of *Stichopogon umkomaasensis* sp. n.

not quite concealing an underlying brown pattern, especially on segments 3 and 4–7. Femora and tibiae black, but all tarsi clear yellow, and strongly contrasting. Head generally silvery dusted, with mystax and beard white. Female terminalia like those of *punctum* (fig. 74).

umkomaasensis sp. n.

Type ♀ and 1 ♀ paratype in Pietermaritzburg. Type-locality: NATAL, beach at Umkomaas, 9 Dec. 1954 (B. Stuckenberg).
Distribution. Known only from type material.

– Mesonotum never with a bold pattern, indefinitely grey and brown. Abdomen not grey-dusted all over, but with clear brown and grey markings, or mostly brown. Tarsi not contrasting strongly with rest of legs; if they are yellow, without dark tips, so are the femora and tibiae.....2

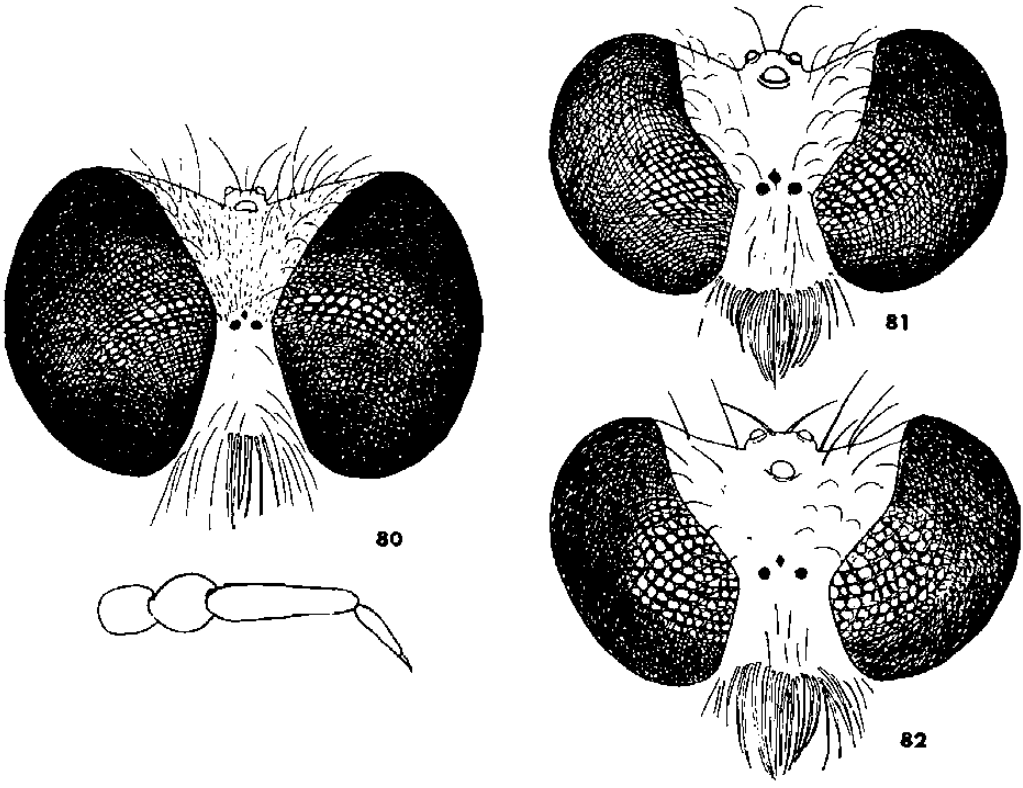
2. Frons and face very much constricted at antennae (fig. 80). Legs entirely black. [There may be more than one black-legged species confused.]

unicolor Ricardo

Stichopogon unicolor Ricardo, 1925, *Ann. Mag. nat. Hist.* (9) **15**: 276.
Type in Bulawayo. Type-locality: RHODESIA, Bulawayo.
Distribution. RHODESIA: Bulawayo. TRANSVAAL: Pretoria. CAPE PROVINCE: 3 km S.W. Brandkop (Irwin).

– Frons and face less heavily constricted. Legs not entirely black.....3

3. Femora mainly or entirely red.....4



Figs 80-82. (80) Head and antenna of *Stichopogon unicolor* Ricardo; (81) head of *Stichopogon punctum* Loew; (82) head of *Stichopogon hermanni* Bezzi.

– Femora mainly or entirely black.....5

4. Wings with a diffuse brown patch stretching from R_1 to R_4. Face silvery white, frons golden ochreous.

maculipennis Engel & Cuthbertson

Stichopogon maculipennis Engel & Cuthbertson, 1939, *J. ent. Soc. S. Afr.* **2**: 188.
Type in Bulawayo. Type-locality: RHODESIA, Kariba Gorge.
Distribution. RHODESIA: Lomagundi District.

– Wings clear. Face and frons both golden (fig. 82).

hermanni Bezzi

Stichopogon hermanni Bezzi, 1910, *Ann. Mus. nat. Hung.* **8**: 145.
Type in Munich. Type-locality: CAPE PROVINCE, Willowmore (Dr Brauns).
Distribution. Throughout southern and eastern Africa, and Congo Basin.

5. Grey bands of abdomen unequal, with prominent bands on segments 1, 2, 4, 5. Males with small but very distinct dark spot on fork of R_{4+5}. Females with trace of spot, and with eighth abdominal segment almost entirely grey-tomented; ventrally with conspicuous tuft of silky golden hairs (fig. 74). Frons, fig. 81.

punctum Loew

Stichopogon punctum Loew, 1851, *Progr. Realschule Meseritz*: 15.
Stichopogon punctatus Loew, 1852, *Ber. Verh. K. Preuss. Akad. Wiss.* **1852**: 658.
Distribution. Throughout southern and eastern Africa, and Congo Basin.

– Grey bands of abdomen incomplete, but equal, without any segments specially prominent. No dark spot on wings. Females with eighth tergite mostly bare and shining, tomented only dorsally (fig. 73); no conspicuous golden tuft.

caffer Hermann

Stichopogon caffer Hermann, 1907, *Z. Syst. Hymen. Dipt.* 7: 3.
Type in Munich. Type-locality: TRANSVAAL, Lichtenburg.
Distribution. Throughout southern and eastern Africa, and Congo Basin.

Tribe *LAPHRIINI*

Under this heading I have merged four of the tribes recognized by Hull (1962): Laphriini in the strict sense, Ctenotini, Andrenosomini and Laphystiini. The last three are useful groups of genera, which quite probably indicate natural relationships, and which, after a little experience, speed up the identification of certain genera. They are less satisfactory to the newcomer, who does not know exactly what to look for, and is thereby left uncertain at the tribal level. I prefer to have all these genera together in one tribal key, particularly as they seem, as far as we know, to share the larval habitat of burrows in stumps and fallen logs, or—in *Hyperechia* at least—sometimes in structural timbers.

In contrast to the diversity of Saropogonini, Laphriini in this broad sense are remarkably alike, and generally resemble bees or wasps. Most of them have the compact, solid appearance of bees, but a few—notably *Proagonistes*—look like wasps, which indeed they attack and overcome. Most Laphriini have the marginal cell of the wing closed, and an almost diagnostic feature is the presence of one or more bristles near the posterior margin of the mesopleuron, just in front of the wings. The third antennal segment is either clubbed or cylindrical, ending in microsegments which form a style, and not an arista as in Asilini. The male epandrium is undivided, and forms a curved hood, or if the genitalia are rotated as they often are in Laphriini, it looks like the hull of a boat (figs 102, 109).

Laphystiini—'die um das Genus *Laphystia* sich gruppierenden Asilidenformen' of Hermann, to which he gave the invalid name 'Prytaniinae'—are a natural group of genera. My only reason for not giving them full tribal status is the practical difficulty of defining and delimiting the group. They are supposed to have fewer abdominal segments than most Asilidae, with only six tergites visible in the male when seen from directly above. This comes about by a reduction of sclerites at both ends of the abdomen (Oldroyd 1963, figs 1, 2). The dorsally visible part of the first tergite is always small, and is generally disregarded in counting the segments. The apparent reduction in Laphystiini is effected by concealment of the seventh and eighth tergites under the overhanging sixth, but this is variable, even within one species, depending on how the specimen dries. In practice it is quite difficult to recognize a member of this group by counting the segments alone. The most characteristic feature is the shape of the tip of the marginal cell; whether this is closed or open, vein R_{2+3} is typically curved backwards at the tip, giving this cell a rounded tip.

Genus *Afromelittodes*

Afromelittodes Oldroyd & van Bruggen, 1963, *J. ent. Soc. S. Africa* **26**: 190–193. Type-species: *Afromelittodes solis* Oldroyd & van Bruggen, by original designation.

83

Fig. 83. *Afromelittodes solis* Oldroyd & van Bruggen ♀, 19 mm.

A strikingly mimetic robber fly (fig. 83), which in the male at least bears a close resemblance to the bee *Megachile felina* Gerst. In the wing the marginal, first and fourth posterior, and anal cells are all closed with a long stalk. The first posterior cell is particularly elongate and narrow. The palpi are unusually inflated, almost spherical, shining black, with strong, stiff bristles. The whole body is clothed with soft hairs, which are particularly long on the legs.

In our original publication, van Bruggen and I commented on the fact that the structure of *Afromelittodes* lends support to the view that 'Laphriini' and 'Laphystiini' cannot be adequately separated. We also mentioned some indication of a flange behind the base of the proboscis, a feature of Hull's tribe Ctenotini, of which *Lamyra* and *Stiphrolamyra* are South African examples. This, again, cuts across proposed tribal boundaries.

Afromelittodes was described from a single male, and lately Dr B. R. Stuckenberg sent me a single female which differs in details of colour and pattern. As far as can be deduced from these two specimens, the only ones so far known, the reasonable conclusion is that they are the two sexes of one species, and they are provisionally so regarded. In that case the sexual dimorphism is in the opposite sense to that of *Laxenecera albicincta*; in *Afromelittodes* the female is the more completely black, and the male has the more abundant pale hairs, and the appearance of abdominal bands.

1. *Male*. Mystax black at sides and below, with brownish hairs dorsally; along margin of eyes, below antennae, a band of glistening, silky white hairs. Antennae, palpi and proboscis black. Palpi with stiff black hairs, but proboscis with orange-yellow hairs below. Thorax shining blue-black, with greyish hairs upturned on scutellum. Abdomen bluish black, dorsally almost obscured by whitish hairs, with some black at extreme base, and laterally. Ventral hairs shorter.
   Female. Mystax mainly white, with only a few black hairs below. Thorax dorsally with black hairs, which are longer and upturned on scutellum. Abdomen dorsally with hairs mainly black, and only small patches of white laterally on hind margins of segments. Ventral hairs as long as those dorsally.

solis Oldroyd & van Bruggen

Afromelittodes solis Oldroyd & van Bruggen, 1963, *J. ent. Soc. S. Afr.* **26**: 191.
Type in Pretoria. Type-locality: TRANSVAAL, Fernwood.
Distribution. TRANSVAAL: Fernwood. S.W. AFRICA: Okahandja (Lamoral & Day).

Genus *Andrenosoma*

Andrenosoma Rondani, 1856, *Dipt. Ital. Prodr.* **1**: 160. Type-species: *Asilus ater* Linnaeus, monotypic.

This is a fascinating but difficult genus, recorded from all the zoogeographical regions. I have written elsewhere (Oldroyd 1970: 255): '. . . *Andrenosoma* . . . is an enigmatic genus everywhere; the huge *Andrenosoma* of Australia and South America, have little obvious affinity with the three distinctive Palaearctic species.' The African species are particularly obscure, since they have been rarely recorded, and seem to have little in common with each other. The two species known to me from Rhodesia are so completely different that it seems absurd to include them in the same genus. One is big, like the Neotropical species, and the other small, like the Palaearctic species.

Key to two species of *Andrenosoma* from Rhodesia

1. A very large species (30 mm). General colour yellow-brown, with some black pattern. Bristles mainly red. Wings stained yellow-brown.

igniferum Engel & Cuthbertson

Andrenosoma igniferum Engel & Cuthbertson, 1937, *Trans. Rhod. Sci. Ass.* **35**: 12.
Type in Bulawayo. Type-locality: RHODESIA, Mt Selinda, Melsetter Dt.
Distribution. RHODESIA. ? KENYA. S. W. Bromley, who determined the specimen in the British Museum, from Kenya, Shimba Hills (van Someren), transferred the species to *Proagonistes*, but without justification.

– A very much smaller species (11 mm). General colour black and white. Bristles black, with many fine white hairs. Wings clear.

boranica Corti

Andrenosoma boranica Corti, 1895, *Ann. Mus. Civ. Genova* (2) **15**: 133.
Type in Genoa. Type-locality: 'East Africa'.
Distribution. Appears to occur sporadically down the eastern half of Africa as well as across to the Ivory Coast. Perhaps generally distributed in tropical Africa.

Genus *Anypodetus*

Anypodetus Hermann, 1907, *Z. Syst. Hymen. Dipt.* **7**: 69. Type-species: *Anypodetus fasciatus* Hermann, by original designation.

In addition to the type-species, two others from South Africa were described by Engel in 1924, and two by Ricardo in 1925. Engel's two are no more than varieties at most of the same species, and *maculipennis* Ricardo is a synonym. We are thus left with three described species—*fasciatus* Hermann, *fascipennis* Engel (= *semirufus* Engel = *maculipennis* Ricardo) and *nigrifacies* Ricardo. To these must be added three new species, making a total of six. All six are South African, though one at least also occurs in Zambia.

Key to the species of *Anypodetus*

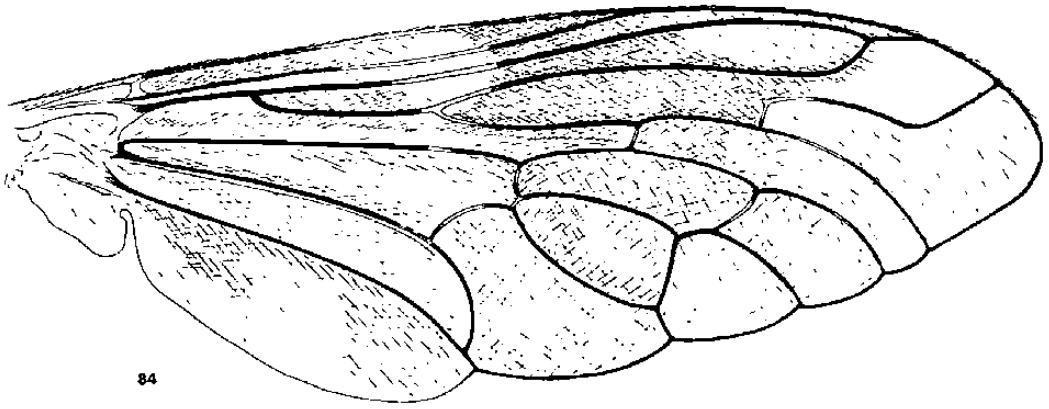
1. Wings distinctly banded, as in fig. 84, with two dark brown crossbands converging and fusing posteriorly; wing-tips distinctly paler, though with dark suffusions along veins. Mystax mainly or wholly black, with strong spines on mouth-margin, and bristly hairs above (fig. 86). Legs and abdomen varying from orange to blackish; abdomen with a broad lateral stripe of whitish hairs on each side. [There are possibly two species mixed here, the specimens with darker legs tending to have very short orange tomentum on both thorax and abdomen.]

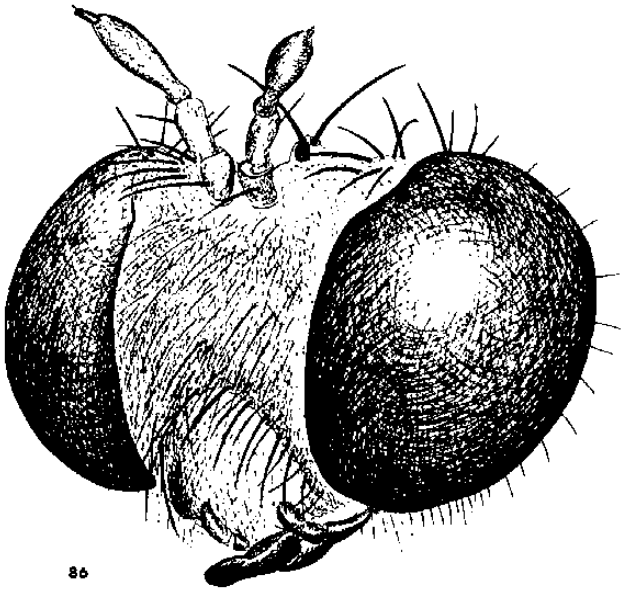
fascipennis Engel
(inc. var. *semirufus* Engel; *maculipennis* Ricardo)

Anypodetus fascipennis Engel, 1924, *Wien. ent. Z.* **41**: 102.
Type in Munich. Type-locality: CAPE PROVINCE: Willowmore.
Anypodetus fascipennis var. *semirufus* Engel, 1924, *Wien. ent. Z.* **41**: 104.
Type in Munich. Type-locality: CAPE PROVINCE, Willowmore.
Anypodetus maculipennis Ricardo, 1925, *Ann. Mag. nat. Hist.* (9) **10**: 242.
Type in London. Type-locality: RHODESIA, Sawmills.
Distribution. CAPE PROVINCE: Willowmore. S.W. AFRICA: Okahandja. RHODESIA: Sawmills; Bulawayo.

– Wings not banded; either clear or almost wholly dark.....2

2. Abdominal pattern consists of a continuous broad stripe of white hairs down





Figs 84–86. (84) Wing of *Anypodetus fascipennis* Engel; (85) hind tarsus of *Anypodetus fascipennis* Engel, showing absence of pulvilli; (86) head of *Anypodetus fascipennis* Engel.

each side, and no transverse bands in middle. Wings uniformly dark brown, except for lighter patches on forks and crossveins.

nigrifacies Ricardo

Anypodetus nigrifacies Ricardo, 1925, *Ann. Mag. nat. Hist.* (9) 10: 244.
Type in London. Type-locality: MOÇAMBIQUE, Lourenço Marques.
Distribution. MOÇAMBIQUE.

– Abdominal tergites each with a posterior band of white hairs, narrowed or interrupted in middle, but without continuous lateral stripes. Wings may be clear, or more or less infuscated 3

3. Wings uniformly dark brown. Body and legs light brown, with white tomentum on mesonotum, upper pleura, and posterior bands on abdominal tergites.

fasciatus Hermann

Anypodetus fasciatus Hermann, 1907, *Z. syst. Hymen. Dipt.* 7: 70.
Type in Munich. Type-locality: TRANSVAAL, Lichtenburg.
Distribution. TRANSVAAL: Lichtenburg. 'Kalahari' (Dr Schwetz). RHODESIA: Victoria Falls.

– Wings hyaline 4

4. Very black species, with all-black legs, but orange antennae. Mystax soft and white, with only a single row of black bristles on mouth-margin; male mystax dense, bushy, silvery white. Dorsum of thorax and abdomen covered with ashy tomentum, mixed white, brown and yellow; mesonotum clothed uniformly with short black bristles. Abdomen with a distinct grey posterior margin on each segment.

arachnoides sp. n.

Type in London. Type-locality: RHODESIA, Sawmills, 11.11.20 (? collector).
Distribution. RHODESIA: Sawmills; Hillside Bye; Sabi Valley (Brian Hursey). ZAMBIA: Chilanga.

– Brown or yellow-brown species. If legs are darker, then mystax is not soft, and includes many strong black bristles 5

5. Lower two-thirds of pleura chocolate-brown, contrasting with grey tomentum of upper third. Fore coxae mostly shining mahogany-brown. Frons as broad as one eye. Mystax of strong black bristles extending up to antennae and intermingled with rather scaly yellowish hairs. Mesonotum and dorsum of abdomen grey-brown; abdominal tergites with broad grey hind margins, and anterior grey patches at extreme sides; clothed with short, concolorous spiny hairs. Legs, including tarsi, uniformly mahogany-brown, with black bristles.

rigidis sp. n.

Type ♂ in London. Type-locality: RHODESIA, Sawmills, 31 Dec. 1921.
Distribution. Known only from unique type.

– Pleura not distinctly bicoloured. Fore coxae covered with whitish tomentum and hairs, like other coxae. Frons narrower than one eye. Mystax variable, consisting of numerous strong bristles, most of which are usually black, but some or all may be white; and with scaly whitish bristles dorsolaterally. Abdomen light brown, tergites with grey hind margins, which expand into a continuous band along each side; spiny hairs concolorous. Legs brown, or indefinitely blackish, with black bristles, and with clothing hairs mostly white. A species with strong sexual dimorphism, as well shown by a series collected on the same occasion by M. E. & B. J. Irwin, and with one pair in cop. Males are grey and black, whereas females are light brown.

unicolor sp. n.

Type ♂ in Pietermaritzburg. Type-locality: NATAL, Zululand, Ndumu Game Res. Camp dry scrub forest (M. E., B. J. Irwin).
Distribution. NATAL: Zululand. MOÇAMBIQUE: Lourenço Marques (?). S.W. AFRICA: Otjiwarongo; Otjitambi Farm, 43 km E.S.E. Kamanjab (B.M. S. Afr. Exped., 1972), and other, unnamed, localities. RHODESIA: Sawmills; Devuli Ranch (Brian Hursey); CAPE PROVINCE: Nauwpoort (G. van Son).

Genus *Gerrolasius*

Gerrolasius Hermann, 1920, *Zool. Jahrb.* **43**: 189. Type-species: *Gerrolasius meridionalis* Hermann, by original designation.

More furry and bee-like than *Laphystia*, though with similar head and antennae. The type-species is tiny and slight, and I have provisionally assigned to this genus a second species, though its bigger size and closed first posterior cell, together with a less bristly mystax, make it probable that a new genus will be needed to accommodate it. There is much variation in wing venation among the *Laphystia* complex, and it is doubtful how much reliance can be placed upon it for generic location.

The two species are both black, with orange tibiae.

Key to South African species of *Gerrolasius*

1. Tiny (8 mm). Wings only faintly smoky, first posterior cell open. Face with a distinct, though small, tubercle, and mystax consisting of strong bristles in lower part. Occiput also with strong white bristles. Pleura with grey tomentum and a crescentic area of shining black.

meridionalis Hermann

Gerrolasius meridionalis Hermann, 1920, *Zool. Jahrb.* **43**: 189.
Type in Munich. Type-locality: TRANSVAAL.
Distribution. RHODESIA. TRANSVAAL. MOÇAMBIQUE: Lower Zambezi R. (Usher). CAPE PROVINCE: 32 km N. of Cradock (Greathead).

– Bigger species (12 mm), comparatively robust. Wings dark brown, paler at tip. First posterior cell closed and stalked. Face with a mystax of dense, short white hairs, and no clear indication of a tubercle. Vertex with soft, silky hairs only. Pleura with long, pale hairs, and no trace of a black area.

krugeri sp. n.

Type in Pretoria. Type-locality: TRANSVAAL, Kruger National Park, Sabie Gorge 22.12.64.
Distribution. TRANSVAAL: Sabie Gorge; Punda Milia.

Genus *Hoplistomerus*

Hoplistomerus Macquart, 1838, *Dipt. exot.* **1** (2): 59. Type-species: *Laphria serripes* Fabricius, by monotypy.

The original spelling of the name is masculine, though Macquart himself gave it a feminine ending on the very next page, and most other authors have followed his example.

Hoplistomerus is a robust, compactly-built asilid, with a slight 'waist', and with dense silky hairs closely adpressed to the thorax and abdomen: on the latter they are predominantly golden yellow or orange, and increase the general resemblance to a bee. The diagnostic character of the genus is the hind femur (fig. 87), with its strongly convex upper margin and straight edge below, the latter armed with tooth-like tubercles, each surmounted by a fine bristle (often broken off). Other Laphriine genera have these inflated femora, but none else has tubercles like these, except to a lesser extent in *Trichardis*.

I wrote a revisionary paper on *Hoplistomerus* in 1940, and as far as I know no new species have been described since then except *garambaensis* Oldroyd (1970), from the N.E. Congo. There are seven species on the African continent, one—*H. caliginosus*

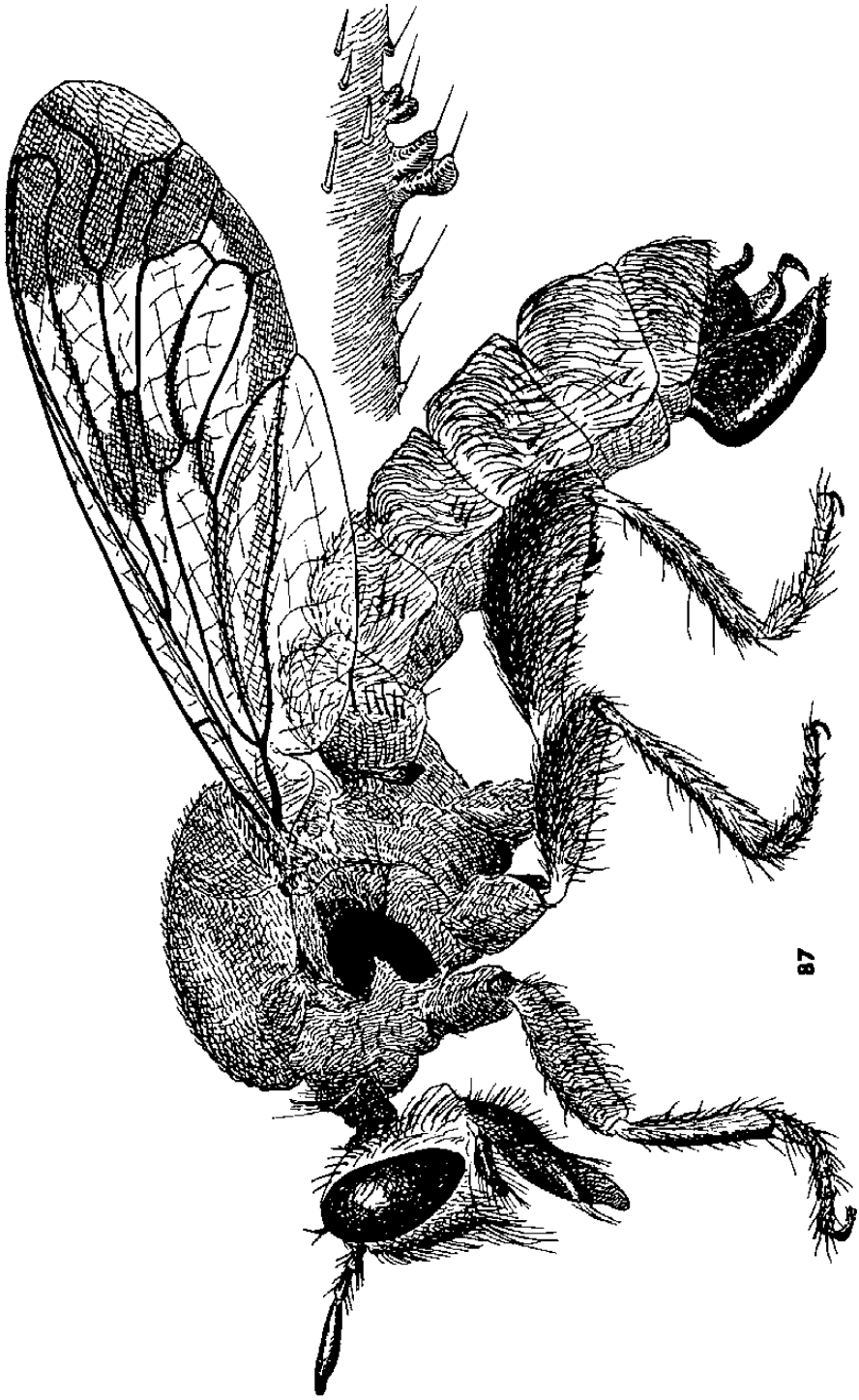


Fig. 87. *Hoplistomerus nobilis* Loew ♂. 14 mm. Detail of spiny tubercles beneath hind femur.

Wulp in the Arabian peninsula, and at least one, undescribed species has been recorded from Burma. As my map showed, the African species are curiously concentrated between Kilimanjaro and the Horn of Africa, with one wide-ranging species to the north and one to the south. The northern species is *H. serripes* Fabricius (including *auriventris* Loew), and ranges from the Gambia in the west to Tanzania in the east. From Malawi south and south-west the only species is *H. nobilis* Loew, which thus almost exactly occupies the area of the present paper. Loew recorded *serripes* from Moçambique (1862, in Peters, *Reise nach Mossambique* (*Zool.*) 5: 10) but this was a delayed report, which was actually written before his 1857 paper. The Moçambique specimen was part of the type material of *nobilis*, Loew having changed his mind, and decided that the South African species was different from the West African one; an instance of the correction being published before the mistake!

Black in ground colour, body densely covered with recumbent hairs, which are either greyish white, golden yellow or orange. Distinguished from other species of the genus by the combination of all-black femora and the distribution of yellow and white abdominal hairs: first four tergites have white hairs at extreme sides, but yellow hairs elsewhere, and fifth and sixth tergites have yellow hairs only (note that this genus belongs to Hermann's Prytaniinae and Hull's Laphystiini, and has the first true tergite reduced to lateral lobes only, which are not counted) (fig. 87).

nobilis Loew

Hoplistomerus nobilis Loew, 1857, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **14**: 357.
Type in Berlin. Type-locality: Caffraria (Wahlberg); Mozambique (Peters).
Distribution. Widespread over southern Africa, from Malawi southwards.

Genus *Hyperechia*

Hyperechia Schiner, 1866, *Verh. zool.-bot. Ges. Wien.* **16**: 673. Type-species: *Laphria xylocopiformis* Walker, by original designation.

Probably the easiest of all genera of Asilidae to recognize, since it is a close mimic of carpenter bees of the genus *Xylocopa* (fig. 88). There is direct association between bee and fly, since the larvae of the *Hyperechia* live in the burrows of the bee. Some *Hyperechia* closely resemble a particular species of *Xylocopa*, in the distribution of pale hairs on the thorax and abdomen, though in fact mimic and model are not necessarily found together. *Hyperechia* has always attracted attention because of its mimicry, and revisions of the species of mainland Africa were published by Grünberg (1907) and by van Bruggen (1962). Both authors seem to have found difficulty over *consimilis* Wood, though this is almost the most distinctive species.

Some time ago Dr E. C. C. van Someren suggested to me that some at least of the alleged species of *Hyperechia* appeared to be merely colour-forms, as witnessed by their occurrence and behaviour in Kenya. My own investigation led me to concur in this. The genitalia of both species indicate the probability that there are only three distinct species, with colour-forms as follows:

species a: *consimilis*; *usambarae*; *floccosa*; *nigrita* (fig. 91).

species b: *hirtipes*; *bomboides* (fig. 90).

species c: *imitator*; *nigripes*; *bifasciata*; *pellitiventris*; *marshalli*; *fülleborni*; *madagascariensis* (fig. 89).

Fig. 92 is of an undescribed East African species in the British Museum.

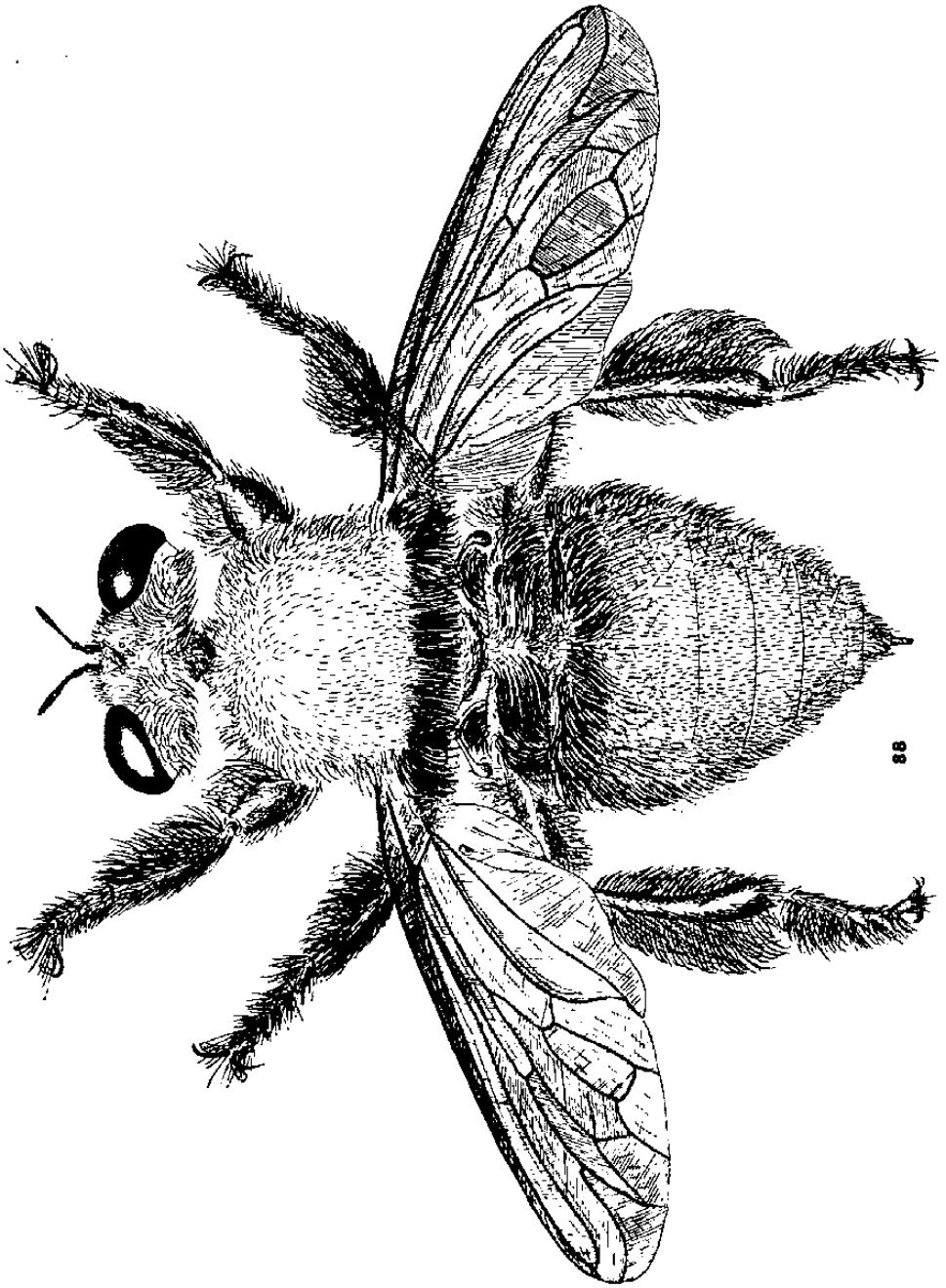
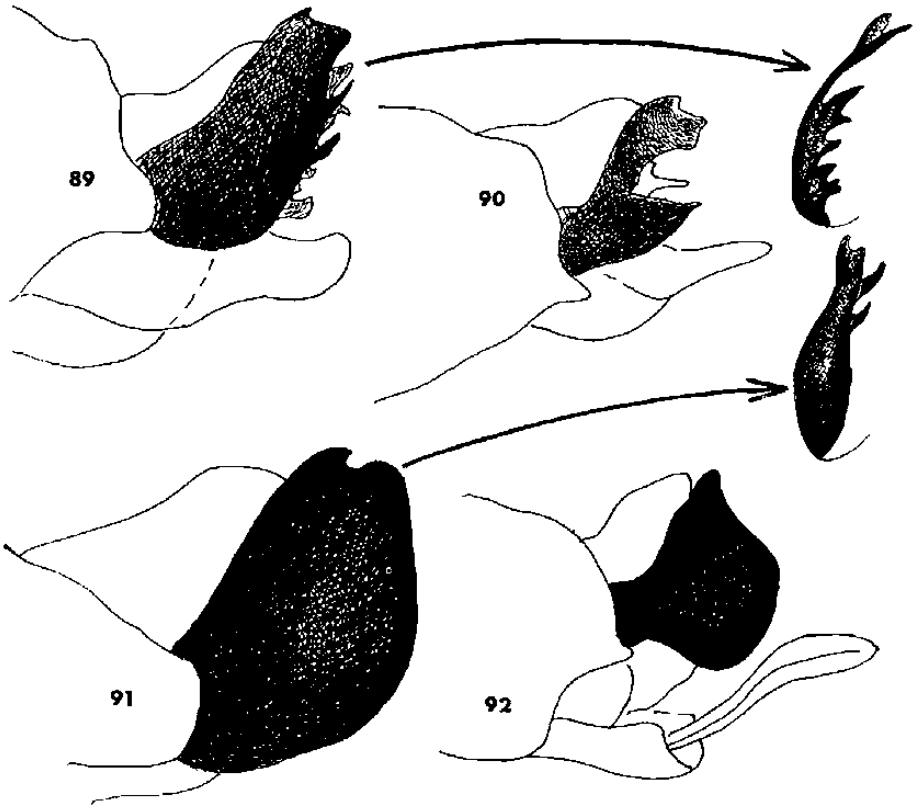


Fig. 88. *Hyperechia bifasciata* Grünberg ♀. 22 mm.



Figs 89–92. Types of male genitalia in *Hyperechia*: (89) Type a, *consimilis* etc.; (90) Type b, *hirtipes*, *bomboides*; (91) Type c, *imitator*, *marshalli*, *bifasciata*; (92) Type d, an undescribed East African species.

These groupings can be recognized as follows:

species a: with fringes of pale hairs along the sides of the abdomen.

species b: with the thorax completely clothed with white or yellow hairs.

species c: not either of the above.

The difference between greyish-white and sulphur-yellow hairs is similar to that found in other Diptera, notably *Tabanus biguttatus* Wiedemann, and may be the result of a simple genetic factor. What appears to the eye to be the presence or absence of a band of pale hairs seems in fact to be another colour-difference; the hairs are present in both cases, but when they are black they disappear into the general sombre background.

The type-species, *Laphria xylocopiformis* Walker, is Indian, but the other described species are nearly all from Africa or Madagascar. Keys were published by Grünberg (1907), van Bruggen (1962) and Oldroyd (1970). The following key is confined to the species known to occur in southern Africa, with only passing comment on the others. *Laphria rufibarbis* Fabricius, included by van Bruggen, is a *Proagonistes*.

Key to the South African species of *Hyperechia*

1. Each side of the abdomen with a continuous pale fringe. Thorax and abdomen otherwise with black hairs. Wings entirely dark. Gonopods of male and eighth sternite of female as in fig. 91.

consimilis Wood

Laphria consimilis Wood, 1874, *Insects Abroad:* 758.
Type in London. Type-locality: NATAL.
Dasyllis usambarae Lichtwardt, 1907, *Deutsch. ent. Z.* **1907**: 85.
Type in Berlin. Type-locality: TANZANIA: Usambara [*floccosa* Bezzi and *nigrita* Grünberg are probably West African colour variants].
Distribution. Eastern Africa, from Usambara to NATAL, with colour variants in West Africa.

– Sides of abdomen without continuous pale fringes. With or without transverse bands of grey or yellow hairs, but mesonotum never completely covered with these. Male genitalia as in fig. 89 2

The other four are possibly colour variants of one species, and the differences stated are not always clearly defined.

2. Thorax and abdomen with black hairs only.

imitator Grünberg

Hyperechia imitator Grünberg, 1907, *Deutsch. ent. Z.* **1907**: 522.
Type in Berlin. Type-locality: 'Sudwestafrika (Ogowe)'.
Distribution. CAPE PROVINCE: Clanwilliam Dt., Algeria forest (Potgieter & Strydom). The type-locality may possibly apply to the Ogouwe River in Congo (Brazzaville), and the species may be widespread from Kenya south and west to Gabon.

– Either thorax or abdomen, or both, with grey or yellow hairs 3

3. A band of conspicuous hairs across posterior margin of mesonotum, immediately in front of scutellum; usually red, sometimes yellow. Abdomen black-haired.

marshalli Austen

Hyperechia marshalli Austen, 1902, *Trans. ent. Soc. London* **1902**: 541.
Type in London. Type-locality: RHODESIA: Mashonaland.
Distribution. ETHIOPIA to RHODESIA.

– Thoracic band grey or yellow, and abdomen also with pale hairs on basal tergites 4

4. First *three* tergites of abdomen with grey or yellow hairs.

nigripennis Wiedemann

Laphria nigripennis Wiedemann, 1830, *Auss. Zweifl. Ins.* **2**: 646.
Type in Berlin. Type-locality: none given.
Distribution. Grünberg (1907: 519) gave 'Capland' as the locality for this species, and I have seen it from CAPE PROVINCE: Willowmore; Longhope.

– Only *two* tergites with pale hairs.

bifasciata Grünberg

Hyperechia bifasciata Grünberg, 1907, *Deutsche. ent. Z.* **1907**: 519.
Type in Berlin. Type-locality: TANZANIA, Dar-es-Salaam; Tanga.
Distribution. KENYA. TANZANIA. CONGO (Zaïre). MALAWI. MOÇAMBIQUE.

Genus *Lamyra*

Laphria subgenus *Lamyra* Loew, 1851, *Progr. Realschule Meseritz*: 19. Type-species: *Laphria* (*Lamyra*) *gulo* Loew, by original designation.

This is one of the most conspicuous and most easily recognized of African Asilidae. Only some *Proagonistes* challenge *Lamyra* in size, a good specimen attaining a length

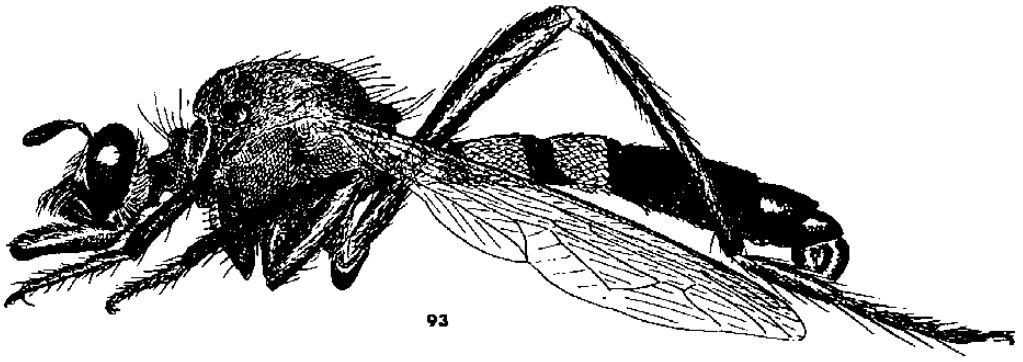


Fig. 93. *Lamyra gulo* Loew ♂. 27 mm.

including proboscis, of 35 mm, and a wing-span of nearly 60 mm. All the legs are elongate, and the hind legs stretch beyond the tip of the abdomen. Unlike the curved and acute proboscis of *Proagonistes*, that of *Lamyra* is straight and unusually thick and strong. The abdomen is markedly constricted at the second and third segments, and the tip appears rather clavate.

Anyone who has collected Asilidae in Africa knows *Lamyra gulo*, but there are several related species that are easily confused with it, especially if the specimen is greasy and the pattern discoloured. There is also confusing variation in size, and some specimens, even of *gulo*, are much smaller than the dimensions quoted above. For this reason the following key is given to all the species of *Lamyra* of which I am aware, though only *gulo* occurs in southern Africa. *Lamyra versicolor* Ricardo and *Lamyra angularis* Loew have been removed to the adjacent genus *Stiphrolamyra*.

Key to the known species of *Lamyra*

1. Red-brown, abdomen with black basal bands on each segment; strongly resembling a hornet ..... [*pleskei* Becker]
   A palaearctic species, found in TURKEY, IRAN and neighbouring countries.
- Predominantly black species, sometimes with abdominal bands 2
2. Metapleural hairs, immediately in front of halteres, predominantly black, sometimes mixed with a few white, sometimes spiny 3
- Metapleural hairs predominantly pale, sometimes few black 5
3. First abdominal segment black, second and third each with a pair of oblique, widely separated grey triangles. Segments 5–8 steel-blue. Pleura black, grey only on dorsal margin. Antennae all black.

   [*vorax* Loew]

   Lamyra vorax Loew, 1857, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **14**: 355.
   Type in Berlin. Type-locality: SUDAN, Khartoum.
   Distribution. SUDAN and northern savannas round to GAMBIA. EGYPT. ARABIA. ISRAEL.

- Abdomen without these widely separated grey triangles, may have other pattern 4

4. First three abdominal tergites with golden bands, which leave a black basal band on second and third tergites. Similar bands ventrally.

gulo Loew

Lamyra gulo Loew, 1851, *Progr. Realschule Meseritz*: 19.
Type in Berlin. Type-locality: 'Caffraria' (Wahlberg).
Distribution. Southern and eastern Africa, north to KENYA and UGANDA, as well as south-eastern ZAÏRE, and ANGOLA.

– First four abdominal tergites with dull brown tomentum, greyish triangles at corners. Venter dull, without distinct bands.

[*nobilis* Walker]

Laphria nobilis Walker, 1871, *The Entomologist* **5**: 258.
Type in London. Type-locality: Straits of Bab-el-Mendeb, Tajura.
Distribution. RED SEA COAST.

5. Face, frons, palpi and entire antennae orange. Legs mainly orange, with some black on femora. Generally resembling *gulo*, with three golden bands (♂) or uniformly dull black (♀).

rossi sp. n.

Type in California Academy of Sciences. Type-locality: ANGOLA, 72 km S. of Santa Combe Dao (E. S. Ross).
Distribution. ANGOLA; Type-locality: Mt Lubiri, 10 km N.W. Alto Hama; 25 km W. Paiva Conceiro (B.M. S. Afr. Exped., 1972).

– First three abdominal segments heavily covered with grey tomentum. Pleura almost entirely covered with grey tomentum. Third antennal segment orange, contrasting particularly with first segment.

[**greatheadii** sp. n.]

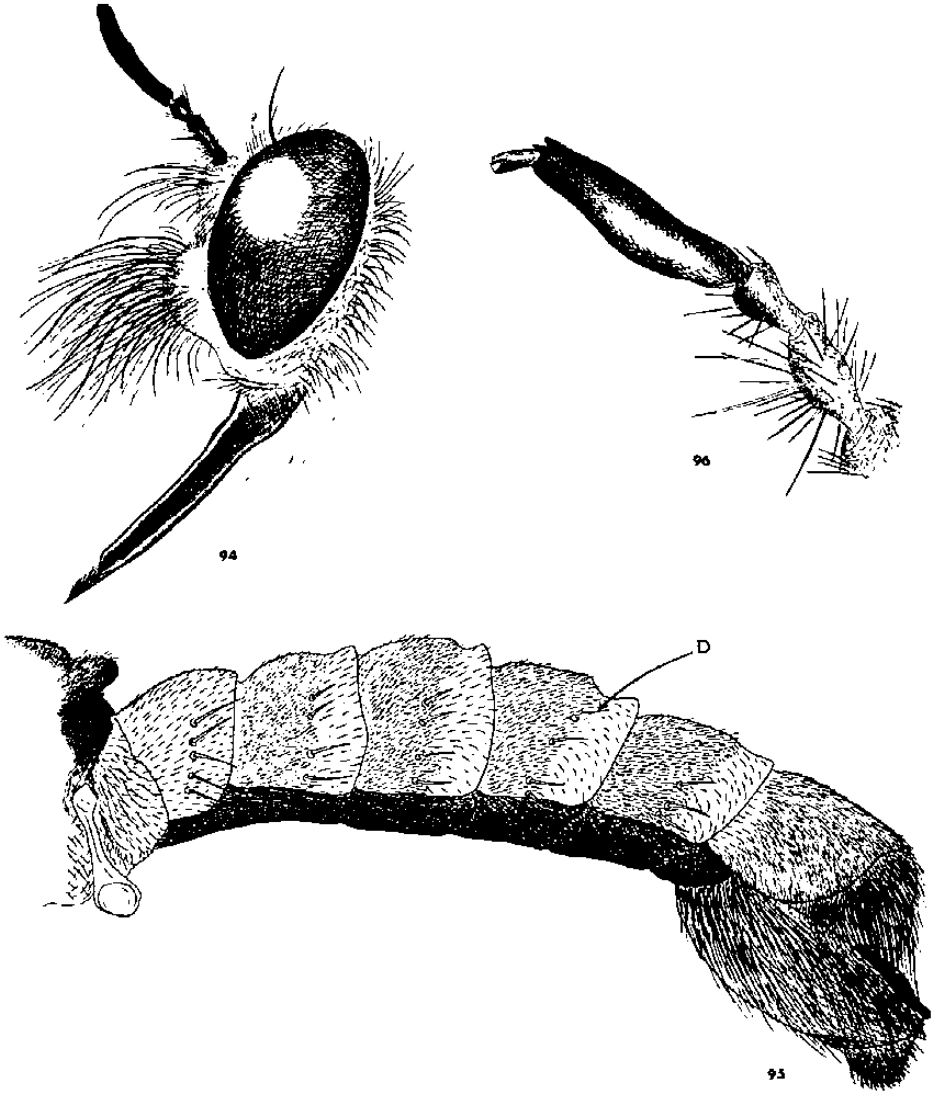
Type in London. Type-locality: SOMALIA, El Rago, 8.12.53 (Desert Locust Survey).
Distribution. SOMALIA: various localities.

Genus *Laphria*

Laphria Meigen, 1803, *Illigers Mag. Ins.* **2**: 270. Type-species: *Asilus gibbosus* L., by designation of Latreille, 1810.
Choerades Walker, 1851, *Ins. Saunds. Dipt.* **1**: 109. Type-species: *Choerades aurigena* Walker, (= *Laphria vulcanus* Wiedemann), monotypic.

'*Laphria*' is a generic name that is used loosely for many bee-like Asilidae, but strictly applies to a very limited concept. True *Laphria* must have the proboscis flattened from side to side, like a paper-knife on edge (fig. 94), and only one South African genus satisfies this condition: *Storthyngomerus* and *Dasyllina* are not yet recorded from southern Africa proper, though *Storthyngomerus* may reach northern Moçambique.

Laphria is pre-eminently a Holarctic genus, with a considerable representation in the Oriental Region. The species fall into two main groups, a furry group of *Laphria* proper, and a bare group, with the pile, if any, recumbent. The latter is especially characteristic of the Oriental Region, where it was named *Choerades* by Walker, 1851, and *Epholkiolaphria* by Hermann, 1914. Some modern authors admit *Choerades* as a distinct genus—I have done so in a paper on Asilidae from the Philippine Islands—but in areas where both occur I am not satisfied that the two can be adequately separated. So in the African Catalogue, and in the present paper, I continue to use the name *Laphria*, though most if not all the African species will fall into *Choerades*.



Figs 94–96. (94) Head of *Laphria flavipes* Wied., showing the 'paper-knife' proboscis. (95) *Laphystia gigantella* Loew ♂ abdomen, showing strong discal bristles (D); (96) antenna of *Laphystotes albicans* (Engel).

In my 1970 key I tentatively suggested that perhaps *L. metalli* Walker (1851, *Ins. Saunds. Dipt.* **1**: 105) might be a synonym of *bipenicillata* Bigot, a conspicuously metallic species that is widespread through tropical Africa, and perhaps extends southwards from Malawi; while *L. fortipes* Walker (1857, *Trans. ent. Soc. Lond.* **4**: 128) could be an earlier name for *nigrescens* Ricardo. Apart from these I am aware of only six species from southern Africa, separable as follows:

Key to South African species of *Laphria*

1. Scutellum, and at least posterior part of mesonotum, conspicuously covered with dense, recumbent, yellow hairs, which conceal ground colour.....2
- Not so: in *serpentina* scutellum has grey tomentum and some short yellowish pile, which is continued on first two segments of abdomen.....3
2. Thorax and abdomen both covered with recumbent yellow hairs. Legs black.

aureopilosa Ricardo
(*variabilis* Bromley)

Laphria aureopilosa Ricardo, 1900, *Ann. Mag. nat. Hist.* (7) **6**: 171.
Type in London. Type-locality: NATAL, Durban.
Laphria variabilis Bromley, 1947, *Ann. Durban Mus.* **3** (**8**): 112.
Type in Durban. Type-locality: NATAL, Durban.
Distribution. All specimens so far seem to have come from Durban Bluffs.

- Thorax with dense bronze hairs; abdomen black, with a variable amount of yellow pile. Femora orange with black tips. A variable species, possibly a complex.

bella Loew

Laphria bella Loew, 1858, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **14**: 356.
Type in Berlin. Type-locality: Caffraria (Wahlberg).
Distribution. CAPE PROVINCE: Port St John's, Pondoland. TRANSVAAL: Malta Forest, Pietersberg (van Son). RHODESIA: N. Vumba (Cookson).

3. Legs entirely black, except for dull reddish base to hind tibiae.....4
- Legs not entirely black, in part clearly red or yellow.....5
4. Scutellum and first two abdominal segments with grey tomentum and rather thick white hairs, giving base of abdomen a banded appearance.

serpentina Bezzi

Laphria serpentina Bezzi, 1908, *Ann. Soc. ent. Belge* **52**: 378.
Type in Brussels. Type-locality: 'Congo'.
Distribution. Specimens from MALAWI: Mt Mlanje (Neave) and NATAL: Dukuduku (Potgieter & Goode) are somewhat doubtfully assigned to this tropical species.

- Scutellum and entire abdomen black, with some fine, pale hairs, but not dense enough to give a banded appearance.

nigrescens Ricardo

Laphria nigrescens Ricardo, 1925, *Ann. Mag. Nat. Hist.* (9) **15**: 279.
Type in London. Type-locality: MALAWI, Mt Mlanje (Neave).
Distribution. MALAWI and adjoining parts of MOÇAMBIQUE. NATAL: N. Jozini (Irwin).

5. Femora and tibiae largely orange, with broad black tips; tarsi black. Mesonotum and abdomen smooth, shining black.

flavipes Wiedemann

Laphria flavipes Wiedemann, 1821, *Dipt. exot.*: 238.
Type in Copenhagen. Type-locality: 'Cap'.
Dasythrix nigrapex Bigot, 1878, *Ann. Soc. ent. France* (**5**) **8**: 229.
Type in Oxford. Type-locality: NATAL.
Distribution. CAPE PROVINCE: Ceres; Mossel Bay. NATAL: Tongaat. MOÇAMBIQUE: Gorongoza Mt., Manica–Sofala Dt. (Stuckenberg). RHODESIA: N. Vumba (Cookson).

- Fore and middle femora black; hind femora and all tibiae orange with black tips, tarsi black. Mesonotum and abdomen heavily punctate.

multipunctata sp. n.

Type in London. Type-locality: CAPE PROVINCE: Matjiesfontein (Turner).
Distribution. CAPE PROVINCE: Matjiesfontein; Seven Weeks Poort (G. van Son).

Genus *Laphystia*

Laphystia Loew, 1847, *Lin. Ent.* **2**: 538. Type-species: *Laphystia sabulicola* Loew, 1847, by original designation.
Laphyctis Loew, 1859, *Öfvers. Kongl. Vet. Akad. Förhandl.* **15**: 338 Type-species: *Stichopogon gigantella* Loew, 1852, by original designation.

Laphystia is the type-genus of the tribe Laphystiini, the current version of Hermann's group Prytaniinae, which I have discussed earlier (p. 87), and decided to retain within the tribe Laphriini. *Laphystia* is primarily Holarctic, with a Palaearctic type-species, though Martin & Papavero (1970, *Cat. Dipt. Amer. South* **35b**: 2) suggest that Laphystiini as a whole may have originated in South America. Indeed this is possible, not only of this tribe, but of Asilidae in general.

Isolated Ethiopian and Oriental species have been assigned to *Laphystia*, but each needs to be examined critically before assuming that it it truly congeneric with the type-species. Two described species from South Africa—(*Stichopogon*) *gigantella* Loew and *Laphystia argenteofasciata* Engel—are synonyms. For some reason Engel himself regarded the latter as synonymous with *Laphystia clausicella* Hermann from Kenya, but material (?types) of the last, which was published as a *nomen nodum*, are quite distinct.

There is thus only one* *Laphystia* from South Africa, a characteristically slender species, with rather bare abdomen. Hull (1962: 76) placed the species with open marginal cell in a subgenus *Laphystiella*, and if a valid distinction this would apply to the South African species. Quite possibly, though, it is not a true *Laphystia* at all.

Wings clear. First posterior cell open. Body with very short, recumbent tomentum, and conspicuous bristles. Abdominal tergites black, with bronze tomentum on anterior two-thirds, and a silvery band on posterior third. Legs slender mostly black, with strong white bristles. Male genitalia large and prominent (fig. 95).

gigantella Loew
(*argenteofasciata* Engel)

Stichopogon gigantella Loew, 1852, *Ber. V. Kongl. Preuss. Akad. Wiss. Berlin* **1852**: 658.
Type in Berlin. Type-locality: MOÇAMBIQUE.
Laphystia argenteofasciata Engel, 1929, *Ann. Transv. Mus.* **14**: 162.
Type in London. Type-locality: RHODESIA, Sawmills.
Distribution. RHODESIA. MOÇAMBIQUE.

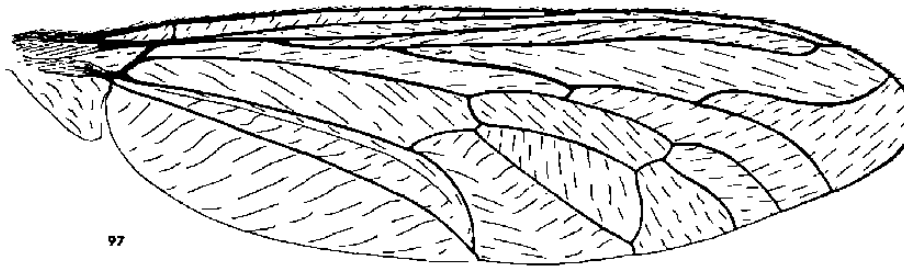
Genus **Laphystotes** gen. n.

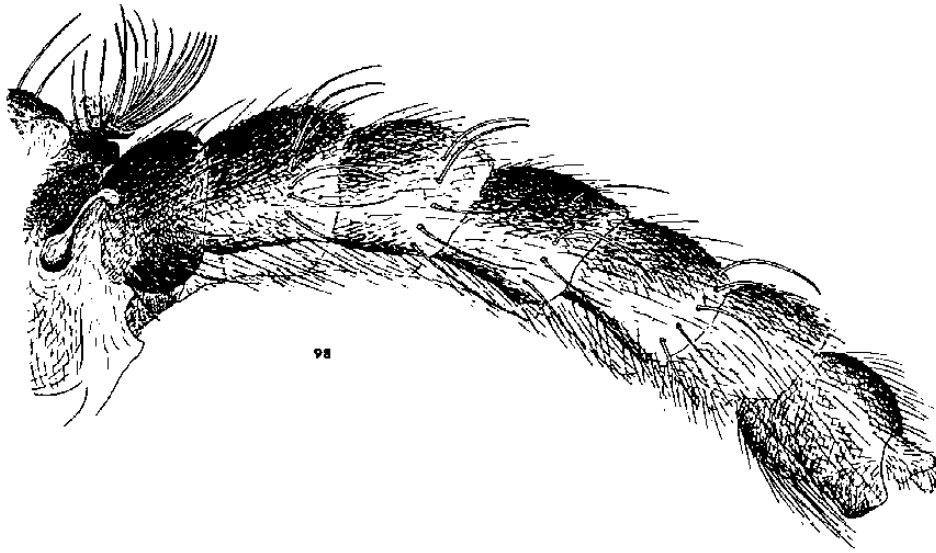
Type-species: *Dasythrix albicans* Engel, 1932, *Ann. Transv. Mus.* **14**: 256.

This genus is erected for a species which its original author considered to be anomalous in the genus to which he assigned it, *Dasythrix* (= *Nusa*). The head and antennae closely resemble those of *Laphystia*: antennae as shown in fig. 96, face strongly convex from antennae to mouth-margin, but without a tubercle, entirely clothed with a moderately dense and shining mystax. Palpi very small, second segment plump spindle-shaped. Body very bristly; tuft of bristles on mesopleuron, before wing-base; abdomen and genitalia as in fig. 98; wing venation as in fig. 97, marginal cell closed with short stalk; first posterior cell widely open, only slightly narrowed; fourth posterior and anal cells closed and stalked.

The genus is clearly laphriine, because of the venation and the mesopleural bristles,

* Linder (1973) has described two new species of *Laphystia* from S.W. Africa, Swakopmund.





Figs 97–98. (97) Wing of *Laphystotes albicans* (Engel); (98) abdomen of *Laphystotes albicans* (Engel).

and of the genitalia with boat-shaped hypandrium. The abdomen has six clearly distinct segments, and one of the two specimens shows a trace of a seventh. These characters in combination bridge the alleged division between Laphriini and 'Laphystiini'.

A grey and pale reddish yellow species, very bristly, with long, strong white bristles, which are particularly evident on scutellum and dorsum of abdomen. Thorax mostly black in ground colour, with grey tomentum; only humeral and postalar calli conspicuously orange. Legs mostly yellow; femora with anterodorsal black stripe, most extensive on hind femora. Wings clear; marginal, fourth posterior and anal cells closed and stalked (figs 96–98).

albicans Engel

Dasythrix albicans Engel, 1932, *Ann. Transv. Mus.* **14**: 256.
Type in London. Type-locality: RHODESIA, Sawmills.
Distribution. Known only from type-locality.

Genus *Laxenecera*

Laxenecera Macquart, 1838, *Dipt. exot.* **1** (2): 77. Type-species: *Laxenecera albibarbis* Macquart (an Indian species), by designation of Hermann, 1919.
Acurana Walker, 1851, *Ins. Saunds. Dipt.* **1**: 107. Type-species: *Acurana sexfasciata* Walker, monotypic.
Dyseris Loew, 1837, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **14**: 357. Type-species: *Laxenecera andrenoides* Macquart, by designation of Loew, 1860: 122.

Laxenecera albicincta Loew is one of the most widely distributed of African Asilidae, as well as one of the most distinctive, especially the female. This compact, bee-like fly is black with rusty grey hairs on the thorax, and broad grey abdominal bands (fig. 99); the male is quite different, being almost entirely black, and not surprisingly the wide distribution and strong sexual dimorphism have led to the redescription of this species several times, under different names.

The other species of *Laxenecera* are smaller and more furry, though still bee-like. They are also obviously laphriine, but differ from true *Laphria* in having the proboscis flattened ventrally, and from *Laphystia* and it allies, including *Hoplistomerus*, in having the marginal cell of the wing closed normally, without the reflexed tip to R_{2+3} characteristic of these genera. Finally, all *Laxenecera* have a row of fine hairs dorsally on the third antennal segment, and this is the definitive character—and the source of the name—though it is not unknown in some other Laphriini.

This is one of the genera that, by historical accident, are based on Oriental species, though the majority of their species are African. Nearly all African *Laxenecera* are tropical, and southern Africa has only the ubiquitous *albicincta* and three or four others.

Hermann (1919) published descriptions of all the species then known, and the few new species since that date have come from the Congo Basin. One new species is in the present material, from Moçambique, and the species misidentified by Bezzi and Engel as *andrenoides* Macquart is renamed *engeli* nom. n.

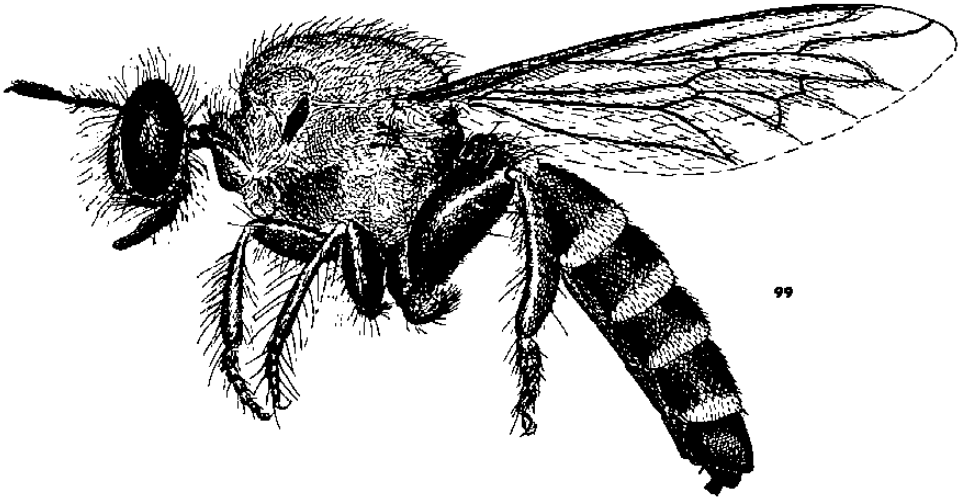


Fig. 99. *Laxenecera albicincta* Loew ♀. 16 mm.

Key to South African species of *Laxenecera*

1. Males 2
– Females 7
2. Legs all black 3
– Fore and middle tibiae clear yellow 5
3. Mystax entirely orange. Hind tarsi with white hairs above.

♂ **dasypoda** Speiser

Laxenecera dasypoda Speiser, 1910, *Kilimandjaro–Meru Exped.* **10** (4): 95.
Type in Stockholm. Type-locality: TANZANIA, Meru (♂) and Kilimandjaro (♀).
Distribution. TANZANIA. MALAWI. MOÇAMBIQUE. ZAMBIA: Namwala. RHODESIA: Hope Fountain; Bulawayo; Salisbury. S.W. AFRICA: Abachaus, Damaraland. ANGOLA: 8 km N.E. Negola (B.M. S. Afr. Ex. 1972).

– Mystax extensively black 4
4. A larger (13 mm), robust, very black species with clear wings, veins reddish in basal half. Hind tarsi without conspicuous white hairs.

♂ **albicincta** Loew

Laphria albicincta Loew, 1852, *Ber. Ver. Preuss. Akad. Wiss.* **1852**: 659.
Type in Berlin. Type-locality: MOÇAMBIQUE (Peters).
Laxenecera apiformis Walker, 1855, *List Dipt. Brit. Mus.* **7 suppl. 3**: 572.
Type in London. Type-locality: NATAL, Port Natal ♀.
Laxenecera nigrocuprea Walker, 1855, *List. Dipt. Brit. Mus.* **7 suppl. 3**: 572.
Type in London. Type-locality: NATAL, Port Natal ♂.
Laxenecera stuhlmanni Röder, 1893, *Jahrb. Hamb. Wiss. Anst.* **10** (2): 3.
Type in Hamburg. Type-locality: MOÇAMBIQUE, Quilimane.
Laxenecera splendida Hermann, 1919, *Deutsch. ent. Z.* **1919**: 341.
Types said to be in London, not now traceable. Type-locality: MALAWI.
Distribution. Throughout eastern, southern and south-western Africa.
N.B. This widespread and somewhat variable species may well prove to be a complex of sibling species.

– A much smaller (8 mm) species, with extensive yellow hairs dorsally on head and thorax. Hind tarsi dorsally with conspicuous snow-white hairs.

♂ **cooksoni** sp. n.

Type in Pietermaritzburg. Type-locality: MOÇAMBIQUE, Amatonga Forest (Cookson).
Distribution. Known to me only from unique male.

5. Mystax entirely yellow. Marginal cell of wing with a long, curved stalk, and veins adjacent to closure edged with black microtrichia.

♂ **mollis** Loew

Dyseris mollis Loew, 1857, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **14**: 358.
Type in Berlin. Type-locality: Caffraria (Wahlberg).
Distribution. ORANGE FREE STATE: Ficksburg. BOTSWANA: Lobatsi. TRANSVAAL: Pretoria.

– Mystax extensively black. Marginal cell with a normal stalk, and adjacent veins not black-edged 6
6. Tip of marginal cell with a short stalk, but with a small black spot, and with other black areas along veins M_4 and Cu_1. Hairs of body dense, silvery, except for yellowish ones on fore and middle tibiae. A rather slender black and white species.

engeli nom. n.

Laxenecera andrenoides Macquart. Engel in part.
Type in British Museum. Type-locality: RHODESIA, Sawmills.
Distribution. RHODESIA: Sawmills. ZAMBIA: Namwala.
N.B. H. C. Dollmann collected two males of *Laxenecera* at Namwala, on the same day, 22.3.1913, which look superficially alike, but one, 'on grass' is *engeli* and the other, 'on window' is *dasypoda*.

– Without these dark wing-patches. Hairs of head and thorax yellowish, apart from black hairs in mystax.

♂ **andrenoides** Macquart

Laxenecera andrenoides Macquart, 1846, *Dipt. exot. suppl.* 1: 76.
Type in Paris. Type-locality: Caffraria (Delegorgue).
Distribution. NATAL: Estcourt; Weenen. ORANGE FREE STATE: Witzieshoek. BOTSWANA: Ngami. TRANSVAAL: Val.

7. Legs all black.....8
– Fore and middle tibiae clear yellow.....9
8. A larger, more bulky species (14 mm). Tomentum and bristles of thorax rusty yellowish. Wing also with a rusty stain, mainly along veins, but leaving a broad margin clear; veins yellowish in basal half of wing. Ambient vein supporting posterior edge of wing very weak, wing often becomes frayed along its trailing edge.

♀ **albicincta** Loew

– A smaller, less bulky species (9 mm). Tomentum and bristles of thorax not rust-coloured, or not conspicuously so. Wings uniformly greyish, not heavily stained. Veins black. Posterior margin of wing adequately supported.

♀ **dasypoda** Speiser

9. Marginal cell closed unusually far from wing-margin, with a long, curved stalk as in male, but without the dark microtrichiae. Abdominal tergites with narrow grey hind margins, which almost vanish when seen from in front.

♀ **mollis** Loew

– Marginal cell closed normally, with a short stalk.....10
10. Hairs of body silvery white. Abdominal tergites shining black, with very narrow, inconspicuous white hind margins.

♀ **engeli** sp. n.

– Hairs of body yellow. Abdominal tergites dull black, with broad, dull greyish, hind margins.

♀ **andrenoides** Macquart

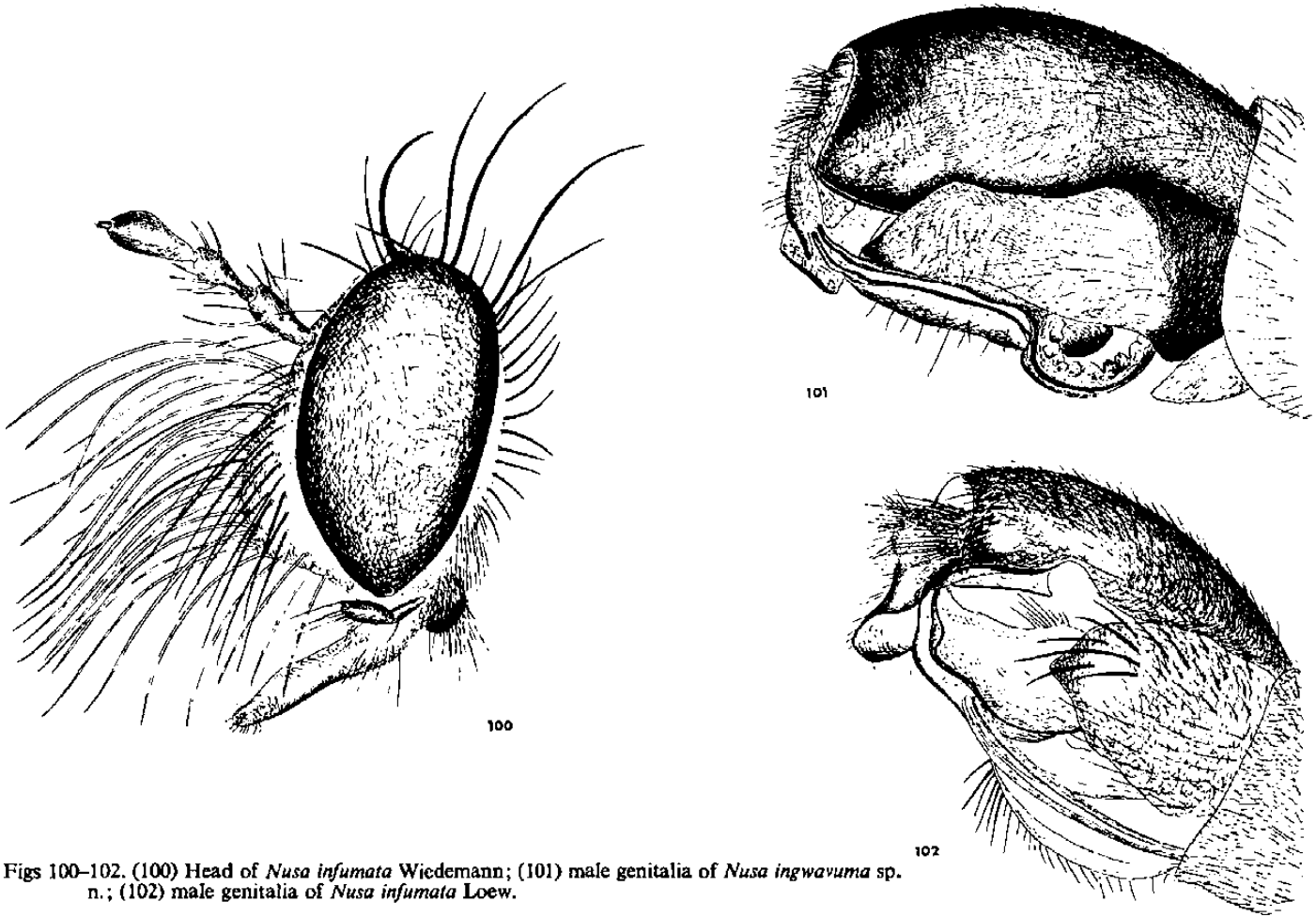
Genus *Nusa*

Nusa Walker, 1851, *Ins. Saunds. Dipt.* 1: 105. Type-species: *Nusa aequalis* Walker, by designation of Hermann, 1912: 239.
Dasythrix Loew, 1851, *Progr. Realschule Meseritz:* 21. Type-species: *Laphria* (*Dasythrix*) *ornata* Loew, by original designation.
Halictosoma Rondani, 1873, *Ann. Mus. Civ. Stor. Nat. Genova* 4: 298. Type-species: *Halictosoma puella* Rondani, monotypic.

Nusa is a distinctive genus once it has been recognized: a sort of dull grey, very bristly laphriine, with the first and fourth posterior cells of the wing closed and stalked, and the posterior margin, from before the wing-tip, without supporting vein, and often frayed. The bristly head, with its clavate antennae, is shown in fig. 100.

This genus seems to have attracted synonymic complications, at both generic and specific levels. I have discussed this previously (Oldroyd 1970: 243), and it seems unnecessary to repeat the discussion here. Miss Ricardo first drew attention to the mistake of confusing this genus with *Andrenosoma* Rondani, in her last publication (1927).

Dasythrix albicans Engel (1932) is not a *Nusa*. Engel lists a number of discrepancies,



Figs 100–102. (100) Head of *Nusa infumata* Wiedemann; (101) male genitalia of *Nusa ingwavuma* sp. n.; (102) male genitalia of *Nusa infumata* Loew.

and the antennae (fig. 96) are quite different. The male clearly has only six visible segments in the abdomen, and I have treated this species as a new genus *Laphystotes*, see above. Similarly, *Dasythrix nigrapex* Bigot is obviously not a *Nusa*, and is a synonym of *Laphria flavipes* Wiedemann.

Loew described three South African species of *Dasythrix*—*infumata* ♂, *stenura* ♂ and *brachyptera* ♀. In the *Dipteren-Fauna Südafrikas* (1860: 125) Loew wrote: 'In der Unterscheidung der *Dasythrix*-Arten herrscht noch grosse Unklarheit', and he strongly hinted that perhaps the three belonged to the same species; in 1857 he had already written: 'Observ. An varietas *Dasythr. infumata* Loew'. After allowing for the obvious sexual dimorphism, and for a decided tendency in this species for preserved specimens to become greasy, it seems inadvisable to try to distinguish more than one species in this complex without much more extensive study. There are, however, two males from Zululand, collected by Dr and Mrs Stuckenberg, which are quite distinctive in shape as well as in male genitalia. See also *Nusa gaerdesi* Lindner (1973).

Key to the South African species of *Nusa*

1. Abdomen noticeably elongate and narrow. Less bristly species, with only 3 strong notopleural bristles. Male genitalia as in fig. 101. Antennae entirely black. Bristles of body predominantly pale (♂). Legs blackish, bases of tibiae dull reddish.

ingwavuma sp. n.

Type in Pietermaritzburg. Type-locality: NATAL, Zululand, Ingwavuma District, Ndumu Reserve, 1–10.xii.63 (B. & P. Stuckenberg).
Distribution. Known as yet only from the male holotype and one male paratype.

– Abdomen stouter and more compact. More bristly species, with 6 or more notopleural bristles in a group. Male genitalia as in fig. 102. Third antennal segment partly orange.

infumata Loew

Dasythrix infumata Loew, 1851, *Progr. Realschule Meseritz:* 21.
Type in Berlin. Type-locality: 'Cap'.
Dasythrix brachyptera Loew, 1851, *Progr. Realschule Meseritz:* 21.
Type in Berlin. Type-locality: 'Cap'.
Dasythrix stenura Loew, 1857, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **14**: 358.
Type in Berlin. Type-locality: 'Caffraria' (Wahlberg).
Distribution. I have seen specimens of this complex from CAPE PROVINCE: Somerset East, and S.W. AFRICA: Otavi, northwards to the limits of the present territory, and beyond. Whether the specimens in the British Museum from Malawi, Tanzania and Kenya are strictly conspecific is a matter for future study.

Genus *Perasis*

Perasis Hermann, 1905, *Berl. ent. Z.* **50**: 37. Type-species: *Perasis sareptana* Hermann (Palaearctic), monotypic.
Saucropogon Hull, 1962, *Robber Flies of the World:* 103. Type-species: *Perasis transvaalensis* Ricardo, by original designation.

In an earlier paper (Oldroyd 1970: 244) I explained that an incorrect interpretation of *Perasis* had led Hull to erect the genus *Saucropogon*, and that in my opinion this is not distinguishable from the Mediterranean species of *Perasis*, at least generically. The only species in southern Africa is *transvaalensis* Ricardo, which Engel (1929: 162) mistakenly equated with the North African *Perasis maura* Macquart.

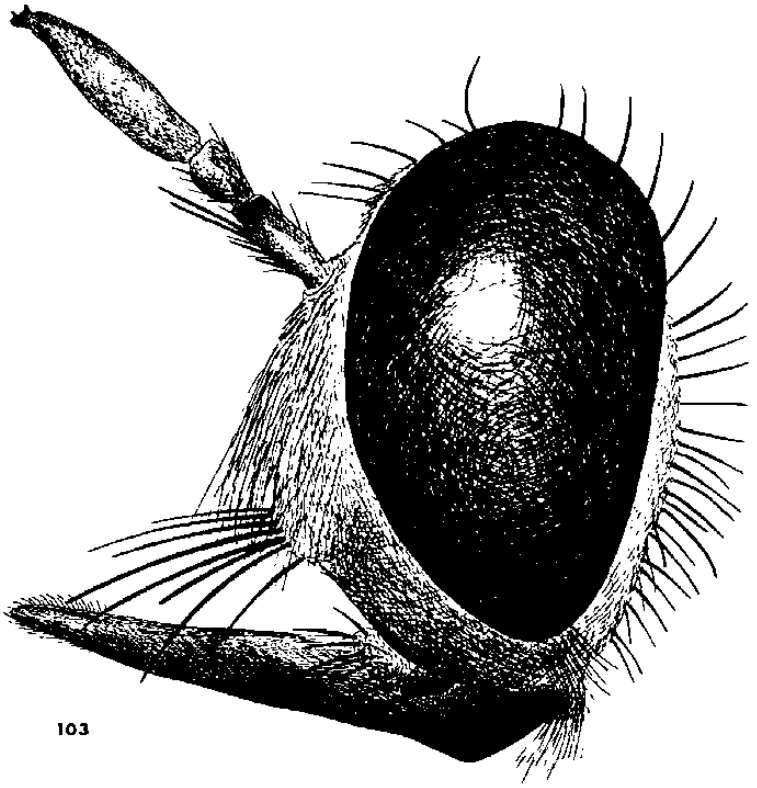


Fig. 103. Head of *Perasis transvaalensis* Ricardo.

Head as in fig. 103. Mystax of a few strong black bristles on mouth-margin, surmounted by yellowish white hairs. Antennae all black, with microsegment and spine. Palpi and occiput also with strong, spiny black bristles. Body generally dull black-brown: pleura with scanty yellow tomentum. Abdominal segments 3–6 with silvery hind margin, especially laterally. Notopleural, supra-alar and metapleural bristles strong, but scutellum quite without marginal bristles. Abdomen with a cluster of strong bristles laterally on first segment, but not on any others. Legs dull black-brown, tibiae dorsally with yellow tomentum.

transvaalensis Ricardo

Perasis transvaalensis Ricardo, 1925, *Ann. Mag. nat. Hist.* (9) **15**: 245.
Type in London. Type-locality: TRANSVAAL, Delarey.
Distribution. TRANSVAAL: Delarey (Dr Brauns). NATAL: Weenen (Thomasset).

Genus *Proagonistes*

Proagonistes Loew, 1858, *Öfvers. K. Vet.-Akad. Förhandl.* **14**: 367. Type-species: *Proagonistes validus* Loew, 1858, monotypic (= *Laphria praeceps* Walker, 1855).

These large, wasp-like flies can scarcely be mistaken for any other, except for a few very big *Laphria*, and they may be distinguished from *Laphria* by the characteristic

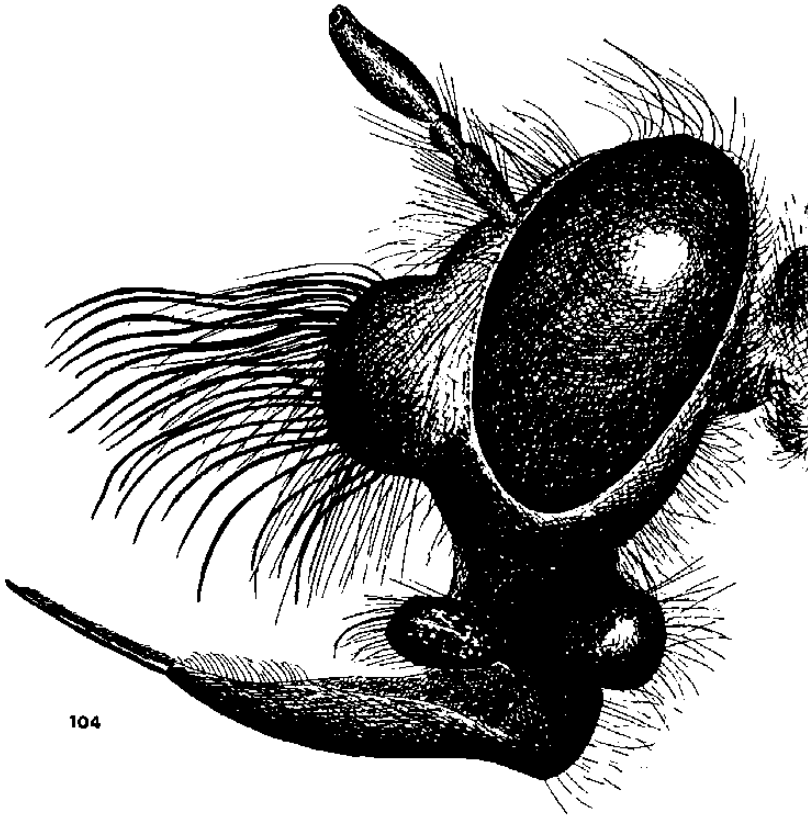


Fig. 104. Head of *Proagonistes*, showing powerful curved proboscis and leaf-like palpi.

scimitar-shaped proboscis (fig. 104). The palpi of *Proagonistes* are flattened, leaf-like, placing this genus in Hull's tribe Andrenosomini, with *Hyperechia* and, of course, *Andrenosoma* itself. In spite of this, 3 out of 20 African *Proagonistes* were originally described in other genera. Only five species occur in southern Africa.

The genus was revised by Speiser (1907) and by Bromley (1930). Although these wasp-mimics do attack and overcome wasps as big as themselves, and have evolved a proboscis fully adequate for this purpose, they are not specialist feeders, and will on occasion take insects of any order. The limiting factor is probably a *minimum* size, since *Proagonistes* would find very tiny prey impossible to grasp.

Key to South African species of *Proagonistes*

1. Hairs of head black and white, mystax and beard mainly white. Head and thorax black, abdomen and legs red.

africanum Ricardo

Nusa africana Ricardo, 1925, *Ann. Mag. nat. Hist.* (9) **15**: 278.
Type in London. Type-locality: MALAWI: Mt Mlanje (Neave).
Distribution. MALAWI. MOÇAMBIQUE: E. of Chiperone (Neave).

– Hairs of head mainly red, especially mystax and beard.....2

2. Pleura with a distinct vertical yellow stripe. Humeri and sides of mesonotum yellow. Thorax and abdomen otherwise black, legs red, or hind femora sometimes blackish. Head red in ground colour, except for apical half of proboscis.

austeni Bromley

Proagonistes austeni Bromley, 1930, *Ann. Mag. nat. Hist.* **(10) 6**: 221.
Type in London. Type-locality: MALAWI: S.W. of Lake Chilwa (Neave).
Distribution. MALAWI. RHODESIA.

– Pleura and mesonotum entirely dark.....3

3. Fore and middle coxae with long, grey hairs. Thorax and abdomen black. Facial tubercle and legs red.

athletes Speiser

Proagonistes athletes Speiser, 1907, *Z. Syst. Hymen. Dipt.* **7**: 356.
Syntypes in Danzig, Charlottenburg & Erlangen. Type-locality: TANZANIA.
Distribution. TANZANIA. MALAWI. MOÇAMBIQUE: Chirinda Forest, Gazaland.

– Fore and middle coxae with predominantly black hairs, perhaps a few red ones..4

4. Small species (28 mm). Femora black, only knees red.

praeceps Walker
(*validus* Loew)

Laphria praeceps Walker, 1855, *List Dipt. Brit. Mus.* **7 suppl. 3**: 542.
Type in London. Type-locality: NATAL, Port Natal (Plant).
Proagonistes validus Loew, 1858, *Öfvers. K. Vet.-Akad. Förhandl.* **14**: 367.
Type in Berlin. Type-locality: 'Caffraria' (Wahlberg).
Distribution. NATAL.

– Huge species (40 mm). Femora much more extensively red.

saliodes Bromley

Proagonistes saliodes Bromley, 1930, *Ann. Mag. nat. Hist.* **(10) 6**: 221.
Type in London. Type-locality: MALAWI, Mt Mlanje (Neave).
Distribution. MALAWI. Likely also to occur in Moçambique, cf. *athletes*, and *africanum*.

Genus **Prytania** gen. n.

Type-species: *Prytania albida* sp. n., by present designation.

This new genus is erected for a species which the British Museum Southern African Expedition, 1972, brought back from both S.W. Africa and Angola. Its general appearance and chief characteristics are shown in fig. 105. The crisp white hairs and the reduced pulvilli recall certain genera of the tribe Stichopogonini, notably *Rhadinus*, but the antennae and wing venation relate it to *Laphystia*. The reduced number of visible tergites, six in males, confirms its location in the group of genera related to *Laphysta*, Hermann's group Prytaniinae. Authors have rejected this as a tribal designation because it is not based upon the name of an included genus. I rectify this by creating a new genus *Prytania*, though I prefer to retain the genera concerned in an expanded tribe Laphriini.

Comparison of the drawings of *Prytania* and *Sporadothrix* will show, I hope, why I place the one in 'Laphystiini' and the other in Stichopogonini.

Head. Very broad in front view, with the parallel-sided frons and face as broad as one eye. Antennae very similar to those of *Laphystia*. Mystax very dense and long, drooping down to obscure the short, dorsoventrally flattened proboscis.

Thorax. Mesonotum covered with fine hairs, some posterior ones bristle-like, and

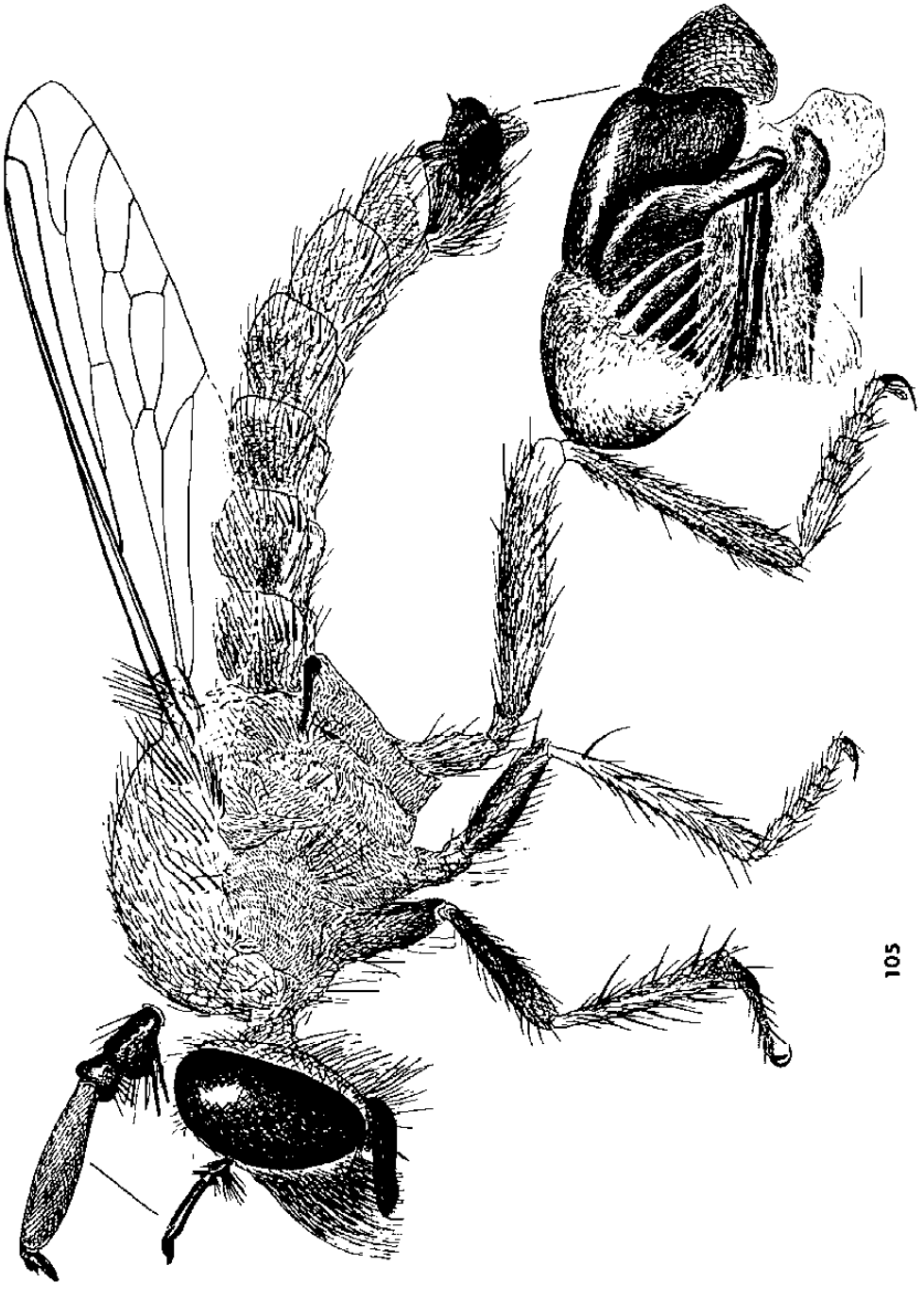


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Fig. 105. *Prytania albida*, gen. et sp. n. 10 mm. Inset male genitalia, long hairs omitted.

with long, strong notopleurals and supra-alars. Scutellar margin with a multiple row of long, erect, curved bristles. Pleura with dense metapleural tuft, and multiple series in front of halteres; metapleural lobes bare.

Abdomen. In dorsal view only six tergites visible in males, seven in females. In both sexes first tergite is reduced to vestiges visible only at sides (see Oldroyd 1963: figs 1, 2). Male genitalia as shown in fig. 105: epandrium not divided into upper forceps, but curved in two wings round anal lamellae; genitalia not inverted.

Legs. Remarkable only for the reduced pulvilli, less than half as long as the acute, curved claws (compare *Sporadothrix*, fig. 77).

Wings. Marginal cell open; vein R_{2+3} curved forwards in a manner typical of many Laphystiini. First posterior cell open, fourth posterior cell closed and stalked.

Length of body about 8 mm.

Hairs and bristles entirely white. Antennae black, except for brownish second segment. Mystax and beard dense, snow-white. Thorax black in ground colour, entirely covered with tomentum that is usually white, but mesonotum with brown tomentum and three obscure blackish stripes, humeri, postalar calli and scutellum white. Pleura with white tomentum and some obscure blackish patches. Abdomen dorsally shining black, with very thin white tomentum: ♂ with first three tergites bearing prominent posterolateral white triangles; ♀ has each segment brownish on basal half and white posteriorly. Legs of female entirely orange, those of male more or less extensively blackish. Wings clear, veins yellow in costal and basal area of wing, black from base of discal cell to wing-margin.

albida sp. n.

Type in London. Type-locality: S.W. AFRICA, Swakopmund, 26–30.i.1972.
Distribution. S.W. AFRICA: Swakopmund; Walvis Bay. ANGOLA: Nr Mossamedes; R. Caroca, 10 km N.E. P. Alexandre.

Genus *Stiphrolamyra*

Stiphrolamyra Engel, 1928, in Lindner, *Flieg. pal. Reg.* **24**: 231. Type-species: *Laphria bipunctata* Loew, by original designation.

This genus is the second section of Loew's *Lamyra* (1860: 187) and is well named from ζτιφρος = stout, sturdy. It differs from *Lamyra* in lacking the exaggerated elongation of the latter, particularly of the legs. This is not an absolute distinction, and *Stiphrolamyra bipunctata*, the type-species, is not in fact as compactly built as the other two species mentioned below.

The name was one of those still unpublished when Hermann died, and was subsequently published by Engel in his monograph on Palaearctic Asilidae. Both *Lamyra* and *Stiphrolamyra* extend from the Cape right to the Mediterranean, though Engel was wrong to identify the Egyptian species with the South African *diaxantha* Hermann: I renamed the Egyptian species *rubicunda* in 1947.

Lamyra versicolor Ricardo, from Rhodesia, and *L. rubra* Bromley, with type from the Katanga and paratype from the Transvaal, seem to be conspecific with *L. angularis* Loew from T'Kons Fountain (? S.W. Africa). The slight range of colour variation shown in the descriptions is covered in the series of obviously conspecific examples before me.

This leaves us with three South African species of *Stiphrolamyra*, easily separated from each other.

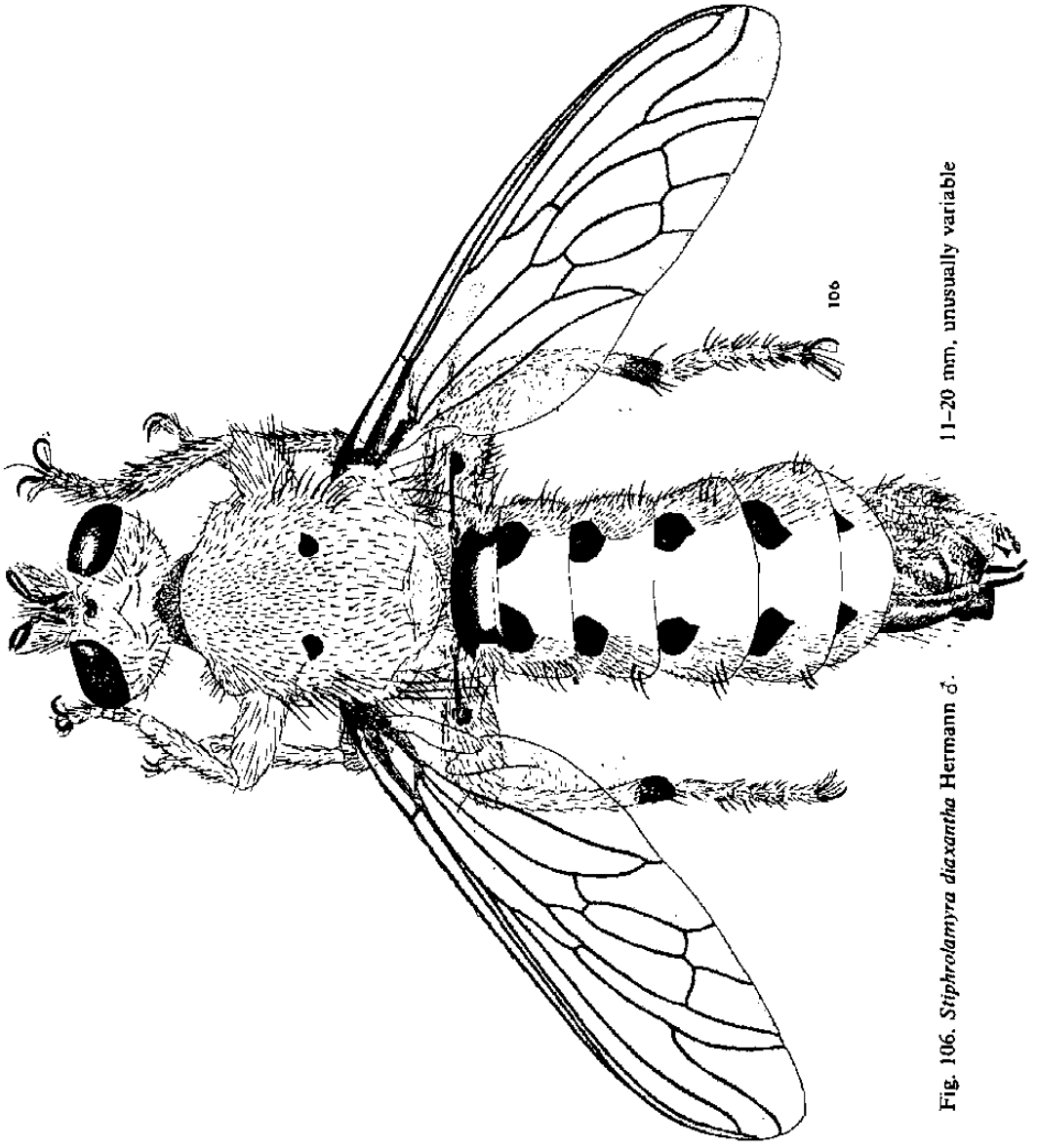


Fig. 106. *Stiphrolamyra diaxantha* Hermann ♂. 11–20 mm, unusually variable

Key to South African species of *Stiphrolamyra*

1. Mesonotum with a pair of sharply defined, circular black spots just behind transverse suture.....2

– Mesonotum dull reddish, with a cruciform black mark, but no clearly defined black spots. A shining black and red species, clothed with short, crisp, yellow hairs, each arising from a cuticular pit. Face, antennae, sides of mesonotum and legs, orange. Abdomen usually black, but may be partly or wholly reddish, while femora may be black. Pleura black, with a conspicuous white streak running obliquely from wing-base to propleuron.

angularis Loew
(*versicolor* Ricardo; *rubra* Bromley)

Lamyra angularis Loew, 1858, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **15**: 338.
Type in Berlin. Type-locality: 'T'Kons Fountain' (Wahlberg).
Lamyra versicolor Ricardo, 1925, *Ann. Mag. nat. Hist.* (9) **10**: 277.
Type in Cape Town. Type-locality: ORANGE FREE STATE.
Lamyra rubra Bromley, 1935, *Rev. Zool. Bot. Afr.* **26**: 413.
Type in Tervuren. Type-locality: KATANGA, Elisabethville.
Distribution. Apparently from Katanga down through RHODESIA to at least ORANGE FREE STATE, and probably to the Cape.

2. Abdomen conspicuously orange, with a notched black margin on which are superimposed triangles of grey tomentum (fig. 106). Mesonotum covered with thick grey tomentum, and with short, spiny black and white bristles. Pleura, head and legs obscured by dense white hairs. A species notably variable in size, from 11–18 mm. Antennae black, and third segment strongly clavate, a little reddish at base.

diaxantha Hermann

Lamyra diaxantha Hermann, 1907, *Zeitschr. Hymen. Dipt.* **7**: 72.
Type in Munich. Type-locality: S.W. AFRICA, 'Prince of Wales Bay'.
Distribution. CAPE PROVINCE: Willowmore; Grootderm; Resolution, Albany Dt., Karoo Region, Graaff-R. (J. S. Kruger). E. of Cradock Farm 'Who can tell?' (M. E. & B. J. Irwin).

– Abdomen steel-blue, bare, except for a pair of lateral white spots on second and third segments. Mesonotum rather bare, with orange sides, and a large black cross on which is superimposed a pair of dull black spots. Antennae orange, third segment spindle-shaped. Femora black with orange tip; tibiae and tarsi orange.

bipunctata Loew

Lamyra bipunctata Loew, 1858, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **15**: 338.
Type in Berlin. Type-locality: S.W. AFRICA, Swakop (Wahlberg).
Distribution. S.W. AFRICA: Swakop (Wahlberg); Seeheim, 18.iv.1933 (Van Son); 128 km S. of Gobabis (Haacke). Taken at Swakop by B.M. S. Afr. Exped., 1972.

Genus *Trichardis*

Trichardis Hermann, 1906, *Zeit. Syst. Hymen. Dipt.* **6**: 137. Type-species: *Trichardis testacea* Hermann, 1906 (= *Laphira testacea* Macquart, 1838) by designation of Hermann, 1920: 177.
Strobilothrix Becker, 1907, *Zeit. Syst. Hymen. Dipt.* **7**: 42. Type-species: *Strobilothrix albipila* Becker, 1907 (= *Hoplistomerus leucocoma* Wulp, 1899) monotypic.

The relationship between *Trichardis* and *Hoplistomerus* is obviously very close, and when I revised the species of *Hoplistomerus* in 1940 the late Stanley W. Bromley wrote to me that in his opinion the two were not separable. There is, however, a marked difference in the length of the third antennal segment, as well as in the genitalia, which are larger and more boat-shaped in *Hoplistomerus*, with prominent claspers, down-

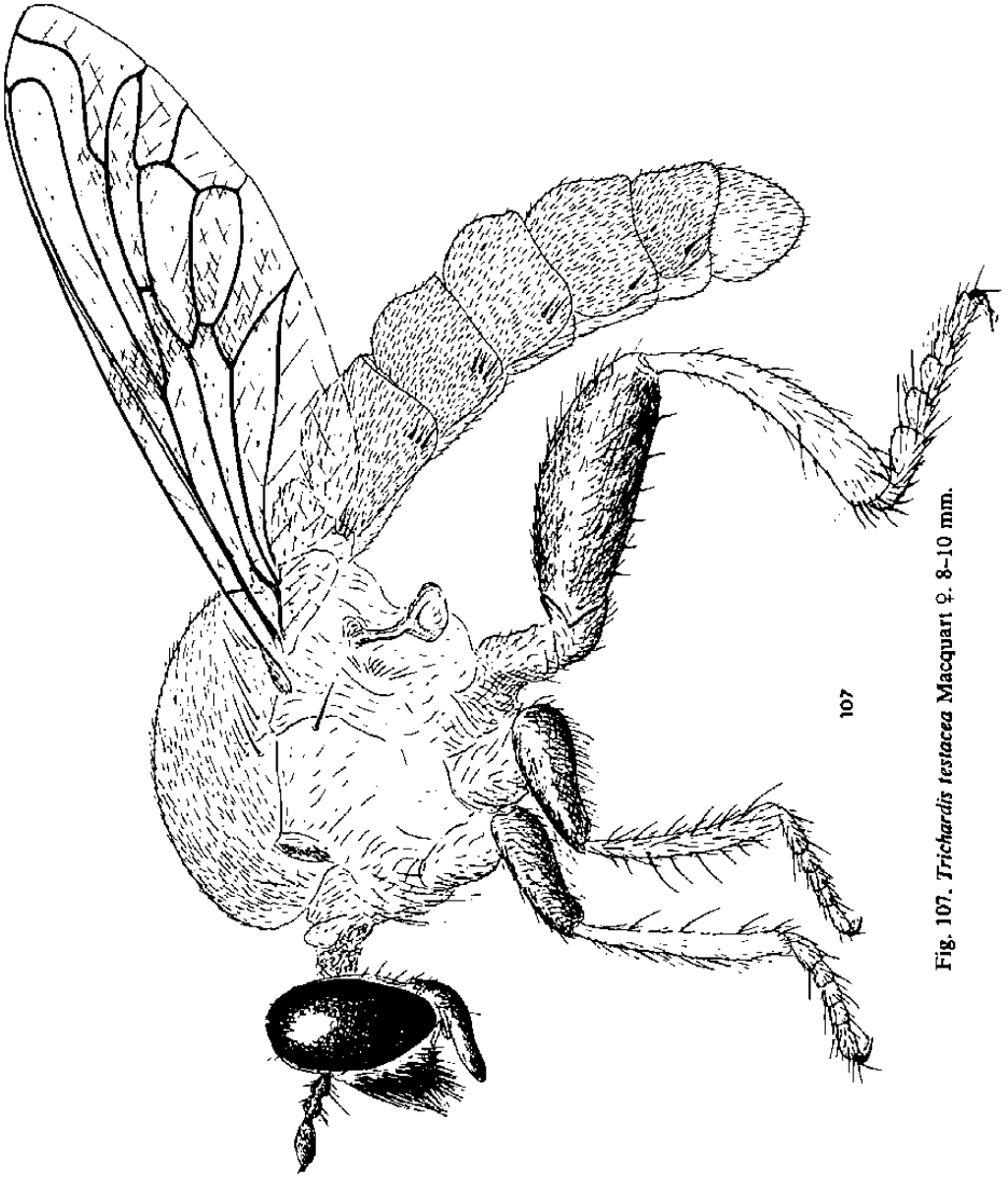


Fig. 107. *Trichardis testacea* Macquart ♀. 8–10 mm.

turned in most species. *Trichardis* has tubercles below the hind femora in most species, but without the characteristic development shown in fig. 87 (*Hoplistomerus*). It is indeed possible that the two genera run together, but the species placed in *Hoplistomerus* form a compact group, with a smooth, bee-like appearance.

The authorship of the type-species has been subject to strange confusion, Hermann himself having first described it as 'testacea, sp. n.', and subsequently referred it to *testacea* Macquart. Engel (1924: 106) stated categorically that Macquart's species was a *Storthyngomerus*, though the original description seemingly makes this impossible: the antennae are described as 'assez courtes, testacées' whereas *Storthyngomerus* is characterized by having 'the third antennal segment exceptionally and conspicuously long' (Hull 1962: 337).

Key to the South African species of *Trichardis*

1. Both male and female genitalia elongate, as shown in figs 109, 110. Mesonotum with a black cross, otherwise dark red; abdominal tergites shining dark red, with narrow, bone-yellow posterior margins; all covered with rather thick, recumbent, whitish hairs. Sides of mesonotum and upper parts of pleura with yellowish tomentum; most of mesopleuron bare, shining brown. Femora dark brown, except at base and tips, tibiae and tarsi (except last segment) yellow. Wings clear.
terminalis sp. n.

Type in Pretoria. Type-locality: RHODESIA, Umguza Valley, 17.ix.22 (Roy Stevenson).
Distribution. RHODESIA: Umguza Valley; Dovenby Farm; Chivundu (Borthwick). BOTSWANA: Ngamiland, 1931 (G. D. Hale Carpenter).

– Male and female genitalia not elongate, but compact, and concealed.....2

2. Mesonotum and scutellum black, covered with fine, sparse, yellow hairs. A black species, sometimes with tibiae more or less reddish.
cribrata Loew

Hoplistomera cribrata Loew, 1857, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **14**: 357.
Type in Berlin. Type-locality: Caffraria (Wahlberg).
Distribution. NATAL: Estcourt; Weenen. CAPE PROVINCE: Aliwal North. ORANGE FREE STATE: Kroonstad. TRANSVAAL: Wonderboom; Bronkhorstspruit. RHODESIA: Mt Selinda.

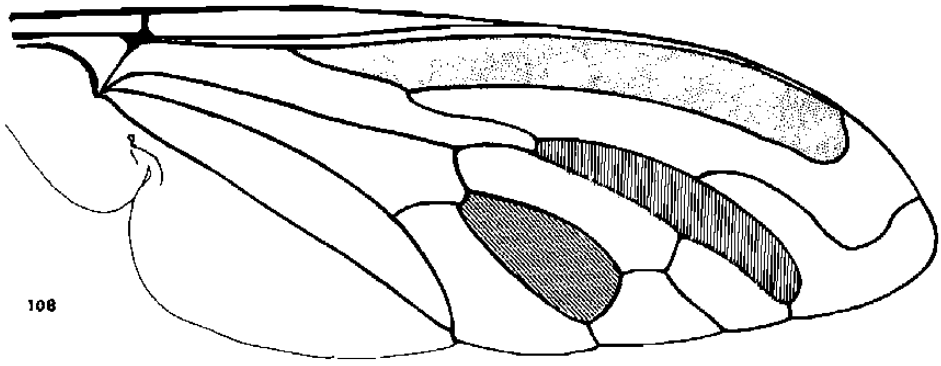
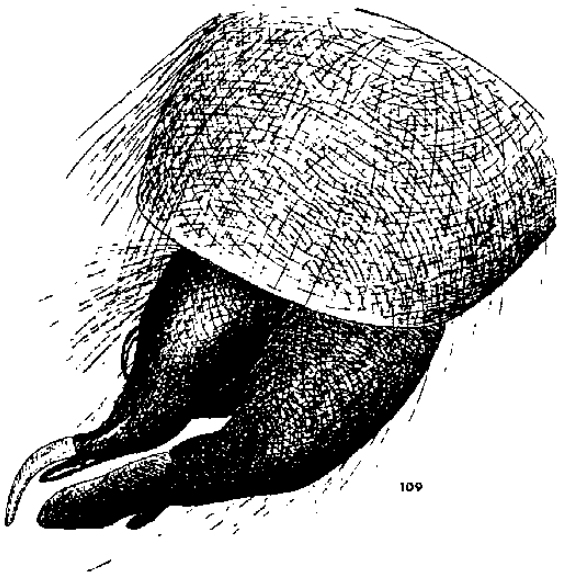
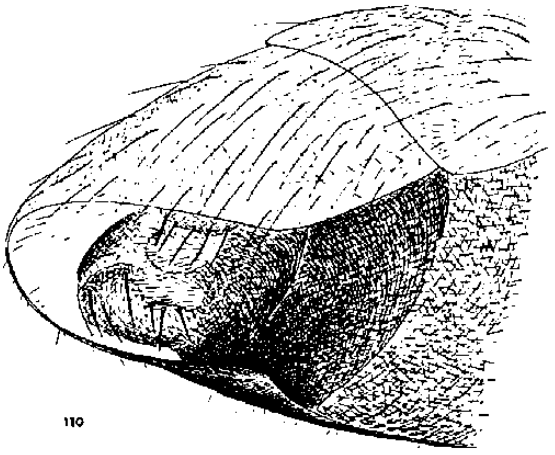


Fig. 108. Wing of *Trichardis testacea* Macquart, showing shape of marginal cell (stippled) and closed first and fourth posterior cells (cross-hatched).





Figs 109–110. (109) Male genitalia of *Trichardis terminalis* sp. n.; (110) female genitalia of *Trichardis terminalis* sp. n.

– Mesonotum dull red, with a large black cross 3
3. Femora predominantly black. Abdomen mostly covered with tomentum as well as hairs, leaving a transverse bare band in middle of each segment 4
– Femora orange, only indistinctly dusky. Abdomen without tomentum, shining, with a coating of fine hairs standing individually in pits 5
4. A robust species, resembling *Hoplistomerus*. Abdomen black, extensively covered with grey tomentum. Hind femora strongly swollen, all black, except at extreme base and tip, and with erect white bristles.

picta Hermann

Trichardis picta Hermann, 1906, *Zeit. Syst. Hymen. Dipt.* **6**: 139.
Type in Munich. Type-locality: CAPE PROVINCE: Willowmore (Dr Brauns).
Distribution. CAPE PROVINCE. Apparently known only from specimens collected at Willowmore by Dr Brauns, in Pretoria and in London.

– A fragile, slender species. Abdomen narrowly dark brown at sides. Hind femora rather slender, and with a black dorsal stripe only, reddish below.

lucifer sp. n.

Type in London. Type-locality: S.W. AFRICA, Satansplatz, 12.1933 (K. Jordan).
Distribution. S.W. AFRICA: Satansplatz; Kahn R., 8 km N. Usakos (B.M. S. Afr. Exped., 1972).

5. An orange species, without any dark stripes on mesonotum; pleura uniformly covered with whitish tomentum, without any bare spot; abdomen bare, shining orange, with short and rather sparse hairs standing in pits. Wings distinctly infuscated on forks and crossveins.

N.B. This bears a superficial resemblance to *Anypodetus fascipennis* (figs 84–86), but the latter has no pulvilli, and the wings are very heavily marked, almost marmorated.

testacea Macquart

Laphria testacea Macquart, 1838, *Dipt. exot.* **1** (2): 63.
Type in Paris. Type-locality: 'Cap'.
Trichardis testacea Hermann, 1906, *Zeit. Syst. Hymen. Dipt.* **6**: 137.
Type in Munich. Type-locality: Capland, Willowmore (Dr Brauns).
Distribution. CAPE PROVINCE: Willowmore; Resolution, Albany District; 26 km E. of Cradock Farm 'Who can tell?' (Irwin); Windsorton. SOUTH WEST AFRICA: Brandberg, Tsisab Valley (R. G. Strey).

– Dull orange species, in which the tergites are more heavily obscured by light-coloured hairs. Meso- and sternopleura with a bare spot. Mesonotum and femora may be distinctly blackened, or wing may be infuscated at tip 6

6. Mesonotum black, with orange humeri and scutellum. Thorax and abdomen covered with rather conspicuous, adpressed, long, pale hairs; abdominal tergites with bone-yellow hind margins, especially laterally, and with pale hairs particularly long and dense laterally and on genitalia. Wings infuscated along veins, but without distinct greyish tip.

turneri sp. n.

Type in London. Type-locality: CAPE PROVINCE, Somerset East (R. E. Turner).
Distribution. CAPE PROVINCE: Somerset East; Aliwal North; Willowmore (Dr Brauns).

– Mesonotum yellow, or with traces of a broad median black stripe, and quadrate lateral spots, but these are separated by red areas. Abdomen not conspicuously obscured by pale hairs; tergites without bone-yellow margins, but with clearly defined spots of white tomentum laterally. Wings almost clear, except for a well-marked grey tip, extending back to apex of discal cell.

apicalis sp. n.

Type in London. Type-locality: MOÇAMBIQUE: Lourenço Marques (H. A. Junod).
Distribution. MOÇAMBIQUE: Lourenço Marques district. NATAL: Zululand, 32 km S. Ndumu Game Res. Camp (Irwin).

Tribe *XENOMYZINI*

In my opinion only three South African genera belong to this tribe, and one of them, *Oligopogon*, is placed here only because it is difficult to locate anywhere else. Otherwise South African Xenomyzini fall into either *Xenomyza* (fig. 114) or *Rhipidocephala* (fig. 111), two very different genera, which are easily recognized on sight. General appear-

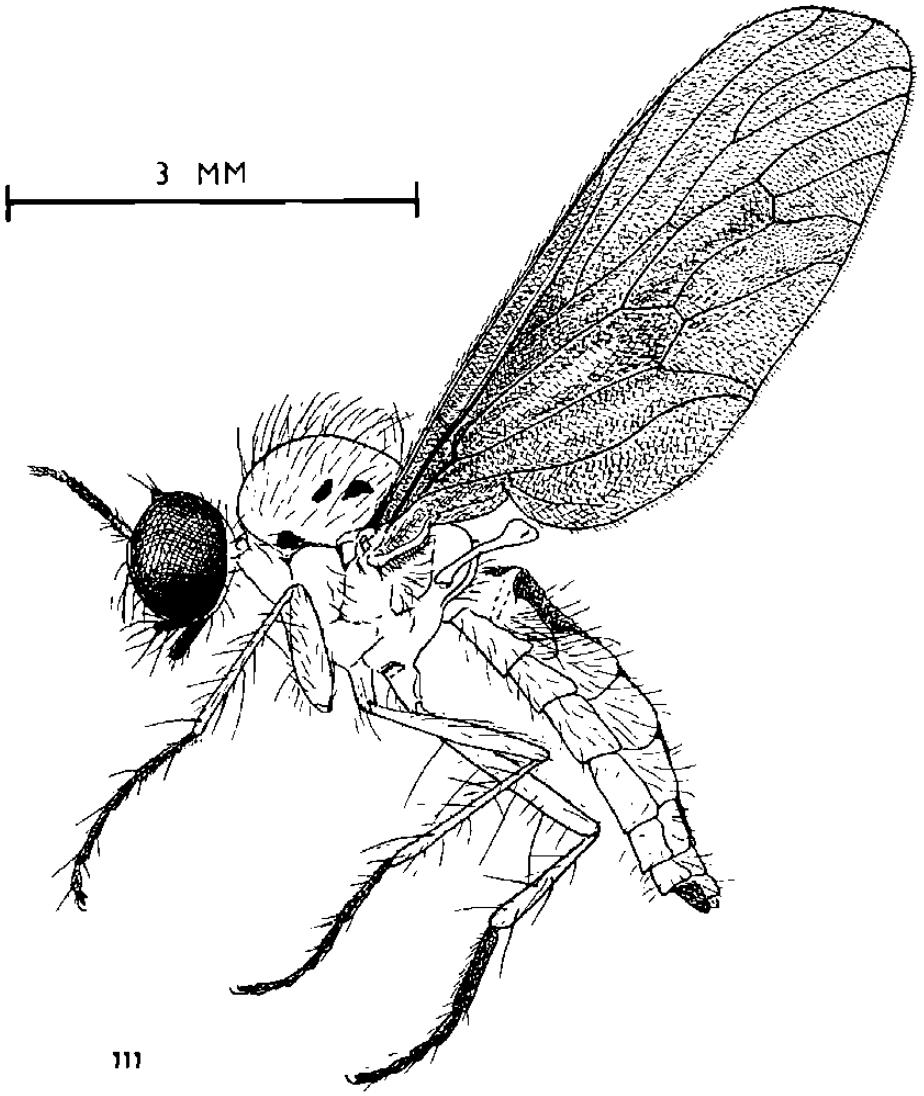


Fig. 111. *Rhipidocephala semitestacea* Loew ♀. 5 mm.

ance is confirmed by the very different antennae, as well as by the venational difference shown in the figures. The aristiform antennae of *Xenomyza* is almost unique outside the tribes Asilini, Ommatiini and Leptogasterini.

In my earlier revision of *Rhipidocephala* (Oldroyd 1966) I merged several generic concepts into one, and in the present paper I group together a number of taxa that have previously (Hull 1962: 52) been given status as subgenera, or full genera.

Genus *Rhipidocephala*

Rhipidocephala Hermann, 1926, *Verh. zool.-bot. Ges. Wien* **74**: 174. Type-species: *Rhipidocephala angustior* Oldroyd (= *Discocephala analis* Macquart, as interpreted by Hermann, 1926, misidentification), by designation of Oldroyd, 1966.
Paroxynoton Janssens, 1953, *Bull. Inst. R. Sci. nat. Belge* **29**: 11. Type-species: *Paroxcynoton tigrinum* Janssens, by original designation.
Margaritola Hull, 1958, *Proc. ent. Soc. Washington* **60**: 255. Type-species: *Margaritola mirabilis* Hull, by original designation.

An attractive genus of tiny flies, mostly black, with broad wings (fig. 111), of which I have previously published a revision (Oldroyd 1966). Earlier attempts to define the genus on the basis of antennal structure led to confusion with *Holcocephala* Jaennicke, whereas comparison of the head and face enabled two genera to be clearly separated. All the species in question from Africa and Madagascar belong to *Rhipidocephala*, and I know of no *Holcocephala* from that area. *Rhipidocephala* has a considerable range of structure of the antennal style, which can be grouped for convenience into four main types.

A further peculiarity of *Rhipidocephala* is a tendency to desclerotization of the dorsum of the abdomen, which is often extensively membranous.

Since 18 out of 24 species occur in southern Africa, and since there are good genitalic differences, which I illustrated previously, it would not be helpful to attempt a shortened version of that paper here.

Genus *Oligopogon*

Oligopogon Loew, 1847, *Linn. Ent.* **2**: 497. Type-species: *Dasypogon hybotinus* Loew, by monotypy.

This is an attractive little genus, but elusive taxonomically. In appearance it is 'agrionine', and looks like *Rhabdogaster*. In tribal characters it fits into Xenomyzini, except for the possession of well-marked acanthophorites with powerfully developed spines. In fact the ovipositor resembles that of Stichopogonini (fig. 74).

The problematical status of this genus is not clarified by the fact that the type-species was described from the Greek island of Rhodes, and is therefore Palaearctic whereas the other species are all Ethiopian. It has been claimed that *hybotinus* extends from Rhodes through Asia Minor to East Africa, but this is not certain.

Engel (1932: 282) wrote of *Oligopogon*: 'Loew makes special mention for this genus . . . of the following criteria: the brush-like haired style of antennae and the smallness of the discal cell in wing. I therefore believe that the species *ater* Bigot . . . from Natal could not belong to this genus, for the author says: alarum cellula discoidalis magna' (figs 112, 113).

Apart from *ater* Bigot, three South African species have been described. Engel & Cuthbertson (1937: 15) wrote: 'The smoky brown wings distinguish this species [*nigripennis* Engel & Cuthbertson] from the closely allied *O. penicillatus* Loew (1860: 94) female, and the black hairs on mystax from *O. pollinosus* Engel, female (1932: 282).' A provisional key to the species is as follows:

Key to the South African species of *Oligopogon*

1. 'A rather robust species with grey-dusted abdomen, and smoky brown wings. Mystax of few brownish black hairs. Thorax black, with red-brown humeri,

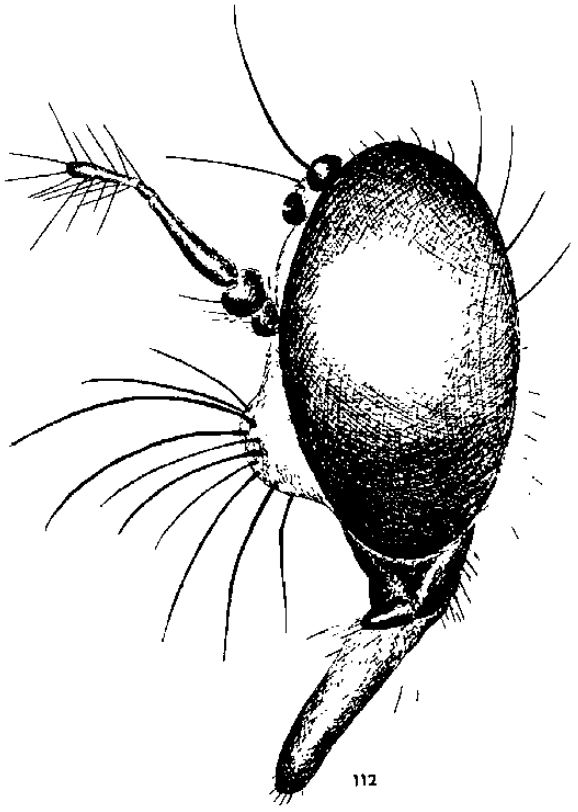


Fig. 112. Head of *Oligopogon*, showing fringed antennal style.

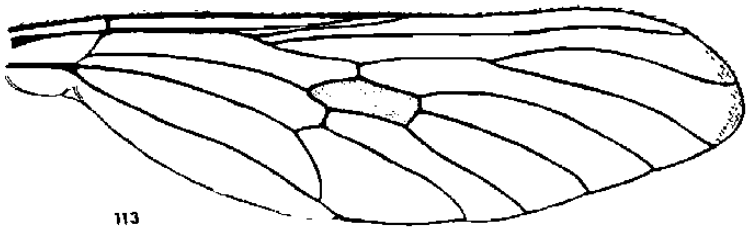


Fig. 113. Wing of *Oligopogon penicillatus* Loew, showing small discal cell (stippled).

median stripe and lateral spots in black. Scutellum and postalar lobes shining black. Legs black, with trochanters, basal half of all tibiae, and ventral longitudinal stripe of hind femora dark reddish brown. Abdominal tergites shining black; sternites with ashy grey tomentum and short whitish hairs.'

nigripennis Engel & Cuthbertson

Oligopogon nigripennis Engel & Cuthbertson, 1937, *Trans. Rhod. Sci. Ass.* **35 (1)**: 14.
Type in Bulawayo. Type-locality: RHODESIA, Vumba Mt.
Distribution. RHODESIA: Vumba Mt. ? Botswana, Mamalapi Mt., according to Hull (1967: 238). I have not seen this species.

– Wings clear, or only faintly greyish. Other details different.....2

2. Mystax black. Mesonotum dull, with thin ashy grey/bronze tomentum, thinly covering the shining black ground colour. Abdomen shining black, or metallic purple. Legs blackish, but with varying amounts of yellow colour, especially on hind legs.

penicillatus Loew

Oligopogon penicillatus Loew, 1857, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **14**: 350.
Type in Berlin. Type-locality: 'Caffraria' (Wahlberg).
Distribution. CAPE PROVINCE: Mossel Bay; Aliwal North; Port Alfred.

– Mystax white.....3

3. Mesonotum and scutellum covered with dense white tomentum, with only small bare areas, which may be due to rubbing. Legs extensively yellowish.

pollinosus Engel

Oligopogon pollinosus Engel, 1932, *Ann. Transvaal Mus.* **14**: 282.
Type in London. Type-locality: RHODESIA, Victoria Falls.
Distribution. RHODESIA.

– Mesonotum with thin white tomentum, which may be abraded away, leaving a large cruciform area of shining black; scutellum mostly or entirely shining black, convex.

enigmatus sp. n.

Type ♀ and paratype ♀ in Pretoria. Type-locality: 'Kransp. 21.12.06' [? NATAL: Kranskop]. Distribution. ? NATAL: Type-locality and 'Zusterstr. 17.12.04'.

Genus *Xenomyza*

Damalis of many authors, but not of Fabricius, 1805. Type-species: *Damalis curvipes* Fabricius = family EMPIDIDAE.

Xenomyza Wiedemann, 1817, *Zool. Mag.* **1**: 60. Type-species: *Damalis planiceps* Fabricius, by designation of Coquillet, 1910.

Chalcidimorpha Westwood 1835, *Ann. Soc. ent. France* **4**: 684. Type-species: *Chalcidimorpha fulvipes* Westwood, by designation of Macquart, 1838.

Discodamalis Karsch, 1887, *Berl. ent. Z.* **31**: 373. Type-species: *Discodamalis debilis* Karsch, by original designation.

Lasiodamalis Hermann, 1926, *Verh. zool.-bot. Ges. Wien.* **74/75**: 174. Type-species: *Damalis capensis* Wiedemann, by original designation.

Lophurodamalis Hermann, 1926, *Verh. zool.-bot. Ges. Wien* **74/75**: 188. Type-species: *Damalis hirtiventris* Macquart, by original designation.

Protodamalis Hull, 1962, *Robber Flies of the World:* 55. Type-species: *Protodamalis elongatus* Hull, by original designation.

Zygocolon Hull, 1962, *Robber Flies of the World:* 56. Type-species: *Zygocolon compactus* Hull, by original designation [Oriental].

Hull (1962: 52) divides *Xenomyza sensu lat.* into several genera and subgenera, but the characters used are too variable to be relied upon. For example, *Lophurodamalis* is defined as having a spiny spur on the mid tibia, combined with a fringe of fine pile along the sides of the abdomen. This is true of the type-species, *hirtiventris* Macquart (*imbutus* Walker), and of *speciosus* Loew, and the middle leg shows a striking structure (fig. 115). Among other species, however, both the fine pile and the tibial and tarsal processes are progressively diminished until they merge completely into Hull's category 'middle tibia simple'.

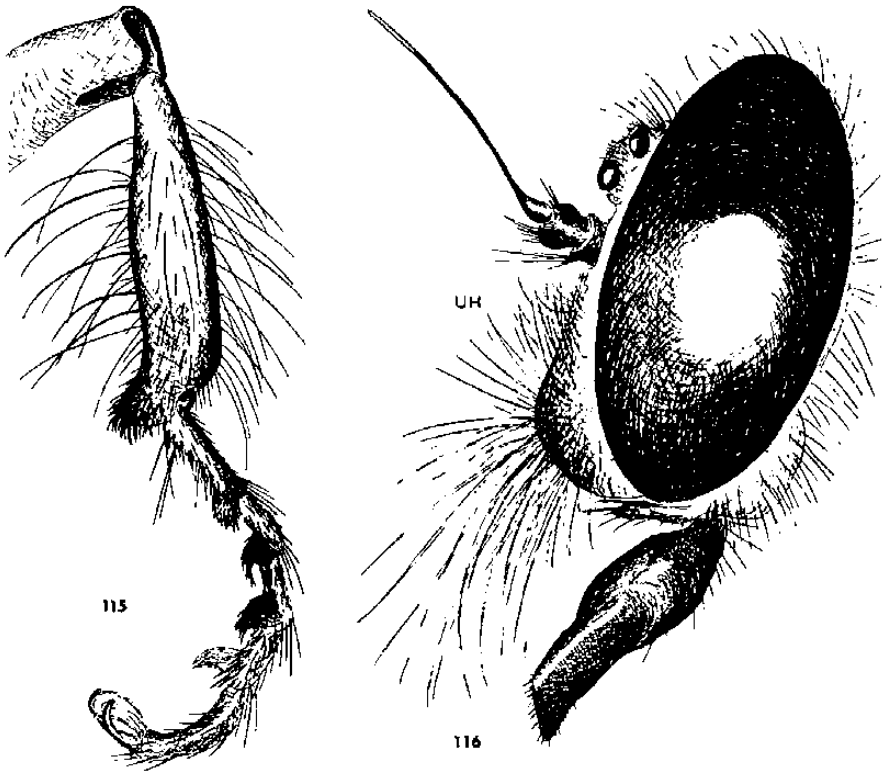
The extensive structural variation in the above generic and subgeneric names is also apparent at species level, and it is probable that better collecting and study of fresh material will reveal many more species of *Xenomyza*. In the British Museum there are

Fig. 114. *Xenomyza heterocera* Wiedemann ♀. 8 mm. Note absence of acanthophorites; compare *Oligopogon*.

two different species, both from Natal—one specimen of each—which have a curiously primitive appearance. The wing is even broader and more paddle-like than usual, and the abdomen narrow and somewhat constricted basally. They stand with a query under *Icaromima* Enderlein, a wasp-like genus at present known only from the Cameroun (Enderlein, 1914, *Wien. ent. Z.* **33**: 163).

Key to the South African species of *Xenomyza*

1. Sides of abdomen conspicuously fringed with long, fine, yellow hairs. Middle leg with exceptionally well-developed tibial and tarsal processes (fig. 115). Mystax



Figs 115–116. (115) Middle leg of *Xenomyza hirtiventris* Macquart, showing tibial and tarsal processes; (116) head of *Xenomyza speciosa* Loew, showing upturned hairs (UH) on upper part of face.

unusual in having *upwardly* curved hairs (fig. 116) (Subgenus *Lasiodamalis* Hermann) 2

– Sides of abdomen not conspicuously fringed. Middle tibiae sometimes with spur, but this is not conspicuously developed, and tarsus usually not modified. Mystax with the usual downturned hairs and bristles 3

2. Mystax black. Legs more black than red; hind tarsi entirely black. Wings almost black.

hirtiventris Macquart
(*imbutus* Walker)

Damalis hirtiventris Macquart, 1846, *Dipt. exot. Suppl.* **1**: 94.
Type in Paris. Type-locality: 'Caffraria' (Delegorgue).
Discocephala imbuta Walker, 1854, *List Dipt. Brit. Mus.* **6 suppl. 2**: 495.
Type in London. Type-locality: NATAL, Port Natal.
Distribution. NATAL: Port Natal; Pinetown Dist.; St Lucia.

– Mystax yellow. Legs more yellow than black: hind tarsi almost entirely yellow. Wings only lightly smoky brown.

speciosa Loew

Damalis speciosa Loew, 1857, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **14**: 354.
Type in Berlin. Type-locality: 'Caffraria' (Wahlberg).
Distribution. NATAL: Malvern; Durban. TRANSVAAL: Barberton. RHODESIA: Chimanimani Mts.

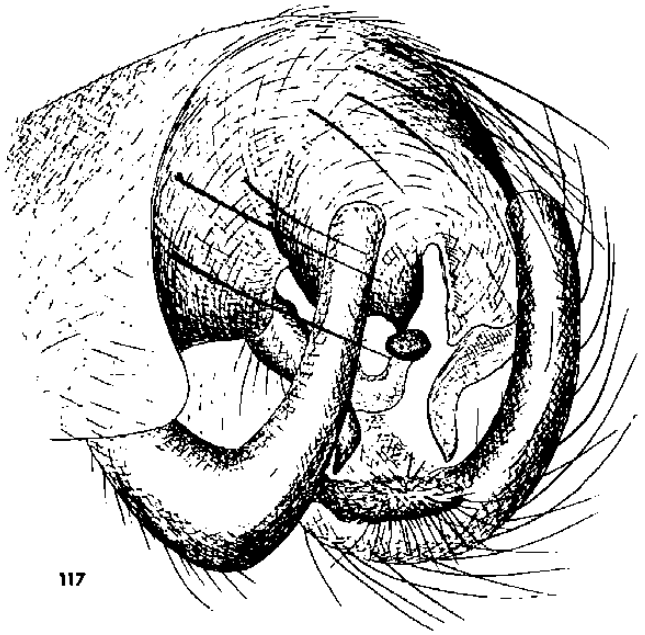


Fig. 117. Male genitalia of *Xenomyza* (*Protodamalis*) *elongata* Hull.

3. Abdomen exceptionally elongate, nearly three times as long as thorax. Male genitalia as in fig. 117 (Subgenus *Protodamalis* Hull)

elongata Hull

Protodamalis elongata Hull, 1962. *Robber Flies of the World:* 55.
Type in London. Type-locality: NATAL, Willow Grange.
Distribution. NATAL: Willow Grange; Malvern; Wells Brook; Tongaat.

– Abdomen not twice as long as thorax, often notably short and downturned 4
4. Mystax restricted to a few bristles on mouth-margin 5
– Mystax extending over entire facial tubercle (fig. 114) 7
5. Wings stained brown in basal half and along costa; vein R_{2+3} curved towards costa (fig. 118). Reddish yellow species, with polished black pattern on mesonotum and mesopleuron. First abdominal segment black.

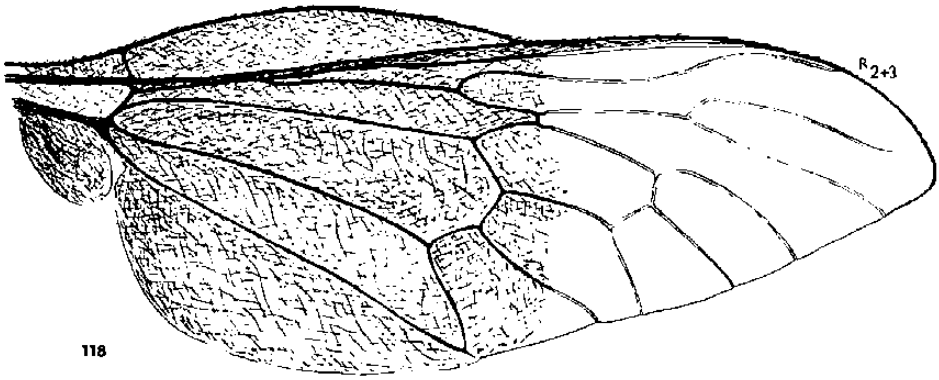
venusta Bertolini

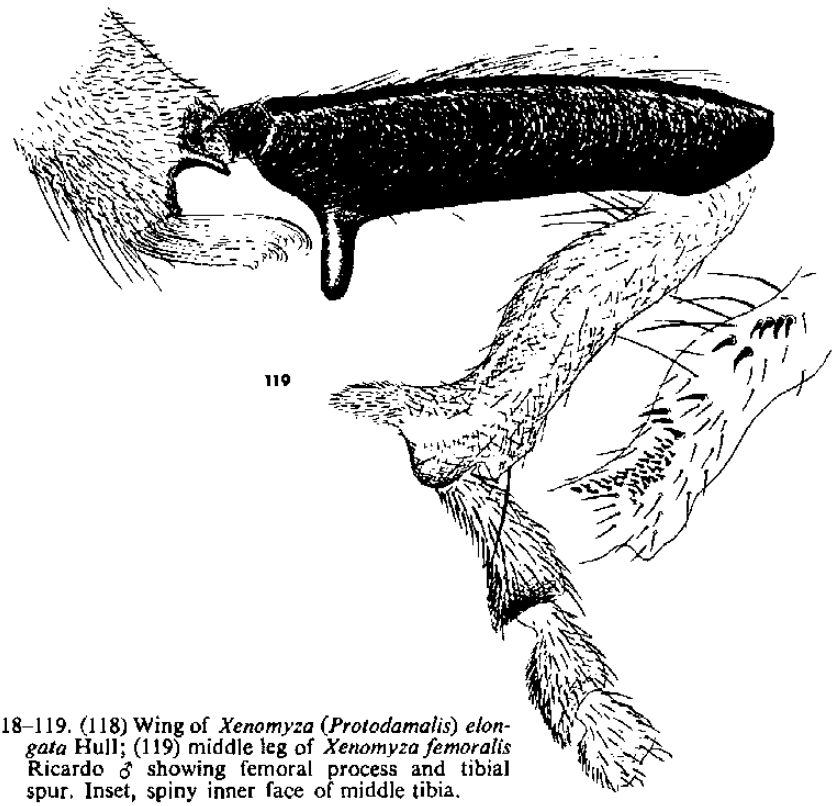
Damalis venusta Bertolini, 1862, *Mem. Accad. Sci. Istit. Bologna* **12**: 11.
Type in Bologna. Type-locality: MOÇAMBIQUE: Inhambane.
Distribution. MOÇAMBIQUE. MALAWI. ZAMBIA.

– Wings and body not so patterned. Vein R_{2+3} not approximated to costa in this way 6
6. A more robust species, with dark mahogany-brown legs. Mesonotum strongly convex, grey with pattern of three brown stripes. Abdomen similarly coloured.

pallinota Hermann
(*maxima* Hermann)

Damalis pallinota Hermann, 1926, *Verh. zool.-bot. Ges. Wien* **74/75**: 184.
Type in Munich. Type-locality: MALAWI, Mt Mlanje.





Figs 118–119. (118) Wing of *Xenomyza* (*Protodamalis*) *elongata* Hull; (119) middle leg of *Xenomyza femoralis* Ricardo ♂ showing femoral process and tibial spur. Inset, spiny inner face of middle tibia.

Damalis maxima Hermann, 1926, *Verh. zool.-bot. Ges. Wien* **74/75**: 185.
Type in Munich. Type-locality: MALAWI, Mt Mlanje.
Distribution. MALAWI. NATAL: various localities. TRANSVAAL: Kruger National Park.

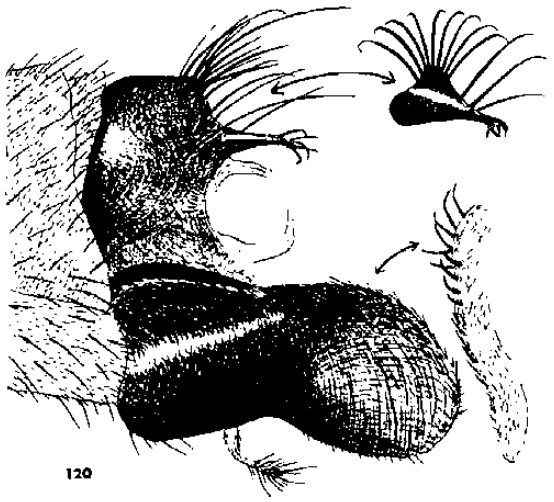
– A slender species, with clear yellow-brown legs. Mesonotum not unusually convex, heavily tomented, and with fine whitish hairs. Abdomen similar.

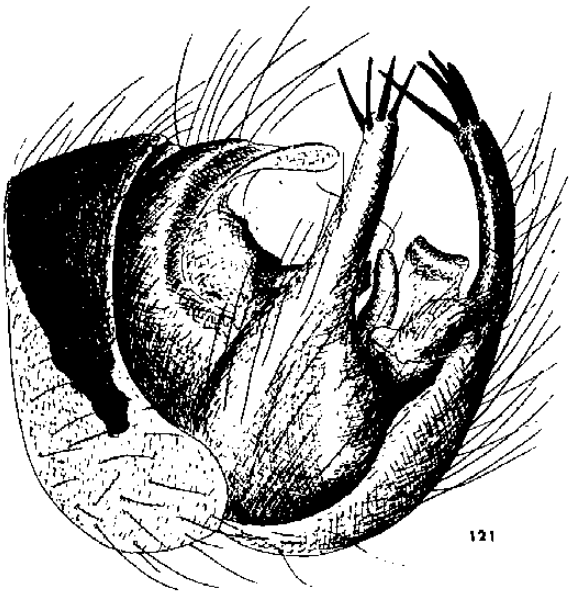
hyalipennis Macquart

Damalis hyalipennis Macquart, 1846, *Dipt. exot. Suppl.* **1**: 95.
Type in Paris. Type-locality: 'Caffraria' (Delagorgue).
Distribution. NATAL: Umbilo. MALAWI: Mt Mlanje.

7. Dorsum of abdomen shining, red or black, with very narrow border of tomentum over a reddish base 8
– Dorsum of abdomen mostly tomented 9
8. Wings brown in basal half, clear at tips. Pleura extensively yellow in ground colour. Legs reddish yellow, with variable amounts of black colour, not very clavate. Middle tarsi of male simple.

heterocerus Wiedemann
(*capensis* Wiedemann; *anomala* Wiedemann; ? *conspicua* Curran)





Figs 120–121. (120) Male genitalia of *Xenomyza femoralis* Ricardo; (121) male genitalia of *Xenomyza annulata* Loew.

It is probable that more than one species is confused here, but I cannot clearly differentiate them.

Dioctria heterocera Wiedemann, 1821, *Dipt. exot.* 1: 182.
Type in Berlin. Type-locality: 'vom Cap'.
Dasypogon anomala Wiedemann, 1821, *Dipt. exot.*: 252.
Type in Berlin. Type-locality: 'vom Cap'.
Dasypogon capensis Wiedemann, 1828, *Auss. zweifl. Ins.* 1: 416.
Type in Berlin. Type-locality: 'Kap'.
Damalis conspicua Curran, 1934, *Amer. Mus. Nov.* **710**: 10.
Type in New York. Type-locality: CAPE PROVINCE, Calvinia.
Distribution. CAPE PROVINCE: numerous localities.

– Wings uniformly smoky. Pleura tomented, with a clear, shining, black spot on mesopleuron. Legs deep red, with black tips to middle and hind femora. Hind femora and tibiae thin and strongly clavate; basitarsus with several conspicuously long black bristles externally, and with a spur.

simplex Curran
(? *cylindrica* Hull)

Lophurodamalis simplex Curran, 1934, *Amer. Mus. Nov.* **710**: 9.
Type in New York. Type-locality: RHODESIA, Vumba.
Lasiodamalis cylindrica Hull, 1967, *S. Afr. Animal Life* **13**: 235.
Type in Lund, Sweden. Type-locality: CAPE PROVINCE, Hout Bay.
Distribution. RHODESIA: Vumba. CAPE PROVINCE: various localities.

9. Facial tubercle bare, shining black. Femora black, or almost entirely so. Middle leg of male with golden hairs on coxae, a process of femora, and a twisted tibia ending in a process (fig. 119). Wing uniformly smoky. Male genitalia, fig. 120.

femoralis Ricardo

Damalis femoralis Ricardo, 1925, *Ann. Mag. nat. Hist.* (9) **10**: 247.
Type in London. Type-locality: NATAL, Willow Grange.
Distribution. Widespread in NATAL and adjoining CAPE PROVINCE.

– Facial tubercle dull, red, tomented. Femora either red posterodorsally, black anteriorly or mostly black. Middle leg of male not especially developed. Wing with clear centres to cells apically, or with pale tip. Male genitalia as in fig. 121, with some variation.

annulata Loew

Damalis annulata Loew, 1858, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **15**: 338.
Type in Berlin. Type-locality: 'Cap. B. Sp.' (Victorin).
Distribution. CAPE PROVINCE: various localities.

Tribe *ATOMOSIINI*

Atomosiini are small, compact, usually metallic Asilidae, which look like sawflies, or like small solitary bees (fig. 122). Diagnostic features are the alignment of the veins at the apex of the discal cell into a cross, or something near this, and also (according to Hull 1962: 369) the sclerotization of the postmetacoxal area, i.e. the recess behind the rear coxae, which is membranous in most Asilidae. The latter structure is difficult to observe, and Atomosiini are best recognized by the sawfly-like appearance combined with the crossed veins of the wing. The few other genera that have this alignment of veins are distinctive: e.g. *Orthogonis* (Oriental and Madagascar) is very much bigger, and *Anypodetus* has no pulvilli.

Hermann (1912) monographed world Atomosiini at length, and erected about 17

new genera, mostly with structural differences in head and antennae. Atomosiini have the appearance of an old-established group, distributed throughout the warmer parts of the world, but not uniformly. They flourish best in the Neotropical Region. South Africa has only one or two species, and their true generic location is uncertain. Engel described one from Rhodesia, and not only placed it in Hermann's genus *Loewinella*, but recorded it as a subspecies of the European type, *Loewinella virescens* (Loew). Engel's fly is fairly easily recognized, and it is probably better to treat it as a distinct species, at least until more is known about these puzzling resemblances that appear between species in southern Africa and southern Europe.

Goneccalypsis Hermann is even more uncertain, mainly because of lack of material. I have seen one male specimen with the conspicuous facial scales mentioned in the generic description, but with darker femora. I also have in the B.M. a short series of specimens, all damaged, which I identified in 1940 as *Goneccalypsis argenteoviridis* Hermann, but which now seem less certain: see note below.

Elucidation of these attractive small flies must await the collection of good series of fresh specimens.

Genus *Goneccalypsis*

Goneccalypsis Hermann, 1912, *Nova Acta Leop.-Carol. Akad. Naturf.* **96**: 108. Type-species: *Atomosia argenteoviridis* Hermann, 1907, by original designation.

For a generic diagnosis, see the key to genera on p. 16.

'Frons and upper part of face ochraceous-pollinose; mystax white; antennae black; thorax dorsally green; pleura sparkling, silvery; abdomen bronze, punctulate; legs ferruginous, white-haired; wings hyaline' [translation of original Latin diagnosis].

argenteoviridis Hermann

Atomosia argenteoviridis Hermann, 1907, *Z. Syst. Hymen. Dipt.* **7**: 68.
Goneccalypsis argenteoviridis Hermann, 1912, *Nova Acta Leop.-Carol.* **96**: 108.
Type in Munich. Type-locality: TRANSVAAL, Lichtenburg.
Distribution. TRANSVAAL.

N.B. Although Hermann saw both sexes, neither the above diagnosis nor the accompanying description in German made any mention of the silvery facial scales that are stressed in the generic description (p. 16, above). A series of damaged specimens in the B.M. from CAPE PROVINCE: Transkei, Umtata agree with the *specific* description, whereas a single male from NATAL: Pietermaritzburg, Scottsville by M. E. Irwin has the facial scales, but the femora are mainly black, so this specimen conforms to the generic description, but not to the specific one.

There are obviously two different species here, but until more material is available it is not possible to say whether either, or neither, is the true *argenteoviridis*.

Genus *Loewinella*

Löwinella Hermann, 1912, *Nova Acta Leop.-Carol. Akad. Naturf.* **96**: 104. Type-species: *Atomosia virescens* Loew, monotypic.

Most subsequent authors have emended the original spelling, in conformity with the spelling of his name that Loew himself commonly used. Fortunately this practice now has the blessing of the Code, Articles 27, 32c.

The appearance of the single South African species is shown in fig. 122, and the generic diagnosis is given in the key to genera (p. 16).

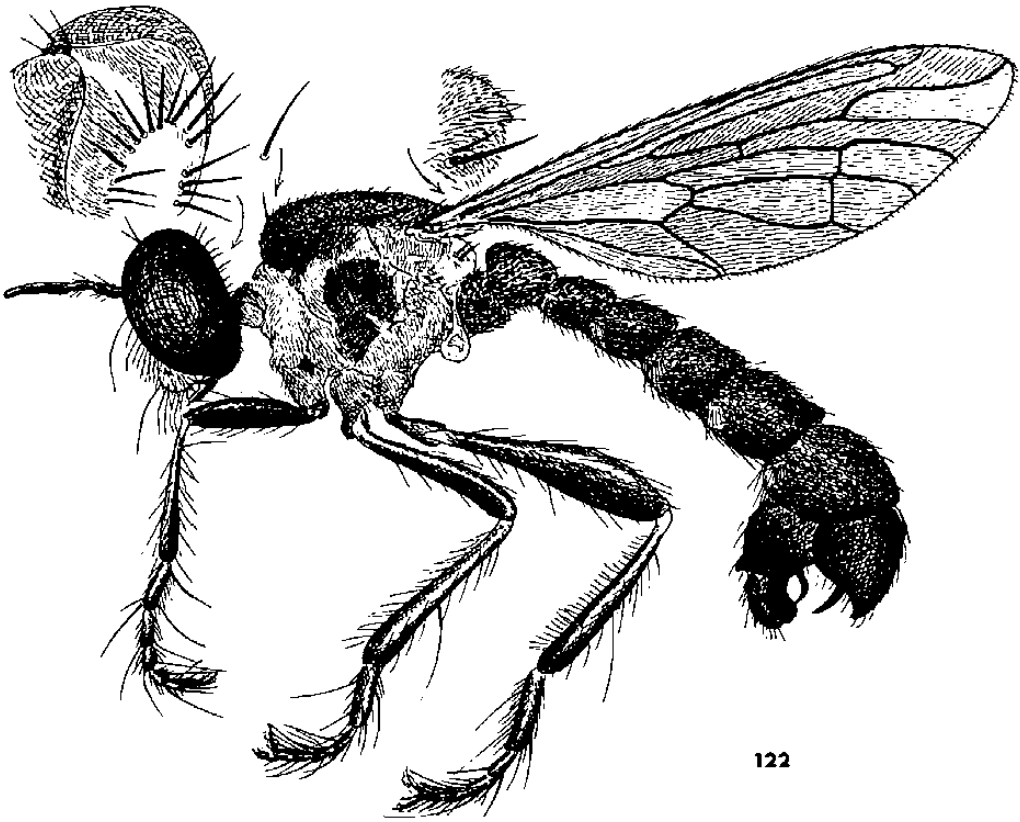


Fig. 122. *Loewinella nigripes* Engel ♂. 7 mm. Details of spines on occiput and mesonotum.

A tiny fly (7 mm), all black in ground colour. Beard and facial hairs white. Mesonotum with a metallic blue-black sheen, and bronze lights, and covered, including scutellum, with short, curly, whitish hairs. Upper mesopleuron similar; pleura otherwise with silvery tomentum and a large, quadrate patch of bare, shining black. Black bristles are few, but strong and conspicuous: a postocular series, set low down on occiput; a single bristle on each side, just before humeri; a single anterior supra-alar on each side; and a pair of exceptionally stout black bristles on each metanotal callosity (see insets on fig. 122). Metapleural fan, and the posterior mesopleurals as usual in Laphriini and Atomosiini, are weak and pale. Abdomen heavily punctulate, bronze, with a faint, shimmering white band *anteriorly* on each segment. Legs with abundant yellowish hair, and very long, fine, yellow hairs.

nigripes Engel

Loewinella virescens var. **nigripes** Engel, 1929, *Ann. Transvaal Mus.* **18**: 161.
Type in London. Type-locality: RHODESIA, Sawmills.
Distribution. RHODESIA. NATAL: Ndumu Reserve, Tongaland. LESOTHO: Maloti Mts. Makhaleng Valley. CAPE PROVINCE: Barkly East Dt., Naudes Nek. MOÇAMBIQUE: Luabo [all collected by B. R. and P. Stuckenberg].
Engel described this as a variety of the Palaearctic *L. virescens* Hermann, from Sarepta, in the U.S.S.R., but this is so improbable that it must be discounted.

Tribe *OMMATIINI*

In general appearance like Asilini, in which tribe they were formerly placed, the genera of Ommatiini all have the antennal arista pectinate, with long rays along the ventral side, in either a single or a double row. *Michotamia* and *Thallosia* (fig. 123) have the arista relatively short in relation to the third segment, which in the other genera is small and seed-like (fig. 124). Neither of these two genera is recorded from southern Africa. *Cophinopoda* is an Oriental genus which extends round the rim of the Indian Ocean to Madagascar, and may perhaps occur locally along the eastern seaboard of the mainland. With this exception all the Ommatiini of southern Africa belong in the one genus *Ommatius*, if we include *Emphysomera* as a subgenus.

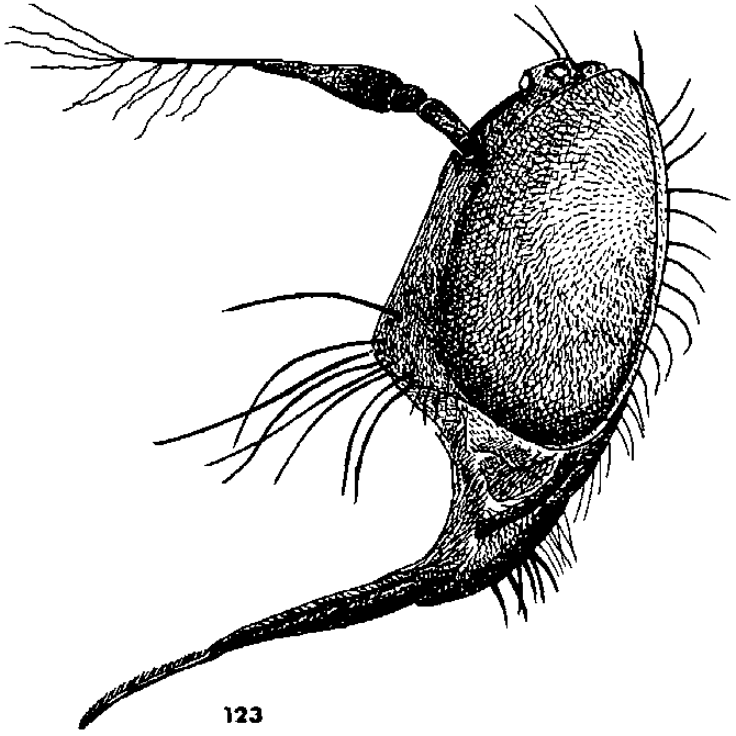


Fig. 123. Head of *Thallosia congoicola* Oldroyd, to show antennal structure.

Genus *Cophinopoda*

Cophinopoda Hull, 1958, *Proc. ent. Soc. Washington* **60**: 251. Type-species: *Asilus chinensis* Fabricius, by original designation.

Asilus chinensis Fabricius has a feathery antennae, and for a long period was placed in the genus *Ommatius*, in spite of its different appearance from the very numerous *Ommatius* of the Old World tropics. Indeed at one time Becker mistakenly regarded *chinensis* as being the type-species of *Ommatius* (see under *Ommatius*). This not being so, a new generic name was needed for *chinensis* and allied species, and Hull provided

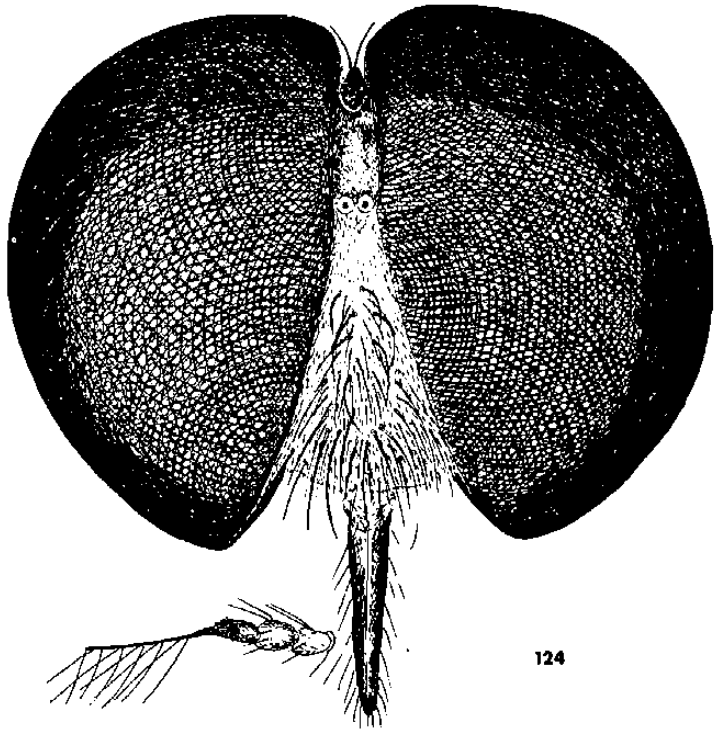


Fig. 124. Head of *Ommatius harlequin* sp. n., from in front to show constricted frons and divergent face. Antenna shown separately.

this with the name *Cophinopoda*. Later Hull (1962: 438) listed a number of Oriental species, and mentioned an undescribed species from Madagascar. Oldroyd (1964: 246), in the course of a report on a small collection of Asilidae from Nepal, took the opportunity to review the genus *Cophinopoda* throughout its range '. . . from Japan and Korea south to Queensland, and round the shores of the Indian Ocean to Madagascar', recognizing six species, easily separated by genitalic differences in both sexes.

In my view only one species occurs in the Malagasy Region, *Ommatius pulchripes* Bigot, 1859: 419, with *O. mayottae* Bigot, 1859: 422 as a synonym. This is the species incorrectly recorded by Oldroyd (1959: 302) as *Ommatius chinensis* F. It might well occur locally along the coast of mainland South Africa, and would then be recognized as an '*Ommatius*' of greater size and bulk than normal.

Genus *Ommatius*

Ommatius Wiedemann, 1821, *Dipt. exot.*: 213. Type-species: *Asilus marginellus* Fabricius, by designation of Coquillet, 1910.

Emphysomera Schiner, 1866, *Verh. Z.-B. Ges. Wien.* **16**: 845. Type-species: *Asilus conopsoides* Wiedemann, 1825, by original designation.

Ommatinus Becker, 1925, *Ent. Mitt.* **14**: 80. Type-species: *Ommatius pinguis* Wulp, by original designation.

Ommatius is a genus of almost worldwide distribution. Most species are greyish, rather frail flies, except for those in the subgenus *Emphysomera*, which have a robust,

clavate abdomen. The genus is formally recognized by the pectinate arista of the antenna, which is much longer than the seed-like third segment (cf. *Thallosia*, *Michotamia*).

Becker proposed the name *Ommatinus* because he believed the type-species of *Ommatius* to be *Asilus chinensis* Fabricius (*Ommatius fulvidus* Wiedemann), a large, rusty yellow Oriental species, but he was mistaken, having overlooked the type-citation by Coquillet, 1910. This, fortunately, preserved the name *Ommatius* for the much more extensive group, and the species resembling *chinensis* fall into *Cophinopoda* Hull (q.v.).

Emphysomera, characterized by the clavate abdomen and stout femora, was originally proposed as a distinct genus, but there is so much variation in these respects that, in my view, it is not practicable to give it more than subgeneric status.

Ommatius is an extremely complex genus, and a fascinating one. Although it is recognized by the pectinate antenna, which is frequently broken off, there is a certain habitus, which becomes familiar with experience. It is most closely related to *Heligmoneura* among the Asilini, but goes even further than that genus in the complexity of male genitalia. Some *Ommatius* have very simple genitalia, like those of *Neomochtherus* rather than *Heligmoneura*, but in general the male genitalia of *Ommatius* are the most bizarre of any Asilidae. At first glance it would seem that these would make identification easy, but for two things: (*a*) there is variation even among genitalia that look deceptively similar, and (*b*) that there are many small, nondescript species with simple genitalia. There are at least 45 species in Africa, of which nearly half have been recorded from southern Africa, and probably close study would increase this number several times. Moreover, *Ommatius* tends to hunt among grass and scrub vegetation, and there is evidence that species may be more widely distributed than in some genera. Hence an effective revision could be made only if it were to cover all sub-Saharan Africa.

Bromley (1936) published a short key to ten species, including two *Emphysomera* and based almost entirely upon the colour of the legs. No key to *Ommatius* is of much value without figures of the male genitalia as verification, and even then it is difficult to assess the range of individual variation either in structure or pattern.

In these circumstances I shall not attempt a key to the *Ommatius* of southern Africa, but shall merely give descriptions, figures and provisional names of the few species that I believe that I can recognize.

1. A robust species of moderate size (12–15 mm), body covered with dull yellowish tomentum. The legs stout and almost entirely yellow, black only at extreme tips of femora and rather more broadly at tips of hind tibiae and of all tarsomeres. Male genitalia as shown, upper forceps ending in a blunt point. There is considerable variation, not only in colour, but also in shape, of both legs and genitalia. Engel was aware of this, hence his choice of specific name, and it is possible that a group of closely similar species may be included here (figs 125–127).

variabilis Engel

Ommatinus variabilis Engel, 1929, *Ann. Transvaal Mus.* **13**: 158.
Type in Pretoria. Type-locality: TRANSVAAL, Piet Retief.
Distribution. TRANSVAAL. NATAL: numberous localities. Engel himself listed a male from the CONGO, but I have referred Congo material to *vittatus* Curran (Oldroyd 1970: 317).

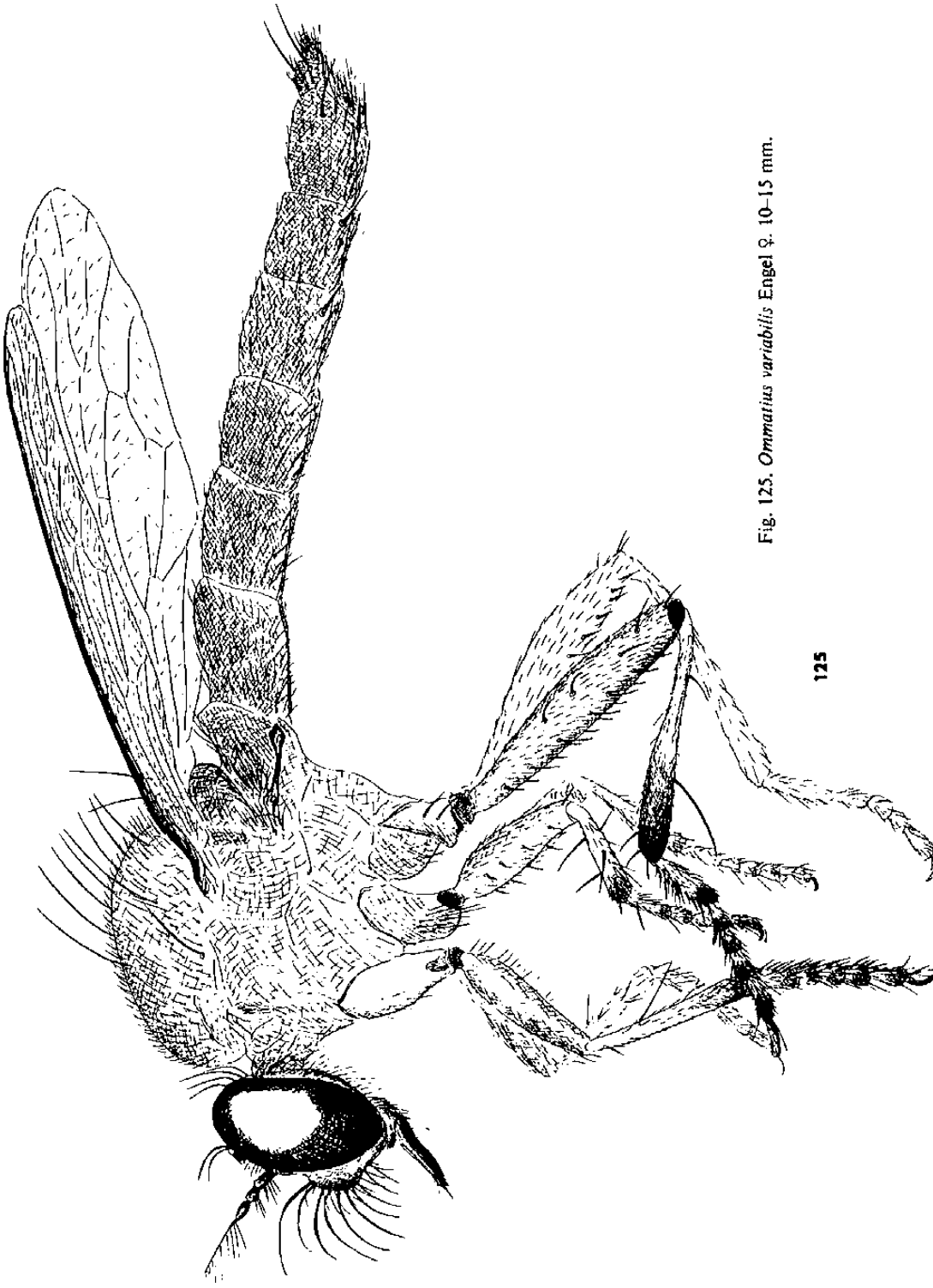
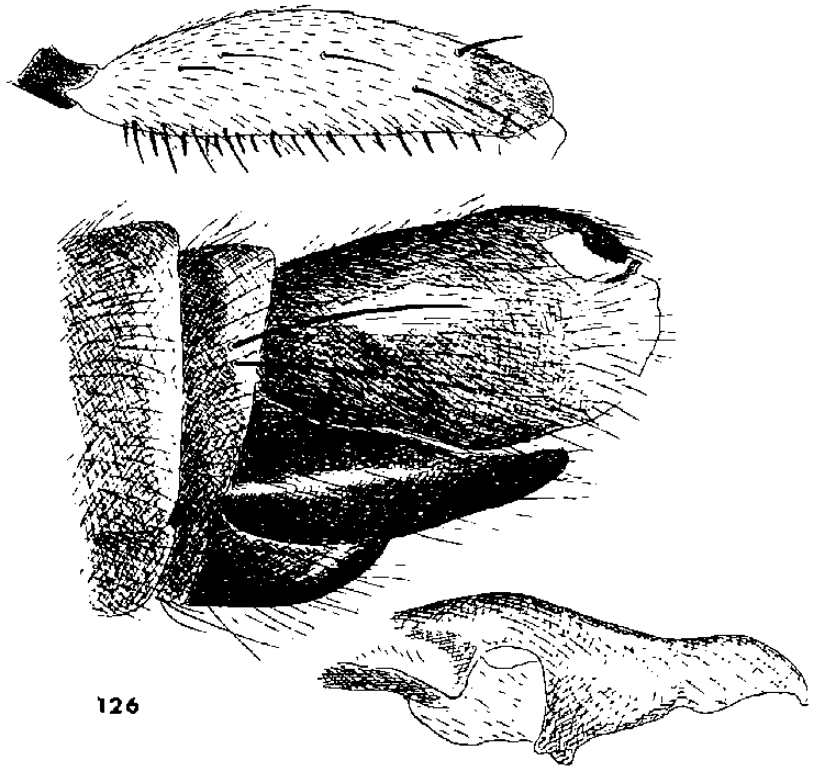
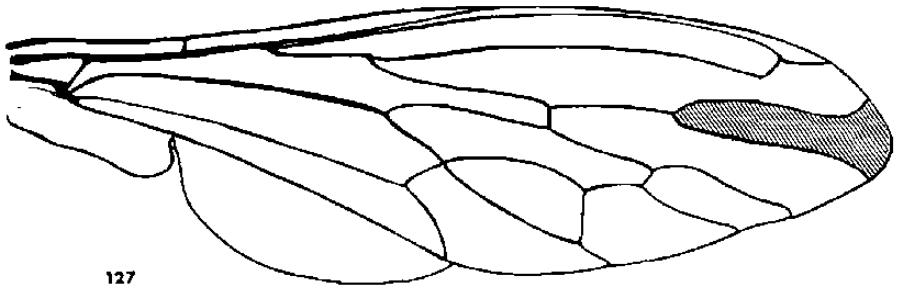


Fig. 125. *Ommatius variabilis* Engel ♀. 10–15 mm.

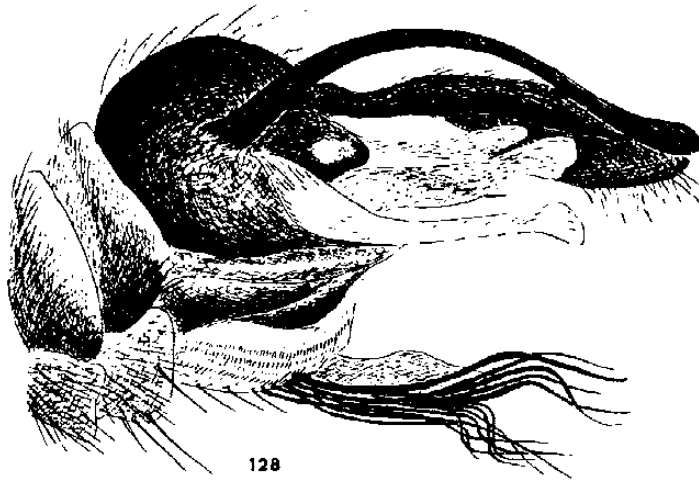
125

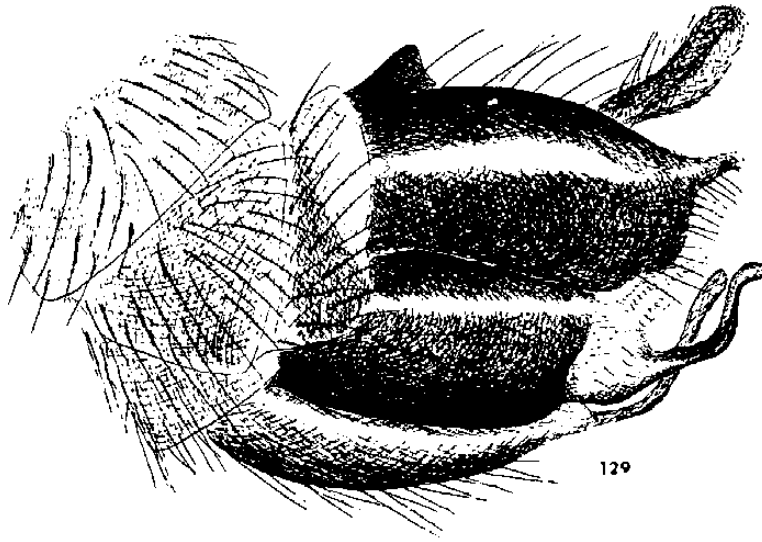




Figs 126–127. (126) Hind femur of male *Ommatius variabilis* Engel (cf. ♀), and male genitalia; (127) wing of *Ommatius variabilis* Engel. Note shape of radial fork (shaded).

2. A slender species (10 mm), easily recognized by the complex male genitalia (fig. 128) and the antero-dorsal black stripe on the yellow femora. Facial tomentum yellow (♂), or white (♀); mystax all yellow; upper occipital bristles black, beard silvery white. Mesonotum entirely tomented, dull brown and yellowish, pleura grey. Abdominal tergites shining black at extreme base, otherwise uniformly yellowish grey with pale yellow hairs. Femora yellow with anterodorsal black streak; fore and mid tibiae yellow basitarsi yellow with black tips, other tarsomeres black; hind tibiae yellow with black





Figs 128–129. (128) Male genitalia of *Ommatius ornatipes* Engel; (129) male genitalia of *Ommatius terminalis* Bromley.

tip, entire tarsus black. Bromley (1936: 126) suggested that his *neglectus* might be the female of *ornatipes* Engel, and I came independently to the same conclusion.

ornatipes Engel

Ommatinus ornatipes Engel, 1929, *Ann. Transvaal Mus.* **13**: 159.
Type in Pretoria. Type-locality: RHODESIA, Sawmills.
Ommatius neglectus Bromley, 1936, *Ann. Transvaal Mus.* **18**: 128.
Type in Pretoria. Type-locality: TRANSVAAL, Pretoria.
Distribution. RHODESIA: Sawmills. TRANSVAAL: Pretoria; Letaba.

3. A small, compact species (9 mm) with male genitalia as in fig. 129; conspicuous feature is elongate, strongly convex lower forceps, ending in a broad fork which is reddish, and contrasts with shining black of rest of sclerite (cf. Bromley 1936). Face narrow, yellow, with yellow hairs in lower mystax, and paired black bristles above; beard white. Mesonotum dull brown, pleura silvery white. Scutellum with two black bristles. Abdomen (in good specimens) shining through thin blue-grey tomentum, and clothed with pale hairs laterally, shorter black ones on disc. Legs: femora, fore tibiae and basitarsi all yellow, with black clothing hairs; hind tibiae, hind basitarsi and other tarsomeres of all legs yellow with black tips.

terminalis Bromley

Ommatius terminalis Bromley, 1936, *Ann. Transvaal Mus.* **18**: 129.
Type in Pretoria. Type-locality: TRANSVAAL, Egerton.
Distribution. TRANSVAAL: Egerton. CAPE PROVINCE: E. London.

4. A slim, yellow species (12 mm), with characteristic male genitalia as in fig. 130; these may be compared with Loew's description of *flavipes* (1860: 171). A distinguishing feature in both sexes is the antennae, with yellow first two segments contrasting with black third. Facial tubercle small; on mouth-margin with a few black bristles and a few yellow ones. Proboscis unusually long and pointed for this genus. Mesonotum handsomely marked, yellowish grey, with well defined pattern of chestnut brown; a paired median stripe, a short prescutellar stripe, and three sharply defined lateral spots on each side. Scutellum grey, with two black marginal bristles. Pleura grey, golden brown anteriorly on mesopleuron. Abdominal tomentum dark brown, yellowish grey laterally, and on first three tergites. ♂ genitalia shining black-brown (fig. 130). Legs

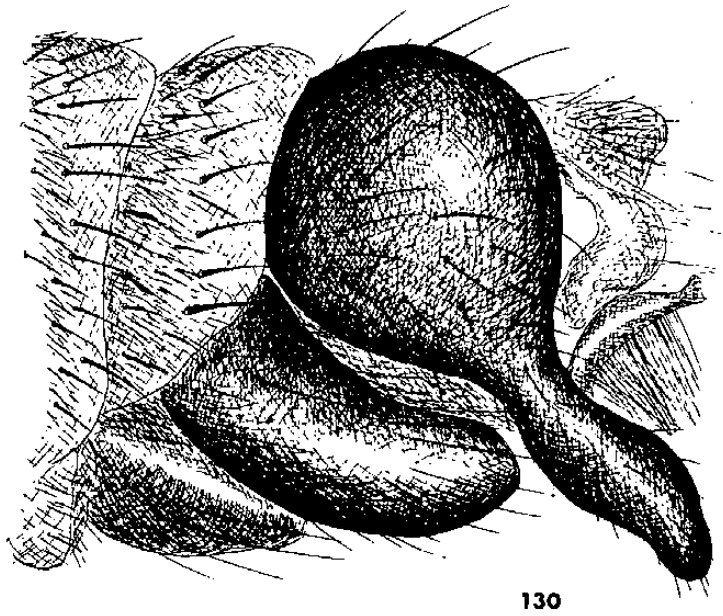
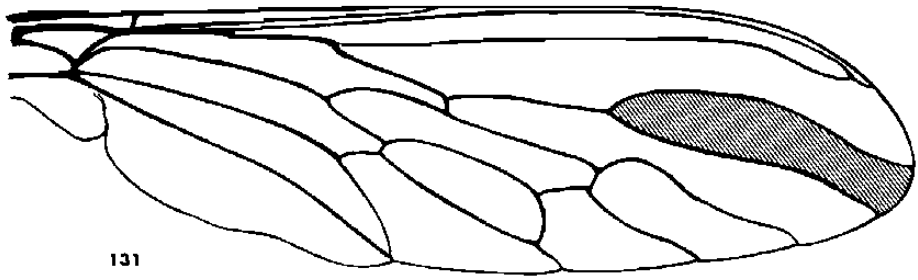
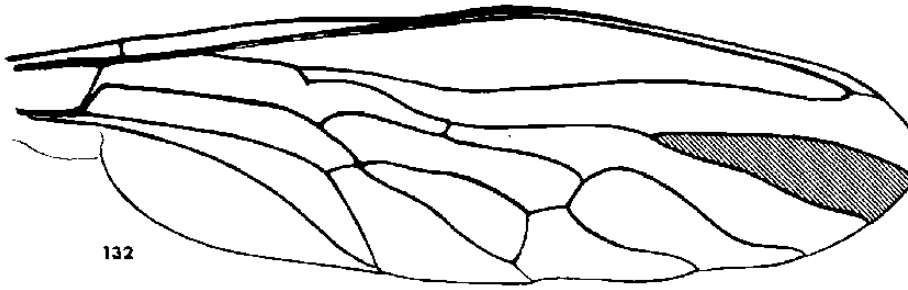


Fig. 130. Male genitalia of *Ommatius fuscovittatus* Ricardo.





Figs 131–132. (131) Wing of *Ommatius fuscovittatus* Ricardo; (132) wing of *Ommatius harlequin* sp.n. Note shape of radial fork (shaded), and sinuous nature of many veins.

clear yellow, tips of all segments more or less distinctly black. Wings greyish smoky. Fork of R_4 long divergent, as in fig. 131.

fuscovittatus Ricardo

Ommatius fuscovittatus Ricardo, 1900, *Ann. Mag. nat. Hist.* (7) 6: 177.
Type in London. Type-locality: TRANSVAAL, Pretoria.
Distribution. TRANSVAAL: Pretoria. NATAL: Weenen; Ingwavuma. Also in ANGOLA: Bruco (B.M. S. Afr. Exped., 1972).
According to specimens in the B.M. determined by Bromley, this was the '*flavipes* Loew' of his 1936 key. It might be possible to interpret Loew's description of the hypopygium in this sense, but Loew's description of the thoracic stripes as 'nur undeutlich angedeutet' is strikingly inappropriate. In any event an earlier *Ommatius flavipes* was described by Macquart (1834) from Senegal.

5. **Ommatius harlequin** sp. nov.

This relatively big, slender species (16 mm) does not agree with any described species known to me, nor is it clearly related to any of them. The wing alone, with its length and the exaggerated curvature of the veins (fig. 132), is unique in southern Africa, though similar venation is seen in some oriental species.

♂ *Head.* Eyes very closely approximated at vertex (fig. 124), inner eye-margins almost straight, and diverging from vertex to mouth-margin. Frons with dull bronze tomentum, face silvery white. Mystax of rather few white hairs, continued upwards by three pairs of black bristles. Antennae (fig. 124, inset) orange, third segment a little dusky and relatively elongate, with two rows of plumes alternating along the arista. Proboscis slender and rather long, black except at extreme base, where it is yellow; palpi narrow, pointed, yellow.

Thorax. Mesonotum black, with rusty grey tomentum, except for humeri, postalar calli and scutellum, which are reddish yellow in ground colour. Ground colour of

pleura in three vertical stripes, with meso- and sternopleura black, and rest reddish yellow, all covered with white tomentum.

Abdomen. Dorsum entirely covered with tomentum, light brown on discs of segments and more greyish laterally and posteriorly. Clothing hairs rather long, yellow. Hypopygium as in fig. 133.

Legs. Coxae yellow in ground colour, with whitish tomentum. Rest of legs yellow, only third femora and most tarsomeres obscurely darkened at tips, and this is mostly due to black hairs. Bristles mixed yellow and black.

Wings (fig. 132). Distinctly 'costalized', i.e. costa and R_1 are thick and black, and run close together, with the costal margin distinctly dilated just beyond tip of Sc. R_5 and other veins markedly sinuous. Halteres orange.

Length of body 14 mm; of wing 10 mm.

Type in Pietermaritzburg. Type-locality: MOÇAMBIQUE, Dundo Forest, 7.4.1961 (D. Cookson). Distribution. Known to me only from unique holotype male.

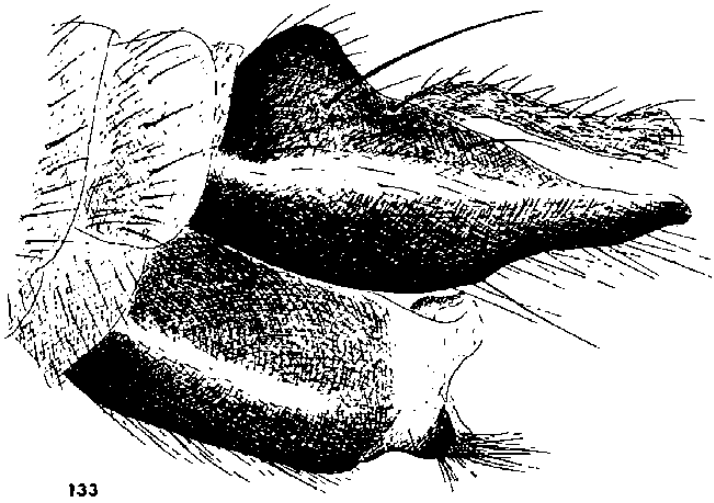
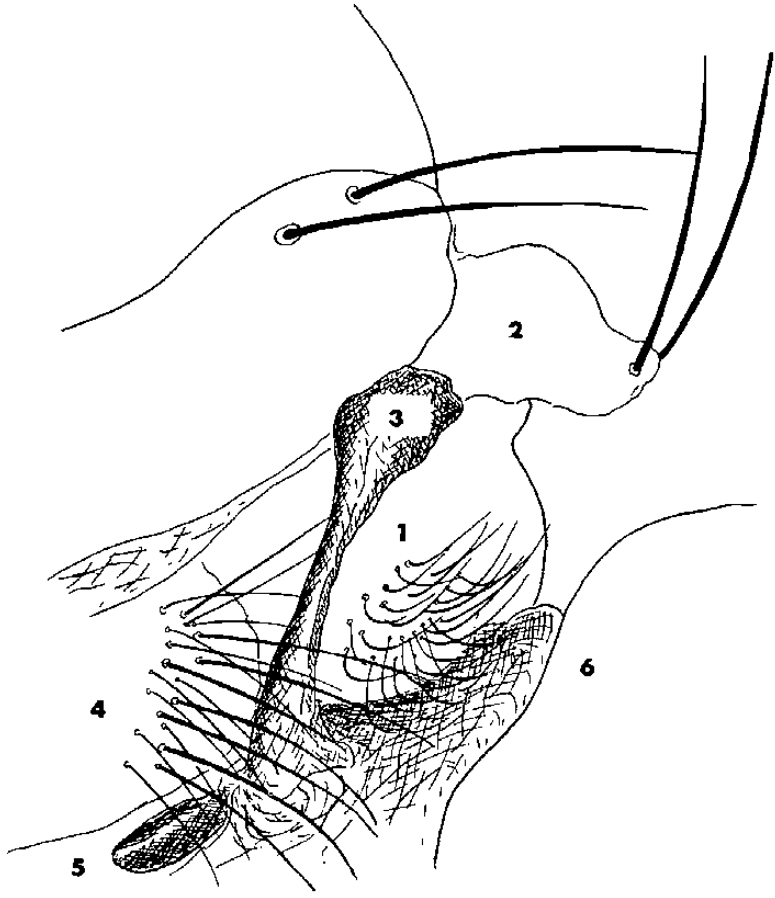


Fig. 133. Male genitalia of *Ommatius harlequin* sp. n.

Tribe *ASILINI*

This, nomenclaturally the 'typical' tribe of the family, is taxonomically the most difficult. There is some evidence that this tribe is the most recently evolved, and is less clearly segregated into genera. The characteristic appearance of Asilini is elongate, dust-coloured (drab, grey/brown) and bristly. Some genera are recognizable at sight, but most are defined by a particular combination of characters such as the size and shape of the facial tubercle, density of the mystax, and the wing venation. Two important characters are the presence or absence of: (*a*) hairs (other than the ubiquitous tomentum) on the metanotal lobes (fig. 134); and (*b*) the so-called 'discal' bristles laterally on the abdominal tergites (fig. 155). The structure of the ovipositor is a very revealing feature, which to the experienced eye often provides a quick clue to the genus,



134

Fig. 134. Diagram showing the 'metanotal lobe' (1) in relation to scutellum (2), haltere (3), metapleural bristles (4), posterior thoracic spiracle (5), and first abdominal segment (6).

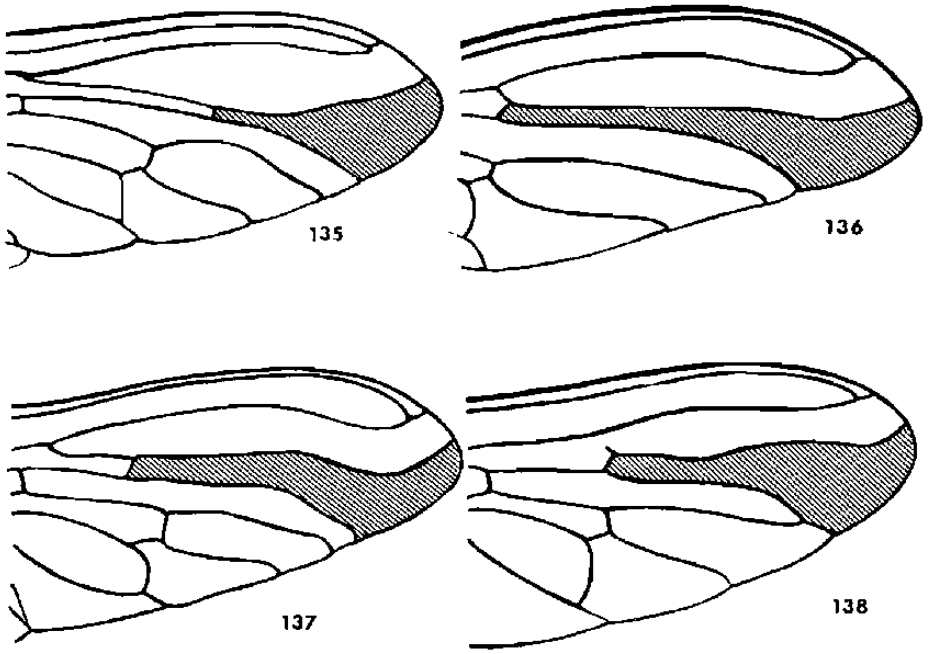
but this must be seen in combination with the other characters already mentioned, and of course is useless for determining male specimens.

Asilini have perhaps suffered more than other tribes from the tendency for European dipterists to assign exotic species to Palaearctic genera, with which they have often no close relationship. The most conspicuous example of this is *Asilus* itself, though most modern students of the family are aware that the number of true *Asilus* in the world is very small indeed, and these almost entirely Holarctic. *Machimus*, *Cerdistus*, *Dysmachus* and *Neoitamus* are other Palaearctic genera that have been misused in this way.

Most of the Asilini of southern Africa fall into two generic complexes, the *Promachus*-group and the *Neolophonotus*-group.

The *Promachus*-group of genera

These genera are characterized, and easily recognized, by the existence of three submarginal cells in the wing. This is brought about by the joining of the radial fork



Figs 135–138. Wing venation in genera of the *Promachus* group: (135) *Promachus*; (136) *Philodicus*; (137) *Alcimus*; (138) *Apoclea*. Note the different ways in which the radial fork (shaded) is linked to R_{2+3} to form three submarginal cells.

to vein R_{2+3} by a supernumerary crossvein; the location of this crossvein, and the consequent shape of the radial fork, are diagnostic of the four genera concerned in the Ethiopian Region. The genus *Apoclea*, confined to the Eremian areas of the Middle East from Morocco to Iran (one alleged species in India), is very variable in the closure of the third submarginal cell as of the first posterior cell (fig. 138). The other three genera are fairly consistent. The course of the veins makes it seem that the crossvein is a continuation of R_4 (which, indeed, it may be), and as if the old base of the radial fork were now a crossvein. Figs 135–138 show that typical arrangement in the three genera, though there is appreciable individual variation.

Genus *Alcimus*

Alcimus Loew, 1848, *Linn. Ent.* 3: 391. Type-species: *Trupanea longipes* Macquart, by original designation.

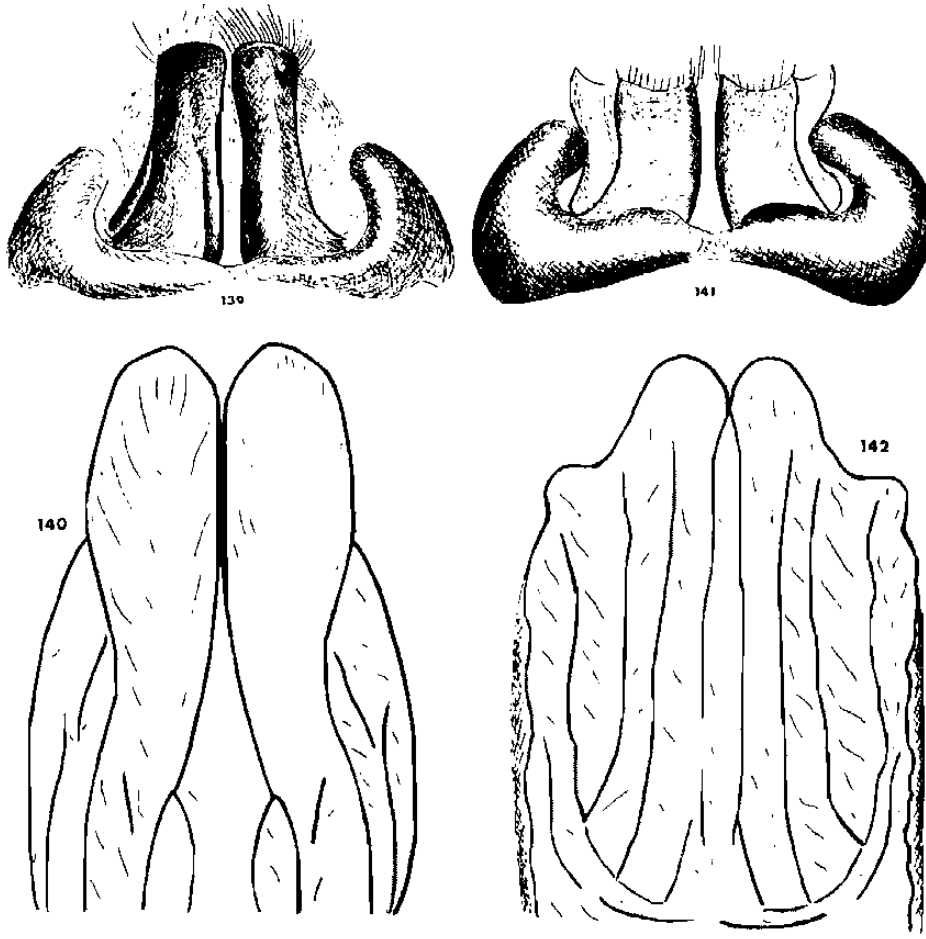
Of the four genera of the *Promachus*-group, *Alcimus* is formally recognized by the placing of the supernumerary crossvein at the extreme base of the radial fork (fig. 136), but is also readily identified to the naked eye by its general appearance—elongate, slim, with the thorax looking broad in proportion to the abdomen, and with a curiously leopardine appearance, with black or dark brown streaks and spots on a chestnut background.

Although Loew based this genus upon a South African type, and drew attention to this fact: '(Arten wie Trup. longipes Macq., meist Südafrikaner)', *Alcimus* is essentially a genus of tropical savannas. Species extend down the eastern side of Africa to a vary-

ing extent, and in the present state of taxonomy of the genus it is not possible to say with confidence which species reach the area concerned in this paper. The following species seem to be well authenticated in southern Africa.

angustipennis Loew, 1857: 361
brevipennis Ricardo, 1922: 40
cuthbertsoni Hobby, 1934: 235
longipes Macquart, 1838: 103
alamanus Walker, 1849: 428
longurio Loew, 1857: 360
perlonga Walker, 1851: 125 (listed by Loew 1860: 134 as 'longipes' Walker)
mimus Wiedemann, 1828: 493
porrectus Walker, 1851: 126
setifemoratus Hobby, 1934: 236
stenurus Loew, 1858: 339
tristrigatus Loew, 1857: 360

Hull (1962: 458) records *Asilus hospes* Wiedemann from India and *Asilus ponticus* Bigot from Iraq as *Alcimus*, but both species belong to *Philodicus*. With this correction,



Figs 139–142. (139) Male genitalia of *Alcimus longipes* Macquart; (140) eighth sternite of female *Alcimus longipes* Macquart; (141) male genitalia of *Alcimus stenurus* Loew; (142) eighth sternite of female *Alcimus sternurus* Loew.

all species of *Alcimus* come from the Ethiopian Region.

I am not certain how many of these species are valid. Differences can be seen both in external appearance—particularly colour and pattern of the mesonotum and of the abdominal tergites—and in the genitalia of both sexes, but there is extensive individual variation. The genitalia seem to fall into two main groups:

Group A. MALE with claspers elongate and narrow (fig. 139).
FEMALE eighth sternite without lateral flanges (fig. 140).

Group B. MALE with claspers truncate, apical margin concave, and deeply hollowed longitudinally (fig. 141).
FEMALE eighth sternite with lateral flanges, but these of variable shape (fig. 142).

The most obvious species of Group A is *longipes* Macquart, readily recognized by its rather small size and generally black appearance. Several species of this appearance have been described, and currently they are regarded as being synonyms. This is the familiar dilemma, of a group that can be regarded as either a plastic species with subspecies and local forms, or as a group of closely similar species. Until this problem can be resolved by study of fresh material it is convenient to continue to lump them together as follows:

A very black species, legs almost entirely black. Each side of mesonotum with two large black spots, almost uniting, followed by a smaller, triangular spot. Pleura ashy brown/grey. Wings grey at tip, and often tinted brown elsewhere. The extreme sides of abdominal segments grey, with a large, black-brown discal spot.

longipes Macquart
(*alamanus* Walker; *perlonga* Walker; *longurio* Loew)

Trupanea longipes Macquart, 1838, *Dipt. exot.* **1** (**2**): 103.
Type in Paris. Type-locality: unknown.
Asilus alamanus Walker, 1849, *List Dipt. Brit. Mus.* **2**: 428.
Type in London. Type-locality: 'S. Africa (Dr Smith)'.
Trupanea perlonga Walker, 1851, *Ins. Saunds. Dipt.* **1**: 125.
Type not located. Type-locality: 'South Africa'.
Alcimus longurio Loew, 1857, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **14**: 260.
Type in Berlin. Type-locality: 'Cap. B. Sp.'
Distribution. Well represented in NATAL and ZULULAND, as well as in the Transkei and other eastern parts of the CAPE PROVINCE.

The rest are chestnut-brown species, and at the present time I am unable to offer a key for their identification. Most of them seem to fall into Group **B**. A notable exception is *setifemoratus* Hobby, which had previously been confused with *rubiginosus* Gerstaecker; Hobby showed that *rubiginosus* is a species of eastern Africa, whereas *setifemoratus* abounds in Rhodesia, and perhaps southwards from there. The females were easily distinguished, those of *setifemoratus* having a row of ventral spines on the fore femora that are absent from the females of *rubiginosus*. The only character applicable to both sexes given by Hobby was the colour of the mesonotal stripes, which are black in *rubiginosus* and brown in *setifemoratus*. In fact the genitalia are different in both sexes, *rubiginosus* belonging to Group **B** and *setifemoratus* to Group A.

Genus *Promachus*

Trupanea Macquart, 1838, *Dipt. exot.* **1** (**2**): 91. Type-species: *Asilus maculatus* Fabricius, by original designation. Name preoccupied.
Promachus Loew, 1848, *Linnaea Ent.* **3**: 390. Type-species: *Asilus maculatus* Fabricius, by designation of Coquillet, 1910.

The name *Bactria* Meigen, 1820 has been applied to part, or the whole of this genus by various authors, notably Hobby (1936). This name is highly disputable, both nomenclatorially and taxonomically, and is best ignored, beyond noting that it usually denotes a species that would fall into the genus *Promachus*.

Formal recognition of *Promachus* is by means of the shape of the radial fork of the wing (fig. 135), with two veins running parallel and close together until the short crossvein, and then diverging widely in a bell-shape. The genus comprises two or three well-marked forms, potential subgenera. The *fasciatus*-group is black, with a conspicuous band of tufty white hairs across the base of the abdomen (fig. 143). Hobby (1936)

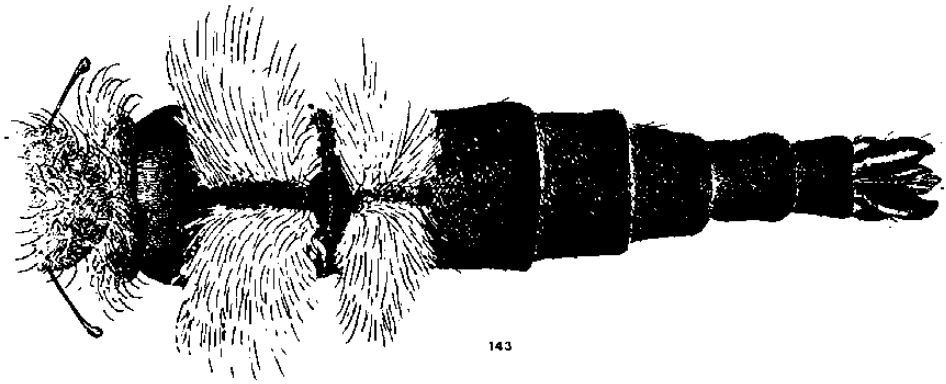


Fig. 143. Abdomen of male *Promachus aequalis* Loew, showing tufts of white hairs characteristic of the *fasciatus* group of species.

reviewed this group, showing that the males can be readily identified from the shape of the aedeagus, which is normally visible without dissection. Most other *Promachus* are of a more familiar grey/brown appearance, like typical Asilini, but there is a further grouping of species according to the shape of the ovipositor. Typical *Promachus*—including the *fasciatus*-group—has a short, downturned ovipositor (cf. *Heligmoneura*, fig. 149), but a section sometimes recognized as the subgenus *Trypanoides* Becker has the ovipositor telescopic like that of *Neoitamus*.

Following upon his successful revision of *Philodicus* (Blasdale 1957) Dr Blasdale has in hand a comprehensive paper on *Promachus*, and it is pointless to attempt any provisional keys in the meantime. The only member of the *fasciatus*-group that is likely to occur in southern Africa is *aequalis* Loew (fig. 143).

Genus *Philodicus*

Philodicus Loew, 1848, *Linn. Ent.* 3: 391. Type-species: *Asilus javanus* Wiedemann, by original designation.

Teretromyia Bigot, 1859, *Ann. Soc. Ent. France* (3) 7: 416. Type-species: *Teretromyia cothurnata* Bigot, monotypic.

Loew established the genus *Philodicus* upon an Oriental type-species, and the described species are distributed in both Ethiopian and Oriental Regions. The former were fully revised by Blasdale (1957), with keys and drawings of genitalia, and they will not be further treated here.

The *Neolophonotus*-group of genera

This is one of the most striking complexes of Asilidae, abundant in southern Africa, and rich in structural differences, which lend themselves to being recognized from drawings. The practical problem is the sheer vitality of this group, and its resulting taxonomic complexity. It would be a rewarding subject for an intensive taxonomic study of the traditional type, and much clarification might well be achieved before the need arose to resort to more modern techniques. The present account cannot attempt to be more than introductory.

This complex exemplifies the well-known taxonomic situation, whereby small segregates can be recognized fairly easily, and probably represent relict groups of relatively older evolution. The rest, the great majority of the species, fall into a large complex, where elusive differences can be seen, but these merge into one another. In the *Neolophonotus*-group four small genera are recognizable—*Dasophrys*, *Hobbyus*, *Dysclytus* and *Synolcus*—but between them they account for only about 15 species. In contrast, the genus *Neolophonotus sensu lat.* comprises some seventy species, with possibly five segregates, which can be regarded as genera, subgenera or species-groups, according to taste: *Lophybus*, *Megadrillus*, *Lophopeltis*, *Hippomachus* and *Neolophonotus sensu stricto*.

The name *Neolophonotus* traces back to the preoccupied name *Lophonotus* Macquart 1838, which directly refers to the characteristic 'crest' or 'mane' of long hairs along the middle of the mesonotum, as shown in figs 144, 148, 154, 155, 157, 158. Loew (1860: 143) gave a key for separating *Lophonotus* from a number of related genera, including his own genus *Dysmachus*, and later in the same work (1860: 152–164) he drew attention to various characters which allowed the species to be arranged in species-groups. Loew correctly indicated that his *Dysmachus* was North African (i.e. Palaearctic), and in fact this genus extends throughout Europe, reaching the British Isles and Scandinavia.

Subsequently authors, including Loew himself, experienced difficulty in adequately defining *Dysmachus* and, because of its hairy mesonotum, it became accepted as including the African *Lophonotus*. Since the latter name is preoccupied, the genus was called *Dysmachus*: *Lophonotus* species are listed under *Dysmachus* in Kertész' *Catalogus Dipterorum*, and Miss Ricardo (1920) described a number of African *Lophonotus* as *Dysmachus*.

Engel (1925: 347) discovered a way of separating the two genera by the presence or absence of hairs on the 'metanotal callosities' (fig. 134). The total absence of metanotal hairs, leaving only a uniform covering of tomentum, separates the *Neolophonotus*-group not only from *Dysmachus* but from *Heligmoneura* as well. *Dysmachus* can be safely relegated to the Palaearctic Region, but *Heligmoneura* is a tropical genus, and has a number of African species, see below.

Engel (1925) went on to divide *Neolophonotus sensu lat.* into six subgenera, and in a later paper (Engel 1927) he discussed the whole problem of the name, the recognition of the complex, and its subdivision. It was in this paper that he raised *Dysclytus*, *Dasophrus* and *Synolcus* to the status of distinct genera, leaving *Hippomachus*, *Lophybus*, *Megadrillus*, *Lophopeltis* and *Neolophonotus sensu stricto* as subgenera of *Neolophonotus sensu lat.* Hobby (1933: 111) added another small genus, *Merogymnus*, which happened to be preoccupied, and was subsequently renamed *Hobbyus* by

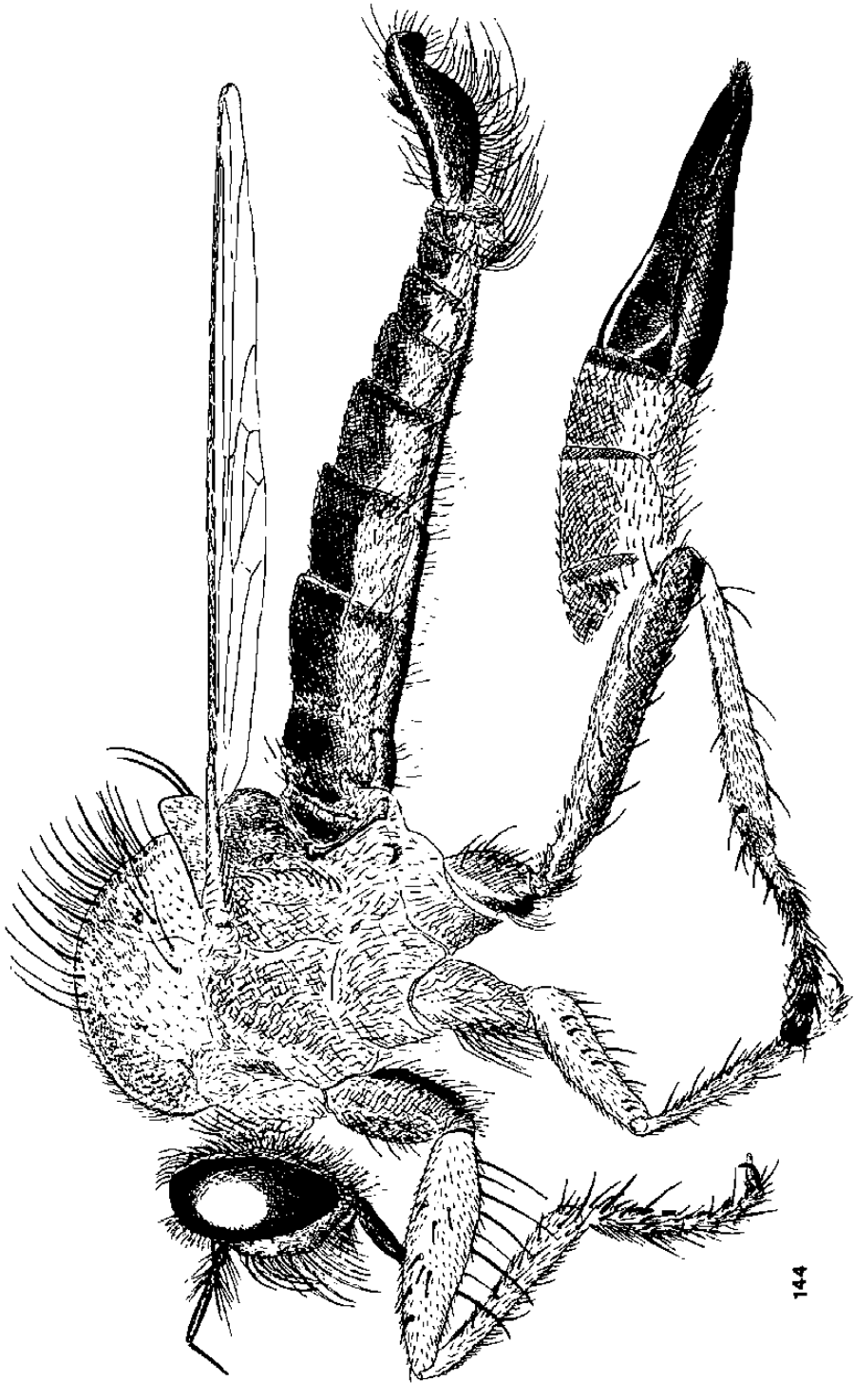


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Fig. 144. *Dysclytus firmatus* Walker ♂, with abdomen of female to same scale.

Bromley (1952: 21).

The following key quotes the alleged differences between these genera, but I find these elusive in practice. *Dysclytus* seems to be distinctive, with its short, stiff occipital bristles, and characteristic genitalia (fig. 144). *Synolcus*, *Dasophrys* (with *Neodasophrys*) and *Hobbyus* all have proclinate occipital bristles, long and sharply bent forwards at right angles, but the shape of the discal cell (*Synolcus*) and the decision whether long hairs of the abdomen are strong enough to count as 'discal bristles', do not give one any great confidence in the separation of these genera.

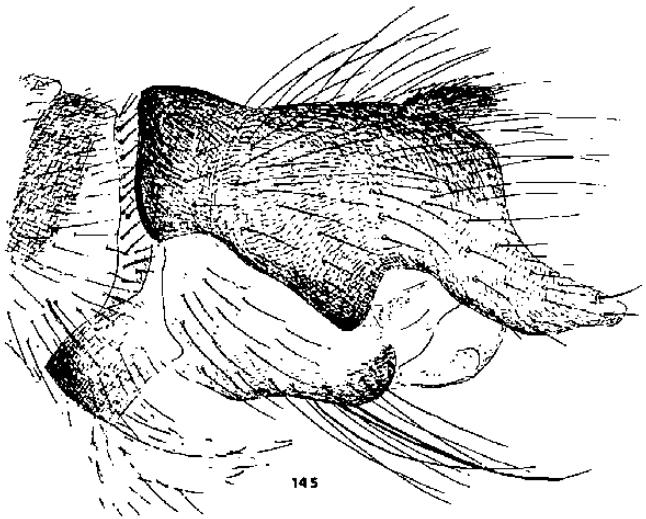
Key to genera and subgenera of the *Neolophonotus*-group

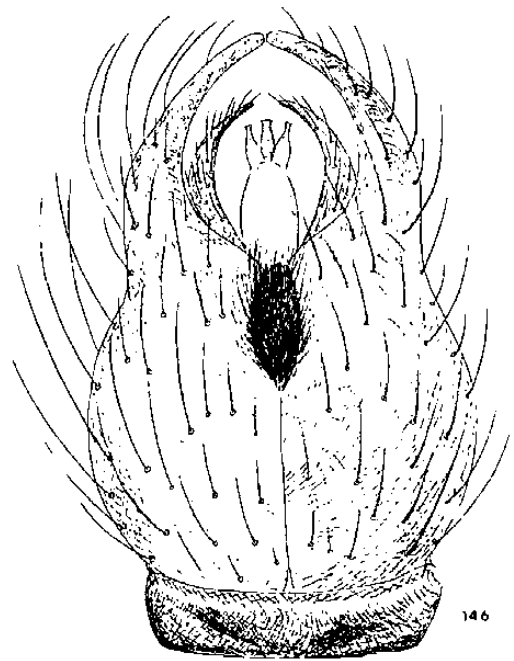
All have the metanotal callosities 'bare', i.e. with tomentum but without hairs or bristles.

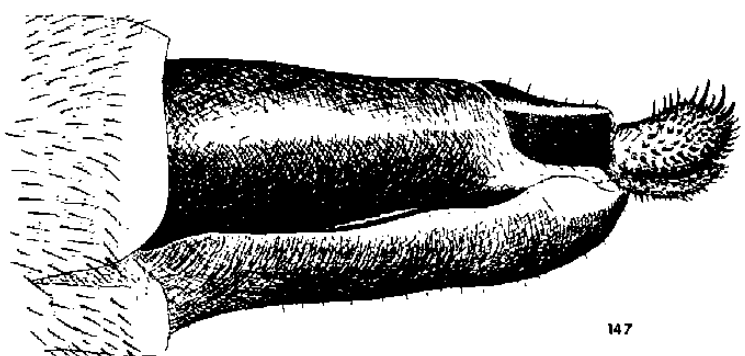
1. Fourth posterior cell (M_3) bulging forwards, so that discal cell is strongly narrowed in middle (fig. 158); costal margin often dilated in male. Ovipositor long, sword-like (figs 159, 160) ..... genus **Synolcus** Loew
- Fourth posterior cell (M_3) not bulging forwards; discal cell a little narrowed in middle, as usual, but not conspicuously so 2
2. Ovipositor long and sword-like (fig. 144). Scutellum with 2–10 isolated marginal bristles. Face distinctly swollen, if not tuberculate (figs 144, 148) 3
- Ovipositor short, downturned (fig. 157). Scutellum with numerous marginal bristles and with tufts of hair on disc. Face plane, or at least straight in profile, not swollen or tuberculate (fig. 155) 5
3. Occipital bristles proclinate (fig. 148) 4
- Occipital bristles short and stiff (fig. 144). Face with a general swelling only. Scutellum with 2 marginal bristles. Wings not widened in male. Rather bare species ..... genus **Dysclytus** Loew
4. Face with a distinct swelling or tubercle (fig. 148). Discal bristles on abdomen. Hairy species. Wings usually dilated in male (if not, subgenus *Neodasophrys* Loew) ..... genus **Dasophrys** Loew
- Face with general swelling only. Wings dilated in male. Discal bristles present on abdomen [See discussion under *Hobbyus*.] ..... genus **Hobbyus** Bromley (*Merogymnus* Hobby, preoccupied)

Genus *Neolophonotus sensu lat.*

5. First posterior cell closed ..... subgenus **Megadrillus** Bigot
- First posterior cell open 6
6. Abdomen with discal bristles at least on tergites, usually on sternites as well (fig. 155) 7
- Abdomen without discal bristles, even on tergites (weak ones anteriorly in *Hippomachus*!) (fig. 157) 8
7. Abdomen with discal bristles on both tergites and sternites. Rather characteristic flies, with a neat, parallel-sided mane of long bristles and shorter hairs, compact mystax and proclinate occipitals (fig. 155). Hypopygium often complex, and distinctive of species ..... subgenus **Lophopeltis** Engel
- Abdomen with discal bristles on tergites only. Hypopygium simple. Ovipositor ending in a pair of spine-like tips to cerci ..... subgenus **Lophybus** Engel







Figs 145–147. (145) Male genitalia of *Congomochtherus acuminatus* sp. n., in side view; (146) male genitalia of *Congomochtherus acuminatus* sp. n., in dorsal view; (147) ovipositor of *Congomochtherus acuminatus* sp. n.—note spiny lamellae.

8. Mesonotum raised, and with an unusually dense mane (fig. 154). Wings dilated in males. Scutellum with long hairs only, no marginal bristles.....
subgenus **Hippomachus** Engel
(*Trichonotus* Loew, preoccupied)

– Mesonotum not raised, and mane not unusually dense (fig. 157). Scutellum with a double row of long, curved marginals. Wings not dilated in males.....
subgenus **Neolophonotus** Engel
(*Lophonotus* Macquart, preoccupied)

Other Genera

Besides the *Promachus*-group and the *Neolophonotus*-group of Asilini, southern Africa has representatives of *Congomochtherus*, *Heligmoneura*, *Neomochtherus* and *Empediodes*. The last is relegated to an Appendix, because of its unique interest. Mention is also made of other genera which have not yet been recorded from the area, but might well occur there: *Dysmachus*, *Machimus*, *Neoitamus* and *Astochia*.

Genus *Congomochtherus*

Congomochtherus Oldroyd, 1970, *Bull. Br. Mus. nat. Hist.* **24** (7): 305. Type-species: *Congomochtherus lobatus* Oldroyd, 1970, by original designation.

This is an interesting but little-known genus of Asilini, which came to light during my previous studies of Asilidae of the Congo Basin. It is mainly characterized by the tubular ovipositor, with heavily spinous anal lamellae (fig. 147). There is some immediate resemblance to the Palaearctic genus *Philonicus*, but the degree of relationship is difficult to determine at the present time.

In 1970 I recognized two species, with a note that Dr Tsacas indicated the possibility of a third, which he subsequently isolated in the British Museum collection, and will describe in due course. These three are all located in the northern and eastern Congo Basin. The collections made in Angola by members of the 1972 British Museum Expedition to southern Africa contain two specimens each of both sexes of a new species of *Congomochtherus*, with distinctive male genitalia.

All four species are closely similar in colouring, and I am not at present able to present a key which will separate them. For the purposes of this paper the new species can be recognized from figures of the male genitalia (figs 145, 146), to which is appended the following description.

General colour ashy-grey and brown. Face with white tomentum, mystax black above, white below; antennae black. Mesonotum with dark brown paired stripe and lateral spots, interspaces with grey/bronze tomentum. Bristles black. Scutellum with two black marginal bristles and short white discal hairs. Abdomen mainly black with short black bristles, but sides of each tergite with golden bronze tomentum, white hairs, and two pairs of very strong yellow bristles. Legs black, only extreme base of each tibia with a narrow red ring; bristles mostly white, some black. Wings uniformly lightly smoky. Male genitalia as in figs 145, 146, unusual in being entirely covered with bronze tomentum; ovipositor as in fig. 147.

acuminatus sp. n.

Type in London. Type-locality: ANGOLA (A37), 8 km N.E. Negola, 25.iii.1972 (B.M. S. Afr. Exped., 1972).

Distribution. ANGOLA. 2 ♂, 2 ♀ from type-locality; 1 ♀ from ANGOLA (A40): Tundavala, 13–16 km N.W. Sa da Bandeira, 27–29.iii.1972.

Genus *Dasophrys*

Dasophrys Loew, 1857, *Öfv. Kongl. Vet.-Akad. Förhandl.* **14**: 366. Type-species: *Dasophrys longibarbus* Loew (= *paron* Walker), monotypic.
Neodasophrys Ricardo, 1920, *Ann. Mag. nat. Hist.* (9) 5: 440. Type-species: *Neodasophrys natalensis* Ricardo, by designation of Hull (1962: 528).

Neodasophrys was distinguished from *Dasophrys* by lacking the dilated wings of the male, and by the rather attenuate mane in both sexes, though Loew (1860: 166) described *Dasophrys* as having 'Thorax hochgewölbt, ohne Mähne'. Engel (1927: 140–3) pointed out the inadequacy of these distinctions, and commented on the extent of variation, even between individuals of the same species. The profile of the head shown in fig. 148 is a good clue to this genus. The following key to species is partly after Engel.

Key to South African species of *Dasophrys* and *Neodasophrys*

1. Acrostichals short, biserial before suture, somewhat irregularly placed on foremost part of mesonotum. Unicolorous dark species, covered with brassy yellow tomentum. Wings of male only moderately dilated (diameter of cell $R_1 = R_3$).
personatus Schiner

Dasophrys personatus Schiner, 1868, *Novara Reise Dipt.*: 186.
Type in Vienna. Type-locality: Cape of Good Hope.
Distribution. CAPE PROVINCE. NATAL.

– Acrostichals hair-like, pluriserial before and behind suture. Yellow, grey and black species 2

2. Prescutellar part of mesonotum (between dc) with long *black* hairs, continued on disc of scutellum. A relatively large, elongate species. Wings heavily blackened over most of area, not spotted on crossveins.
natalensis Ricardo
(? *nigricans* Wiedemann)

Neodasophrys natalensis Ricardo, 1920, *Ann. Mag. nat. Hist.* (9) 5: 440.
Type in London. Type-locality: NATAL, Karkloof.
? *Asilus nigricans* Wiedemann, 1821, *Dipt. exot.*: 195.
Type in Vienna. Type-locality: 'vom Kap'.
Distribution. ? CAPE PROVINCE. NATAL: Karkloof.

– Prescutellar part of mesonotum (between dc) with long *white* hairs, also on disc of scutellum. Wings not heavily and uniformly infuscated 3

3. An abundant cluster of strong black bristles on prescutellar part of mesonotum, almost obscuring white hairs. Wings moderately dilated in male, only faintly greyish in apical half.
paron Walker
(? *longibarbus* Loew)

Asilus paron Walker, 1849, *List Dipt. Brit. Mus.* **3**: 450.
Type in London. Type-locality: 'S. Africa' (Dr A. Smith).
? *Asilus longibarbus* Loew, 1857, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **14**: 366.
Type in Berlin. Type-locality: 'Caffraria' (Wahlberg).
Distribution. CAPE PROVINCE. NATAL: junction of Blauw Krantz & Tugela R. (G. A. K. Marshall); 16 km N. Jozini (Irwin). MOÇAMBIQUE: Inhaca (Vári).

– Without this distinctive cluster of black bristles 4

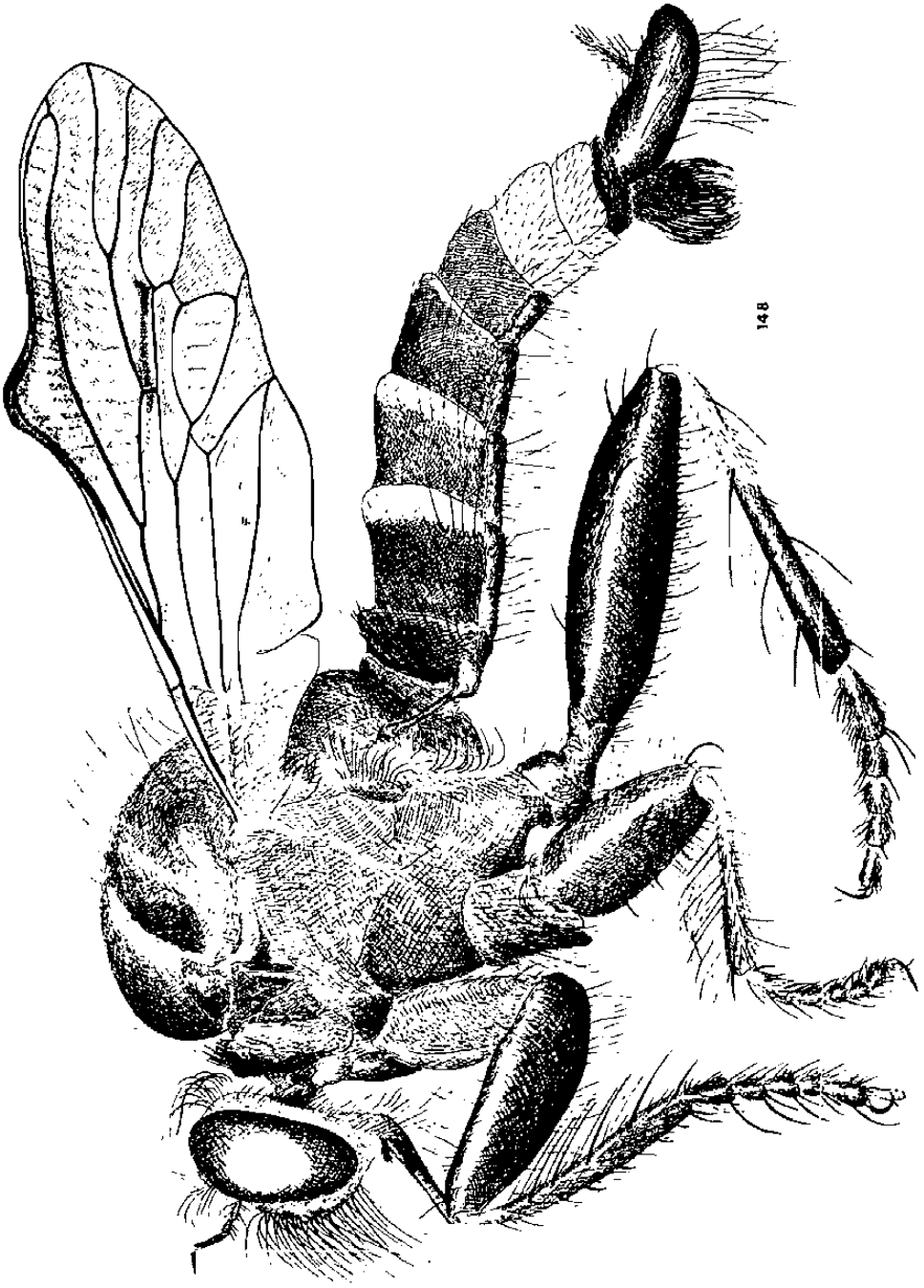


Fig. 148. *Dasophrys hypselopterus* Engel ♂. 22 mm.

4. Hairs in front of halteres black. Legs without conspicuous yellow hairs. Wings of male dilated 5
– Hairs in front of halteres fine, yellow. Legs with fringes of dense, long, yellow hairs. Wings of male not dilated, but spotted on crossveins.

androclea Walker
(*hirsutus* Ricardo)

Lophonotus androclea Walker, 1949, *List. Dipt. Brit. Mus.* **2**: 411.
Type in London. Type-locality: 'S. Africa' (Dr A. Smith).
Neodasophrys hirsutus Ricardo, 1920, *Ann. Mag. nat. Hist.* (9) **5**: 442.
Type in London. Type-locality: NATAL, Port Shepstone (G. A. K. Marshall).
Distribution. NATAL: various localities.

5. Wings spotted.

punctipennis Engel

Neodasophrys hirsutus Ricardo, var. **punctipennis** Engel, 1927, *Ann. Transvaal Mus.* **12**: 143.
Type in Pretoria. Type-locality: 'Cape Colony' (Dr Brauns).
Distribution. ? CAPE PROVINCE. NATAL: Pietermaritzburg, Town Bush (Irwin).
N.B. Not a form of *hirsutus*, which is synonymous with *androclea* Walker, above.

– Wings not spotted on crossveins, but infuscated on apical half.

hypselopterus Engel

Dasophrys hypselopterus Engel, 1929, *Ann. Transvaal Mus.* **13**: 155.
Type in London. Type-locality: RHODESIA: Vumba Mts.
Distribution. RHODESIA: Vumba Mts and Chirinda Forest.

Genus *Dysclytus*

Dysclytus Loew, 1857, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **14**: 363. Type-species: *Dysclytus spurcus* Loew, monotypic (= *Asilus firmatus* Walker).

This is a striking and distinctive robber fly which—as often happens—was described independently by two different authors in the same year. Walker's paper was read to the Entomological Society of London on 2 February 1857, and published in April 1857, whereas Loew's paper appeared on 14 October 1857, as stated at the foot of p. 337 of the work. The synonymy was correctly indicated by Miss Ricardo (1920: 439–40), and the genus must be credited to Loew, but the species to Walker.

Fig. 144 shows the general appearance of this fly, which can be puzzling at first glance, although it traces down through the key to genera. It looks more like a *Machimus* than a member of the *Neolophonotus* group, but the bare metanotal lobes locate it correctly. Both male and female genitalia are fairly distinctive, resembling only those of *Synolcus*. Indeed *Dysclytus* might almost be a variant of *Synolcus*, lacking the constricted discal cell and the dilated costa of the male.

I have seen specimens of two species from Natal, much smaller and more fragile, which might possibly belong here. One of them was indeed labelled '*Dysclytus* n. sp.' by Miss Ricardo, but I am not at present prepared to accept this assignment.

Robust, yellow-grey, bristly species. Dorsocentral bristles extending halfway from the transverse suture to the front of the mesonotum, but without acrostichals (the apparent acrostichals seen in fig. 144 are clothing hairs in profile), and therefore not forming a mane. Mesonotum grey at sides, with heavy black pattern; abdomen both dorsally and ventrally covered with dull yellow tomentum and an indistinct, narrow,

blackish median stripe. Femora black, indistinctly reddish posterodorsally. Male and female genitalia large and characteristic (fig. 144).

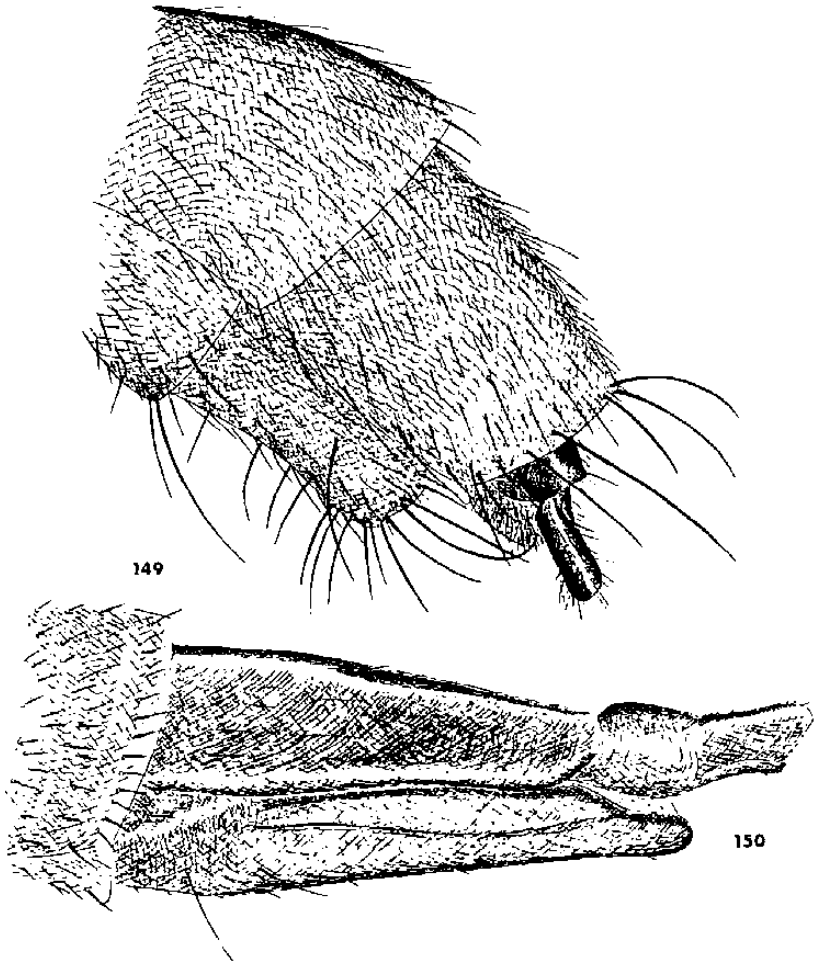
firmatus Walker
(*spurcus* Loew)

Asilus firmatus Walker, 1857, *Trans. ent. Soc. Lond. N.S.* **4** (4): 130.
Type in London. Type-locality: NATAL, Port Natal.
Dysclytus spurcus Loew, 1857, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **14**: 363.
Type in Berlin. Type-locality: 'Caffraria' (Wahlberg).
Distribution. NATAL: Port Natal; Willow Grange; Tongaat. CAPE PROVINCE: Lady Grey. TRANSVAAL: Elandshoek.

Genus *Heligmoneura*

Heligmoneura Bigot, 1858, in Thomson, *Voyage au Gabon, Arch. Ent.* **2**: 356. Type-species: *Heligmoneura modesta* Bigot, monotypic.

In my review of the Asilidae of the Philippine Islands (Oldroyd 1972: 276) I quoted five names in the synonymy of this genus, four of them based upon Oriental types.



Figs 149–150. (149) Female genitalia of *Heligomoneura laevis* Engel—note short, downturned ovipositor, and compare with fig. 150; (150) ovipositor of *Neomochtherus annulitarsis* Loew.

Only *Heligmoneura*, the oldest name, has an African type-species. It can be said with confidence that *Heligmoneura* is applicable to the African species, and the status of the other four names can be left aside for present purposes. When some future student undertakes a revision of African *Heligmoneura* it will be necessary for him to enquire into these.

Heligmoneura is one of the most important genera of Asilini, and could well be a focal point of any further subdivision, either of the tribe or of the whole family. The name refers to the conspicuous double bend in vein R_5, from a Greek root meaning the bending of a bone without fracture, sometimes called a 'green stick' fracture. This character is not unique to *Heligmoneura*, but is found in some genera related to *Machimus* (Asilini) as well as in many species of *Ommatius* (Ommatiini). These three groups may be convergent in this character, in which case the 'kinky' vein must presumably confer some mechanical advantage to the wing. If it is not convergent, but homologous in the three groups, this fact is significant in the phylogeny of the Asilidae.

In the African fauna confusion has sometimes arisen between *Heligmoneura* and two other genera, *Neomochtherus* and *Hoplopheromerus*, both of which have been studied recently by Dr L. Tsacas, of the Paris Museum. The separation of *Helig-*

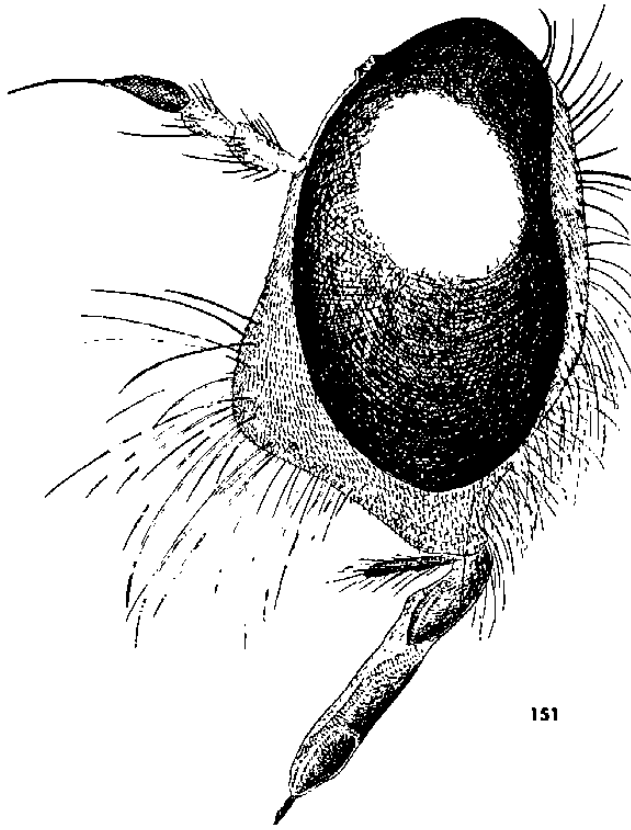
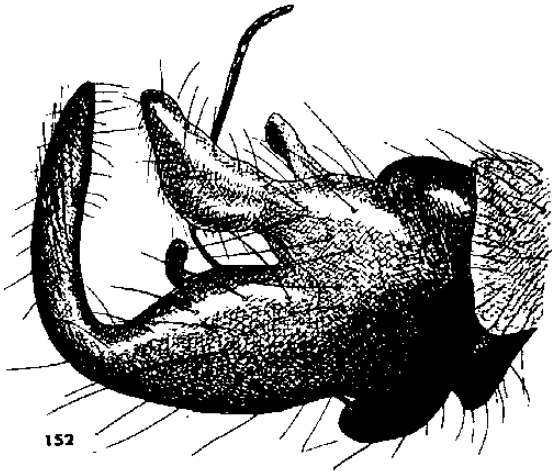
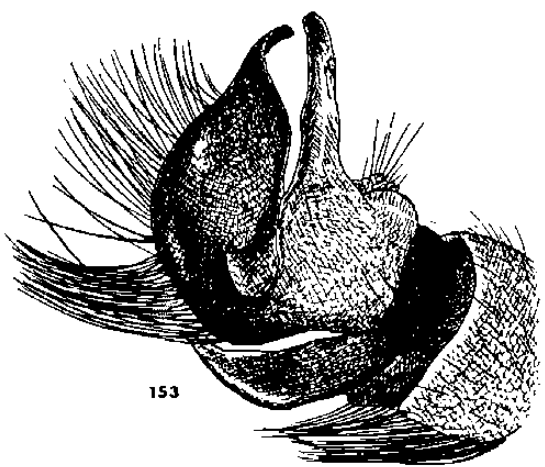
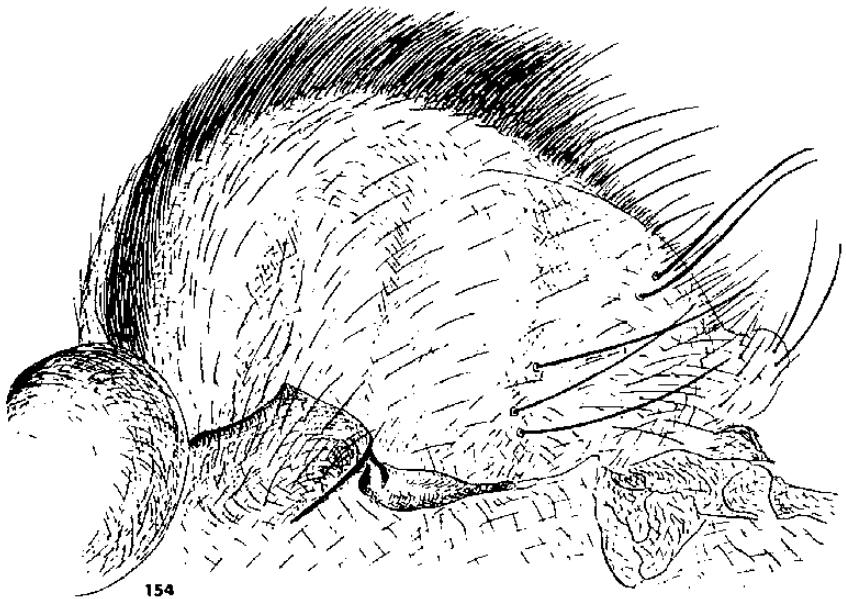


Fig. 151. Head of *Heligomoneura laevis* Engel. Note the nose-like profile.







Figs 152–154. (152) Male genitalia of *Heligmoneura laevis* Hermann; (153) male genitalia of *Heligmoneura modesta* Bigot; (154) oblique view of thorax of *Hippomachus* to show the dense 'mane' which extends to the anterior border of the mesonotum.

moneura from *Neomochtherus*, of which it was once considered to be a synonym, is simplified by the difference in ovipositor in the two genera. In *Heligmoneura* the ovipositor is short and downturned (fig. 149), whereas in *Neomochtherus*, as in *Cerdistus*, *Machimus* and other asiline genera, the ovipositor is laterally flattened (fig. 150).

Hoplopheromerus was one of several segregates established by Becker (1925) among Oriental Asilini. Dr Tsacas and I (Tsacas & Oldroyd 1967) wrote a joint paper on *Hoplopheromerus*, showing that there were African as well as Oriental species. These are in West and Central Africa, with none in the area under present study. The definitive character of *Hoplopheromerus* is an intensely spiny middle femur, but a certain degree of spinulation of this femur also occurs in *Heligmoneura*, and could lead to confusion. In doubtful cases *Heligmoneura* may be recognized by the curiously nasute profile of the face (fig. 151) as well as by the strikingly cleft upper forceps of the males of most species. There is one known South African species.

General colour grey, with light brown pattern. Legs orange, only extreme tips of femora, tibiae and tarsomeres black, especially on hind legs. Mesonotum with very short, bristly, black clothing hairs. Most readily recognized by male genitalia (fig. 152).

laevis Engel

Heligmoneura laevis Engel, 1927, *Ann. Transvaal Mus.* **12**: 137.
Type in Pretoria. Type-locality: TRANSVAAL, Waterberg District, Platriver.
Distribution. TRANSVAAL. MALAWI. ? ZAÏRE.

Although the male genitalia seem distinctive, and abundantly different from neighbouring species such as *modesta* Bigot (fig. 153), which may extend into Malawi, specimens from different countries show variation in the relative proportions of the lobes and processes. It is possible that two or three species may have male genitalia of the same general type, but fortunately the form from the Transvaal is the authentic *laevis* Engel.

Genus *Hobbyus*

Merogymnus Hobby, 1933, *Ent. mon. Mag.* **69**: 111. Type-species: *Merogymnus nigroflavipes* Hobby by original designation. Preoccupied in Pisces.
Hobbyus Bromley, 1952, *Durban Mus. Nov.* **4**: 21. Change of name.

According to Hobby his *Merogymnus* is 'distinguished from *Dasophrys* by the general swelling of the face, and from *Dysclytus* by the proclinate occipital bristles and the widened wings of the male'. Hull (1962: 526) says: 'The rectangular anterior cross-vein and unexpanded base of the second posterior cell separate it from its allies', but this can hardly be correct, since Loew (1860: 166) says of *Dasophrys*: '. . . die kleine Querader senkrecht. . . . die zweite Hinterrandzelle nach vorn hin kaum etwas erweitert.'

The genus was founded for a new species *Merogymnus nigroflavipes* Hobby from Rhodesia, and Bromley (1947: 114) added a second species *Merogymnus minor* from Eshowe, Zululand. I am not convinced that they are really congeneric, and I think the best plan is to identify them specifically and then compare the specimens thus identified with *Dasophrys* and *Synolcus*.

Key to the two described species of *Hobbyus*

1. A larger species (18–20 mm), yellowish grey, with large dark spots on the abdomen. Wing (♂) slightly widened on fore border. Pale hairs of head yellow, and

proclinate occipital bristles mainly or entirely yellow. Upper forceps of male 'simple, twice as long as broad, somewhat rectangular in shape, but rounded distally. . . '.

nigroflavipes Hobby

Merogymnus nigroflavipes Hobby, 1933, *Ent. mon. Mag.* **69**: 112.
Type in Oxford. Type-locality: RHODESIA, Mt. Chirinda.
Distribution. RHODESIA.

– A smaller species (13–15 mm), black, greyish pollinose, with the usual dark markings on mesonotum and abdominal tergites. Wing of male 'decidedly dilated'. Pale hairs of head white, proclinate occipital bristles black. Upper forceps of male 'more slender and elongate, hooked at tip'.

minor Bromley

Merogymnus minor Bromley, 1947, *Ann. Durban Mus.* **3**: 114.
Type in Durban. Type-locality: ZULULAND, Eshowe.
Distribution. ZULULAND. ? CAPE PROVINCE: Port St Johns.

Genus *Neolophonotus sensu lat.*

Lophonotus Macquart, 1838, *Dipt. exot.* **1** (2): 125. Type-species: *Lophonotus auribarbis* Macquart (= *Asilus chalcogaster* Wiedemann), by designation of Coquillet, 1910. Preoccupied Lepidoptera.
Neolophonotus Engel, 1925, *Bull. Soc. ent. Egypte* **8**: 347. Change of name.

Subgenera

Neolophonotus Engel, 1925, *sensu stricto.*
Megadrillus Bigot, 1857, *Ann. Soc. ent. France* (3) **5**: 545.

Type-species: *Lophonotus heteroneurus* Macquart, by original designation.

Hippomachus Engel, 1927, *Ann. Transv. Mus.* **12**: 148. Change of name for:
Trichonotus Loew, 1857, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **14**: 362, 365.

Preoccupied in Pisces and in Coleoptera.

Lophybus Engel, 1925, *Bull. Soc. ent. Egypte* **8**: 348.

Type-species: *Lophonotus melanolophus* Loew, 1858.

Lophopeltis Engel, 1925, *Bull. Soc. ent. Egypte* **8**: 348.

Type-species: *Lophonotus erythracanthus* Hermann (= *Asilus comatus* Wiedemann), by original designation.

Antilophonotus Lindner, 1955, *Jhft. Ver. vaterl. Naturk.* **110**: 38.

Type-species: *Antilophonotus maculipennis* Lindner, by original designation.

Engel's (1927) paper is a most useful guide to the whole *Neolophonotus* complex, with excellent figures of genitalia. It is not without its difficulties and inconsistencies, and of course it is now over forty years old, but the few new species described since then can be listed from the *Catalogue*.

This group offers an attractive subject for an extensive study by someone working as well as collecting in southern Africa, but I shall not attempt to amplify Engel's paper in the present work. Figs 154–157 illustrate the principal features mentioned in the key to genera.

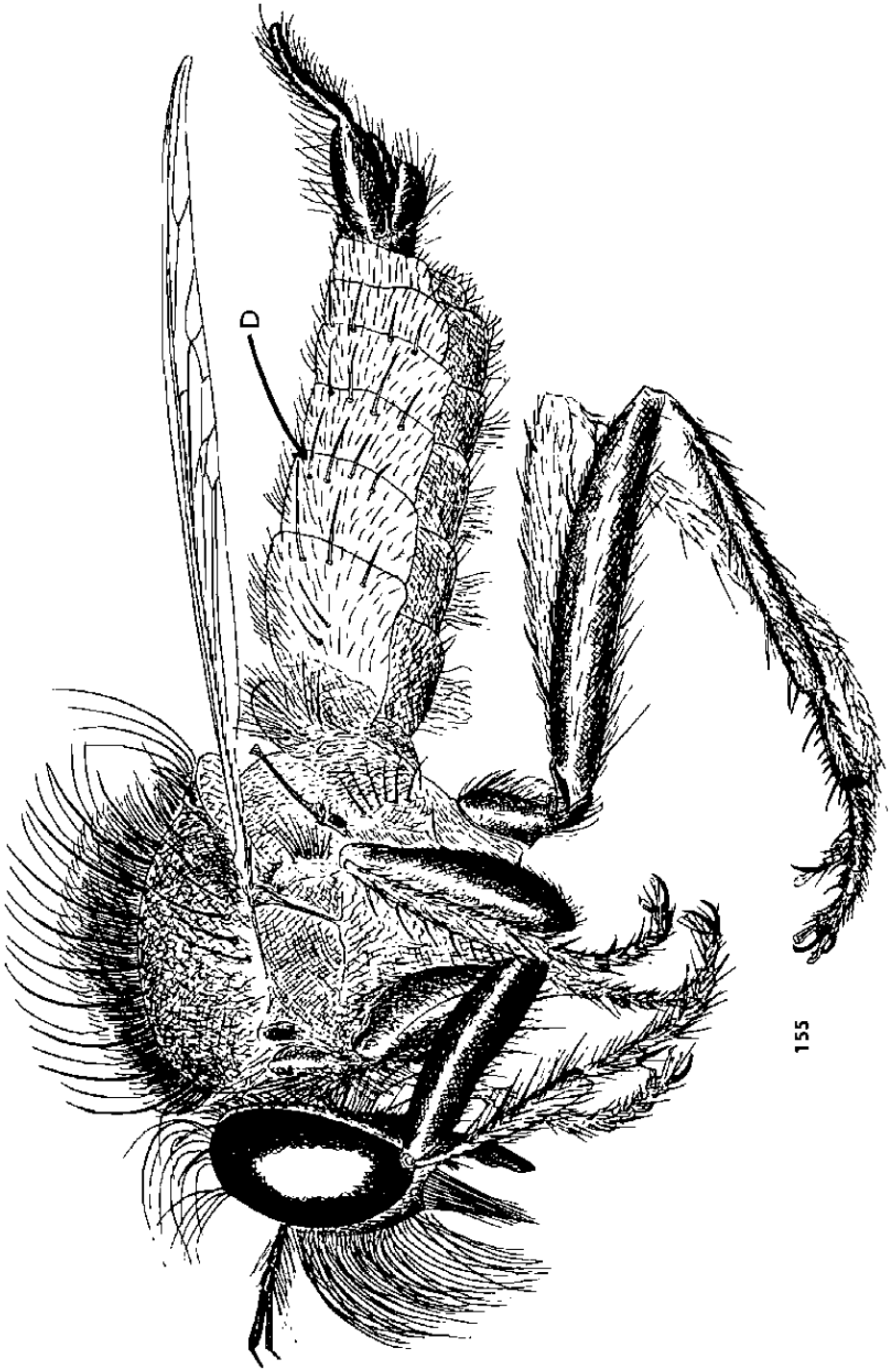


Fig. 155. *Lophopeltis wroughtoni* Ricardo ♂. 14 mm.

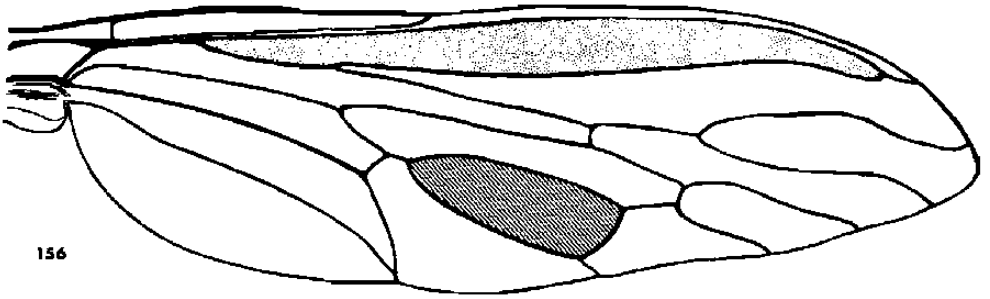


Fig. 156. Wing of *Lophopeltis*, showing closed marginal (stippled) and fourth posterior (cross-hatched) cells.

Genus *Neomochtherus*

Mochtherus Loew, 1849, *Linn. Ent.* **4**: 58. Preoccupied in Coleoptera.
Neomochtherus Osten-Sacken, 1878, *Cat. Descr. Dipt. N. Amer.*: **82**, 235. Change of name.

Separated from *Heligmoneura*—with which it was at one time synonymized—by the laterally flattened ovipositor, in contrast to the short, downturned ovipositor of *Heligmoneura* (figs 149, 150).

Tsacas has made a special study of this genus in a series of papers. His revision of the African species (Tsacas, 1969) gives a thoroughgoing account of their taxonomy and distribution, and I shall not attempt to add to it.

Genera *Dysmachus* and *Machimus*

Machimus Loew, 1849, *Linn. Ent.* **4**: 1. Type-species: *Asilus chrysitis* Meigen, 1820, by designation of Coquillet, 1910.
Dysmachus Loew, 1860, *Dipt-Fauna Südafr.* **1**: 142, 145. Type-species: *Asilus trigonus* Meigen, 1804, by designation of Coquillet, 1910.

Two characteristically Palaearctic genera, which have been recorded from other regions, but usually mistakenly.

Machimus readily extends into mountainous regions—in the Himalayas it merges into a genus *Trichomachimus*, with the hirsute appearance often associated with cold climates—and so not unexpectedly has species in the highlands of eastern Africa.

Dysmachus was originally described by Loew in his *Dipteren-Fauna Südafrikas*, but the only species included were from Algeria, Egypt and Nubia, i.e. the southern fringe of the Palaearctic Region. Subsequent authors described many African species of *Dysmachus*, but Engel (1927) showed that this was due to confusion with the abundant African species of the *Neolophonotus* group; both taxa have a mesonotal mane, but *Dysmachus* has hairy metanotal lobes, whereas the *Neolophonotus* group have them bare. Apart from this seemingly minor difference, the two groups are in fact not closely related.

Neither *Dysmachus* nor *Machimus* has South African species.

Genera *Neoitamus* and *Astochia*

Itamus Loew, 1849, *Linn. Ent.* **4**: 84. Type-species: *Asilus cyanurus* Fabricius. Preoccupied.
Neoitamus Osten-Sacken, 1878, *Cat. N. Amer. Dipt.* (2): 82. Change of name.
Astochia Becker, 1913, *Ann. Mus. zool. Sci. St. Petersburg* **17**: 538, Type-species: *Astochia metatarsata* Becker, monotypic.

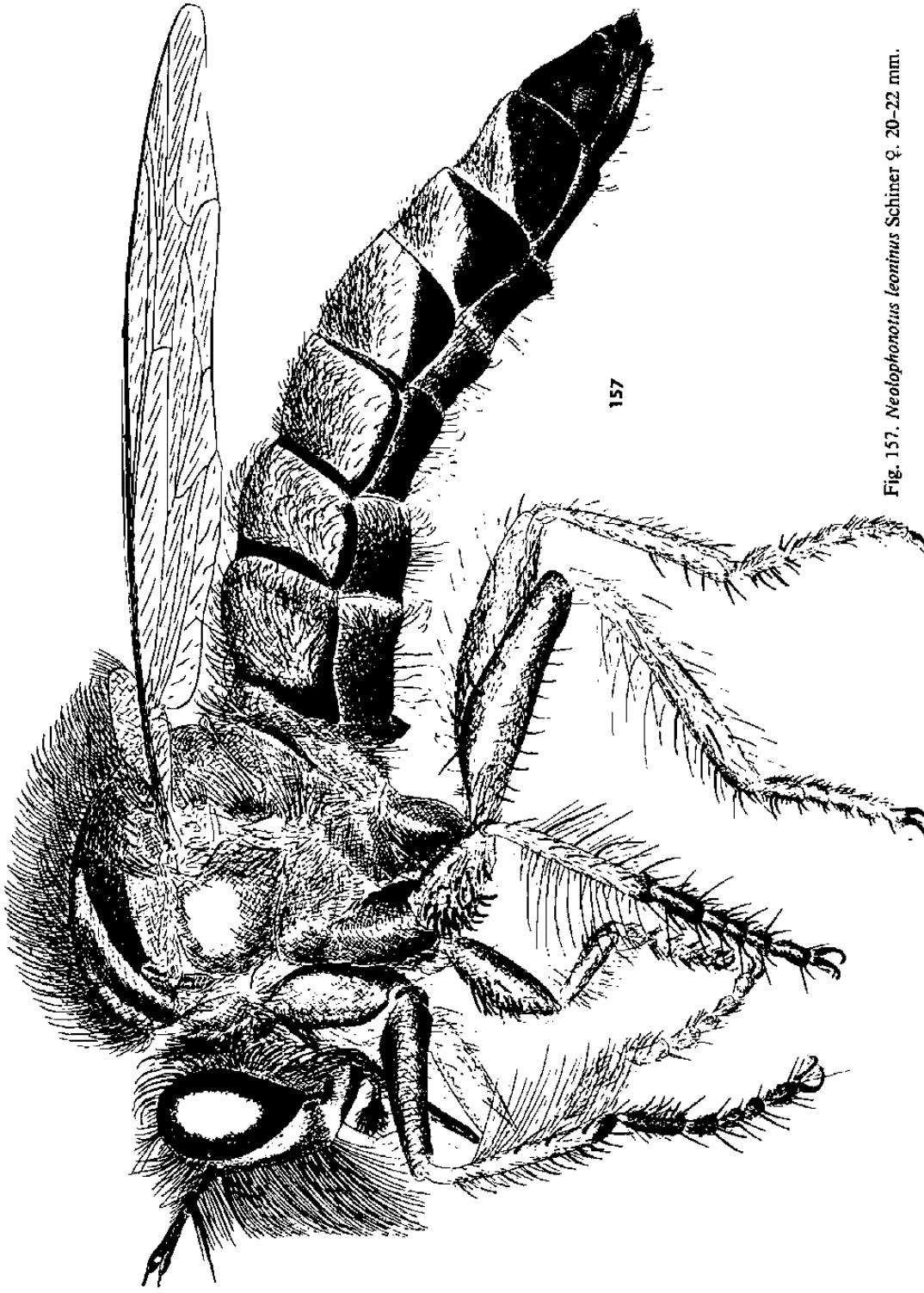


Fig. 157. *Neolophonotus leoninus* Schiner ♀. 20–22 mm.

These are not synonymous, but two abundantly distinct genera, which share a rather similar type of telescopic ovipositor. *Neoitamus* is principally a genus of temperate countries in both hemispheres, though the Australian species—some of which are segregated into *Trichoitamus*, *Rhabdotoitamus*, etc.—may not be truly congeneric. Apart from the telescopic ovipositor, which they share, they are easily distinguished by the postoccipital bristles, which are proclinate in *Neoitamus*, straight in *Astochia*. *Astochia* also has characteristically swollen basitarsi on fore and middle legs—hence the specific name of the type-species, *metatarsata*—and the pedunculate male genitalia are rather distinctive.

Both genera occur in central and eastern Africa, *Astochia* as a tropical genus, and *Neoitamus* presumably as a stray from the Palaearctic Region. No species has yet been recorded from southern Africa, but these two genera are mentioned here, and included in the key to genera, because it is not unlikely that one day South African species will be found.

Genus *Synolcus*

Synolcus Loew, 1858, *Öfv. Kongl. Vet.-Akad. Förhandl.* **14**: 362. Type-species: *Asilus dubius* Macquart, by designation of Loew, 1860.

This attractive genus is characterized by a strong forward curvature of vein M_3, resulting in a marked constriction of the discal cell (figs 158, 161). In males this is often, but not always, accompanied by a dilation of the costal margin. The ovipositor is elongate, sword-like, as in a few other genera of Asilini, but not in *Neolophonotus sensu lat.* The male genitalia are fairly characteristic, though not easy to describe; the superior forceps are large in relation to the rest, and prominently angled upwards (fig. 158).

Synolcus was described from South Africa, and, as so often, Oriental tropical species were added at a later date. Eventually these were segregated, on the basis of their hairy metanotal callosities, into *Clephydroneura* Becker, which was revised by Oldroyd, 1938. This left *Synolcus* as a purely African genus, which Engel (1927, 1929) recognized as an outlier of the *Neolophonotus* cycle of genera.

Key to the species of *Synolcus*

1. Femora yellow with black streaks or patches.....2
- Femora entirely black.....3
2. Yellowish species. Femora with a short black stripe and a subapical spot (fig. 158). Each tergite of abdomen with a black saddle-spot. Ovipositor, fig. 159.

dubius Macquart

Asilus dubius Macquart, 1846, *Dipt. exot. Suppl.* **1**: 89.
Type in Paris. Type-locality: NATAL, Port Natal and 'Caffraria'.
Distribution. NATAL. CAPE PROVINCE: 'Caffraria'. Coffee Bay (J. G. H. Londt).

- Black and brownish grey species. Femora with a long, black stripe. Each tergite of abdomen with three narrow longitudinal stripes.

tenuiventris Loew

Synolcus tenuiventris Loew, 1857, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **14**: 362.
Type in Berlin. Type-locality: 'Caffraria' (Wahlberg).
Distribution. CAPE PROVINCE. ? TRANSVAAL: Nelspruit.
N.B. The differences between *dubius* and *tenuiventris* given in this couplet are taken from Engel (1927: 144), but I am not convinced of their validity. It is probable that they are

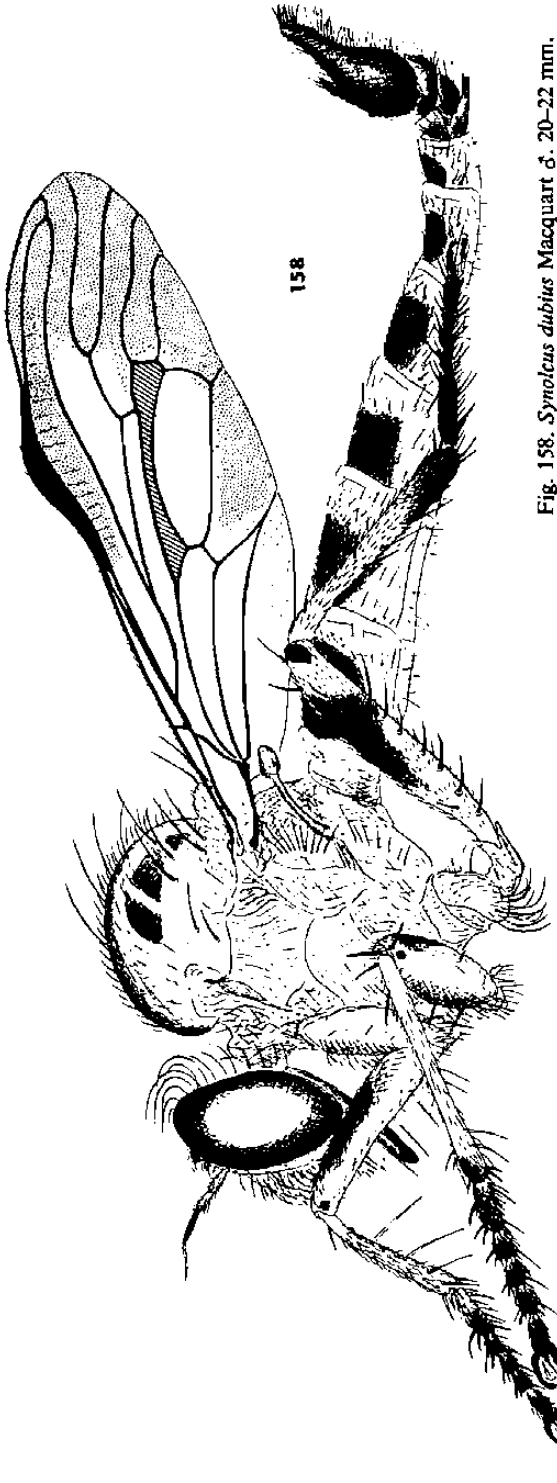


Fig. 158. *Synolcus dubius* Macquart ♂. 20–22 mm.

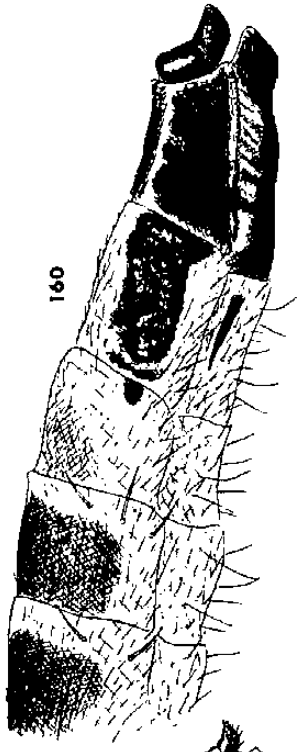


Fig. 160. Ovipositor of *Synolcus dubius* Macquart.

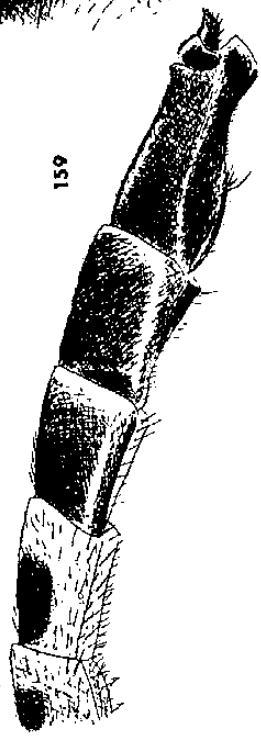


Fig. 159. Ovipositor of *Synolcus griseus* Engel.

merely lighter and darker specimens of one species, which is the biggest and most prominent species of *Synolcus*.

3. Wing with an apical spot, most obvious in males. Both sexes have an additional crossvein near apex of subcostal cell (A in fig. 161). A small, dark species. Male abdomen with 3 interrupted brown lines.

acrobaptus Wiedemann
(*signatus* Loew)

Asilus acrobaptus Wiedemann, 1828, *Auss. zweifl. Ins.* **1**: 449.
Type in Vienna. Type-locality: 'Kap'.
Synolcus signatus Loew, 1858, *Öfvers. Kongl. Vet.-Akad. Förhandl.* **14**: 262.
Type in Berlin. Type-locality: 'Caffraria' (Wahlberg).
Distribution. CAPE PROVINCE: Cape Town (Péringuey); Sea Point; Paarl Mt. (Miss Mackie); Seven Weeks Poort (Potgieter & Jones).

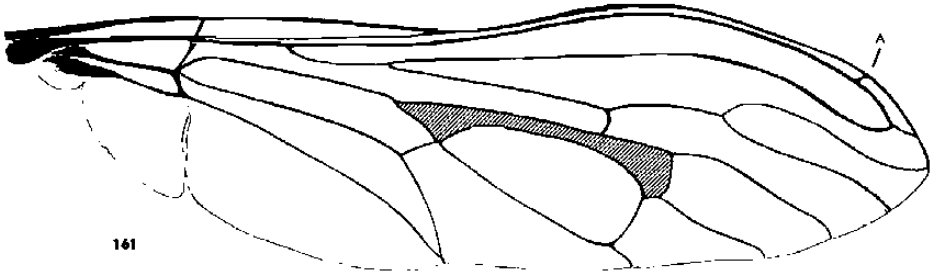


Fig. 161. Wing of *Synolcus acrobaptus* Wiedemann ♂. Note constricted discal cell (shaded), and supplementary vein linking R_1 with costa.

– If wing is infuscated at tip this does not give the effect of a well-defined spot. Venation normal.....4

4. A small, black species. Male abdomen with silvery grey tomentum and shifting darker pattern. Thorax of both sexes with a sharply defined pattern of denuded median stripe and three lateral spots on each side. Ovipositor short as in fig. 159.

griseus Engel

Synolcus griseus Engel, 1927, *Ann. Transv. Mus.* **12**: 146.
Type in Pretoria. Type-locality: 'Cape Colony'.
Distribution. CAPE PROVINCE: Seven Weeks Poort (Potgieter & Jones). TRANSVAAL: Gladdespruit R., Headwaters at Kaapsehoop (Stuckenberg).

– A larger, yellowish species. Abdomen with golden tomentum, and clothed with short yellow hairs. Mesonotum dull golden yellow, with a fairly distinct brown median stripe, but little traces of lateral spots. Ovipositor longer, resembling that of *dubius* (cf. fig. 160).

aurulentus Engel

Synolcus aurulentus Engel, 1929, *Ann. Transv. Mus.* **13**: 156.
Type in Pretoria. Type-locality: CAPE PROVINCE, Knysna.
Distribution. CAPE PROVINCE: Knysna (Brauns); Port Elizabeth (J. S. Taylor).

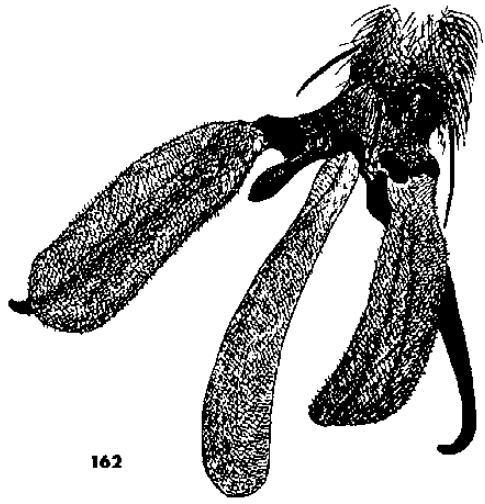
APPENDIX

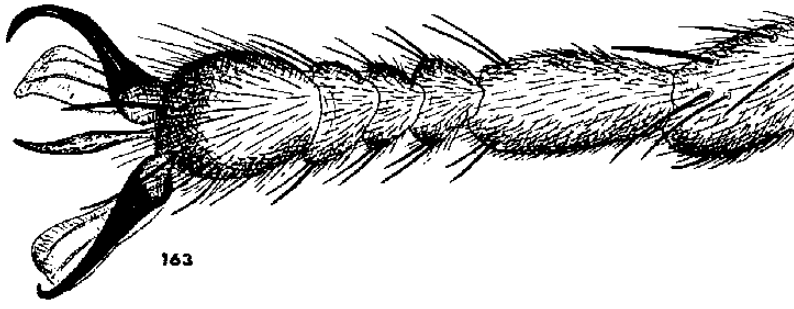
Genus *Empodiodes*

Empodiodes Oldroyd, 1972, *J. nat. Hist.* **6**: 635. Type-species: *Empodiodes greatheadi* Oldroyd, by original designation.

I described this peculiar fly at length, pointing out that the appearance of 'three pulvilli'—i.e. of a padlike empodium instead of the normal bristle—seems to be a secondary development, not a survival from some primitive condition. Apart from this peculiarity the genus seems to be related to *Lycostomus* and *Scylaticus*, but it is sufficiently different from any of these to make it difficult to accommodate in the generic key to Saropogonini, at least until more specimens are available for comparative study. There is one known species.

Head and tarsi as in figs 162–165. Resembles *Scylaticus* in its black and red ground





Figs 162–163. (162) Hind tarsus of *Empodiodes greatheadi* Oldroyd, showing pulvilliform empodium; (163) fore tarsus of *Empodiodes greatheadi* Oldroyd, showing slightly expanded empodium, but less pulvilliform than hind tarsus.

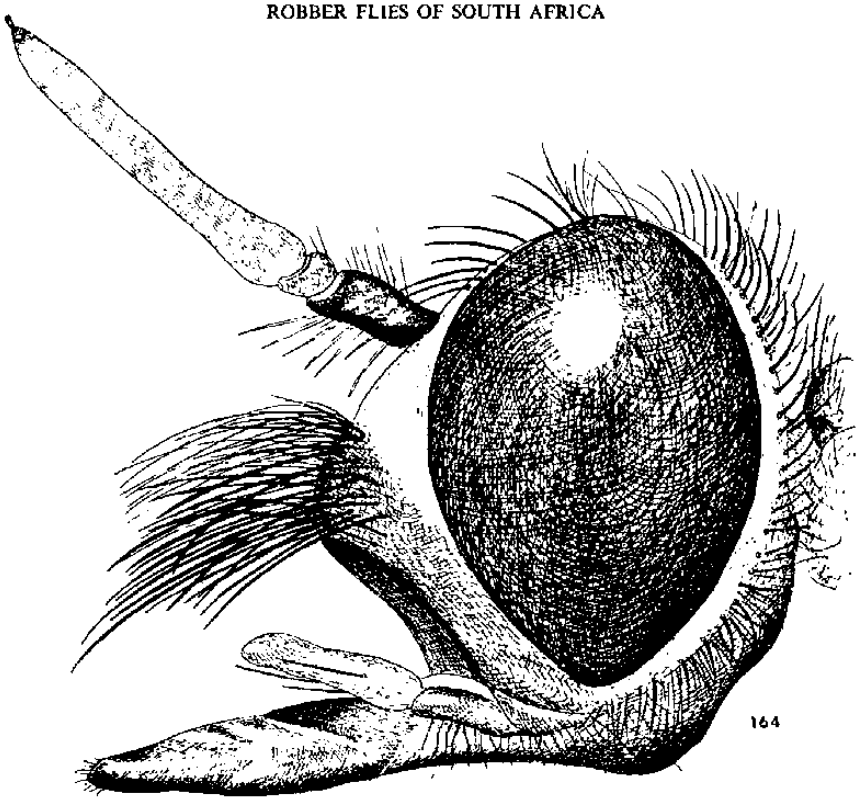


Fig. 164. Head of *Empodiodes greatheadi* Oldroyd, in side view.

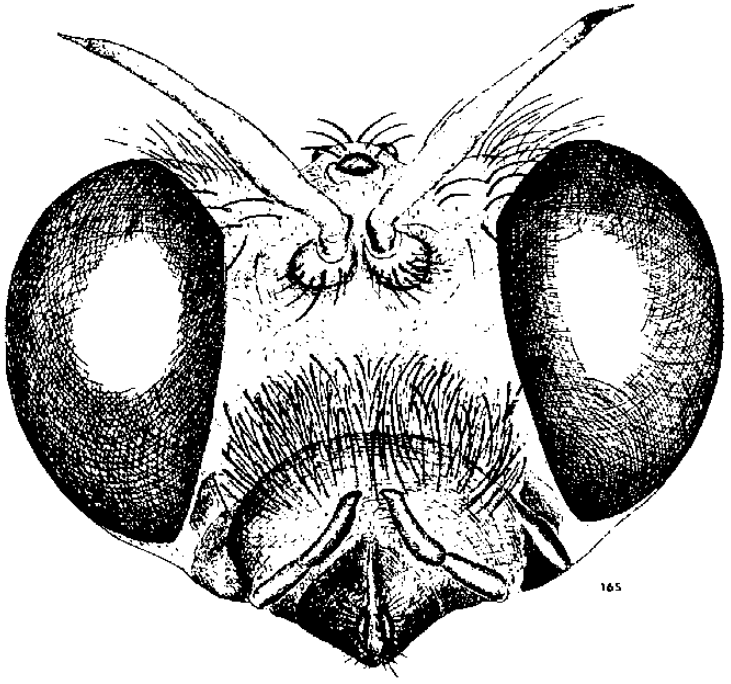


Fig. 165. Head of *Empodiodes greatheadi* Oldroyd in front view.

colour, with a superficial pattern of grey tomentum. Lower face brown, upper face whitish, mystax black. Prothorax large and bristly. Mesonotum with conspicuous dark brown pattern. Abdomen dorsally mainly orange, with a black basal band on some segments, and apicolateral grey triangles. Legs dull reddish, only tips of tarsi black. Wings smoky grey, more brownish along veins.

greatheadi Oldroyd

Empodiodes greatheadi Oldroyd, 1972, *J. nat. Hist.* 6: 637.
Type in London. Type-locality: CAPE PROVINCE, Alicedale, 16.xii.71 (D. & A. Greathead).
Distribution. Known only from unique male holotype.

Genus *Oxynoton*

Oxynoton Janssens, 1951, *Bull. Inst. R. Sci. nat. Belge* 27 (54): 1. Type-species: *Oxynoton francoisi* Janssens, monotypic.

This genus was erected for a single species from Urundi that had the general appearance of a *Xenomyza*, but with the antennae of *Rhipidocephala*, and acanthophorites like *Oligopogon*. Its outstanding feature was the extremely elevated mesonotum, rising into an exaggerated hump (fig. 166). A similar development is seen in certain South American genera which Hull places in the subfamily Megapodinae, see his figure of *Pseudorus piceus* Walker (Hull 1962: 429, fig. 29). Apparently no one has dissected a fresh specimen of any of these genera in order to find out if the thoracic hump is empty, or if it accommodates enlarged muscles and is associated with any peculiarities of flight.

Fig. 166. Thorax of *Oxynoton francoisi* Janssens.

Janssens apparently thought of it as a progressive elevation of the crest of the mesonotum, since he subsequently described another genus *Paroxynoton*, intermediate between *Oxynoton* and *Rhipidocephala*. Oldroyd (1966: 147) merged *Paroxynoton* with *Rhipidocephala*, but retained *Oxynoton* as clearly distinct because of its well-developed acanthophorites, which are absent in both *Rhipidocephala* and *Xenomyza*.

Until now the only known species of *Oxynoton* was *francoisi* Janssens, described from Urundi, and in the British Museum collection from localities in Tanzania and Kenya. A collection of Asilidae sent to me through the good offices of Prof. Paul H. Arnaud, jnr., of the California Academy of Sciences, contains a single female of a second species of *Oxynoton*, from Rhodesia, and hence within the scope of the present paper.

Key to species of *Oxynoton*

1. Mesonotum of the shape shown in fig. 166, more pointed. In clear specimens boldly patterned in red, with black median stripes and large black lateral spots as shown; the red colour may be subdued, especially in greasy specimens. Scutellum black with red rim, or entirely red. Hind femora moderately swollen, black, with red at base and tip.

[*francoisi* Janssens]

Oxynoton francoisi Janssens, 1951, *Bull. Inst. Sci. nat. Belge* **27**: 1.
Type in Brussels. Type-locality: Urundi.
Distribution. URUNDI. TANZANIA. KENYA.

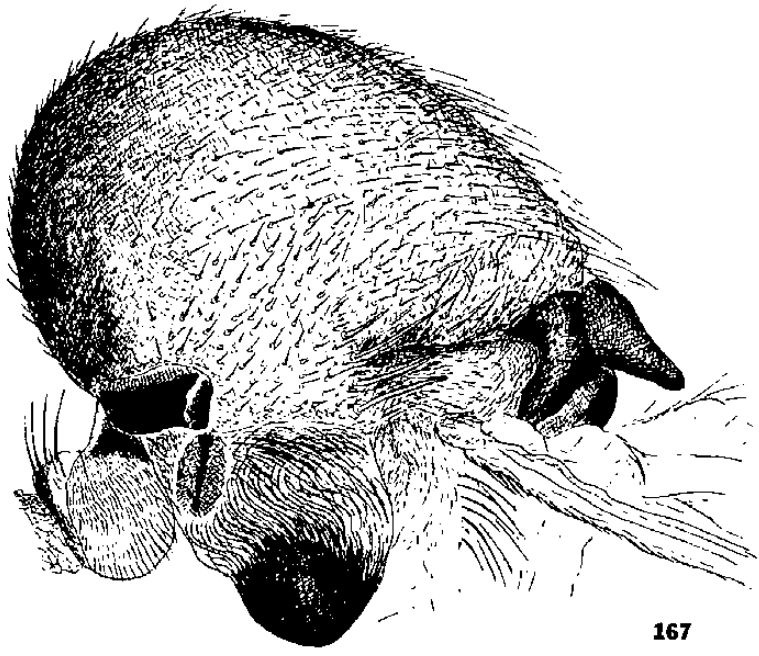


Fig. 167. Thorax of *Oxynoton arnaudi* sp. n.

– Mesonotum of the shape shown in fig. 167, more rounded; entirely black, heavily punctured, and with yellow clothing hairs shorter than those of *francoisi*, except posteriorly. Scutellum entirely black. Hind femora scarcely swollen, entirely reddish.

arnaudi sp. n.

Type in San Francisco. Type-locality: RHODESIA, 3 km N.W. of Balla Balla (E. S. Ross & H. R. Leach).
Distribution. Known only from unique type female.

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In an earlier paper (Oldroyd 1963: 13–16) I gave a comprehensive bibliography of African Asilidae up to that date, and Hull (1962: 813–874) dealt even more exhaustively with Asilidae on a world basis. I have therefore confined the present bibliography to those works that are directly relevant to Asilidae in southern Africa, and those few others that have appeared since 1963.

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