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A revision of the Xestomyza-group of Therevidae (Diptera)

by

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SYNOPSIS

The paper presents a revision of a group of Therevidae formed by eight African genera and one New World genus. The group is motivated as a monophyletic unit, especially on the basis of a study of the female and male terminalia. The nine genera and a total of 28 species, of which 20 are new to science, are described and figured. Keys are presented. The descriptions are supplemented by series of measurements. The male terminalia of nearly all species are illustrated. Some remarks are given on the phylogenetic relationships within the group and within the family Therevidae.

Five of the eight African genera are described as new to science. Three of them, *Delphacura* gen.nov., *Cochlodactyla* gen.nov. and *Ceratosathe* gen.nov. are monobasic and described on the basis of new species. *Microgephyra* gen.nov., with seven new species in it, is described. *Hemigephyra* gen.nov. includes two species, one of which is described as new. *Braunsophila* Kröber, 1931, and *Xestomyza* Wiedemann, 1820, are two other monobasic African genera. *Pseudoxestomyza longirostris* Kröber, 1912, is placed as a new synonym of *Xestomyza lugubris* Wiedemann, 1820. The last African genus, *Pentheria* Kröber, 1914, includes eight species, four of which are described as new. Two of the species, *Psilocephala rufipes* Bigot, 1889, and *Ectinorhynchus alternans* Loew, 1857, are placed in combination with *Pentheria* Kröb. for the first time. *Psilocephala xylophagoides* Enderlein, 1912, is a new synonym of *Pentheria rufipes* (Bigot, 1889). *Pentheria ponti* is a new name for *P. rufipes* Kröber, 1933 (*nec* Bigot, 1889). *Ectinorhynchus braunsi* Kröber, 1931, is placed in new combination with *Hemigephyra* gen.nov. The New World genus *Henicomyia* Coq. includes six species, five of which are described as new to science.

The African genera are restricted to southern Africa, only two species of *Pentheria* reach northwards to Rhodesia and Tanzania. *Henicomyia* occurs in Brazil, Peru, Costa Rica, Mexico and Arizona.

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INTRODUCTION

The present paper is a small step towards a world revision of the family Therevidae. It deals with a group containing eight South African genera and one New World genus and a total of 28 named and one unnamed species. The fact that 20 of these species and five of the genera are described herein as new to science indicates that our knowledge of the Therevidae is far from complete. The species treated here probably correspond to only one or two per cent of the World fauna.

The group formed by these nine genera is arbitrarily called the *Xestomyza*-group and is motivated as a monophyletic unit by using obviously apomorphous characters in the male and female terminalia (for further details, see the section on morphology). Its future status as a separate subfamily or as a tribe within a larger subfamily must await the revision of other parts of the family.

The descriptions are quite conventional, but are supplemented by some tables at the end of the paper giving measurements of a number of continuous state characters. The measurements are, where possible, taken for both sexes and are usually based on holotypes or lectotypes. The procedure for making these measurements is the same as used by Irwin (in press) in his study of the North American pherocerine Therevidae.

A further improvement on the descriptive work of earlier authors is the description and illustration of the male terminalia which were completely unknown in this group. After removing the tip of the abdomen with a pair of scissors and softening it in KOH, the terminalia were placed in glycerine and drawn in lateral view seen from the left side. Then the terminalia were dissected out and the different parts were drawn. All the parts are preserved in glycerine in microvials attached to the pin with the specimen.

Only 260 specimens form the basis of this taxonomic treatment. This includes all available material of described as well as undescribed species in about a dozen museums and other collections spread over four continents. Each specimen studied has been provided with a number on a small label reading 'Therevidae/L. Lyneborg/Specimen no. . . '. The numbers used run from 1001 to 1260. These numbers are given in the lists of material under the various species and are also used in the legends to figures and in the tables of measurements. By this method the actual specimen used can be located with certainty.

The following abbreviations are used in the lists of material:

BMNH: British Museum (Natural History), London, England.
CAS: California Academy of Science, San Francisco, U.S.A.
CIS: California Insect Survey, Univ. Calif., Berkeley, U.S.A.
CNC: Canadian National Collection, Ottawa, Canada.
CU: Cornell University, Ithaca, U.S.A.
DZSA: Departamento de Zoologia, Agricultura, Sao Paulo, Brazil.
MEI: Irwin Collection, Natal Museum, Pietermaritzburg, South Africa.
MZP: Museum Zoologica Poloniae, Warsaw, Poland.
NM: Natal Museum, Pietermaritzburg, South Africa.
NMW: Naturhistorisches Museum, Vienna, Austria.
NRS: Naturhistoriska Riksmuseum, Stockholm, Sweden.
SAM: South African Museum, Cape Town, South Africa.
SWRS: South West Research Station, Portal, Arizona, U.S.A.
TM: Transvaal Museum, Pretoria, South Africa.
USNM: United States National Museum, Washington, D.C., U.S.A.
ZIL: Zoologiska Institutionen, Lund, Sweden.
ZMB: Zoologisches Museum, Berlin, Germany.
ZMC: Zoological Museum, Copenhagen, Denmark.
ZMH: Zoological Museum, Helsinki, Finland.
UA: University of Arizona, Tucson, U.S.A.
UCR: University of California, Riverside, Cal., U.S.A.

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MORPHOLOGY OF THE *XESTOMYZA*-GROUP OF THEREVIDAE, WITH NOTES ON EVOLUTIONARY TRENDS IN THIS AND OTHER PARTS OF THE FAMILY

Head

Seen in profile the head is always higher than deep. In genera like *Hemigephyra* (fig. 162), *Braunsophila* (fig. 175) and *Ceratosathe* (fig. 176) the heads are nearly circular, i.e. the depth is nearly equal to the height. The same is true of some species of *Microgephyra* (fig. 13) and *Henicomyia*. The shortest heads are found in species of *Pentheria* (figs 71–74), but the differences in head profile seem to be determined mainly by the position of the frontal protuberance, i.e. by the position of the antennae. In most genera the frontal protuberance has a high position on the head, for which reason it is measured as forming a part of the depth of the head. The very low position of the frontal protuberance in *Pentheria* means that this part will not be included in the measurement of the depth of the head.

The antennae of the genera with a frontal protuberance in a high position have an orientation which is something intermediate between a line continuing the longitudinal axis of the head and a line continuing the frontal profile line. In *Pentheria*, where the frontal protuberance has a very low position, the antennae of some species have an orientation (see figs 71, 73) which continues the profile line of the frons, but it is interesting to note that there is a trend towards an obviously secondary more porrect orientation in other species of the genus (see figs 72, 74).

The eyes are normally very large and in some genera, i.e. *Microgephyra*, *Pentheria* and *Henicomyia*, reach from top to bottom of the head. In other genera (fig. 175) the eyes are smaller and do not reach to top or bottom of head, i.e. both frons and genae are clearly visible in lateral view. Tendencies towards enlargement of the upper facets in the males occur in several genera. Widely separated eyes in both sexes occur in most species of *Microgephyra* (figs 11, 14, 17, 20), and in *Henicomyia* (figs 206, 207, 209), *Braunsophila* (fig. 174) and *Xestomyza* (fig. 186). Though it is difficult to prove, it is the author's impression that the broad frons of *Microgephyra* and *Henicomyia* is a plesiomorphous condition, whereas it seems to be apomorphous in *Braunsophila* and *Xestomyza*. The other genera of the group have holoptic or nearly holoptic heads in the males, while the female heads are always dichoptic, i.e. have a broad frons.

The frons of the members of this group of Therevidae does not usually show distinct

frontal markings, as is often the case in the family. The colour is usually blackish with more or less tomentum. However, the tomentum forms a more or less distinct pattern on the lower part of frons in species of *Henicomyia*. The frons may be bare, or have longer or shorter pile which often has an irregular distribution.

The occiput is more or less protuberant. Postocular ciliation is always present on the upper part of the occiput; it is noteworthy that this is composed of strong setae, clearly differentiated from the normal pile, in both sexes of genera like *Pentheria* (fig. 73), *Henicomyia* (fig. 212), *Delphacura* (fig. 140) and *Microgephyra* (fig. 10). On the other hand, the male sex in *Braunsophila* (fig. 175), *Hemigephyra* (fig. 162) and *Ceratosathe* (fig. 176) has long and thin postocular setae which are not distinguishable from the normal pile, while the females of the same genera have these setae strongly differentiated. Pile is always present on the lower part of the occiput and is composed of shorter or longer, thin hairs. A number of occipital setae is normally present on the middle of occiput.

There is considerable diversity in the degree to which the genae are visible in lateral view. They can be practically invisible as in *Pentheria* (figs 71–74), or broadly visible as in *Braunsophila* (fig. 175) and *Xestomyza* (fig. 187), and they can have pile or not. The same is true of the face. There is an obvious correlation between the pile on the frons and the pile on the face and genae. If the frons is bare, the face and genae will also be bare. If the frons has short or scattered pile, the face and genae will be bare or have at most short and sparse pile. If the frons has a long and dense pile, the face and genae also will have long pile.

The morphological structure of the proboscis has not been studied. Its relative length shows considerable variation. The plesiomorphous condition is most probably found in genera like *Pentheria* (figs 71–74), *Henicomyia* (fig. 212) and *Delphacura* (fig. 140), where the proboscis does not reach beyond or only reaches slightly beyond the level of the antennal bases. The proboscis of these genera has broad labellae. The more or less elongate proboscis of *Braunsophila* (fig. 175), *Xestomyza* (fig. 187) and *Ceratosathe* (fig. 176) should therefore be interpreted as showing the apomorphous state.

The palpi are distinctly two-segmented in all genera. There is some variation in the relative length of the two segments, the apical segment being from about as long as to more than twice as long as the basal segment. The palpi are always shorter than the proboscis, but are relatively shorter in genera with a long proboscis than in genera with a short proboscis. The palpi always have shorter or longer pilosity.

The antennae vary in their relative lengths. In genera such as *Pentheria* (figs 71–74), *Braunsophila* (fig. 175) and *Ceratosathe* (fig. 176) they are distinctly shorter than depth of head; in other genera they are distinctly longer than the head. The relative length of the three antennal segments also shows a great diversity. The original condition seems to be that the first segment is shorter than or nearly as long as third segment (without style). In *Hemigephyra* (fig. 162), *Braunsophila* (fig. 175) and *Ceratosathe* (fig. 176), however, the first antennal segment is longer than the third segment, and this tendency reaches its climax in *Xestomyza* (fig. 187). The width of all segments may be nearly the same, or the first segment may be slightly narrower than the second and third segments, or the third segment may be wider than first and second segments, or the first segment may be strongly thickened in comparison with second and third segments. The first and second antennal segments always carry longer or shorter pile. There is a correlation between the length of

this antennal pile and of the pile on the frons and on the face and genae (see the figures).

The antennal style consists principally of two sections plus an apical spine. The two sections may be of equal length, or the apical one may be two or three times longer than the basal one, or the basal section may be a little longer than the apical one, or only one section may be obviously present as in *Henicomyia*. The spine at the apex is often distinct, though it is not visible by normal examination in *Henicomyia*, *Hemigephyra braunsi* and *Xestomyza*.

Thorax

The chaetotaxy of the mesonotum and scutellum is remarkably constant in the group. Two notopleural setae on each side occur in all genera. An additional short third notopleural seta occurs now and then. *Henicomyia hubbardii* has only one notopleural seta, but other *Henicomyia*-species have two. The occurrence of one supra-alar seta and one postalar seta on each side is constant throughout the group. The same is true for the occurrence of only one pair of scutellar setae. The sole exception is *Henicomyia hubbardii*, where scutellar setae are absent. The number of dorsocentral setae is variable, even within a genus, and 0–2 pairs may occur.

The pile on the mesonotum and on the pleura shows great variety, not only at intergeneric and interspecific levels, but often also as a sexual difference.

Wings

The wings (see figs 21–23, 75–79, 163, 164) of the members of the *Xestomyza*-group seem to be of a most plesiomorphous nature and show no characters which can be motivated as representing apomorphous states. They are rather slender and the wing-cells are long. Cell R_4 is comparatively long and slender, i.e. the veins R_4 and R_5 are not very strongly divergent towards the wingtip. Cell M_3 is always closed. The basal cross-vein of discal cell has an oblique position, i.e. its prolongation crosses posterior wing-margin near the apex of vein M_3. The orientation of this cross-vein distinguishes this group from the genera of the *Phycus*-group, which usually have the cross-vein in a transverse position and closing discal cell proximally. Vein R_1 always lacks minute spinelike setulae dorsally; such setae are present in members of the *Phycus*-group, though also absent in *Thereva* and allied genera. The wings may be hyaline or more or less darkened, or may have a pattern of transverse darker bands.

Legs

These are slender and always simple, as is usual in Therevidae. Fore coxae are long and have one to three setae on anterior surface. Fore femora are always without setae, and the same is true of middle femora. Hind femora are usually also without setae, but in *Braunsophila* and *Xestomyza* a few short anteroventral setae occur near apex. It seems sound to accept the absence of femoral setae as a plesiomorphous state in the group.

The chaetotaxy of the fore tibiae shows a similar gradation of development as the chaetotaxy of the femora just described. The most plesiomorphous condition may be found in *Microgephyra*, *Pentheria*, *Delphacura*, *Cochlodactyla* and *Henicomyia* which have only some short posteroventral setae, usually 2–6. Posteroventral setae are also constantly

found in the four other genera *Hemigephyra*, *Braunsophila*, *Xestomyza* and *Ceratosathe*. These four genera also have a few posterodorsal setae. The posterodorsal setae are always shorter than the width of front tibia. The first three of these four genera also have a few minute anterodorsal setae.

The chaetotaxy of middle tibiae is more constant. Anterodorsal, anteroventral and posteroventral rows of setae are present in all genera. Posterodorsal setae are absent in *Microgephyra* and *Pentheria*, while the other genera have from one to several setae on the posterodorsal surface.

Hind tibiae always have rows of anterodorsal, anteroventral and posterodorsal setae, but the posteroventral setae may be absent as in *Henicomyia* and *Cochlodactyla*, whereas they are distinct in *Braunsophila* and *Xestomyza*. The other genera have short and hairlike posteroventral setae.

The structure of the tarsi, pulvilli and claws shows no distinctive features.

Abdomen

The structure of the abdomen gives no occasion for special comments. The shape is slender and more or less cylindrical, especially in the male sex. The posterior part of the female abdomen is usually not narrower than the anterior part, this being a result of the specialized development of the female terminalia (see below). There is usually no marked sexual difference in the colour as is often the case in other parts of the family.

Male terminalia

These have been thoroughly investigated in all species. The conclusion must be that the male terminalia, together with the female terminalia, give sound reasons for the motivation of the group as a monophyletic unit, and also give excellent characters for the establishment of genera and within these usually also give excellent interspecific differences. In the following discussion of the male terminalia the reader is referred to an earlier paper for morphological terms (Lyneborg, 1968). Unpublished notes have also been used to a great extent.

In all members of the *Xestomyza*-group segment 8 has a remarkably uniform development. Both tergite 8 and sternite 8 are figured for most species, and it will be seen that the shape of tergite 8 is certainly of a more plesiomorphous nature than in *Thereva* and allied genera (Lyneborg, 1968: figs 2, 4, 6). The shape of the epandrium (tergite 9 + ? tergite 10) also seems remarkably uniform, and only *Ceratosathe* (fig. 200) seems to be an exception. The cerci need no special comment. The paraprocts + sternite 10 always form a well-marked sclerite lying ventrally to the complex of epandrium + cerci. The shape of this sclerite is shown for several species.

A very remarkable feature in all members of the group is that the hypandrium (= sternite 9) is very large and always has a strong pilosity. This is one of the best distinguishing characters for the group, as it can always be clearly seen in lateral and ventral views without dissection. Many other Therevidae also have a hypandrium, but then it is much smaller, without hairs, and usually not visible in lateral view (cf. Lyneborg, 1968: figs 12–14).

The present author has previously emphasized that the occurrence of a free-lying hypandrium in Therevidae is a plesiomorphous character which is correlated with the

gonocoxites not being fused ventrally. This opinion may be incorrect. In the families of the lower Brachycera, e.g. Xylophagidae, Stratiomyidae, Tabanidae, and most Rhagionidae, there is constantly a fusion of the gonocoxites ventrally. This fusion results in a transverse ventral bridge which usually also includes the hypandrium. It now appears that similar conditions also occur in the Therevidae. A dissection of the Mexican species '*Thereva crassicornis* Bellardi' (see Lyneborg, 1969: figs 22–23) clearly shows such a ventral bridge. It also occurs in the Neotropical genus *Cyclotelus* Walk. and in the Australian genus *Ectinorrhynchus* Macq. These taxa certainly represent some of the most primitive members of the *Thereva*-group of genera. But a ventral bridge also occurs in members of the *Phycus*-group of genera, for example in some *Rueppellia* Wied.

In both the *Cyclotelus-Ectinorrhynchus*-complex and in *Rueppellia* the occurrence of a ventral sclerotized bridge formed by the gonocoxites and hypandrium is correlated with the occurrence of a dorsal sclerotized bridge from the anterior dorsal edge of the gonocoxite to the dorsal apodeme of the aedeagus.

Two parallel lines of evolution thus seem to lead to the condition characterized by the combination of free gonocoxites, a free hypandrium and a free aedeagus. The one line leads from the *Cyclotelus-Ectinorrhynchus*-complex to the more advanced therevine-genera such as *Thereva*, *Psilocephala*, *Dialineura* and many others, while the other line leads from the *Rueppellia*-type to the phycine-like genera and to the xestomyzine-like genera. These outlines are of course very rough and must be worked out in more detail.

As will be seen from the above, the gonocoxites are always free ventrally in the *Xestomyza*-group, but their shape is strongly modified in different ways. A matter of special interest is the fact that the gonocoxite may be closed, that is to say, a sclerotized band occurs on the inside from the ventral to the dorsal margin proximally to the stylus. The occurrence of this inner bridge may certainly be regarded as a plesiomorphous character, as it resembles the more or less cylindrical shape of the gonoxocites as found in the lower Brachycera. The inner bridge occurs in all *Microgephyra* (figs 25, 36), in *Delphacura* (fig. 144) and some *Pentheria* (figs 81, 89). However, in these *Pentheria* there is a distinct tendency towards a reduction of the dorsal part. In other *Pentheria*, in all other members of the *Xestomyza*-group and in all other Therevidae seen by the present author, the inner bridge is reduced to a larger or smaller lobe ventrally, the so-called 'ventral lobe'.

The posterior margin of the gonocoxites shows peculiar structures in most Xestomyzine-genera, these structures entering into a more or less intimate connection with the stylus. Again, *Microgephyra* seems to show the most plesiomorphous condition, as only a slightly modified ventral 'shelf' is present below the stylus. In *Pentheria* this ventral element is developed in different ways, forming for instance a long, complicated ventral process in *P. septentrionalis* (fig. 132). In *Pentheria* a dorsal gonocoxal process also occurs. In this genus it varies to a great extent, whilst in the genus *Cochlodactyla* it is shaped like a corkscrew and in *Delphacura* (fig. 143) it is broad and lobe-shaped. Other peculiar formations on the gonoxocite include the occurrence of a single or a few very strong setae, or of a curved process (*Delphacura*), of a long finger-like process with some setae apically (*Ceratosathe*).

The stylus also shows many modifications. It is a simple staff in some genera, as is normal in Therevidae, or has processes of varying arrangements.

The aedeagus is always free, i.e. there is no sclerotized bridge from its dorsal part over to the dorsal edge of the gonocoxite. At the same time the so-called dorsal apodeme (see Lyneborg, 1968) is strongly reduced and appears only as a small rudiment on the proximal, dorsal area of the phallic part. This phallic part is strongly developed, bulbous and shows different modifications apically. The ventral apodeme is always shaped as two long, slender struts, and the ejaculatory apodeme is also long.

Female terminalia

The structure of the female terminalia forms one of the most obviously apomorphous characters of the *Xestomyza*-group. It is beyond the scope of the present paper to deal with the structure of the female terminalia in all Therevidae. For the moment the author has found it most useful to compare the female terminalia of the *Xestomyza*-group with those of an apparently very generalized therevid, *Phycus brunneus* (Wied.).

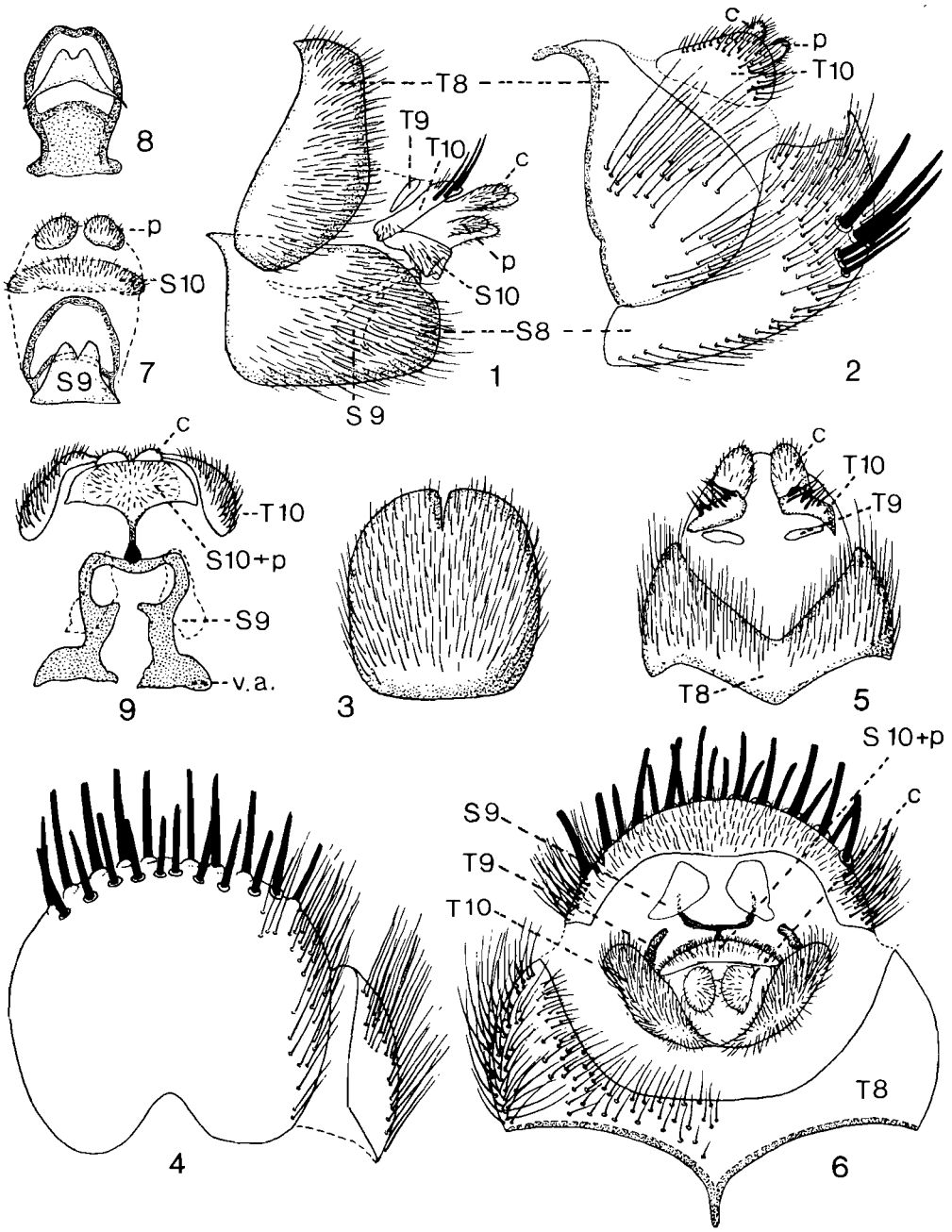
The female abdomen of *Phycus brunneus* (figs 1, 3, 5, 7, 8) has elements representing the tergal and sternal parts of segments 8–10 and terminates in paired dorsal and ventral appendages. Tergite 8 (figs 1, 5) is relatively short and has moderately long pile. It is followed by three pairs of dorsal sclerotizations (fig. 5). Firstly there is a pair of short, narrow sclerites which are widely separated and bare. These two sclerites may represent tergite 9. The next pair of sclerites is much larger but is also well separated on the midline. Laterally these sclerites reach to a position proximally to the sclerites of tergite 9. Dorsally the sclerites bear some strong setae which are directed upwards and outwards, while they have some very short hairs laterally. These two haired sclerites may represent tergite 10. The terminal pair of appendages is homologous with the structures normally called cerci in the Diptera.

The ventral elements of the apex of the abdomen of the *Phycus* female (figs 7, 8) have a slightly more complicated pattern. The large rounded sternite 8 (figs 1, 3) covers two internal elements. Firstly there is the vaginal apodeme (also called furca), and between this and sternite 8 there is a sclerite that certainly represents sternite 9. Their position is shown in lateral view in fig. 1. The vaginal apodeme has a shape as shown in fig. 8. Its proximal part forms a united shield and distally there is a sclerotized ring. Sternite 9 is placed ventrally to this ring.

Distally to sternite 8 and the vaginal apodeme is a semicircular area which is weakly pigmented and contains three weakly sclerotized elements. Close to the posterior margin of the vaginal apodeme is a transverse bar which laterally (fig. 1) reaches to the lateral margin of tergite 10 and is provided with short hairs. This sclerotized bar may represent sternite 10. The two small oval sclerotizations terminally can be called paraprocts.

The following description of the female terminalia in the *Xestomyza*-group is based mainly on a study of *Xestomyza lugubris* Wied. Some modifications found in other genera are also mentioned, but the ground-plan seems remarkably constant throughout the group.

The most marked difference between *Phycus* (fig. 1) and *Xestomyza* (fig. 2) is the position of the anal and genital openings, these having a secondary dorsal position in *Xestomyza*. This is caused by the peculiar formation of sternite 8, which is upcurved and forms the actual apex of the abdomen. At the same time sternite 8 usually has rows of strong setae near the apex of the abdomen. In *Xestomyza* there are two rows of very strong setae. In other genera of the group, e.g. *Henicomyia*, the pile at this point is hardly longer or stronger



Figs 1–9. Female terminalia. (1) *Phycus* Walk. in lateral view; (2) *Xestomyza* Wied. in lateral view; (3) sternite 8 of *Phycus* Walk.; (4) sternite 8 of *Xestomyza* Wied.; (5) *Phycus* Walk. in dorsal view; (6) *Xestomyza* Wied. in dorsal view; (7) sternite 9, vaginal apodeme, sternite 10 and paraprocts of *Phycus* Walk. in ventro-caudal view after removal of sternite 8; (8) sternite 9 and vaginal apodeme of *Phycus* Walk. in ventral view; (9) sternite 9, vaginal apodeme, complex of sternite 10 + paraprocts, cerci and tergite 10 of *Xestomyza* Wied. in ventro-caudal view after removal of sternite 8; c=cercus, p=paraprocts, S 8, 9, 10=sternites 8, 9 and 10, T 8, 9, 10=tergites 8, 9 and 10, v.a. = vaginal apodeme.

than the normal pilosity. The posterior margin of sternite 8 with its more or less strongly specialized pile certainly plays an important role during oviposition. This has, however, never been observed so far.

Tergite 8 (fig. 6) is similar in shape to tergite 8 of *Phycus* (fig. 5). It is followed by a rather large, haired, bilobed sclerite representing tergite 10. It will be seen (fig. 6) that tergite 10 is not separated into two sclerites as in *Phycus*, though it is only narrowly fused along the midline. The pile of tergite 10 is short and uniform, i.e. without the strong setae present in *Phycus* and which are so characteristic of *Thereva* and all its allied genera. The absence of strong setae on tergite 10 in the *Xestomyza*-group thus seems compensated by the structures on sternite 8.

Tergite 9 is also present in *Xestomyza*. It cannot be seen in lateral view (fig. 2) because it is covered by the lateral parts of tergite 10, but is clearly visible in dorsal view (fig. 6) as two lateral struts. Whether tergite 9 occurs in all members of the group is not clear. The dorsal elements also include quite normal cerci.

Of the ventral elements sternite 8 has just been described. Sternite 9 is distinct in *Xestomyza* (figs 6, 9), forming two darkly pigmented irregularly shaped sclerites. The position of these sclerites is indicated by the broken lines in fig. 9 in order not to disturb the shape of the vaginal apodeme. It is not clear if sternite 9 is developed in all genera of the group. In a dissection of a female of *Henicomyia hubbardii* Coq. the two sclerites could not be detected, but this may be due to poor pigmentation. They were found in *Microgephyra brincki* sp.nov.

The sclerite marked as sternite 10 (figs 6, 9) may also include the elements termed paraprocts in *Phycus*. It has a narrow apodeme on its anterior margin reaching to the posterior margin of the vaginal apodeme. The vaginal apodeme is very strong and darkly pigmented in *Xestomyza* (fig. 9). It is not fused proximally as in *Phycus*. In *Henicomyia* and *Microgephyra* the vaginal apodeme is much more slender and the two arms are widely divergent.

PHYLOGENY AND ZOOGEOGRAPHY OF THE *XESTOMYZA*-GROUP

It will be seen from the previous section that the family Therevidae can probably be divided into two subfamilies by using characters principally in the male and female terminalia. The one subfamily includes genera such as *Thereva* Latr., *Dialineura* Rond., *Psilocephala* Zett., *Ectinorrhynchus* Macq. *Cyclotelus* Walk. and many others. The other subfamily includes genera such as *Phycus* Walk., *Rueppellia* Wied., *Pherocera* Cole and also the nine genera forming the *Xestomyza*-group. When this latter subfamily has been worked up, the *Xestomyza*-group will probably be graded at the level of a tribe.

The phylogenetic relationships within the *Xestomyza*-group are fully discussed under the various genera. They can be briefly summarized as follows. *Microgephyra* certainly includes the most plesiomorphous members of the group; as in two species of *Pentheria* and in *Delphacura*, they have a closed gonocoxite which has so far not been found in other Therevidae. *Pentheria*, *Delphacura* and also *Cochlodactyla* have strong specializations on the posterior part of the gonoxocite; such specializations do not occur in *Microgephyra*. All these four genera have frons and face bare or only sparsely haired, a short proboscis, short pile on the body and front tibiae with a few posteroventral setae only. The rest of the African genera, i.e. *Hemigephyra*, *Braunsophila*, *Xestomyza* and *Ceratosathe*, usually

have long pile on the frons and face, a longer proboscis, longer pile on the body and tendencies towards the occurrence of anterodorsal and/or posterodorsal setae on front tibia.

The phylogenetic relationships of the New World genus *Henicomyia* are discussed on p. 363.

The centre of distribution lies in the Cape Province (see table 1), as all African genera are represented here and all but two genera are restricted to the Cape Province. The two genera with a wider distribution are *Microgephyra* and *Pentheria*, the former having two species in Natal and one in South West Africa, while *Pentheria* reaches as far north as Rhodesia and Tanzania and obviously has its centre of distribution in Natal.

The genus *Henicomyia* has its centre of distribution in Brazil, where three species occur; one species is known from Peru, one from Costa Rica, and one occurs in Mexico and Arizona.

TABLE 1

List of genera and species of the *Xestomyza*-group with indication of distribution

Genus *Microgephyra* gen.nov.	
1. *brincki* sp.nov.	Cape Province
2. *turneri* sp.nov.	Cape Province
3. *hessei* sp.nov.	Cape Province
4. *stuckenbergi* sp.nov.	Natal, Tongaland
5. *grandis* sp.nov.	Cape Province
6. *capricornis* sp.nov.	Natal
7. *stylata* sp.nov.	S. W. Africa
Genus *Pentheria* Kröber, 1914	
1. *rufipes* (Bigot, 1889), comb.nov.	Cape Province, Natal, Transvaal
2. *ponti* n.n. (=*rufipes* Kröber, 1933)	Natal
3. *obscura* Kröber, 1914	'Süd-Afrika'
4. *alternans* (Loew, 1857), comb.nov.	Natal
5. *uncinata* sp.nov.	Natal
6. *caniceps* sp.nov.	Rhodesia
7. *simplex* sp.nov.	Cape Province, Natal
8. *septentrionalis* sp.nov.	Tanzania
Genus *Delphacura* gen.nov.	
1. *mosselensis* sp.nov.	Cape Province
Genus *Cochlodactyla* gen.nov.	
1. *munroi* sp.nov.	Cape Province
Genus *Hemigephyra* gen.nov.	
1. *atra* sp.nov.	Cape Province
1a. sp. ♀	Cape Province
2. *braunsi* (Kröber, 1931), comb.nov.	Cape Province
Genus *Braunsophila* Kröber, 1931	
1. *nubeculipennis* Kröber, 1931	Cape Province
Genus *Xestomyza* Wiedemann, 1820	
1. *lugubris* Wiedemann, 1820	Cape Province
Genus *Ceratosathe* gen.nov.	
1. *tridactyla* sp.nov.	Cape Province
Genus *Henicomyia* Coquillett, 1898	
1. *hubbardii* Coquillett, 1898	Arizona, Mexico
2. *bicolor* sp.nov.	Brazil
3. *diversicolor* sp.nov.	Brazil
4. *flava* sp.nov.	Brazil
5. *tomentosa* sp.nov.	Costa Rica
6. *nigra* sp.nov.	Peru

KEY TO AFRICAN MEMBERS OF THE *XESTOMYZA*-GROUP

(For key to the species of the New World genus *Henicomyia*, see p. 364)

1. Distance between eyes in front of anterior ocellus shorter than distance between exterior margins of upper ocelli (figs 17, 70, 141) 2
— Distance between eyes in front of anterior ocellus longer than distance between exterior margins of upper ocelli (figs 11, 14, 20, 161, 174, 186) 13
2. Genae and face (figs 162, 176) with a long pile reaching to above level of antennal bases. Upper postocular setae long and weak. t2 with 1–2 distinct pd setae. Wings (figs 163, 164) with 2 or 3 brownish bands 3
— Genae and face (figs 71–74) bare, or at most posterior part of genae (fig. 140) with some few hairs. Lower part of frons may have a very short pile. Upper postocular setae short and strong 4
3. Frontal protuberance low (fig. 162). Upper part of pleura shiny, lower part tomented. Wings (fig. 163) with 2 brownish bands .. .. **Hemigephyra atra** sp.nov. ♂
— Frontal protuberance high (fig. 176). Pleura uniformly shiny blackish all over. Wings (fig. 164) with 3 brownish bands .. .. .. **Ceratosathe tridactyla** sp.nov. ♂
4. Minimal distance between eyes equal to double width of anterior ocellus (fig. 17). Third antennal segment about three times longer than first antennal segment (fig. 16) **Microgephyra hessei** sp.nov. ♂
— Minimal distance between eyes shorter than width of anterior ocellus (figs 70, 141). Third antennal segment shorter than three times the length of first antennal segment (figs 71–74, 140) 5
5. Longitudinal axis of antenna and profile-line of frons forms a straight line (figs 71, 73) 6
— Longitudinal axis of antenna forms an angle of *c.* 120°–150° to profile-line of head (figs 72, 74) 9
6. Femora bright reddish-yellow 7
— Femora dark brownish to blackish 8
7. Cx1 reddish-yellow, cx2 and cx3 blackish .. .. .. **Pentheria rufipes** (Big.) ♂
— All coxae blackish .. .. **Pentheria ponti** nom.nov. ♂
8. Part of wing apical to discal cell uniformly dark brownish with extreme apex hyaline (fig. 78). Upper facets not distinctly larger than lower facets (fig. 73) **Pentheria alternans** (Lw.) ♂ and **P. septentrionalis** sp.nov. ♂
— Part of wing apical to discal cell dark brownish in broad streaks along the veins; central area of all cells and also extreme apex of wing being greyish-brown (fig. 79). Upper facets distinctly larger than lower facets .. .. **Pentheria uncinata** sp.nov. ♂
9. Face uniformly, but thinly, greyish tomented. Halteres dark brownish to blackish 10
— Face partly polished black, partly tomented. Halteres yellowish 12
10. Front femora yellowish .. .. **Microgephyra stylata** sp.nov. ♂
— Front femora dark brownish to blackish 11
11. Extreme apex of wing of same coloration as palest part of discal cell. Tergites, when viewed from in front, without greyish tomentum laterally on posterior part. dc absent **Pentheria caniceps** sp.nov. ♂

— Extreme apex of wing distinctly darker than palest part of discal cell. Tergites, when viewed from in front, without greyish tomentum laterally, i.e. dark brownish tomented all over. 1 dc .. .. **Pentheria simplex** sp.nov. ♂

12. Abdomen shiny blackish. Wings hyaline .. .. **Delphacura mosselensis** sp.nov. ♂
— Abdomen shiny yellowish-brown. Wings brownish tinged, but not in bands **Hemigephyra braunsi** (Kröb.) ♂

13. Thorax yellowish, at least on pleura 14
— Thorax blackish, often with greyish or dark brownish tomentum 16

14. Third antennal segment (figs 13, 15, 142) 2–4 times longer than first antennal segment. Eyes reaching to bottom of head (fig. 13) 15
— Third antennal segment (fig. 19) of about the same length as first antennal segment. Eyes not reaching to bottom of head (fig. 19) .. **Microgephyra grandis** sp.nov. ♀

15. Frons entirely polished black (fig. 14). Thorax all yellowish. Smaller species: 5–6 mm **Microgephyra stuckenbergi** sp.nov. ♀
— Frons subshiny black on upper part, greyish tomented on lower part. Disc of mesonotum darker than the yellowish pleura. Larger species: 8,7 mm **Cochlodactyla munroi** sp.nov. ♂

16. First antennal segment (fig. 187) twice as long and twice as wide as third antennal segment, polished black and with very long black pile **Xestomyza lugubris** Wied. ♂♀
— First antennal segment not twice as long or twice as wide as third antennal segment 17

17. Face and frons with a dense black pile which is as long as or longer than upper postocular setae. t2 with distinct pd setae 18
— Face and frons bare, or with a sparse black pile which is much shorter than upper postocular setae. t2 with or without pd setae 19

18. Wing (fig. 164) with 3 dark brownish transverse bands. Occiput polished black, only narrowly tomented along ocular margin below .. **Ceratosathe tridactyla** sp.nov. ♀
— Wing not banded, but brownish tinged, especially in streaks along the veins. Occiput greyish tomented all over .. .. .. **Braunsophila nubeculipennis** Kröb. ♂♀

19. Upper postocular margin strongly cushion-shaped and polished black; seen from above (fig. 161) as thick as height of ocellar triangle. Occiput deeply excavated in midline between the two 'cushions'. This area thickly tomented **Hemigephyra braunsi** (Kröb.) ♀
— Upper postocular margin not strongly cushion-shaped and without a deep excavation in midline of occiput. No distinct difference in density of tomentum 20

20. Longitudinal axis of antenna and profile-line of frons form a straight line (figs 71, 73) 21
— Longitudinal axis of antenna forms an angle of *c.* 120°–150° to profile-line of head (figs 72, 74) 24

21. Femora bright reddish-yellow 22
— Femora blackish 23

22. Cx1 reddish-yellow, cx2 and cx3 blackish .. .. .. **Pentheria rufipes** (Big.) ♀
— All coxae blackish .. .. **Pentheria ponti** nom.nov. ♀

23. Wing (fig. 78) with two distinct dark brownish transverse bands, leaving apex of wing hyaline .. .. **Pentheria alternans** (Lw.) ♀
— Wing (fig. 76) not transversely banded, intensively dark brownish coloured, especially in streaks along the veins .. .. **Pentheria obscura** Kröb. ♀
24. Third antennal segment about as long as first antennal segment (figs 140, 162) 25
— Third antennal segment more than twice as long as first antennal segment (figs 10, 12, 18) 26
25. Genae polished black as rest of head. Wing (fig. 163) with two distinct brownish transverse bands .. .. **Hemigephyra atra** sp.nov ♀
— Genae thickly greyish tomented in strong contrast to the polished black frons and occiput. Wing without distinct bands, rather uniformly brownish coloured **Delphacura mosselensis** sp.nov. ♀
26. Anterior part of frons with a short black pile. Halteres blackish.. 27
— Anterior part of frons absolutely bare. Halteres yellowish 28
27. Third antennal segment about twice as long as first segment. Larger species: 7,5 mm **Pentheria simplex** sp.nov. ♀
— Third antennal segment 3–4 times longer than first segment. Smaller species: 4,5 mm **Microgephyra capricornis** sp.nov. ♂
28. Mesonotum uniformly blackish and shiny. Mesopleuron polished black **Microgephyra brincki** sp.nov. ♂♀
— Mesonotum greyish-brown tomented, the tomentum forming a pattern of stripes. Mesopleuron thinly greyish tomented .. .. **Microgephyra turneri** sp.nov. ♂♀

Microgephyra gen.nov.

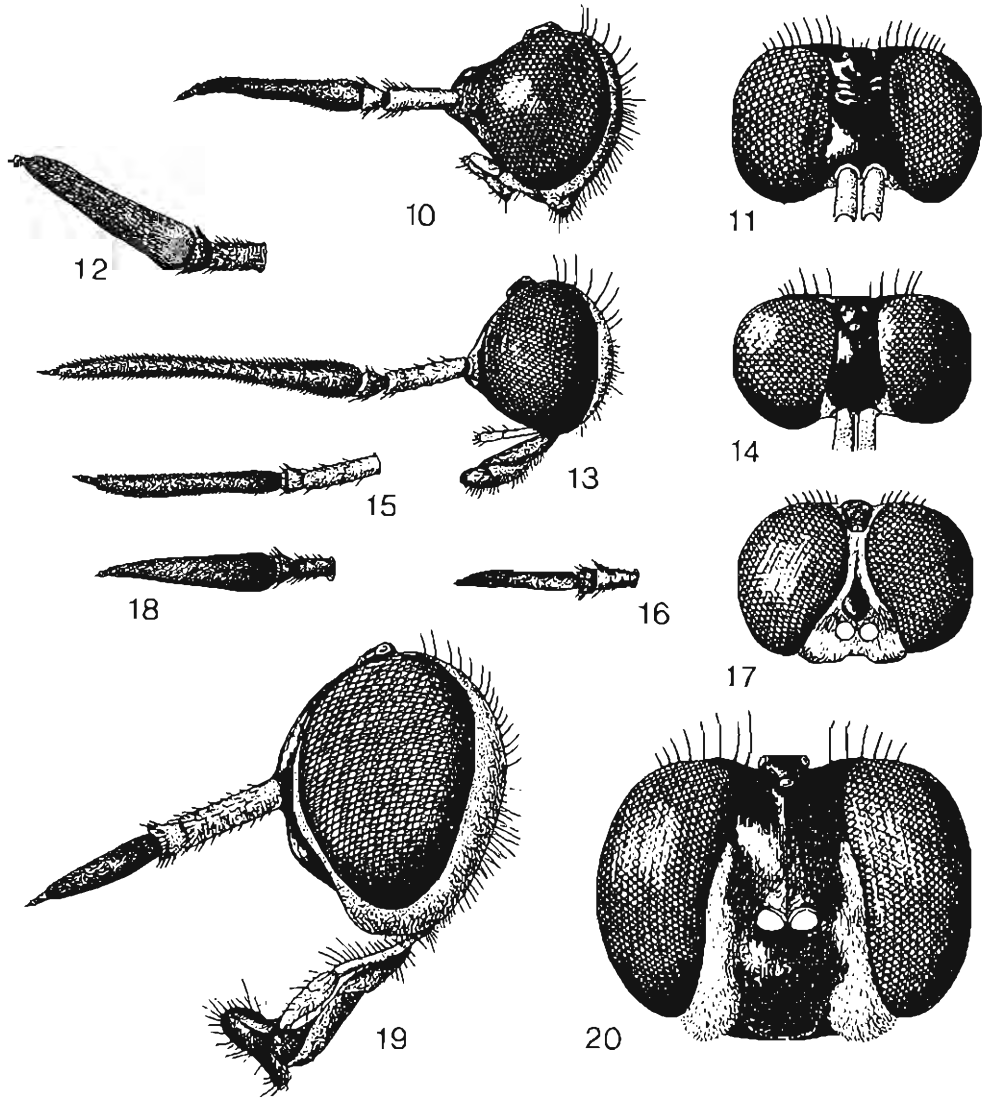
Derivation of name: μικρός = small + γέφυρα = bridge
Gender: femininum.
Type-species: *M. brincki* sp.nov., by present designation.

Description. Head (figs 10–20) when seen in profile nearly circular. Eyes large, genae narrow. A frontal protuberance is always distinct. Both sexes are dichoptic, but the width of male frons shows interspecific variation, and in one species, *stylata*, the male is holoptic. Frons and face bare in most species, while occiput has a pilosity. Antennae long and inserted near middle of head. Their axis forms more or less a continuation of the longitudinal axis of the head. First and second antennal segments slender and with a short pilosity. Third antennal segment often several times longer than first segment and sometimes also wider than this segment. Proboscis short and slender; labella of a moderate size. Also palpi are slender.

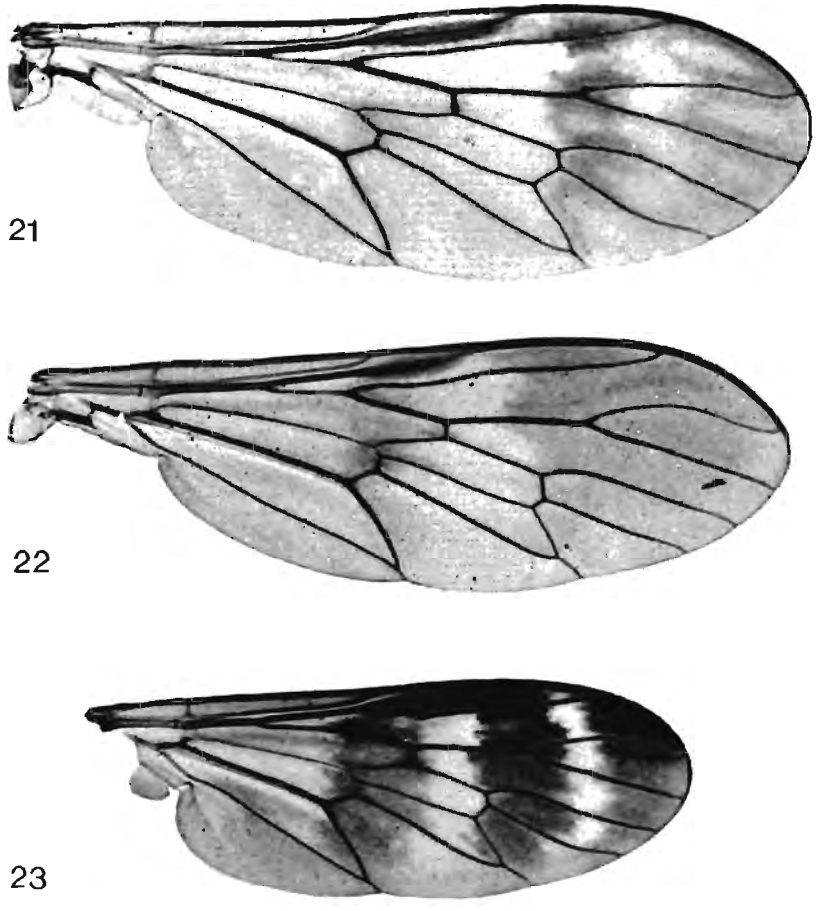
Thorax with a short or moderately long pile on mesonotum, while the pleura are almost bare. 0–1 dc setae.

Wings (figs 21–23) with a narrow alula and axillary lobe in several species. Coloration in most species with a pattern of transverse bands.

Legs slender. Femora without strong setae. t1 with 2–4 short pv setae only, the ad and pd setae are not distinguishable from the normal pilosity. t2 with rows of 2–4 ad, av and pv setae, but pd setae normally absent or a single small pd may be present. t3 with rows of ad, pd and av setae, the pv setae being short and hairlike, sometimes practically absent.



Figs 10–20. Heads and antennae of *Microgephyra* gen.nov. (10) head in lateral view of *M. brincki* sp.nov., ♂ no. 1086; (11) head of same in frontal view; (12) antenna of *M. turneri* sp.nov., ♂ no. 1129; (13) head in lateral view of *M. stuckenbergi* sp.nov., ♂ no. 1065; (14) head of same in frontal view; (15) antenna of same, ♀ no. 1072; (16) antenna of *M. hessei* sp.nov., ♂ no. 1203; (17) head of same in frontal view; (18) antenna of *M. capricornis* sp.nov., ♂ no. 1204; (19) head in lateral view of *M. grandis* sp.nov., ♀ no. 1128; (20) head of same in frontal view.



Figs 21–23. Wings of *Microgephyra* gen.nov. (21) *M. brincki* sp.nov., no. 1087; (22) *M. stuckenbergi* sp.nov., no. 1059; (23) *M. hessei* sp.nov., no. 1202 × 25.

Abdomen slender and cylindrical.

Male terminalia. Gonocoxite of a simple shape and normally only with a short and uniform pilosity. It is closed on inside and without any indication of a dorsal gonocoxal process. Stylus has an almost apical position on the gonocoxite, arising from the lumen formed by the sclerotized ring of the gonocoxite. In most species the stylus is provided with a shorter or longer process which has different directions. The gonocoxite forms ventrally beneath the base of stylus a 'shelf' which is weakly sclerotized and pigmented. Aedeagus with a short and compact phallic part.

Female terminalia as typical for the group, see p. 304.

Remarks. The genus *Microgephyra* is most probably a paraphyletic group. The main arguments for gathering the seven included species are based on characters which provisionally may be termed plesiomorphous. The six species of which the male sex is known

all have a gonocoxite which forms a well-sclerotized ring apically and a stylus with an almost apical position on the gonocoxite. This arrangement is very similar to the conditions in many nematocerous flies and in some brachycerous flies, e.g. Rhagionidae. Dissections of many therevids from all regions of the world has not disclosed so far, similar original conditions. Only in two species of *Pentheria* Kröb. and in *Delphacura* gen.nov. is a similar bridge on inside of the gonocoxite present, although the connection at the dorsal margin of the gonocoxite is narrower and weaker (cf. figs 81 and 145).

The shape of the head, the usually dichoptic heads in both sexes and the simple antennae which are inserted near the middle of head and are directed straight forwards seem also to be plesiomorphous conditions.

It is, of course, absurd to search for a sister-group to an obvious paraphyletic genus like *Microgephyra*, but further study may show that there can exist a sister-group relationship between the genera *Pentheria*, *Delphacura* and *Cochlodactyla* on the one hand and a part of what here is gathered in *Microgephyra* on the other hand. The former three genera are characterized by complicated sclerotized elements on the dorsal and/or posterior margin of the gonocoxite. The corresponding plesiomorphous condition in *Microgephyra* is the complete absence of such gonocoxal processes. Similar plesiomorphous conditions are also present in other genera of the *Xestomyza*-group, as well as in many other parts of the family. Most species of *Microgephyra* have an apomorphous character in the formation of a process on the stylus. Also most species of *Pentheria* and *Cochlodactyla* have a similar process on the stylus, whereas the stylus in other genera of the group is simple.

Seven species are included in the genus. They are keyed out on pp. 308–310.

Microgephyra brincki sp.nov. Figs 10, 11, 21, 24–32

Diagnosis. 5–6 mm. Thorax and abdomen uniformly brownish-black to black in both sexes. Mesopleuron and anterior part of sternopleuron black and shiny. Third antennal segment about as long as depth of head in both sexes. Alula narrow, but not linear. Axillary lobe slightly broader than anal cell. Gonocoxite with uniform, short pilosity.

Description. Male, holotype.

Head (figs 10–11). Frons shiny black and bare; upper part transversely wrinkled. Face and genae blackish-brown and with a thin dark brownish tomentum, especially below antennal bases. Occiput brownish-black and shiny, only narrowly greyish-brown tomented along postocular margin. 10–12 postocular + occipital setae forming an irregular, continuous row. Pilosity of lower part of occiput short and sparse. Palpi slender, brownish and with short black pile. First and second antennal segments brownish, third segment blackish.

Thorax. Ground coloration brownish-black. Mesonotum and scutellum shiny to subshiny, i.e., with a very thin tomentum. Pleura blackish; mesopleuron and anterior part of sternopleuron polished; posterior part of sternopleuron and other pleural sclerites dulled by a rather thick greyish tomentum. Pilosity extremely sparse and short on all parts.

Wings (fig. 21). Coloration brownish-hyaline; with two indistinct darker bands in apical third. Halteres yellowish.

Legs. Coxae and femora yellowish-brown; femoral pilosity very short and black.

Tibiae slightly more darker brownish than corresponding femora, especially t1 towards apex and t3. Tarsi coloured as corresponding tibiae. Claws and pulvilli normal.

Abdomen. Brownish-black and shiny, the posterior lateral parts of tergites 1–4 being palest. Pilosity short, composed of both blackish and pale hairs.

Terminalia (figs 24–32). Entirely brownish-black with black pilosity. Pile on gonocoxite of uniform length. Stylus very small, straight, pointed; with a slender process externally. This process is directed outwards and 'lies' on the shelf formed by a ventral distal outshoot of the gonocoxite. Aedeagus weakly sclerotized, the phallic part being simple in lateral view. The sperm-tube comes narrowly out of the bulbous part of the phallus.

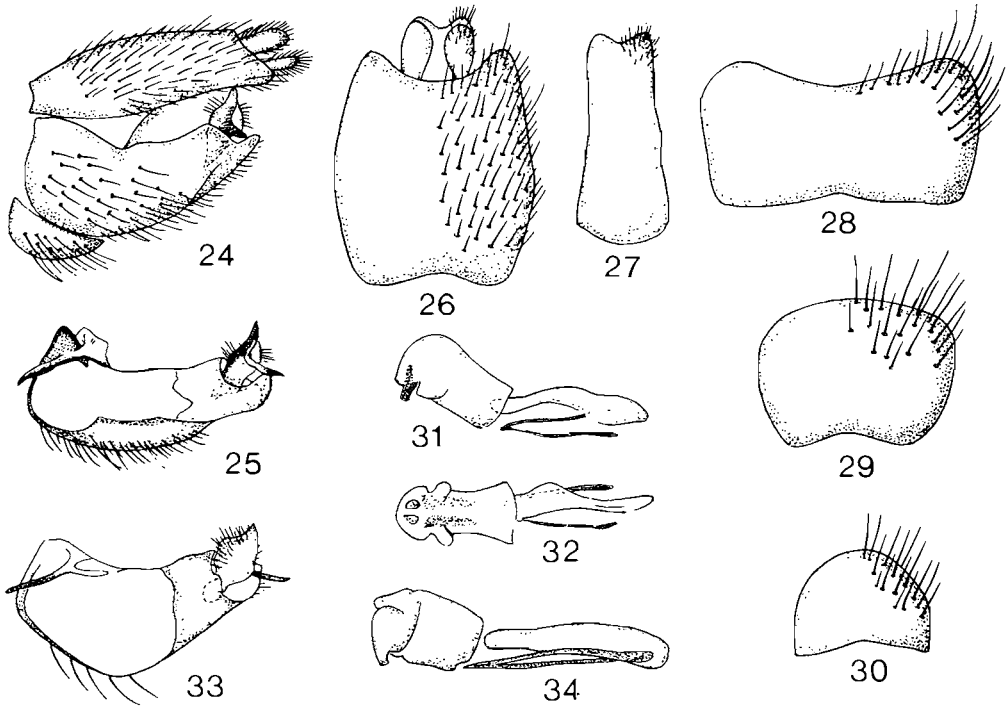
Total length 5,7 mm.

Measurements and numerical characters: see table 2, no. 1086.

Female. As will be seen from the table, there is practically no difference in dimension between the two sexes. Only third antennal segment is shorter in female than in male. Also the description above fits the female sex perfectly apart from the differences in the terminalia.

Total length 5,2 mm.

Measurements and numerical characters: see table 2, no. 1122.



Figs 24–34. Male terminalia of (24–32) *Microgephyra brincki* sp.nov., no. 1086, and (33–34) *M. turneri*, no. 1129. (24) terminalia in lateral view; (25 and 33) right gonocoxite seen from inside; (26) epandrium; (27) sternite 10 + paraprocts; (28) tergite 8; (29) sternite 8; (30) sternite 9 or hypandrium; (31 and 34) aedeagus in lateral view; (32) aedeagus in dorsal view.

Variation. Most of the male paratypes from the same locality as the holotype are in a bad condition, wherefore an analysis of the individual variability was not undertaken. It is the impression from a superficial study of the best preserved specimens that these show only small differences in dimensions and in other characters. The single male paratype from Doornkloof Forest Reserve is practically identical with the holotype in all dimensions and also in genital structures. It is, however, a somewhat darker insect, having basal antennal segments and palpi blackish, thorax and abdomen of a deeper blackish ground coloration, tibiae darker brownish, and also wings with more distinct dark bands. The four female paratypes from the same locality as this male paratype just described are also darker than the female paratypes from the same locality as the holotype. They all have black antennae and palpi, black thorax and abdomen, and distinctly banded wings, but the coloration of the femora and tibiae varies from dark brownish to nearly black.

Material. 41 ♂ 10 ♀. Holotype, ♂ no. 1086, CAPE PROV., Hout Bay, Skoorsteenskop, 2.ii.1951, Brinck & Rudebeck (ZIL); paratypes, ♂ no. 1121, xii. 1950, ♂ no. 1090, 13.xii.1950, 27 ♂ nos. 1082–85, 1087–89, 1091–1110 + 2 ♀ nos. 1122–23, 22.i.1951, 10 ♂ nos. 1111–20 + 4 ♂ nos. 1124–27, 2.ii.1951, same locality as holotype (ZIL, ZMC and ZMH); ♂ 4 ♀ nos. 1132–36, Alexandria dist., Doornkloof Forest Reserve, B. & P. Stuckenberg (NM and ZMC).

Remarks. The species is named in honour of Prof. Per Brinck, Lund, Sweden, who has contributed so much to the knowledge of the South African fauna.

Microgephyra turneri sp.nov. Figs 12, 33, 34

Diagnosis. Very close to *brincki* n.sp., but mesonotum with two stripes of greyish-brown tomentum and longer pile. Mesopleuron and whole sternopleuron greyish tomented. Third antennal segment in male longer than head and wider than in *brincki*. Frons narrowly tomented in front and laterally. Gonocoxite with the same uniform, short pilosity as in *brincki*.

Description. Male, holotype.

Head (fig. 12). Frons mostly shiny black; anterior margin and very narrow stripes along ocular margin greyish to greyish-yellow tomented; without pilosity. Occiput blackish and covered with greyish tomentum which is especially thick on a broad stripe on postocular margin. 20–24 postocular + occipital setae. Pilosity of lower part of occiput sparse, moderately long and yellowish. Palpi slender, yellowish with yellow hairs. Antennae brownish-black on first, second and base of third segment; the rest blackish. Antennal pilosity short and blackish.

Thorax. Mesonotum and scutellum brownish-black to black and subshiny, i.e. with a thin, greyish-brown tomentum. This tomentum is most thick in two narrow unsharply demarcated stripes which are confluent on posterior part of mesonotum and are separated on anterior part by a blackish middle band, the width of which equals 0,25 mm. Pleura brownish-black, propleural area yellowish-brown. All pleural parts evenly, though thinly, greyish tomented overall. Pilosity of mesonotum moderately long, *c.* 0,12 mm, and black. Pleura practically bare, a few hairs on prosternum, sternopleuron and metapleural callus.

Wings. Nearly uniformly brownish-hyaline; darker bands indistinct. Halteres

yellowish-brown.

Legs. Coxae and femora yellowish-brown; femoral pilosity very short and black. t1 and t2 yellowish-brown, t3 dark brownish. Tarsi coloured as corresponding tibiae. Claws and pulvilli appear slightly enlarged.

Abdomen. Tergites blackish and shiny, posterior corners of tergites 2–4 yellowish-brown. Sternites yellowish-brown, being darker towards apex of abdomen. Pilosity moderately long, yellowish-brown on lateral parts of first tergites and on first sternites; on rest blackish.

Terminalia (figs 33, 34). Dark brownish, shiny and with black pilosity of uniform length. All structures very similar to those of *brincki* sp.nov., see figs 24–32. Stylus appears shorter and wider and the phallic part of aedeagus is also shorter and wider.

Total length 5,8 mm.

Measurements and numerical characters: see table 2, no. 1129.

Female. Very similar to male, with the following differences. Frons entirely polished black. Basal antennal segments much paler, yellowish. Second palpal segment seems broader. Mesonotum and especially pleura of a paler brownish ground coloration, but with the same tomented pattern as described for male. Also the tibiae appear paler. Abdominal tergites more extensively yellowish-brown laterally, and all sternites yellowish-brown. Only 8+6 strong setae on sternite 8. Total length 6,8 mm.

Measurements and numerical characters: see table 2, no. 1131.

Variation. The single male paratype is practically identical with the holotype in all characters. Only the basal antennal segments seem to be paler coloured than in the holotype, thus something intermediate between the holotype and the female paratype.

Material. 2 ♂ 1 ♀. Holotype, ♂ no. 1129, CAPE PROV., Pondoland, Port St John, 12–30.vi.1923, R. E. Turner (BMNH); paratypes, 1 ♂ 1 ♀ nos. 1130–31, same data as holotype (BMNH and ZMC).

Remarks. The species is named to the memory of Mr R. E. Turner who gathered a fantastic collection of South African insects for the British Museum (Nat. Hist.).

Microgephyra hessei sp.nov. Figs 16, 17, 23, 35–43

Diagnosis. Only 4 mm long. Thorax and abdomen blackish, mesonotum with two stripes of greyish tomentum and pleura tomented all over. Third antennal segment shorter than depth of head. Frons (fig. 17) narrower than in other species of the genus, except *stylata*. Gonocoxite with some strong setae.

Description. Male, holotype.

Head (figs 16, 17). Frons narrow, blackish and brownish-grey tomented on most of its surface with the exception of a rhomboid spot on lower part, which is shiny; a few, short black hairs on lower part of frons. Face and genae blackish and with a moderately thick greyish tomentum all over; lower genae with some short, black hairs. Occiput black and subshiny, i.e. dulled by a very thin greyish tomentum; postocular margin with a stripe of more thick, whitish-grey tomentum. *C.* 15 postocular + occipital setae which are short and form a practically uniserial row. Lower part of occiput with stiff, black pilosity. Palpi, especially first segment, very slender and blackish-brown to black; palest on first segment.

Antennae blackish-brown to black; pilosity of first and second segments short and black.

Thorax. Ground coloration black. Lateral parts of mesonotum shiny; disc of mesonotum partly dulled by a thin greyish tomentum forming two stripes (width: *c.* 0,10 mm) which are confluent on posterior part. Scutellum deep black, not shiny. Mesonotal pilosity moderately long (*c.* 0,10 mm) and black. All pleura dulled with a thin greyish tomentum; pilosity very sparse.

Wings (fig. 23). With three distinct, brownish bands, the first over basal half of disc cell, the second apical to apex of disc cell and the third on apex of wing. Basal part of wing of a paler, brownish-hyaline coloration, and the two areas separating the three brown bands semihyaline. Halteres blackish.

Legs. Coxae blackish with thin, greyish tomentum as on pleura. All other parts black and shiny, only extreme base of t1 and tarsi of p2 and p3 appear slightly paler, more blackish-brown. Claws and pulvilli comparatively large.

Abdomen. Entirely black and shiny, when seen from in front with a deep blackish-brown tomentum. Pilosity moderately long and exclusively black.

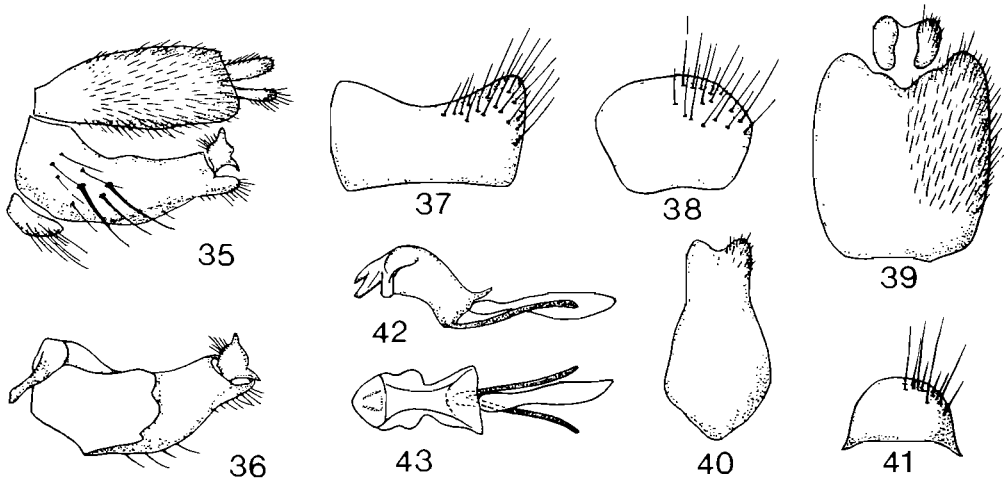
Terminalia (figs 35–43). Black and shiny, with black pilosity. Gonocoxite with 2–3 moderately strong setae. Stylus shorter than in any other species of the genus; its external hook short too. Gonocoxite broadly closed on inside, especially near ventral margin. Aedeagus as shown in figs 42 and 43.

Total length 4,0 mm.

Measurements and numerical characters: see table 2, no. 1203.

Female. Unknown.

Variation. The single male paratype agrees in every detail with the holotype.



Figs 35–43. Male terminalia of *Microgephyra hessei* sp.nov., no. 1203. (35) terminalia in lateral view; (36) right gonocoxite seen from inside; (37) tergite 8; (38) sternite 8; (39) epandrium; (40) sternite 10 + paraprocts; (41) sternite 9 or hypandrium; (42) aedeagus in lateral view; (43) aedeagus in dorsal view.

Material. 2 ♂. Holotype, ♂ no. 1203, CAPE PROV., Port St John, 20–25.xi.1961, B. & P. Stuckenberg (NM); paratype, ♂ no. 1202, same data as holotype (ZMC).

Remarks. The species is named after Dr A. J. Hesse, the well-known dipterist of the South African Museum, Cape Town.

Microgephyra stuckenbergi sp.nov. Figs 13–15, 22, 44–52

Diagnosis. 5–6 mm. Thorax and abdomen entirely yellowish in male, while in the female the abdomen is black. Antennae slender and elongate, third segment more than twice as long as depth of head in the male, somewhat shorter in the female. Alula very narrow, linear. Axillary lobe narrower than anal cell. Gonocoxite with a strong seta.

Description. Male, holotype.

Head (figs 13–15). Frons shiny black and smooth, without pilosity. Ground coloration of face and genae brownish-black; with a silvery-white tomentum which is most clearly seen in dorsal view; without pilosity. Occiput of a brownish-black ground coloration; its upper, central part brownish-grey tomented, other parts with a more greyish tomentum. 7–8 postocular + occipital setae which form a continuous row. Palpi brownish, with a moderately long pilosity of black hairs. First antennal segment pale brownish, being somewhat darker towards apex. Second and third antennal segments blackish. Antennal pilosity short and black, erect and extremely dense on third segment.

Thorax. Ground coloration entirely yellowish-brown. Seen from above a thin, whitish tomentum appears on the pleura, forming three stripes with the following position; a narrow stripe from dorsal part of mesopleuron to propleuron, a broader stripe from central part of sternopleuron to pteropleuron, and an area on posterior coxa and on hypopleuron. Pilosity extremely sparse and very short on all parts; on pleura practically absent.

Wings (fig. 22). Coloration as a whole dark, but a narrow, darker band over base of discal cell and also apical third of wing darkened. Halteres yellowish-brown.

Legs. Coxae and femora yellowish-brown; pilosity very short and black. Tibiae yellowish-brown, though darker than femora, especially t1. Fore tarsi blackish, other tarsi coloured as corresponding tibiae. Claws and pulvilli small.

Abdomen. Entirely yellowish-brown with short, black pilosity. A narrow whitish-hyaline hindmarginal hem on tergite 2.

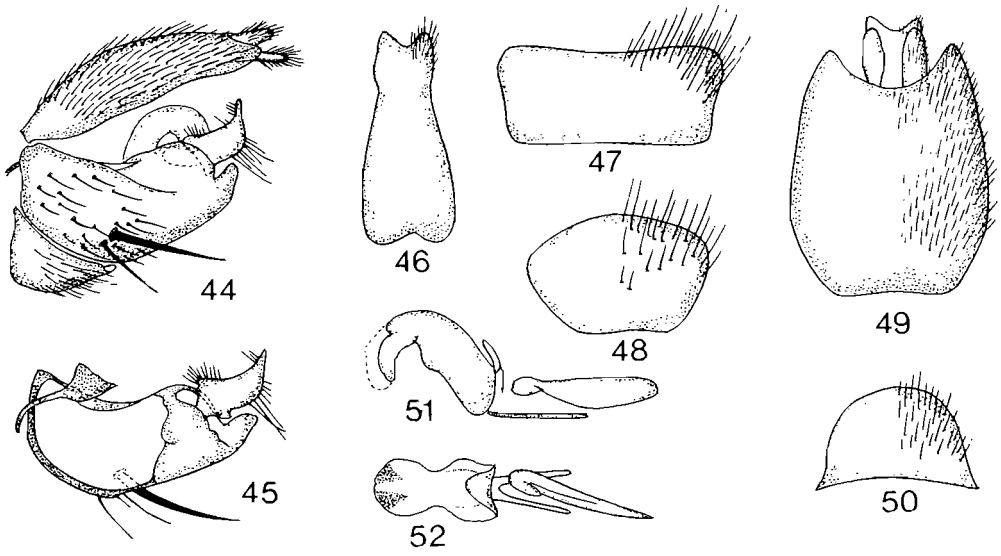
Terminalia (figs 44–52). Yellowish-brown with black pilosity. Pile on gonocoxites composed of one very strong and several weaker setae. Stylus short and curved, thick at base and terminating into a sharp point. Gonocoxite closed on inside, but the sclerotized part is very narrow near dorsal margin. Aedeagus weakly sclerotized, the sperm-tube not being clearly separated from the rest of the bulbous, phallic part, though distinguishable by darker pigmentation. A small, triangular dorsal apodeme is present.

Total length 5,4 mm.

Measurements and numerical characters: see table 2, no. 1065.

Female. Frons and face slightly wider than in male, and third antennal segment (fig. 15) comparatively much shorter. Other characters as described for holotype.

Thorax. Ground coloration as in holotype, though in some specimens the pleura are darker brownish, especially the areas covered with whitish tomentum.



Figs 44–52. Male terminalia of *Microgephyra stuckenbergi* sp.nov., no. 1065. (44) terminalia in lateral view; (45) right gonocoxite seen from inside; (46) sternite 10 + paraprocts; (47) tergite 8; (48) sternite 8; (49) epandrium; (50) sternite 9 or hypandrium; (51) aedeagus in lateral view; (52) aedeagus in dorsal view.

Wings and legs as in male, though f3 and t3 appear darker than f2 and t2 in some specimens.

Abdomen entirely shiny blackish with black, erect pilosity and whitish hindmarginal hems on segments 2–3 or 2–4.

Total length 5,5 mm.

Measurements and numerical characters: see table 2, no. 1072.

Variation. The male paratypes show practically no variation in dimensions. The thirteen male paratypes from the same locality as the holotype show very little variation in coloration too, but the three male paratypes from Mtubatuba have nearly blackish palpi and first antennal segments, and also t1 and t3 appear darker. Two of these paratypes also have the tomented pleural areas of a darker brownish ground coloration. All the seven female paratypes have black abdomens, so there is a definite sexual difference in abdominal coloration in this species.

Material. 17 ♂ 7 ♀. Holotype, ♂ no. 1065, TONGALAND, Ndumu Reserve, Ingwavuma district, 1–10.xii.1963, B. & P. Stuckenberg (NM); paratypes, 13 ♂ 7 ♀ nos. 1058–64 + 1066–78, same data as holotype (NM and ZMC); 3 ♂ nos. 1079–81, Zululand, Mtubatuba, 24–25.iii.1968, Paul J. Spangler (USNM).

Remarks. The species is named in honour of Dr B. R. Stuckenberg, Natal Museum, Pietermaritzburg.

Microgephyra grandis sp.nov. Figs 19, 20

Diagnosis. Thorax as in the preceding species entirely yellowish, but *grandis* can be recognized by its large size, *c.* 8,5 mm. Third antennal segment shorter than depth of head and of about same length as first segment.

Description. Female, holotype (male unknown).

Head (figs 19, 20). Frons shiny brownish-black and smooth; narrow stripes of whitish tomentum along ocular margin of lower part of frons. These tomented stripes continue downwards, being gradually wider, covering lateral parts of face and entire genae. Central part of face shiny brownish-black as frons. Frons and face absolutely bare. The rather deep genae with minute, black hairs. Occiput mostly greyish tomented, the tomentum having a slight brownish tinge dorsally. Area behind ocellar triangle and on lower, central part of occiput untomented. About 20 postocular + occipital setae. Pilosity of lower part of occiput rather dense, moderately long and black. Proboscis and palpi longer than in other species of the genus. First palpal segment slender and dark brownish; second palpal segment broadened near base and yellowish-brown; palpal pilosity yellowish and rather long. First antennal segment yellowish-brown, second segment brownish and third segment blackish. Antennal pilosity short and black.

Thorax. Ground coloration of mesonotum and scutellum yellowish-brown to reddish-yellow. Two narrow darker stripes are present and also central and posterior part of scutellum are brownish-black. Seen from behind a very thin, pale tomentum appears. Pilosity sparse, very short and black. Upper parts of pleura except dorsal margin of mesopleuron are pale yellowish and untomented. Lower parts of pleura, including sternopleuron and hypopleuron, have a much darker ground coloration and are at the same time thickly covered with whitish-grey tomentum. Pleural pilosity practically absent; a few pale hairs on prosternum.

Wings. Practically uniformly brownish-hyaline. Narrow and very indistinct darker bands appear over base and apex of discal cell. Halteres whitish-yellow.

Legs (both p2 lost). Coxae yellowish-brown, cx3 darker behind, all coxae whitish tomented. f1 and f3 yellowish-brown, f3 slightly darkened at apex. t1 yellowish-brown, being gradually darker towards apex, which is nearly blackish-brown. Fore tarsi blackish-brown. t3 and hind tarsi pale brownish as apex of f3. Claws and pulvilli normal.

Abdomen. Tergites brownish-black to black and shiny, posterior 2–3 tergites more or less yellowish-brown. Sternites, including sternite 8, yellowish. Abdominal pilosity erect, moderately long and black. Sternite 8 with 13 long setae in upper posterior row and 11 shorter setae in lower anterior row.

Total length 8,4 mm.

Measurements and numerical characters: see table 2, no. 1128.

Material. 1 ♀. Holotype, ♀ no. 1128, CAPE PROV., Willowmore, 10.ii.1923, Dr Brauns (TM).

Microgephyra capricornis sp.nov. Figs 18, 53–60

Diagnosis. 4,5 mm long. Thorax and abdomen blackish, mesonotum with two indistinct stripes of greyish tomentum and pleura thinly tomented all over. Frons short haired

anteriorly. Third antennal segment about as long as depth of head and 3–4 times longer than first segment. Gonocoxite with a single moderately long seta. Stylus with a remarkable long exterior process directed downwards.

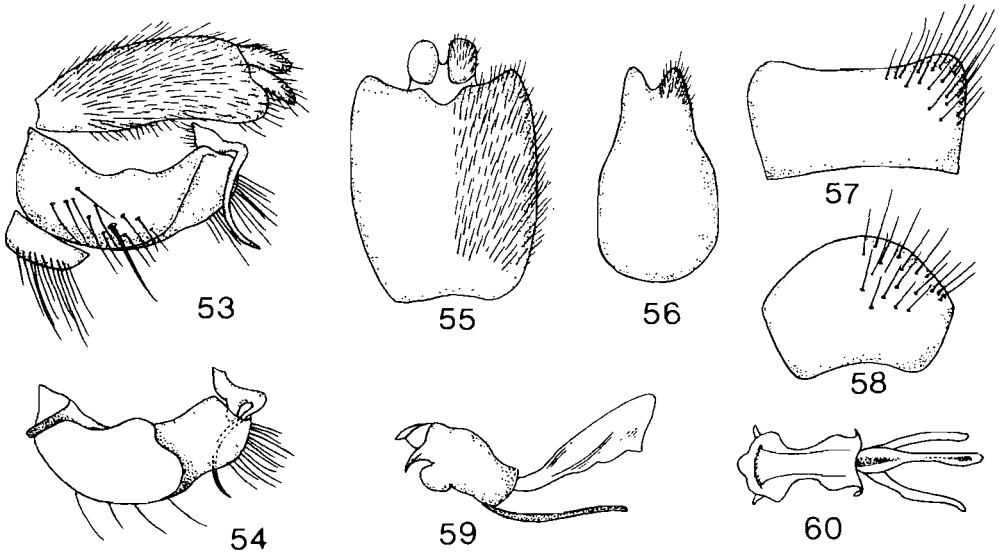
Description. Male, holotype.

Head (fig. 18). Frons blackish, narrowly greyish tomented on lateral stripes and on extreme anterior part; central part transversely wrinkled and therefore not polished, though shiny. On anterior part of frons a short pile of black hairs. Face and genae blackish with greyish tomentum; without pilosity. Occiput blackish with a thin, greyish tomentum on dorsal part, and a thicker tomentum on postocular margin and on ventral part. About 20 postocular + occipital setae. Pilosity of lower part of occiput rather long and blackish. Palpi slender, blackish, with black hairs. Antennae blackish, pilosity of first and second segments short and blackish.

Thorax. Ground coloration blackish. Mesonotum dulled by greyish tomentum which forms two indistinctly demarcated stripes on anterior part and covers posterior part. Scutellum untomented. Pleura tomented all over, but most intensively on lower parts. Pile moderately long and dense on mesonotum, very sparse on pleura. Prosternum with black hairs.

Wings. Ground coloration greyish-brown, with three unsharply demarcated bands of a more brownish coloration. One band occurs over basal half of discal cell, one apically to discal cell and one occupies the apical part of the wing. Halteres blackish.

Legs. Coxae and femora blackish-brown; coxae with a thin, greyish tomentum; femora with short, black pile. t1 and especially t2 slightly paler than corresponding femora.



Figs 53–60. Male terminalia of *Microgephyra capricornis* sp.nov., no. 1204. (53) terminalia in lateral view; (54) gonocoxite seen from inside; (55) epandrium; (56) sternite 10 + paraprocts; (57) tergite 8; (58) sternite 8; (59) aedeagus in lateral view; (60) aedeagus in dorsal view.

t3 of same dark colour as f3. Tarsi coloured as corresponding tibiae. Claws and pulvilli comparatively large.

Abdomen. Entirely blackish and shiny; thinly tomented when seen from in front. A distinct whitish hindmarginal hem on tergite 2. Pilosity moderately long and black.

Terminalia (figs 53–60). Blackish, shiny and with black pilosity. Gonocoxite with one rather strong and several weaker setae. Posterior, ventral part of gonocoxite remarkably large, lamellate and provided with long pilosity on ridge. Gonocoxite broadly closed on inside. Body of stylus very small, but provided with a remarkable long, hook-like process which first is directed towards the rear, then curves outwards and downwards, lying externally to the lamellate lobe of the gonocoxite. Aedeagus of a rather complicated shape both seen laterally and dorsally, as the opening of the sperm-tube is surrounded by dorsal, ventral and lateral outshoots of various shape.

Total length 4,5 mm.

Measurements and numerical characters: see table 2, no. 1204.

Female. Unknown.

Material. 1 ♂. Holotype, ♂ no. 1204, NATAL, Umhlanga, 26.x.1941, L. Bevis (NM).

Microgephyra stylata sp.nov. Figs 61–69

Diagnosis. *C.* 5 mm long. The only known species of the genus with a holoptic head. Coloration of thorax and abdomen almost as in preceding species, and stylus also with a long process which is directed upwards and inwards.

Description. Male, holotype.

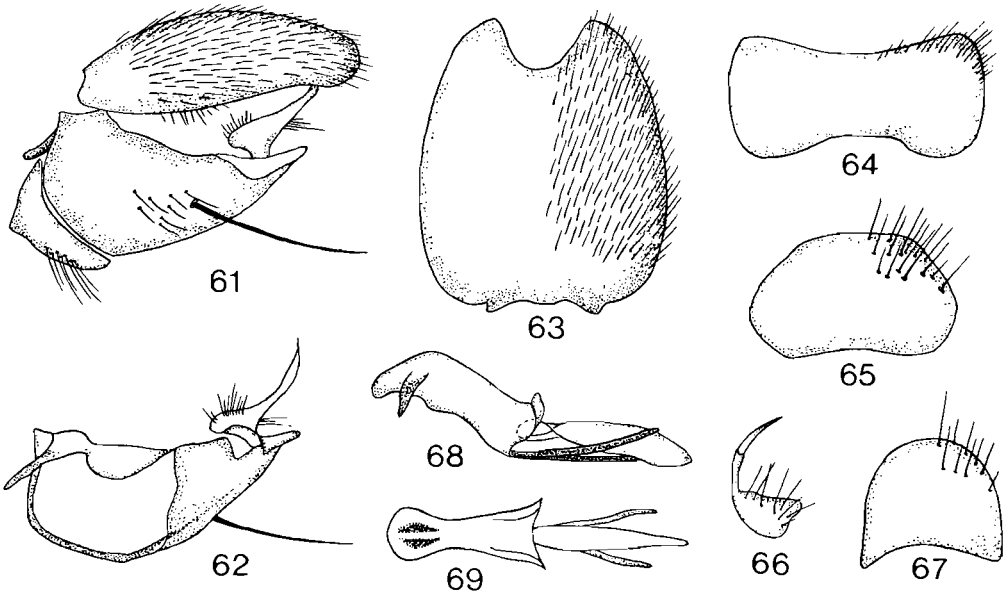
The following description is not complete, as the holotype is in bad condition. Third antennal segments, right p1 and p3, and left p2 are lost.

Head. Eyes practically touch for a short distance. Upper facets not distinctly enlarged. Frontal triangle blackish and thickly whitish-grey tomented all over, except for a small area above antennal bases which is shiny. Face, genae and occiput blackish and whitish-grey tomented; this tomentum being very thin on lower part of occiput which is thus subshiny. Frons and face bare, genae with single hairs, but not piled. *C.* 14 short postocular + occipital setae, which are irregularly arranged below. Pilosity of lower occiput rather long and pale. Palpi slender, blackish-brown, with a few black hairs. First and second antennal segments yellowish-brown; with short, black hairs.

Thorax blackish, with a thin greyish tomentum all over. The extreme lateral parts of mesonotum together with mesopleuron and pteropleuron are shiny. Also disc of mesonotum is subshiny; seen from behind two narrow stripes with a more thick tomentum appear. Scutellum deep black, not shiny. Pilosity of mesonotum very short (*c.* 0,05 mm) and black, of pleura pale and very sparse.

Wings semihyaline with two very indistinct darker bands, the first one narrow and running from stigma over base of discal cell, the second one broad and occupying the wing apical to discal cell, except for the extreme apex. Halteres brownish-black.

Legs. Coxae blackish-brown to blackish and greyish tomented as pleura. Femora yellowish-brown, basal half of f3 darker brownish. Tibiae yellowish-brown, apical part of t1 and entire t3 darker brownish. Tarsi of same coloration as corresponding tibiae. Claws



Figs 61–69. Male terminalia of *Microgephyra stylata* sp.nov., no. 1175. (61) terminalia in lateral view; (62) right gonocoxite seen from inside; (63) epandrium, cerci broken; (64) tergite 8; (65) sternite 8; (66) stylus; (67) sternite 9 or hypandrium; (68) aedeagus in lateral view; (69) aedeagus in dorsal view.

and pulvilli normal.

Abdomen. Entirely blackish and shiny, when seen from in front with a dark brownish tomentum on disc of tergites, and with a more greyish tomentum on lateral parts of tergites. Pile on lateral parts of tergites 1–3 pale, black on rest of abdomen.

Terminalia (figs 61–69). Black and shiny. Gonocoxite has a single very long seta and some additional hairs, while epandrium has a short, black pile. Stylus of a remarkable shape; its basal part semicircular in dorsal view. From exterior corner arises a long, narrow process which is directed upwards and inwards, so that the apices of these sections nearly reach each other in midline below epandrium. Gonocoxite broadly closed on inside; dorsally at posterior margin unpigmented and weakly sclerotized. Aedeagus with a very weakly sclerotized and unpigmented phallic part, which is comparatively slender; a paired tooth-like section just behind the opening of the sperm-tube is dark pigmented.

Total length 5,0 mm.

Measurements and numerical characters: see table 2, no. 1175.

Female. Unknown.

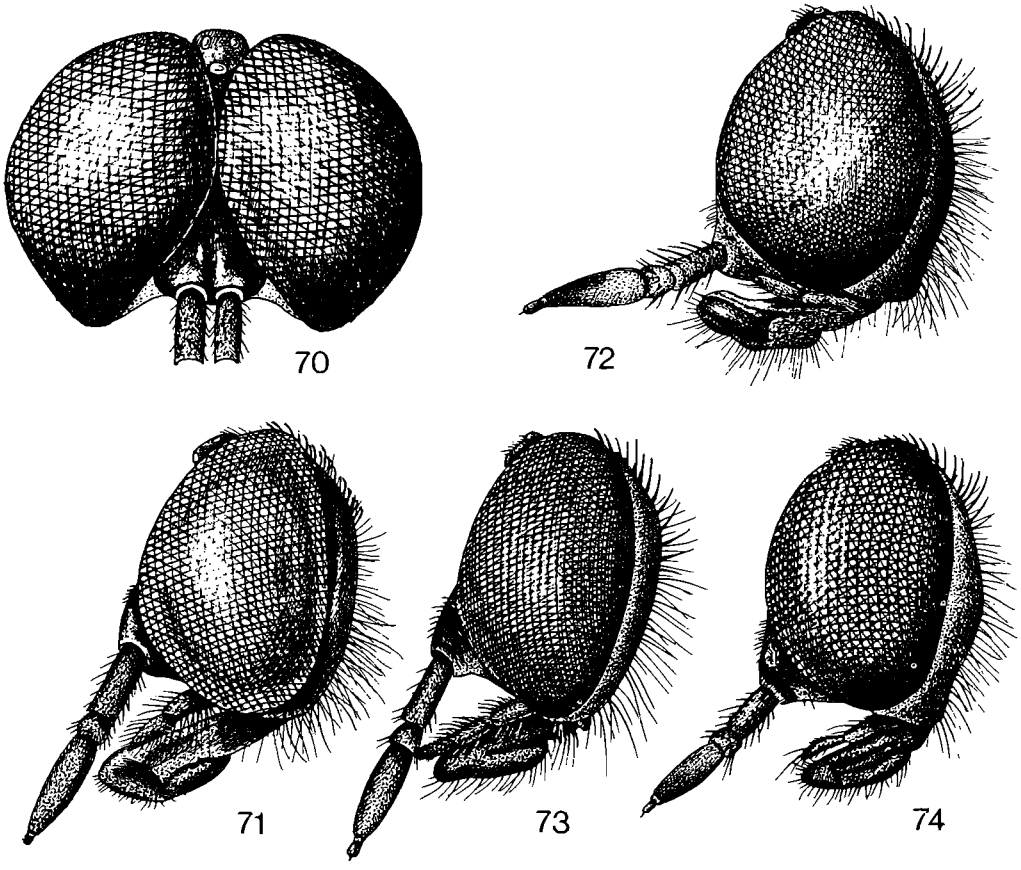
Material. 1 ♂. Holotype, ♂ no. 1175, SOUTH WEST AFRICA, Okahandja, 1–12.i.1928, R. E. Turner (BMNH).

Pentheria Kröber, 1914

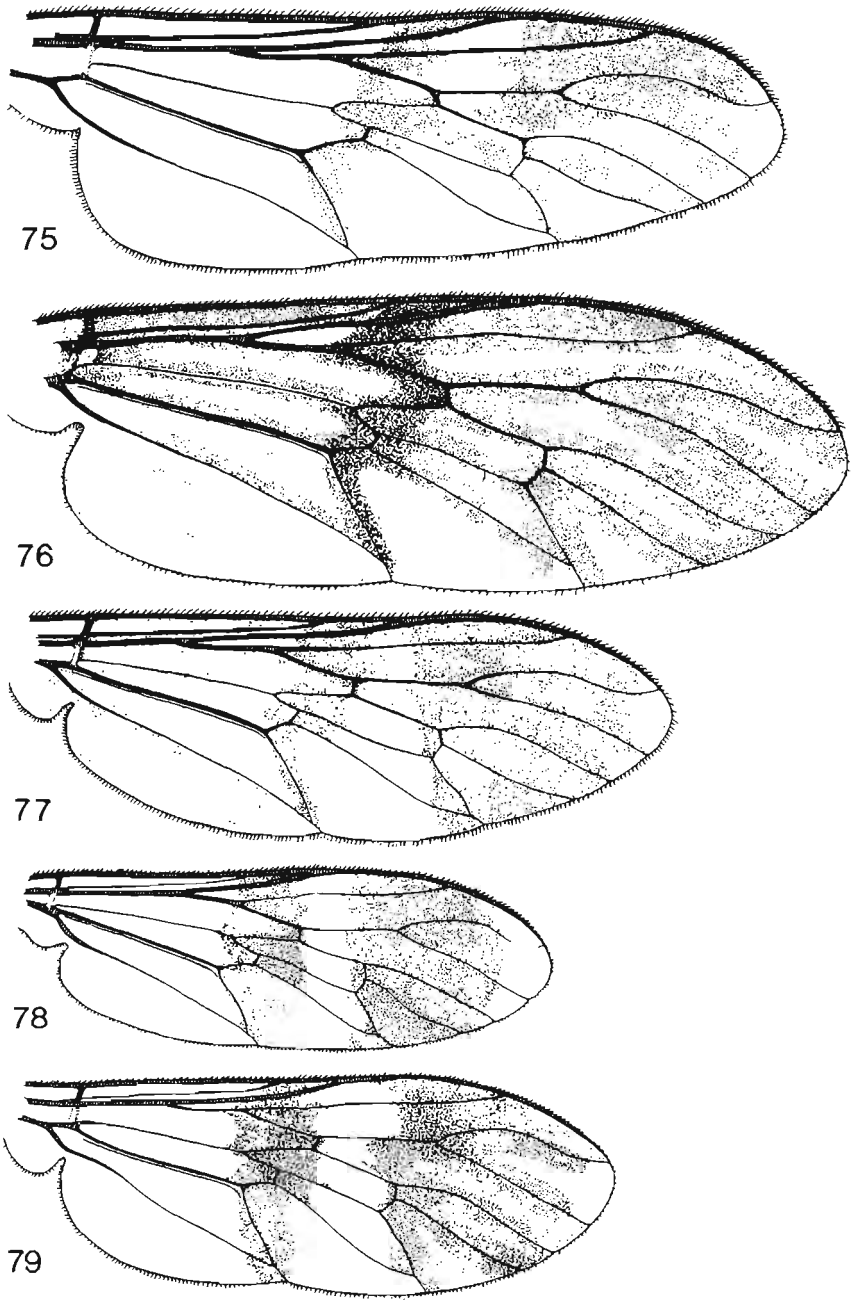
Type-species: *P. obscura* Kröber, 1914, by original monotypy.

Description.

Head (figs 70–74). The eyes (fig. 70) are touching in the male and are comparatively narrowly separated in the female. Frons with a very short and sparse black pile in both sexes. Face (fig. 71) short, concave and without pile, or with a few short hairs. Genae narrow and like occiput with exclusively blackish pile. No marked sexual difference in length and strength of the postocular and occipital setae. Proboscis short and with broad labella. The two palpal segments of almost equal length. Proboscis and palpi black and with blackish pile. Antennae of a simple shape and with a low insertion on the head. First antennal segment always shorter and not wider than third segment and provided with a short and sparse black pile. Orientation of the antennae in relation to the profile-line of frons shows some interspecific variation. In most species (figs 71, 73) the profile-line of the



Figs 70–74. Heads of male *Pentheria* Kröb. (70) head in frontal view of *P. rufipes* (Big.), no. 1027; (71) head in lateral view of same; (72) head in lateral view of *P. simplex* sp.nov., no. 1200; (73) head in lateral view of *P. alternans* (Lw), no. 1049; (74) head in lateral view of *P. caniceps* sp.nov., no. 1046.



Figs 75–79. Wings of *Pentheria* Kröb., drawn at the same scale. (75) *P. rufipes* (Big.), no. 1027; (76) *P. obscura* Kröb., no. 1043; (77) *P. ponti* nom.nov., no. 1032; (78) *P. alternans* (Lw.), no. 1049; (79) *P. uncinata* sp.nov., no. 1044.

frons and of the antennae forms a straight line, but in *caniceps* (fig. 74) and *simplex* (fig. 72) this line is not straight.

Thorax with all parts blackish and partly dulled by a thin greyish or brownish tomentum. Any marked stripes or spots does not occur, whether on mesonotum or on pleura. Mesonotal pile short and black. Pleura with blackish pile only on propleural area, prosternum and metapleural callus. Upper part of mesopleuron sometimes with a few short hairs.

Wings (figs 75–79) normally marked with a narrow and irregularly shaped brownish band over basal half of discal cell. A much broader band is present in apical third of wing. The inner demarcation of this band touches extreme apex of discal cell. The area between these bands, basal part of wing and extreme wing apex may be hyaline to semihyaline, or the whole wing may be more or less intensively brownish as in the type-species *obscura*. The halteres are blackish in all species.

Legs are long and slender and with extremely short pile. All femora without setae. t1 without ad or pd setae, only 4–6 short pv setae are present. Also t2 without pd setae, but other three rows well developed. t3 with pv setae very short and hairlike; other three rows well developed. Claws and pulvilli of normal size.

Abdomen nearly cylindrical and only slightly narrower towards apex. Coloration black and shiny when viewed from behind and above. When viewed laterally and from in front a brownish and/or greyish tomentum appears. Abdominal pile short, sparse and black.

Male terminalia. These show a remarkable diversity, especially in the shape of the stylus and in complicated structures on the dorsal and posterior edge of the gonocoxite.

These structures are in *rufipes* (fig. 80) and *ponti* (fig. 88) represented by a short upwards directed process dorsally and a haired oval lobe on posterior margin. In the first species (*rufipes*) the stylus has a very long process downwards, but this process does not enter into an intimate connection with the gonocoxal structures just described as is the case in *ponti* (fig. 88) where the process on stylus fits closely into a furrow below the haired lobe just mentioned. In the other species, except *caniceps*, there is a long, pointed process which branches off dorsally on the gonocoxite. This process is of different length, directed towards the rear or upwards as in *septentrionalis* (fig. 132). Only in *caniceps* (fig. 113) this dorsal process is of quite another shape. The stylus has in *alternans* (fig. 97), *uncinata* (fig. 105) and *caniceps* (fig. 113) a short exterior process which has an intimate connection with the posterior gonocoxal structures as in *ponti* (fig. 88). However, there are differences in the structure of the lower posterior margin of the gonocoxite. The haired oval lobe as present in *rufipes* and *ponti* is missing in the other species. Some of these have a more or less distinct ventral gonocoxal process. This process is distinct in *alternans* (fig. 97), much larger in *uncinata* (fig. 105) and extremely long and complicated in *septentrionalis* (fig. 132). On the other hand it is hardly developed in *simplex* (fig. 123) and *caniceps* (fig. 113). *Rufipes* and *ponti* have a closed gonocoxite, as a broad and well-sclerotized bridge is present on inside between ventral and dorsal margin of the gonocoxite. However, the connection to dorsal margin is narrow. All other species have the gonocoxite open on inside, but some have a broad, rounded ventral lobe.

The proximal part of phallus is short, wide and has apically a dorsal rounded extension which is often weakly sclerotized, especially along the margin. A narrow hook is situated

below this 'shield' and may constitute the distal end of the sperm-tube itself. The ejaculatory apodeme is high when viewed laterally.

Remarks. Pentheria Kröb. certainly represents a monophyletic group. Certain characters of the head and of the male terminalia may be termed apomorphous. It holds good for the holoptic heads of the males, for the narrowly fronted females, for the low insertion of the antennae which are directed more or less downwards giving the head a characteristic profile. The presence of gonocoxal processes represents an apomorphous condition and is found in this group only in *Delphacura* gen.nov. and *Cochlodactyla* gen.nov. Like in most species of *Microgephyra* gen.nov. the stylus of most species of *Pentheria* has an exterior process, and this process enters in some species into an intimate connection with the structure formed by the gonocoxal processes. Evolutionary lines for this connection and for the gradual reduction of the sclerotized bridge from ventral to dorsal margin on inside of the gonocoxite are described above.

The genus is represented by eight species in southern and eastern Africa. The principal distribution area seems to be in the Natal and Transvaal provinces of South Africa. *P. septentrionalis* sp.nov. from Tanganyika is the northernmost representative of the genus and of the whole group in Africa. The species are keyed out on pp. 308–310.

Very little is known about the biology of these flies, see note on p. 336.

Pentheria rufipes (Bigot, 1889), **comb.nov.** Figs 70, 71, 75, 80–87

Psilocephala rufipes Bigot, 1889: 327; Kröber, 1912: 115; Kröber, 1931: 123.
Psilocephala xylophagoides Enderlein, 1912: 327, **syn.nov.**; Kröber, 1931: 122.

Diagnosis. A large species, 11–14 mm, with front coxae, all femora and tibiae bright reddish-yellow, while the other coxae are blackish. Wing (fig. 75) with dark transverse bands.

Redescription. Male, holotype.

Head (figs 70, 71). Frons blackish, mostly shiny, only slightly greyish tomented above. Face mainly greyish tomented, without pile. Genae and lower part of occiput blackish and subshiny to shiny, with a greyish tomented area along ocular margin. Upper part of occiput entirely tomented. *C.* 15 postocular + occipital setae. Antennae blackish.

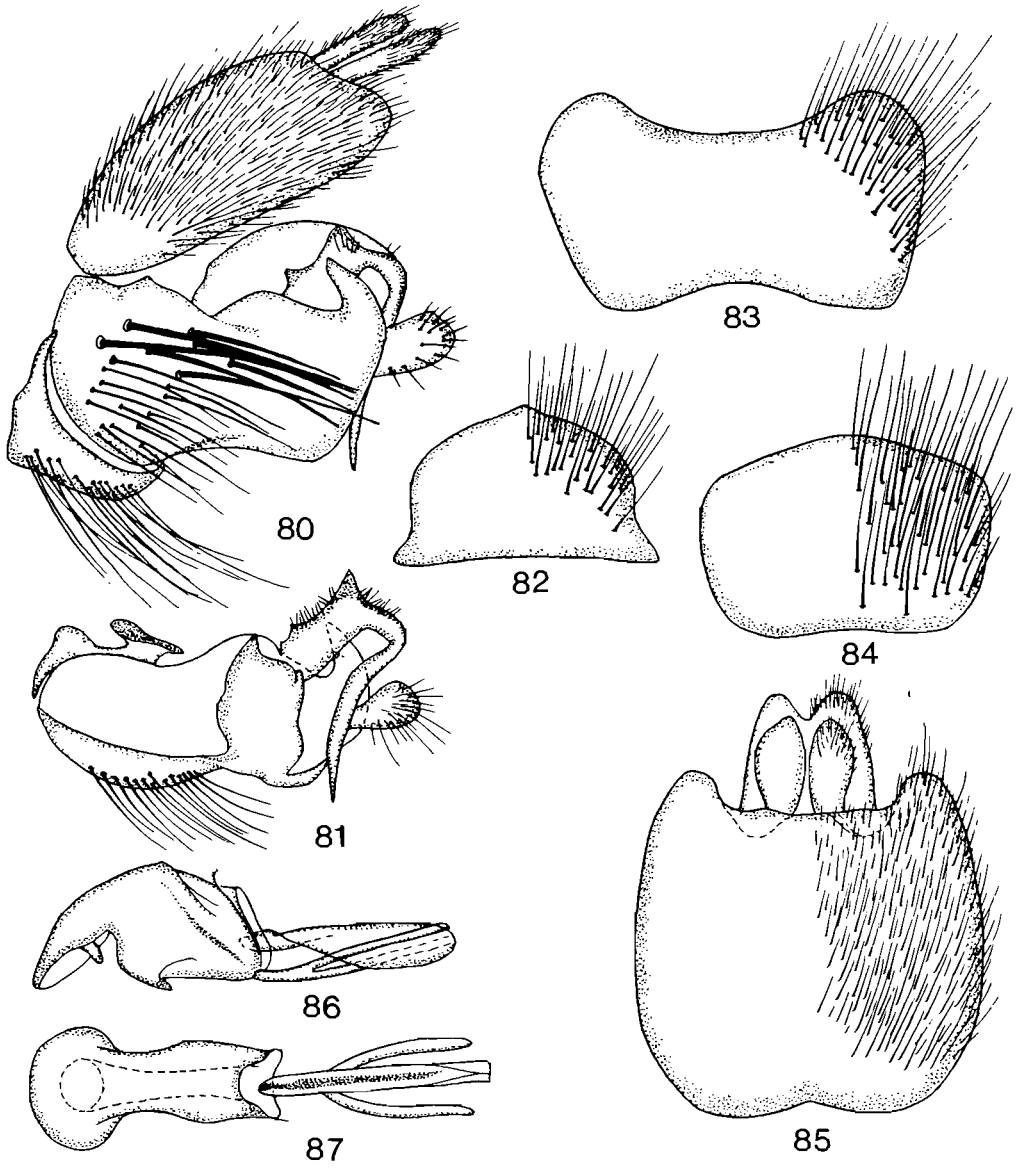
Thorax. Mesonotum and pleura black and distinctly shiny, only slightly tomented on posterior part of mesonotum.

Wings as in fig. 75.

Legs. A marked difference in coloration of cx1 which is reddish-yellow, and cx2 + cx3 which are blackish and thinly greyish tomented. Femora, tibiae and metatarsi reddish-yellow; other tarsal segments more blackish-brown.

Abdomen entirely blackish and shiny. Distinct whitish hindmarginal hems on segments 2 and 3.

Terminalia (figs 80–87). Exclusively shiny blackish. Some very strong setae on gonocoxites. Gonocoxite (fig. 81) closed on inside by a broad well sclerotized 'ventral lobe', which is narrowly connected with dorsal margin of gonocoxite. Gonocoxite in lateral view (fig. 80) with posterior margin broadly rounded and simple, terminating on dorsal corner into a pointed process which is directed upwards and inwards. Attached to posterior margin is an oval haired sclerite. Stylus (fig. 81) with its proximal part rectangular. Its distal part



Figs 80–87. Male terminalia of *Pentheria rufipes* (Big.), no. 1027. (80) terminalia in lateral view; (81) right gonocoxite seen from inside; (82) sternite 9 or hypandrium; (83) tergite 8; (84) sternite 8; (85) epandrium; (86) aedeagus in lateral view; (87) aedeagus in dorsal view.

arises in a right angle to the proximal part, then suddenly curves for another 90° and terminates into a pointed, slightly curved process which reaches to bottom of the gonocoxite. The dorsal, distal part of phallus is circular and comparatively well sclerotized.

Total length 11,3 mm.

Measurements and numerical characters: see table 3, no. 1027.

Female. Very similar to the male. Frons black and shiny; a narrow stripe of greyish tomentum along ocular margin of upper half. Antennae brownish-black as in male, but may be more or less reddish-brown, especially on first segment and base of third segment.

Thorax. Meso- and sternopleuron thinly greyish tomented and therefore less shiny than in male.

Wings. Two of five females examined do not show so clear a distinction between the hyaline areas and the brownish bands as shown in fig. 75.

Legs as in male.

Abdomen. Tergites 1–5 or 1–6 and sternites 1–6 or 1–7 are blackish, but less shiny than in male. Seen from in front the tergites have a dark brownish tomentum on most of the surface, but posterior parts more greyish-brown tomented, though not in sharp contrast to the dark brownish areas. Tergites 7–8 and sternite 8 are reddish-yellow. Also tergite 6 and sternite 7 may be more or less reddish-yellow, extensively so in the holotype of *xylophagoides*.

Terminalia. Sternite 8 has two rows of setae, one row of 8 long and one row of 10 shorter setae. The setae and also the pile of the yellowish terminal sclerites are shorter than in the following species.

Total length 11,5–12,3 mm.

Measurements and numerical characters: see table 3, no. 1210.

Type material. Bigot's (1889: 327) description of *rufipes* was based on a single male specimen from 'Port-Natal' (= Durban). This specimen is in the Bigot collection of the British Museum (Nat. Hist.). It is in nearly perfect condition as only the third antennal segments are lost. One of these is glued to the stripe of *Polyporus* on which the specimen has recently been mounted. The specimen corresponds closely to the description. It carries an old label of 'P. rufipes ♂, Natal Pt., F. Bigot' and must evidently be the holotype.

Psilocephala xylophagoides was described by Enderlein (1912: 327) on the basis of a single specimen from 'Transvaal, Zoutpansberg', and the type was stated to be in the 'Stettiner Zoologischen Museum'. The collection of the Stettiner Museum is now in Warsaw and thanks to the help of Dr A. Draber-Monko I received the holotype. This is labelled in accordance with the information given in the original description. Enderlein stated the type to be a male, but it is in fact a female. It is in nearly perfect condition, though left third antennal segment, both p1 and the tarsi of both p3 are lost. This holotype of *xylophagoides* represents the female sex of Bigot's *rufipes*.

Material. 1 ♂ 6 ♀. Holotype, ♂ no. 1027, NATAL, Port Natal (= Durban), F. Bigot Coll. (BMNH); holotype of *xylophagoides* End., ♀ no. 1028, Transvaal, Zoutpansberg, (MZP). Other material, ♀ no. 1029, Cape Prov., Pondoland, Port St. Johns, x.1916, H. H. Swinny (TM); ♀ no. 1030, Transvaal, Nelspruit district, Elandshoek, xi.1946, A. L. Capener (TM); ♀ no. 1031, Cape Prov., Somerset East, xi.1930, R. E. Turner (BMNH); ♀ no. 1209,

Natal, Zululand, Eshowe, on lab. window, 14.x.1937 (BMNH); ♀ no. 1210, same locality, 11.x.1935, B. de Meillon (from BMNH) to ZMC.

Pentheria ponti nom.nov. Figs 77, 88–96

pro *Pentheria rufipes* Kröber, 1933: 289; nec *Pentheria rufipes* (Bigot, 1889: 327).

Diagnosis. 9–11 mm. All coxae blackish, all femora and tibiae bright reddish-yellow as in preceding species. Wing (fig. 77) with dark transverse bands.

Redescription. Male, lectotype.

Head. Apart from smaller dimensions (see table 3) not distinguishable from head of *rufipes* (Big.).

Thorax. Mesonotum not so shiny as in *rufipes*, dulled by a dark brownish and greyish tomentum.

Wing as in fig. 77.

Legs. The only difference compared with *rufipes* lies in the coloration of the coxae. These are all blackish in *ponti*, though greyish tomented, and contrast strongly against the reddish-yellow femora, tibiae and basal parts of metatarsi. The coloration is, however, not so bright as in *rufipes*.

Abdomen blackish and shiny when viewed from behind. When viewed from in front the tergites appear with a dark brownish tomentum medially, while lateral parts have a more greyish tomentum, but no sharp demarcations.

Terminalia (figs 88–96). Epandrium blackish, gonocoxites brownish. Gonocoxite with some strong setae and closed on inside as in *rufipes*, the sclerotized connection with dorsal margin of gonocoxite being broader than in this species. Gonocoxite in lateral view (fig. 88) more modified than in *rufipes*, as the oval sclerite on posterior margin of gonocoxite is more intimately fused to the posterior part of the gonocoxite, and the distal part of stylus curves outwards and fits into a furrow below on the posterior margin of the gonocoxite. The dorsal, distal part of phallus is truncate and weakly sclerotized.

Total length 9,6 mm.

Measurements and numerical characters: see table 3, no. 1032.

Female. Very similar to male and to female of *rufipes*. Frons less shiny than in *rufipes*, distinctly greyish tomented, especially on upper half. Antennae often more or less reddish-brown on first and second segments.

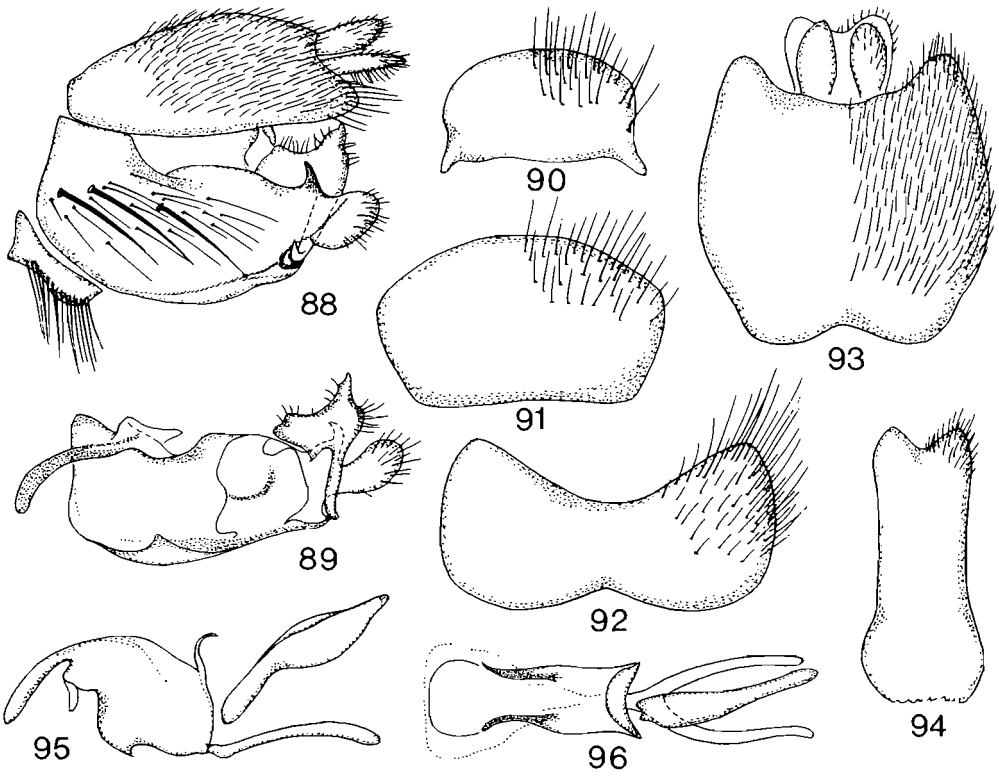
Thorax still more tomented than in male and then much less shiny than in female of *rufipes*.

Wings. The hyaline areas which are so distinct in the male lectotype (see fig. 77) are in all female specimens more or less intensively greyish-brown tinged, although they still appear paler than the dark brownish band.

Legs as in male.

Abdomen less shiny than in male. Tergites 1–5 blackish, the following tergites being more or less reddish-yellow; especially on tergite 6 there is considerable individual variation in the extension of the blackish area. Sternites blackish, except to sternite 7 which is more or less reddish-yellow.

Terminalia. Sternite 8 carries 10 long, yellow setae and 10 shorter setae in front of these;



Figs 88–96. Male terminalia of *Pentheria ponti* nom.nov., no. 1032. (88) terminalia in lateral view; (89) right gonocoxite seen from inside; (90) sternite 9 or hypandrium; (91) sternite 8; (92) tergite 8; (93) epandrium; (94) sternite 10 + paraprocts; (95) aedeagus in lateral view; (96) aedeagus in dorsal view.

moreover long and soft, yellowish pile.

Total length 10,6–11,9 mm.

Measurements and numerical characters: see table 3, no. 1033.

Remarks. The species is named after Mr Adrian C. Pont, British Museum (Nat. Hist.) who gave me an excellent service with the collection of Therevidae in the British Museum.

Type material. Kröber (1933: 289) described his *Pentheria rufipes* on the basis of a series of both sexes originating from 'Natal, Weenen, IX–III' and stated to be in the British Museum (Nat. Hist.), London. Two specimens, a male and a female, in the BM collections are labelled as types. The male syntype is labelled 'Natal, Weenen, xi.1928–iii.1929, H. P. Thomasset', and the female syntype 'Natal, Weenen, ix–x.1928, H. P. Thomasset'. Both were presented by the Imperial Institute of Entomology to the British Museum (1931–480), and bear the identification-labels 'Pentheria rufipes, det. Kröber 1931'. I hereby designate the male syntype as lectotype and have labelled it accordingly. The lectotype has lost both p1 and p2, and the abdomen has been loose, but otherwise it is in a good condition. The female paralectotype is in good condition though it has lost both its third antennal segments.

Further material from the type-locality is present in the British Museum (see below). Weenen is situated about a hundred km NNW of Pietermaritzburg, Natal Province.

Material. 4 ♂ 7 ♀. Lectotype, ♂ no. 1032, NATAL, Weenen, xi.1928–iii.1929, H. P. Thomasset (BMNH); paralectotype, ♀ no. 1033, same locality, ix.–x.1928, H. P. Thomasset (BMNH). Other material, ♂ no. 1036, ix.–x.1925, ♀ no. 1039, x.1924, ♀ no. 1040, x.–xi.1926, same locality as lectotype, H. P. Thomasset (BMNH and ZMC); ♂ no. 1034, Natal, Pietermaritzburg, 14.xi.1959, B. Stuckenberg (NM); ♀ no. 1037, Natal, Scottsville, Pietermaritzburg, 21.x.1962, B. & P. Stuckenberg (NM); ♂ no. 1035, Natal, Durban, 28.ix.1941, Marley (SAM); ♀ no. 1042, Natal, Durban, Capt. Mann (BMNH); ♀ no. 1038, Natal, Hilton Road, xii.1956, P. Graham (NM); ♀ no. 1041, Natal, Wakkerstroom, i.1922, A. Rob. & G. v. Dam (TM).

Pentheria obscura Kröber, 1914. Fig. 76

Pentheria obscura Kröber 1914: 30; Kröber, 1931: 115.

This is the type-species of the genus *Pentheria* Kröb.

Diagnosis. 13 mm. All coxae and femora blackish. Tibiae reddish-yellow. Wing (fig. 76) not transversely banded, but with broad dark brownish streaks along the veins.

Description. Female, holotype. (Male unknown.)

Head. Frons black, not shiny as in *rufipes*, but dulled by a greyish tomentum, especially on upper half. Face, genae and occiput as in *rufipes*. Antennae entirely black, first segment subshiny.

Thorax. Mesonotum black, dulled by a tomentum and therefore not shiny as in *rufipes*. The tomentum does not form any distinct pattern and its coloration is certainly greyish. This does not appear, however, in the holotype which seems somewhat discoloured on mesonotum.

Wing (fig. 76) extensively dark brownish coloured. The coloration does not form distinct bands, but is most intensively in broad streaks along the veins, leaving the central parts of the cells greyish-brown. Apex of wing not paler.

Legs. All coxae blackish, cx3 rather densely whitish-grey tomented. Femora blackish. Tibiae reddish-yellow, though not of so bright a coloration as in *rufipes*. Metatarsi slightly darker than tibiae. Other tarsal segments brownish-black.

Abdomen entirely black, in certain views dulled by a dark brownish tomentum. Terminal tergites and sternites not reddish-yellow as in preceding two species.

Terminalia with two rows of setae which are longer and more slender than in *rufipes*. Their number cannot be exactly stated without dissection.

Total length 12,8 mm.

Measurements and numerical characters: see table 3, no. 1043.

Type material. The species was described by Kröber (1914: 30) on a single female specimen from South Africa. The holotype is in the Vienna Museum and is labelled 'Dr. Penther/Süd-Afrika' and 'Type'. It is in a good condition, only both p1 are lost.

Material. 1 ♀. Holotype, ♀ no. 1043, SOUTH AFRICA, Dr Penther (NMW).

Pentheria alternans (Loew, 1857), **comb.nov.** Figs 73, 78, 97–104

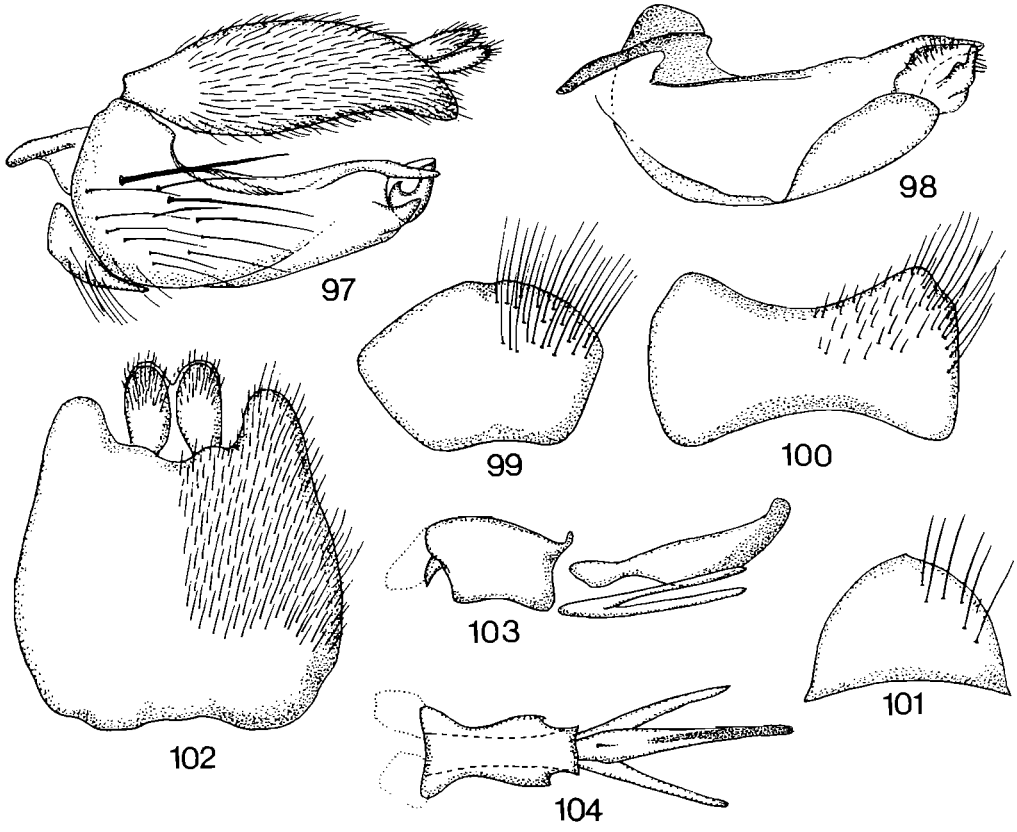
Ectinorhynchus alternans Loew, 1857: 342; Loew, 1861: 54; Kröber, 1912*b*: 22; 1913: 268, 270; Kröber, 1931: 113.

Diagnosis. 8–10 mm. Coxae and femora blackish. Wing (fig. 78) with two dark brownish, transverse bands separated by hyaline to subhyaline areas. Extreme apex of wing hyaline. Longitudinal axis of antenna and profile-line of frons forms a straight line as in preceding three species. Eye facets of ♂ of almost equal size.

Redescription. Male, lectotype.

Head (fig. 73). Eyes touch for a short distance only. Facets of equal size. Frons black, dulled by thin greyish tomentum, but subshiny on lower, central area. Face greyish tomented. Genae and lower part of occiput black and subshiny, but with a broad band of pale greyish tomentum along ocular margin. Upper part of occiput entirely greyish tomented. Palpi and antennae blackish.

Thorax. Blackish and dulled by a thin greyish tomentum. On mesonotum three narrow



Figs 97–104. Male terminalia of *Pentheria alternans* (Lw.), no. 1049. (97) terminalia in lateral view; (98) right gonocoxite seen from inside; (99) sternite 8; (100) tergite 8; (101) sternite 9 or hypandrium; (102) epandrium; (103) aedeagus in lateral view; (104) aedeagus in dorsal view.

stripes of a brownish tomentum. Also postalar calli and scutellum with a dark brownish tomentum.

Wing as in fig. 78.

Legs. Coxae blackish with greyish tomentum as on pleura. Femora and t3 brownish-black to blackish. t1 and t2 dirty yellowish-brown, t1 dark brownish towards apex. Tarsus of p1 blackish, of p2 and p3 dirty yellowish-brown.

Abdomen when viewed from behind black and subshiny, anterior part of tergite 2 thinly greyish tomented. When viewed from in front the tergites have a dark brownish tomentum on anterior part, and a greyish tomentum on posterior part. The demarcation between the two areas with differently coloured tomentum is not sharp, and the brownish tomented anterior area is broader in midline than laterally.

Terminalia (figs 97–104). Exclusively shiny blackish. Pile of epandrium short and black. On gonocoxites only a few rather long but weak setae present. Gonocoxite (fig. 98) not closed on inside, with a broadly rounded ventral lobe. Gonocoxite in lateral view (fig. 97) with two processes on posterior margin, both directed towards the rear. The upper process is narrow in lateral view, broadly tooth-shaped in dorsal view, and slightly longer than lower process. Stylus of a very compact shape. On its exterior surface a short, curved process which arises in the space between the two gonocoxal processes. The dorsal distal part of phallus formed by two separated and weakly sclerotized lobes. The ventral distal part of phallus has the shape of a short hook.

Total length 8,2 mm.

Measurements and numerical characters: see table 3, no. 1049.

Female. Head as in male. Frons with distinct greyish tomentum all over, lower part subshiny as in male. Lower part of occiput with shorter pile.

Thorax, wings and legs as described for male.

Abdomen entirely subshiny blackish to blackish-brown when viewed from behind, and with a thin greyish tomentum on anterior part of tergite 2. Seen from in front the tergites have the same pattern of tomentum as in the male. Tergite 7 and sternite 8 are densely covered with a moderately long pile of brass-coloured hairs. The two rows of setae with ca. 10 setae in each row. The setae are yellowish and not longer than the pile.

Total length 6,8–9,8 mm.

Measurements and numerical characters: see table 3, no. 1055.

Variation. The five male syntypes vary in length between 8,0 and 8,2 mm, but show otherwise no variation. The few female specimens available show a greater variation in size, as the total length varies between 6,8 and 9,8 mm.

Type material. Loew (1857: 342) described *alternans* on the basis of material of both sexes collected by Wahlberg and originating from 'Caffraria'. In the Naturhistoriska Riksmuseum, Stockholm, are five syntypic males. Four of the syntypes are labelled 'Caffraria' and 'J.Wahlb.'. One of these syntypes and the fifth syntypic specimen are labelled '168'. In the Loew collection of the Berlin Museum is a male specimen labelled 'Pt. Natal/Boh.', '4171' and 'Type' which certainly also belongs to the syntypic series. Further, a female specimen labelled 'E. alternans ♂/Natal/Loew' and deposited in the Bigot collection of the British Museum (Nat. Hist.) may be a syntype. From the series in the Stockholm Museum I desig-

nate a lectotype and have labelled it accordingly. The type locality is certainly Durban (= Port Natal) in Natal, and the species is not known from outside this area.

Material. 6 ♂ 3 ♀. Lectotype, ♂ no. 1049, NATAL ('Caffraria'), J. Wahlberg (NRS); paralectotypes, 4 ♂ nos. 1050–53, same locality and collector (NRS); ♂ no. 1054, Natal, Durban (Pt. Natal), J. Wahlb., pres. by Boheman to Loew (ZMB); ♀ no. 1057, Natal, pres. by Loew to Bigot (BMNH). Other material, ♀ no. 1055, Natal, Durban, 4.xi.1908, G. F. Leigh (TM); ♀ no. 1056, Natal, Umhlanga nr. Durban, 29.ix.1944, Marley (SAM).

Pentheria uncinata sp.nov. Figs 79, 105–112

Diagnosis. Very similar to *alternans*, see further below.

Description. Male, holotype.

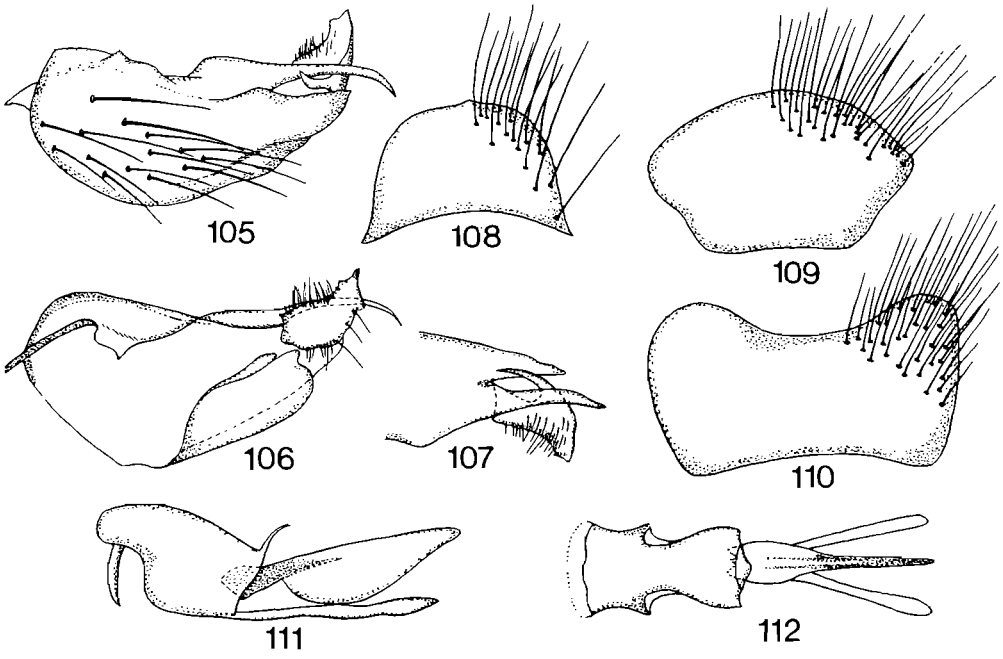
Head as in *alternans*, but eyes touching for a longer distance and facets of upper part of eyes distinctly larger than on lower part of eyes. A distinct demarcation is present between the areas with larger and smaller facets.

Thorax as in *alternans*.

Wings as in fig. 79. Note that extreme apex of wing is darker than the palest part of discal cell.

Legs and abdomen as in *alternans*.

Terminalia (figs 105–112). Of same coloration and with pile as in *alternans*. Gonocoxite



Figs 105–112. Male terminalia of *Pentheria uncinata* sp.nov., no. 1044. (105) terminalia in lateral view; (106) right gonocoxite seen from inside; (107) apex of right gonocoxite in dorsal view; (108) sternite 9 or hypandrium; (109) sternite 8; (110) tergite 8; (111) aedeagus in lateral view; (112) aedeagus in dorsal view.

(fig. 106) not closed on inside as also is the case in *alternans*. The main difference lies in the shape of the two processes on posterior margin of gonocoxite. The upper process is much longer in *uncinata* than in *alternans* and when seen dorsally (fig. 107) much narrower than in *alternans*. The lower process is more broadly tooth-shaped in *uncinata* than in *alternans*. Stylus with a dorsal extension, and its exterior process more slender than in *alternans*. The dorsal, distal part of phallus is only present as a narrow, weakly sclerotized fringe. The ventral, distal part of phallus has the shape of a very long hook.

Total length 7,7 mm.

Measurements and numerical characters: see table 3, no. 1044.

Female. Unknown.

Material. 1 ♂. Holotype, ♂ no. 1044, NATAL, Bellair (nr. Durban), 20.ix.1940, Marley (SAM).

Remarks. The holotype bears a label: 'frequent tree trunks where mating takes place. Sunny attractions'. This may indicate a larval habitat in forest soil or rotten wood.

Pentheria caniceps sp.nov. Figs 74, 113–122

Diagnosis. This and the following species are of the same size as *alternans* and are distinguished from the other known species of *Pentheria* by the more porrect antennae (cf. fig. 73 and fig. 74), which, in combination with more rounded eyes, gives a different profile line of the head. *Caniceps* and *simplex* can be separated by means of the key presented on p. 308.

Description. Male. holotype.

Head. Profile as in fig. 74. Eyes touch for a rather long distance. Upper facets enlarged. A rather distinct demarcation is present between the areas with larger and smaller facets. Coloration as described for *alternans* (p. 333).

Thorax black. Mesonotum dulled by a dark brownish tomentum, no distinct pattern. Scutellum black and dull. Pleura with a thin greyish tomentum, mainly on the lower parts.

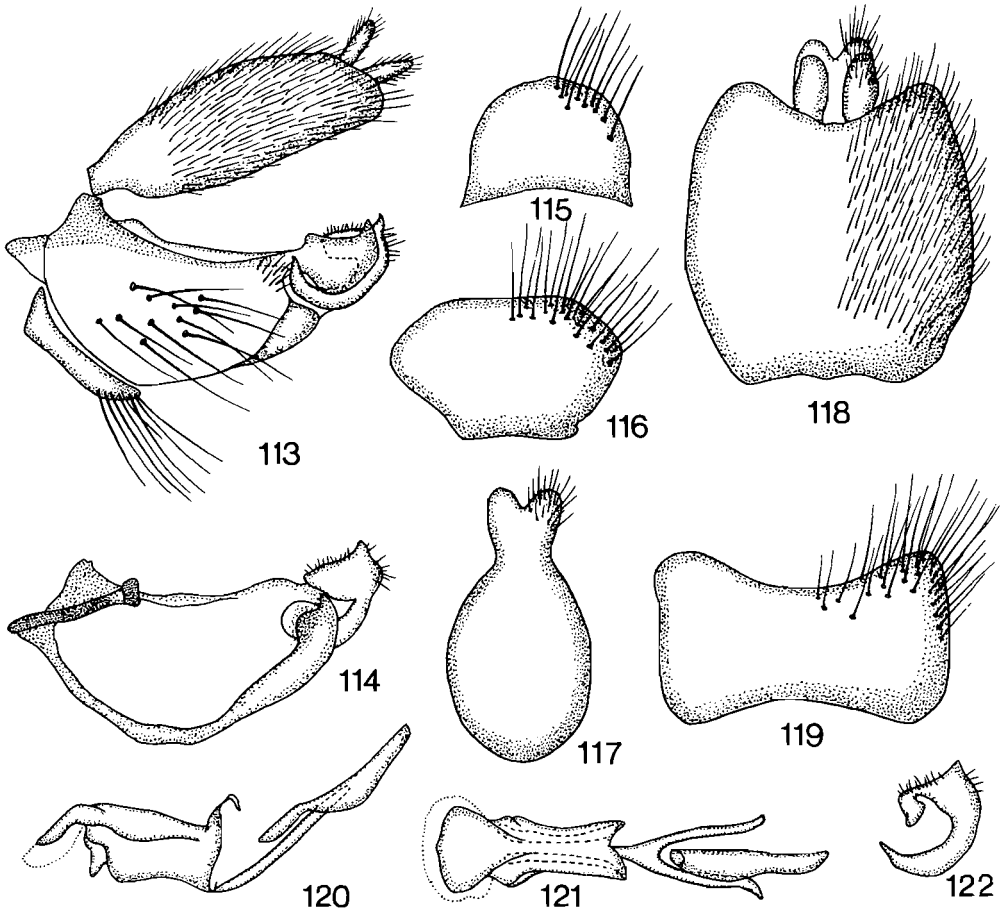
Wing practically as in *alternans* (see fig. 78).

Legs. Coxae and femora blackish, the former with a thin greyish tomentum. t1 and t2 dirty yellowish-brown. t3 blackish-brown, palest at base. Tarsus of p1 blackish, of p2 and p3 dirty yellowish-brown, the terminal segments being more blackish.

Abdomen when viewed from behind black and subshiny, anterior part of tergite 2 and entire tergite 1 being greyish and brownish tomented. Tergites 1 and 2 have very distinct white hindmarginal hems. Seen laterally and from in front the posterior lateral parts of the tergites are greyish tomented, the rest dark brownish tomented.

Terminalia (figs 113–122). Shiny blackish with black pile which is short on epandrium, longer but sparse on gonocoxites. Gonocoxite (fig. 114) as in *alternans* open on inside, but the processes on the posterior margin modified in a different way compared with this species. The upper gonocoxal process is much wider at apex, has a more complicated shape and is partly covering the exterior process of stylus. The lower gonocoxal process as present in *alternans* is not present in *caniceps*. Stylus as shown in fig. 122. Aedeagus (fig. 120) with about the same shape in lateral view as in *alternans* (fig. 103), but seen dorsally the dorsal, distal part of the phallus is not divided into two separate lobes.

Total length 7,8 mm.



Figs 113–122. Male terminalia of *Pentheria caniceps* sp.nov., no. 1046. (113) terminalia in lateral view; (114) right gonoxocite seen from inside; (115) sternite 9 or hypandrium; (116) sternite 8; (117) sternite 10 + paraprocts; (118) epandrium; (119) tergite 8; (120) aedeagus in lateral view; (121) aedeagus in dorsal view; (122) stylus.

Measurements and numerical characters: see table 3, no. 1046.

Female. Unknown.

Variation. Apart from small differences in size the paratypes agree with the holotype in every respect.

Material. 3 ♂. Holotype, ♂ no. 1046, RHODESIA, Vumba, 11.xi.1965, D. Cookson (NM); paratypes, ♂ no. 1047, same data as holotype (from NM to ZMC); ♂ no. 1045, N. Vumba, 21.x.1965, D. Cookson (NM).

Pentheria simplex sp.nov. Figs 72, 123–131

Diagnosis. Head as in preceeding species with more porrect antennae and more rounded eyes than in other species of *Pentheria* (cf. fig. 72 and fig. 73). For separation from *caniceps*, see the key on p. 308.

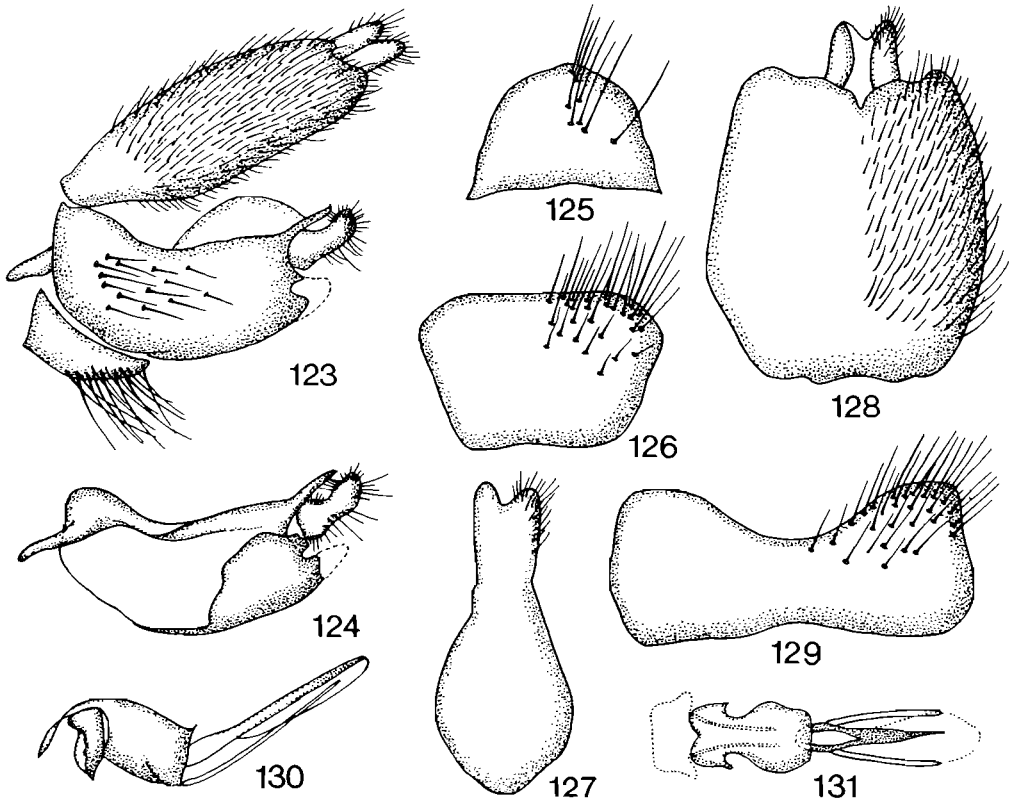
Description. Male, holotype.

Head. Profile as in fig. 72. Eyes touch for a long distance. Upper facets still more enlarged than in *caniceps* and with a sharper demarcation against the lower and smaller facets. Head blackish; frons, face, genae and upper part of occiput covered by a brownish tomentum. Lower part of occiput distinctly shiny, but with a greyish-brown tomented area along ocular margin. Palpi brownish-black. First antennal segment greyish-brown tomented; second and third segments pale brownish, third segment darkened towards apex, especially dorsally.

Thorax black. Mesonotum and scutellum subshiny and covered by a uniform dark brownish tomentum. Some elongate hairs in front of the dc setae. Pleura with a thin greyish tomentum which is distinctly brownish tinged on upper parts.

Wings with a broad basal band as in *alternans* (fig. 78), and portion of wing apical to discal cell mostly brownish, only with an ill-defined semihyaline area in middle, this area not reaching costal margin. Extreme apex of wing is thus dark brownish.

Legs. Coxae brownish-black and only slightly greyish tomented. Femora brownish to



Figs 123–131. Male terminalia of *Pentheria simplex* sp.nov., no. 1200. (123) terminalia in lateral view; (124) right gonocoxite seen from inside; (125) sternite 9 or hypandrium; (126) sternite 8; (127) sternite 10 + paraprocts; (128) epandrium; (129) tergite 8; (130) aedeagus in lateral view; (131) aedeagus in dorsal view.

dark brownish. t1 brownish in basal half, blackish in apical half. t2 brownish. t3 blackish, darker than f3. Tarsi blackish.

Abdomen. When seen from behind all tergites appear black and subshiny. Seen from in front all tergites are covered by a uniform dark brownish tomentum which does not form any pattern.

Terminalia (figs 123–131). Coloration and pile as in *caniceps*. Gonocoxite (fig. 124) open on inside as in *alternans* (fig. 98), but the ventral lobe is larger than in this species. Gonocoxite in lateral view (fig. 123) with the same long and narrow, dorsal process on posterior margin as in *alternans*, but the process is narrower towards apex and is directed more upwards and inwards. The lower gonocoxal process is very weakly sclerotized and unpigmented in comparison with *alternans*. Stylus simple, without any process on exterior surface. Aedeagus as shown in figs 130–131.

Total length 7,7 mm.

Measurements and numerical characters: see table 3, no. 1200.

Female. Head as in male with more porrect antennae than in other species of the genus. Frons not distinctly tomented, shiny but not polished; with a depressed transverse area below middle. Rest of head as in male, but upper part of occiput less tomented, thus more shiny black. Palpi as in male. Antennae with third segment darker than described for male, being blackish-brown, and is also slightly wider.

Thorax black and mesonotum and scutellum not distinctly dark brownish tomented as in male. Pleura also darker than in male, being gradually greyish tomented on lower parts only.

Wings as in male, but the dark bands not so intensively brownish.

Legs as in male.

Abdomen black and with distinct whitish hindmarginal hems on segments 2 and 3. Pilosity mostly black, but yellowish-brown on the abdominal apex.

Terminalia. Sternite 8 with two rows of setae, an apical (dorsal) row of 6 longer setae which are rather wide apart, and a row of 6 shorter setae more basally (ventrally). These latter setae are not clearly separable from the normal pilosity.

Total length 7,5 mm.

Variation. The two male paratypes agree with the holotype in all characters.

Material. 3 ♂ 1 ♀. Holotype, ♂ no. 1200, NATAL, Gillitts, Pinetown district, 1.x.1961, B. & P. Stuckenberg (NM); paratypes, ♂ no. 1199, Natal, Geekie's Farm, Karkloof range nr. Mt. Alida, 4.i.1962, B. & P. Stuckenberg (ZMC); ♀ no. 1260, Natal, Karkloof range, nr. Mt. Alida, 31.x.1971, M. E. Irwin (NM); ♂ no. 1201, Cape Prov., Somerset East, 10–22.xii.1930, R. E. Turner (BMNH).

Pentheria septentrionalis sp.nov. Figs 132–139

Diagnosis. Very similar to *alternans* (Lw.). The single specimen available is not well preserved and does not show any external characters that separates it clearly from *alternans*, except for in the terminalia.

Description. Male, holotype.

Head as described for *alternans*. Only first antennal segments present; these are blackish.

Thorax as in *alternans*; mesonotum maybe less distinctly striped by brownish tomentum.

Wing with pattern exactly as in *alternans* (fig. 78).

Legs as in *alternans*; left p1 and both p2 are missing in the holotype.

Abdomen coloured as in *alternans*.

Terminalia (figs 132–139). All shiny blackish. Pile of epandrium short and black. Gonocoxites with some rather long but weak setae. Epandrium (fig. 135) with a deeper incision in posterior margin than in other species of the genus. Gonocoxite (fig. 133) not closed on inside, with a poorly developed ventral lobe. Gonocoxite in lateral view (fig. 132) with posterior margin very deeply cleft, so that two very long spine-like processes arise. Both processes are directed upwards and have a position that recalls an eel-fork. Stylus of rather a simple shape, having the shape of a short thigh-bone; with a short process on exterior surface. The dorsal distal part of phallus formed by a narrow weakly sclerotized fringe; a ventral hook is not distinct.

Total length about 8 mm.

Material. 1 ♂. Holotype, ♂ no. 1259, TANZANIA, (Tanganyika), Lushoto Forest, 24.i.1957, T. Jones & W. Wilkinson, E. A. Forest Insect Survey (BMNH). The specimen is further labelled with the numbers 'G 5288' in black and '1993' in red; an additional small label with 'C.I.E. Coll. No. 18104'.

Delphacura gen.nov.

Derivation of name: δέλφαξ = pig; οὐρά = tail.
Gender: femininum.
Type-species: *D. mosselensis* sp.nov., by present designation.

Description.

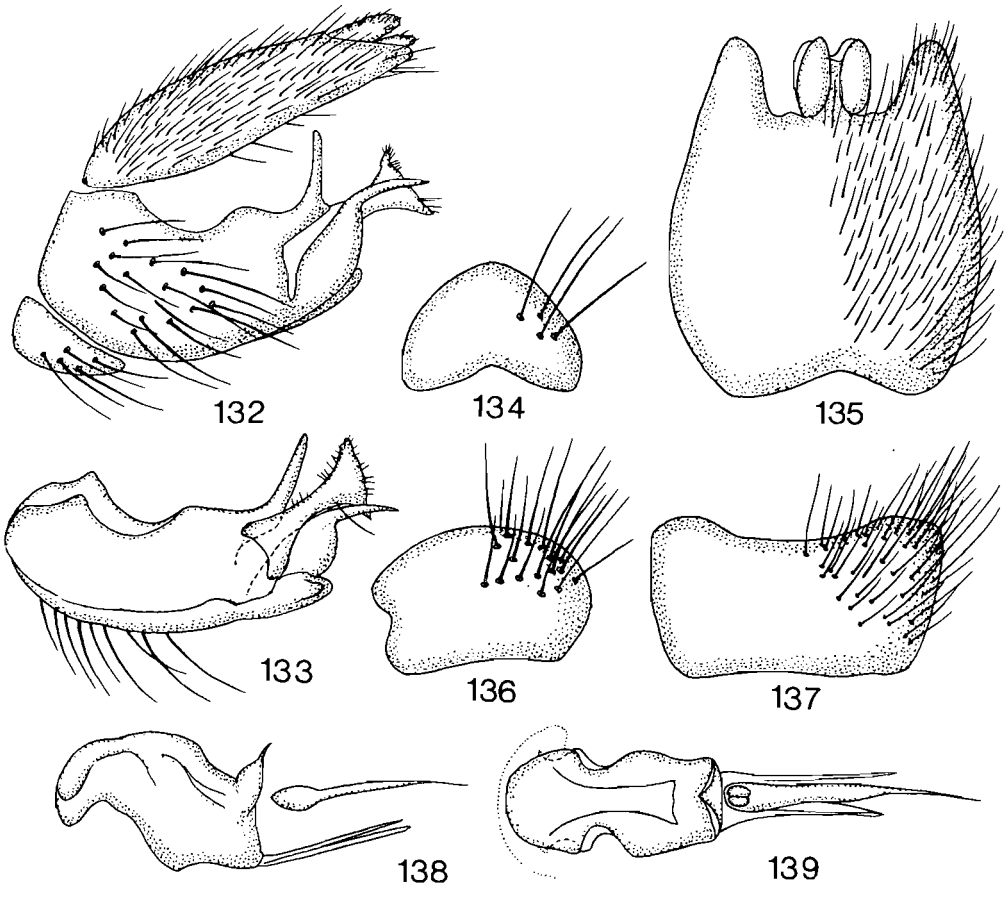
Head (figs 140, 141) nearly circular in profile. Antennae inserted near middle of head and with a porrect direction. First and third antennal segments of almost equal length. Eyes nearly touch for a short distance in the male, and are widely separated in the female. Frontal protuberance very low and shape of antennae simple. Frons partly polished black and with a few short hairs below; face bare. Proboscis short and rather thick, with broad labella. Palpi slender, apical segment more than half as long as basal segment.

Wing without pattern of dark transverse bands.

Legs as in *Microgephyra* gen.nov. (p. 310).

Male terminalia. Gonocoxite with a long curved process on posterior margin, forming a structure like a pig-tail (fig. 143). This structure corresponds to the lower gonocoxal process in *Pentheria*. The gonocoxite further bears a large dorsal process, the distal end of which is provided with a short pile. Gonocoxite (fig. 145) closed on inside, though the connection at dorsal margin is narrow. Stylus long and simple, i.e. without a process on its exterior surface.

Remarks. The genus has an apomorphous character in the possession of a 'pig-tailed' process on the gonocoxite. This peculiar structure is homologous to the lower gonocoxal process in *Pentheria* and represents a compensation for the loss of an exterior process of the stylus as found in nearly all species of *Pentheria* and *Microgephyra*. A tendency to a similar structure on the same place is not present in other parts of the group and thus quite unique.



Figs 132–139. Male terminalia of *Pentheria septentrionalis* sp.nov., no. 1259. (132) terminalia in lateral view; (133) right gonocoxite seen from inside; (134) sternite 9 or hypandrium; (135) epandrium; (136) sternite 8; (137) tergite 8; (138) aedeagus in lateral view; (139) aedeagus in dorsal view.

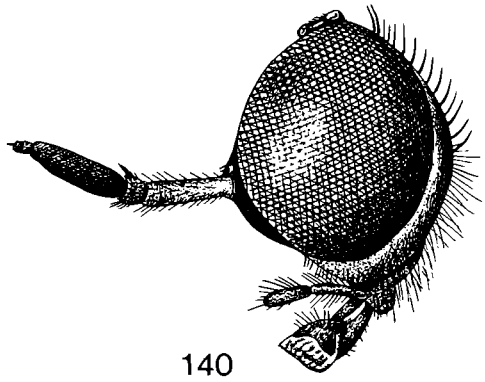
The shape of the dorsal gonocoxal process strongly resembles the conditions in higher *Therevidae*, e.g. in genera like *Thereva* Latr. and *Psilocephala* Zett., but may be regarded as a convergence (see Lyneborg, 1968). The stylus may represent a plesiomorphous condition.

Only one species: *D. mosselensis* which is keyed out on pp. 309–310.

Delphacura mosselensis sp.nov. Figs 140, 141, 143–152

Description. Male, holotype.

Head (figs 140, 141). Upper facets enlarged. Frons narrowly whitish-grey tomented laterally; lower part blackish and polished on a triangular area. Face black and shiny; with stripes of a thick whitish-grey tomentum laterally. This tomentum entirely covers the genae which have a short pile of black hairs behind. Occiput black and shiny on central parts; postocular margin narrow and whitish-grey tomented, this tomented stripe being



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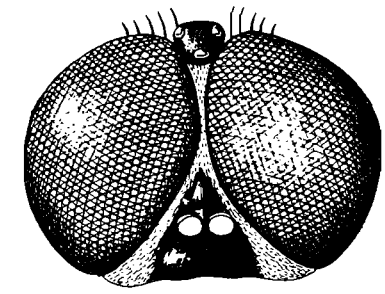

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142

Figs 140–141. *Delphacura mosselensis* gen. et sp.nov., ♂ no. 1146, head in lateral and frontal views.
Fig. 142. *Cochlodactyla munroi* gen. et sp.nov., ♂ no. 1257, antenna.

linear dorsally and gradually increasing in width downwards. *C.* 14 postocular + occipital setae which form a continuous, uniserial row. Pilosity of lower part of occiput moderately long and whitish. Palpi brownish-black, being blackish towards apex. First antennal segment dark brownish with blackish apex; rest of antennae also blackish; antennal pile short and black.

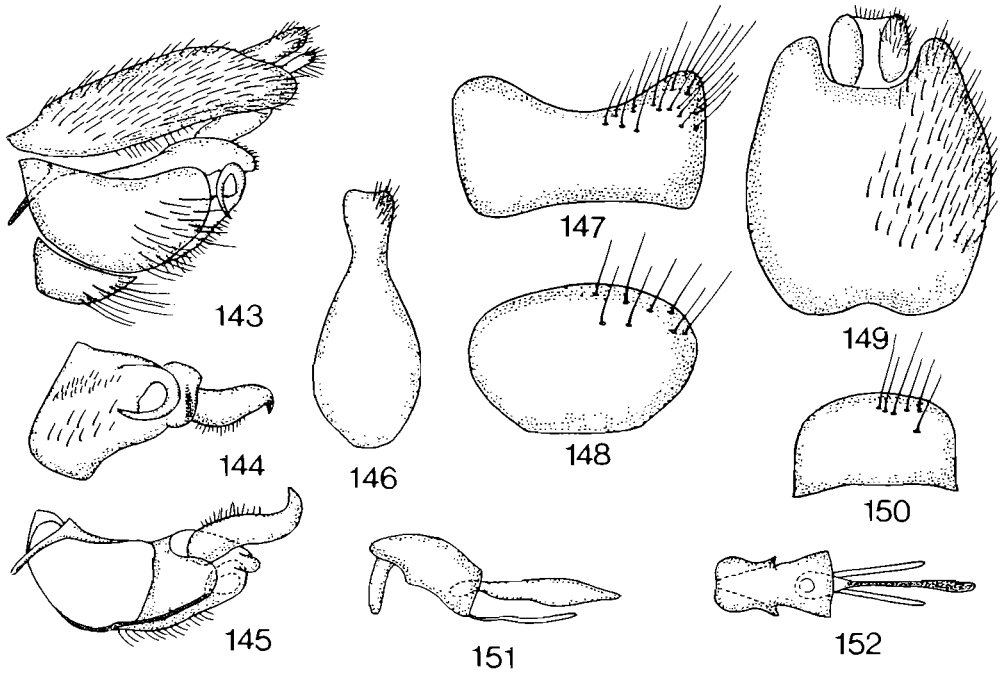
Thorax. Ground coloration black. Mesonotum laterally shiny, but whole disc covered with moderately thick, greyish tomentum which has a brownish tinge laterally and in a broad middle band. Scutellum has a dark brownish tomentum when seen from behind. Pilosity of mesonotum and scutellum rather long (*c.* 0,20 mm) and pale. Pleura with a tomented stripe on dorsal part of mesopleuron and on propleural areas and also most of sternopleuron and hypopleuron are tomented. Ventral part of mesopleuron and pteropleuron shiny. A sparse, but rather long, pale pile is present on prosternum and parts of the pleura.

Wings. Practically hyaline, with a whitish tinge; costal margin and stigmatical area brownish. Halteres pale yellowish.

Legs. Cx1 blackish-brown, cx2 + cx3 blackish; all coxae with a whitish-grey tomentum. Femora and tibiae yellowish-brown, t1 and f3 darkened at apex. Fore tarsi blackish, other tarsi coloured as corresponding tibiae. Claws and pulvilli comparatively large.

Abdomen. The tergites mainly have a blackish ground coloration, but laterally they are brownish. Seen dorsally a dark brownish tomentum appears, and when seen laterally the disc of the tergites appears brownish tomented, while more laterally they are shiny. Sternites yellowish-brown to brownish. Pilosity rather long and whitish on lateral parts of tergites 1–3 and on the first sternites; short and blackish on the rest.

Terminalia (figs 143–152). See generic description. Coloration entirely yellowish-brown with a short, black pile. Stylus rather long, gradually narrowing and terminating into a



Figs 143–152. Male terminalia of *Delphacura mosselensis* gen. et sp.nov., no. 1146. (143) terminalia in lateral view; (144) right gonocoxite seen from underside; (145) right gonocoxite seen from inside; (146) sternite 10 + paraprocts; (147) tergite 8; (148) sternite 8; (149) epandrium; (150) sternite 9 or hypandrium; (151) aedeagus in lateral view; (152) aedeagus in dorsal view.

short, pointed tooth. Aedeagus very weakly sclerotized; with apical part of sperm-tube rather long.

Total length 5,6 mm.

Measurements and numerical characters: see table 4, no. 1146.

Female. Head. The broad frons is black and polished; narrowly whitish-grey tomented laterally. Face wider than in male, and more narrowly whitish-grey tomented laterally. Some few, very short, black hairs are present on frons and face. Upper part of occiput black, more polished than in male, and postocular margin broadened. Pile of lower part of occiput darker than in male. Palpi blackish. First antennal segment brownish, at least partly, and much paler than second and third segments.

Thorax of the same basic coloration as in male, though lateral parts of mesonotum often appear paler, i.e. of a shiny dark brownish coloration, but this may be due to fading. Mesonotal pilosity much shorter (*c.* 0,05 mm) than in male.

Wings darker than in male, of a nearly uniform brownish-hyaline coloration, at least no distinct banding. Halteres dirty brownish.

Legs darker than in male, especially the femora are more or less extensively dark brownish.

Abdomen entirely blackish-brown to black and shiny, very thinly greyish tomented in

certain views. Sternite 8 with 11–12 long and thin setae in apical row and some much shorter setae in basal row.

Total length 6,3 mm.

Measurements and numerical characters: see table 4, no. 1152.

Variation. The four male paratypes show only little variation in dimensions and coloration. There is some variation in coloration of the first antennal segment, this being pale brownish to blackish-brown. Also the coloration of the tergites seems to vary, as in two specimens the lateral parts of the tergites have a more bright yellowish-brown coloration which has a more extensive distribution. The coloration of the basal antennal segments varies also in the female paratypes, and the same is due to the coloration of the legs, especially the femora which can be more or less darkened in comparison with the male femora.

Material. 5 ♂ 12 ♀. Holotype, ♂ no. 1146, CAPE PROV., Mossel Bay, 15–28.iii.1922, R. E. Turner (BMNH); paratypes, ♀ no. 1155, iv.1921; ♂ no. 1142 + 2 ♀ nos. 1147–48, ii.1922; 3 ♂ nos. 1143–45 + 2 ♀ nos. 1149–50, 1–13.iii.1923; 2 ♀ nos. 1151–52, 15–28.iii.1922; ♀ no. 1154, iii–iv.1930; ♀ no. 1153, 15.iii–20.iv.1932; 2 ♀ nos. 1156–57, iv.1933, same locality and collector as holotype (BMNH and ZMC); ♀ no. 1158, Cape Prov., Plettenberg Bay, 14.iii.1968, Paul J. Spangler (USNM).

Cochlodactyla gen.nov.

Derivation of name: κόχλος = snail, helix + δάκτυλος = finger
Gender: femininum.
Type-species: *C. munroi* sp.nov., by present designation.

Description.

Head. Antennae inserted at middle of head and with a porrect direction as in *Delphacura* (fig. 140). Third antennal segment (fig. 142) about four times longer than first segment. Eyes broadly separated in male. Frontal protuberance very low. Proboscis short with broad labella. Palpi with two segments of almost equal length.

Wing with pattern of transverse bands as in *Pentheria*.

Legs. Femora without strong setae. t1 with 2 short pv setae only. t2 with 2–3 setae in all four positions: av, ad, pv and pd. t3 with rows of ad, pd and av setae; pv setae absent.

Male terminalia. The dorsal gonocoxal process (figs 153, 154) very large and complicated; its apex shaped like a corkscrew. The lower gonocoxal process not strongly developed as is the case in *Delphacura* (the 'pig-tail') and in most *Pentheria*. Stylus small and compact; its exterior surface with a short process which arises below lower margin of the upper gonocoxal process. Gonocoxite open on inside.

Remarks. The genus is related to *Pentheria* and *Delphacura*, but is distinguished by the broad fronted male (as in most *Microgephyra*). The corkscrew-like gonocoxal process resembles the peculiar structure on the gonocoxite in *Delphacura*, but the two structures are certainly not of homologous origin.

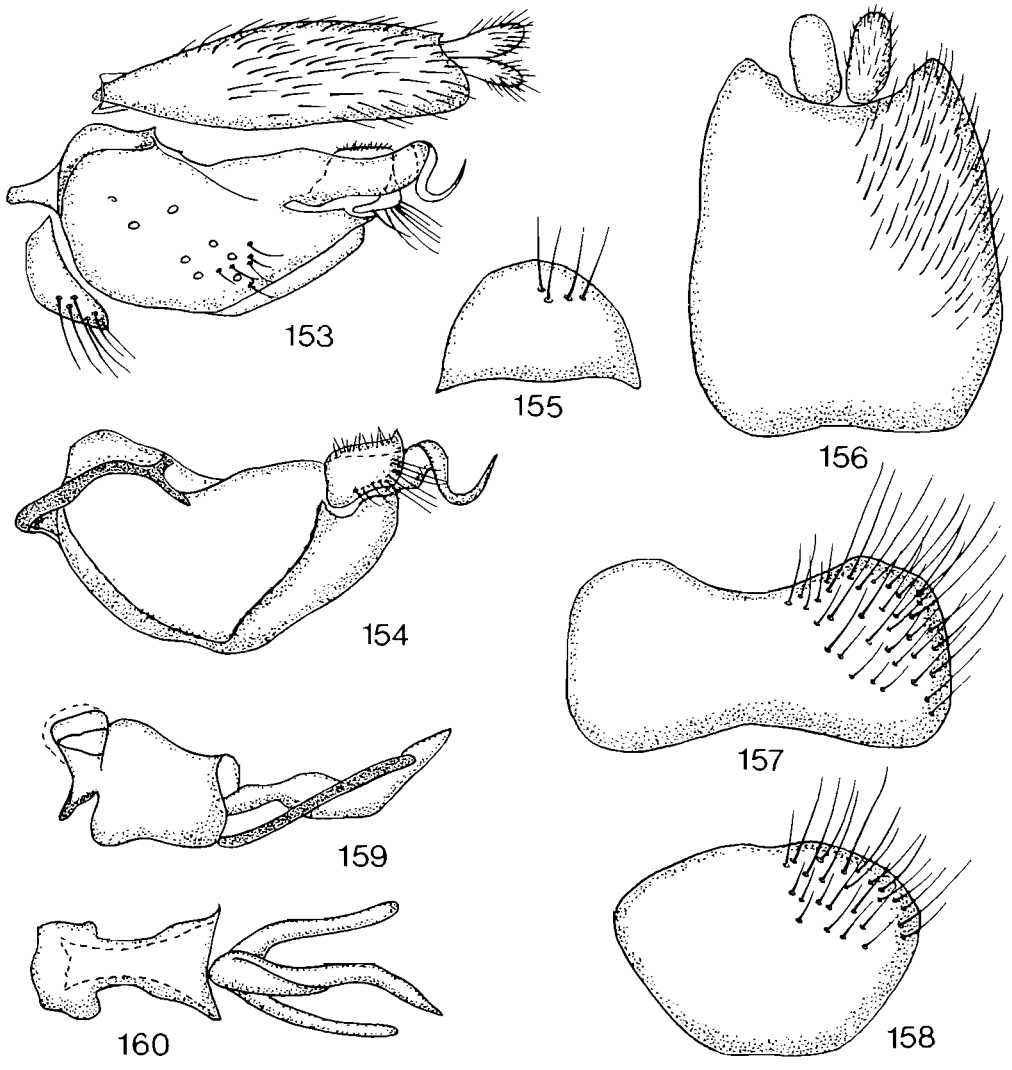
Only one species: *C. munroi* which is keyed out on p. 309.

Cochlodactyla munroi sp.nov. Figs 142, 153–160

Description. Male, holotype.

Head (fig. 142). Frons mostly black and shiny, though finely wrinkled. Lower third

of frons covered with a dense whitish tomentum, leaving only a narrow middle stripe black. Face and genae dull brownish in certain views, in other views covered with a whitish tomentum as on lower third of frons. Both frons and face bare. Occiput brownish and thinly tomented on lower part, while upper part is darker and has a thicker tomentum. 11 postocular + occipital setae forming a continuous row. Lower part of occiput with a sparse, yellowish pilosity. Palpi brownish with yellowish pile. Antennae brownish to brownish-black, darkest on dorsal surface of third segment.



Figs 153–160. Male terminalia of *Cochlodactyla munroi* gen. et sp.nov., no. 1257. (153) terminalia in lateral view; (154) right gonocoxite seen from inside; (155) sternite 9 or hypandrium; (156) epandrium; (157) tergite 8; (158) sternite 8; (159) aedeagus in lateral view; (160) aedeagus in dorsal view.

Thorax. Ground coloration of mesonotum brownish-black, of pleura yellowish-brown. Mesonotum appears subshiny; a thin whitish tomentum is present on the posterior part. Mesonotal pile black and short. The pleura are practically bare and show a whitish tomentum, when viewed from above, on propleural area, on posterior half of sternopleuron and on metapleuron.

Wings. Coloration brownish-hyaline, more intensively dark brownish coloured in the part apical to the discal cell. Moreover an indistinct dark brownish band over base of discal cell. Stigma blackish-brown. Halteres yellowish-brown.

Legs. Yellowish-brown, front tarsi blackish, and also t3 darkened. Cx3 with thin whitish tomentum. Claws and pulvilli normal.

Abdomen. Tergites yellowish-brown, the discs being gradually darkened towards the rear. Posterior tergites black and shiny. Pilosity short, composed of both blackish and pale hairs.

Terminalia (figs 153–160). Entirely blackish and with black pilosity. Pile of gonocoxite long but sparse. For structural details: see generic description.

Measurements and numerical characters: see table 4, no. 1257.

Female. Unknown.

Material. 1 ♂. Holotype, ♂ no. 1257, CAPE PROV., Storms River Park, 20–21.xi.1967, H. K. Munro (NM).

Hemigephyra gen.nov.

Derivation of name: ἡμι- = half- + γέφυρα = bridge
Gender: femininum.
Type-species: *H. atra* sp.nov., by present designation.

Description. In general appearance similar to *Delphacura* gen.nov. Head (figs 161, 162) with the same nearly circular profile in the male, and antennae with the same insertion and direction. Eyes touching or nearly touching in the male, while they are widely separated in the female. Upper part of postocular margin more or less swollen in the female and marked by a shiny appearance.

Legs. t1 with very short but distinct ad and pd setae in addition to the normal stronger pv setae. t2 with 1–2 strong pd setae in addition to the rows of ad, av and pv setae.

Male terminalia. These are only known for the genotype. No special structure is present on the dorsal edge of the gonocoxite (fig. 165). Gonocoxite (fig. 166) open on inside, its ventral margin with a spoon-shaped ventral lobe. Stylus simple. Aedeagus with distal part of phallus strongly developed, both dorsally and ventrally.

Remarks. Two species, *atra* sp.nov. and *braunsi* (Kröb.) are preliminary placed in this genus. Unfortunately, the male terminalia of the latter species are unknown, as the single male specimen available has lost its abdominal tip. The two species will certainly ultimatively prove not to be congeneric, and *braunsi* is arranged here in combination with *Hemigephyra* mainly in order to have it removed from the original combination with *Ectinorrhynchus* Macq. which is an exclusively Australian genus. The following comments only have reference to the type-species: *atra.*

Hemigephyra represents more advanced therevids than the preceding genera. The

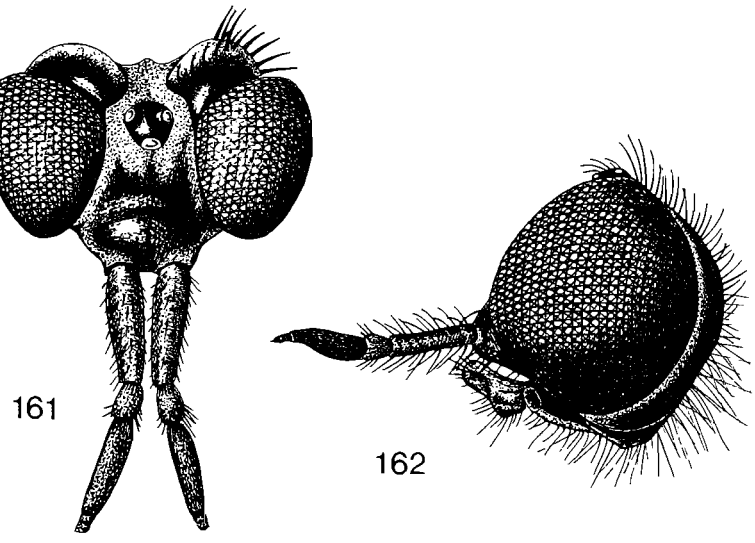


Fig. 161. *Hemigephyra braunsi* (Kröb.), ♀ no. 1137, head in dorsal view.
Fig. 162. *Hemigephyra atra* sp.nov., ♂ no. 1179, head in lateral view.

following apomorphous characters can be mentioned: a strong sexual dimorphism in frontal width, the presence of ad and pd setae on t1, and of pd setae on t2, the reduction of the sclerotized bridge from ventral to dorsal margin on inside of gonocoxite to a spoon-shaped ventral lobe. The two species included are keyed out on pp. 308–310.

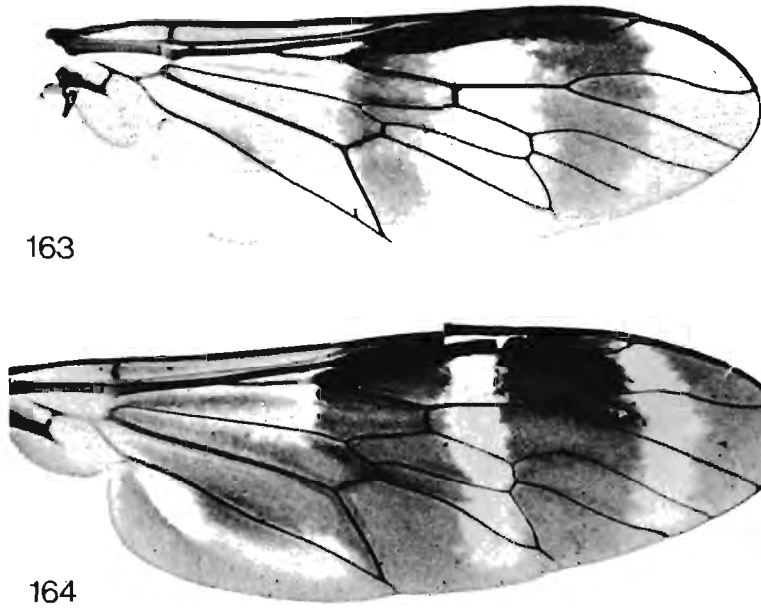
Hemigephyra atra sp.nov. Figs 161–163, 165–173

Diagnosis. 5–6 mm. Wings semihyaline with two brownish transverse bands. Femora and halteres blackish. Occiput polished black in female, and not deeply excavated in mid-line.

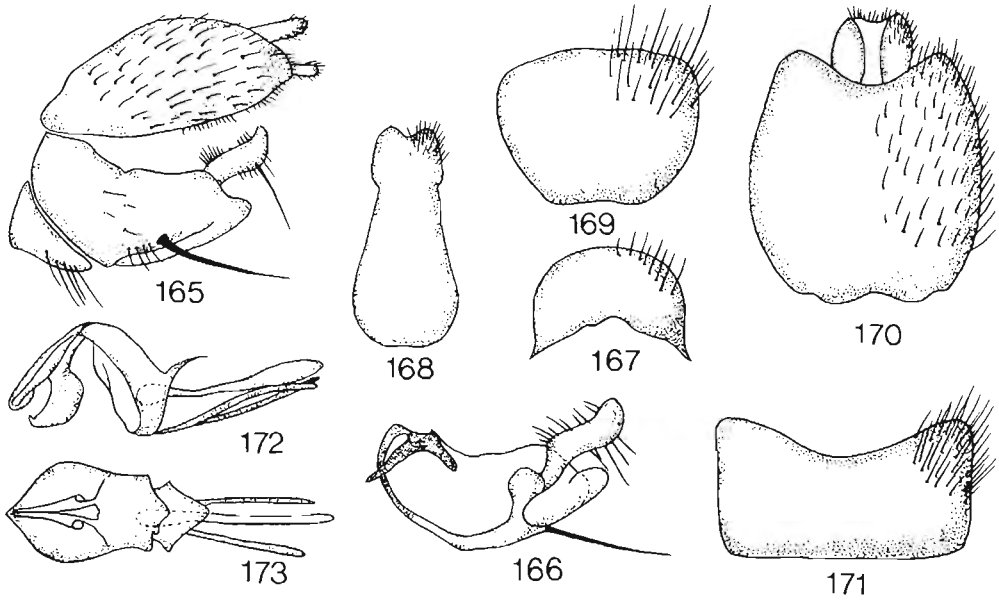
Description. Male, holotype.

Head (fig. 162). Upper facets enlarged. Ground coloration black and shiny, only with a narrow greyish tomented stripe following ocular margin from frontal triangle over face and gena to vertex. *C.* 8 postocular setae which are long and thin; more ventrally numerous and stronger occipital setae. Pilosity on lower part of occiput and on genae and face long, black and reaches up to lower, lateral parts of frontal triangle. Palpi blackish with black pile. Antennae blackish, first segment thinly greyish tomented, pile short and black.

Thorax. Ground coloration black. Seen laterally, mesonotum appears to have a thin, greyish tomentum. Seen dorsally it has a broad middle band of lead-grey tomentum, while lateral areas are more shiny. Scutellum deep black and not shiny. Pilosity of mesonotum and scutellum rather long (*c.* 0,25 mm) and black. Upper parts of pleura, viz. mesopleuron, pteropleuron and metapleural callosity, are polished; lower parts of pleura covered with a rather thick, whitish-grey tomentum. Pile rather long, pale and present, though sparsely, on prosternum, meso- and sternopleuron and on metapleural callosity.



Figs 163–164. Wings of (163) *Hemigephyra atra* sp.nov., no. 1180, and (164) *Ceratosathe tridactyla* sp.nov., no. 1187. ×25.



Figs 165–173. Male terminalia of *Hemigephyra atra* sp.nov., no. 1179. (165) terminalia in lateral view; (166) right gonocoxite seen from inside; (167) sternite 9 or hypandrium; (168) sternite 10 + paraprocts; (169) sternite 8; (170) epandrium; (171) tergite 8; (172) aedeagus in lateral view; (173) aedeagus in dorsal view.

Wings (fig. 163). Semihyaline, with two well-marked, brownish bands, the first over base of discal cell, the second apical to discal cell. The two bands are connected at costal margin. Halteres blackish.

Legs. Coxae blackish with whitish-grey tomentum as on the lower pleural sclerites. Femora black, only very narrowly and indistinctly brownish-black at base and apex. Tibiae also mainly brownish-black, though t1, t2 with corresponding tarsi have a paler coloration than t3 and its tarsus. Claws and pulvilli comparatively large.

Abdomen entirely black and shiny, when seen from in front with a dark brownish tomentum. Pile on lateral parts of tergites 1–3 rather long and pale, on rest of abdomen short and black.

Terminalia (figs 165–173). These are black and shiny. Pile short and black, very sparse on the gonocoxite which bears a single, very strong seta. Stylus moderately long and of a simple shape; its apex rounded. Seen laterally, the aedeagus is sharply bent and has a clear division of the apical part into a dorsal and a ventral structure. The sperm tube has its opening in the bottom of the angle between these two structures. Dorsal apodeme larger than in most other species of the group.

Total length 5,8 mm.

Measurements and numerical characters: see table 4, no. 1179.

Female. Head. The broad frons is black and polished as is also the rest of head. A narrow stripe of greyish tomentum following ocular margin is present from level of antennal bases downwards and up to middle of occiput. A sparse and short, black pile is present on extreme anterior part of frons and on face and genae. Occiput more polished than in male and with short pile. Palpi and antennae as in male, but first antennal segment with shorter pile.

Thorax. Coloration as in male, but mesonotum with a thinner tomentum and thus more shiny, and mesonotal pile very short. The same sharp demarcation on the pleura between an upper polished part and a lower tomented part. Pleura practically without pile.

Wings, legs and abdomen as in male, but abdomen with only short and sparse pilosity.

Total length 5,4 mm.

Measurements and numerical characters: see table 4, no. 1170.

Variation. The five male paratypes show very little variation both in dimensions and coloration. The female paratypes vary more in size, the smallest specimen being 5,2, the largest 6,8 mm in total length. Also the distribution of the tomented stripe along the ocular margin shows variation, and so does the coloration of the legs, especially t1 and t2, which in some specimens are brownish, distinctly paler than the femora.

Material. 6 ♂ 15 ♀. Holotype, ♂ no. 1179, CAPE PROV., Seven Weeks Poort, Laingsburg Dist., 19–22.ix.1959, B. & P. Stuckenberg (NM); paratypes, 3 ♂ nos. 1177–78+1180, same data as holotype (NM and ZMC); ♂ no. 1159, Cape Prov., Olifants River bet. Citrusdal & Clanwilliam, x–xi.1931, Museum staff (SAM); ♂ no. 1198, Cape Prov., Uitenhage, 30.x.1931, J. Ogilvie (BMNH); ♀ no. 1160, Cape Prov. (Capland), Algoa Bay, 25.iv.1895, Dr Brauns, *Ectinorrhynchus alternans* Lw. det. Kröber (NM); 2 ♀ nos. 1161–62, Cape Prov., Ceres, xi.1920, R. E. Turner (BMNH); ♀ no. 1163, Cape Prov., Mossel Bay, xii.1921, R. E. Turner (BMNH); ♀ no. 1164, Cape Prov., Hout Bay, Skoorsteenskop, 13.xii.1950, Brinck &

Rudebeck (ZIL); 5 ♀ nos. 1165–69, same locality, 22.i.1951, Brinck & Rudebeck (ZIL and ZMC); 5 ♀ nos. 1170–74, same locality, 26.xii.1950, Brinck & Rudebeck (ZIL and ZMC).

Hemigephyra sp.

A female specimen, no. 1176, CAPE PROV., Ceres, 460 metres, xii.1920, R. E. Turner (BMNH) may represent a third species of *Hemigephyra*. It has about the same dimensions as an average female of *atra*, but is a much paler insect. First antennal segment is yellowish with apex more brownish and also first and middle coxae as well as the halteres are yellowish. The femora are dark brownish with both base and apex broadly yellowish and the tibiae are yellowish to yellowish-brown. In other characters it agrees with the female of *atra*. A final description must await additional material.

Hemigephyra braunsi (Kröber, 1931), **comb.nov.** Fig. 161

Ectinorrhynchus Braunsi Kröber, 1931: 114.

Diagnosis. 5–8 mm. Wings uniformly greyish-brown, not banded. Upper postocular margin in female polished black and cushion-shaped. Occiput deeply excavated in midline and otherwise with a thick greyish tomentum. Femora and halteres yellowish-brown.

Description. Male.

Head. Upper facets not enlarged. Ground coloration brownish-black. Lower part of frons polished. Upper and lateral parts of frons, as well as face, genae and occiput with a rather thick brownish-grey tomentum. An area around anterior tentorial invagination and two stripes on lower occiput in good distance from ocular margin and surrounding the posterior tentorial invaginations yet polished. *C.* 24 postocular + occipital setae all of which are short. Pilosity of lower part of occiput sparse, but rather long, and yellowish. A few short hairs lateral to antennal bases. Palpi dark brownish with black pile. First and second antennal segments dark brownish, third segment blackish; pile short and black.

Thorax. Ground coloration blackish, on propleural area yet yellowish-brown. Humeral callus shiny and an area above humeral callus dull black. Rest of mesonotum with a rather thick greyish tomentum. An indistinct stripe of brownish tomentum in midline and also tomentum on notopleura more brownish tinged. Scutellum entirely greyish tomented. Upper half of mesopleuron and pteropleuron polished, rest of pleura greyish tomented. Mesonotal pile very short and black. Pleural pile pale, only present on prosternum and propleural area.

Wings. Coloration uniformly greyish-brown, only slightly more intensively coloured along costal margin, not banded. Halteres yellowish.

Legs. Coxae yellowish-brown, slightly tomented. Femora yellowish-brown. Also t1 and t2 yellowish-brown, t1 being darkened towards apex. t3 absent. Tarsi of p1 blackish, of p2 yellowish-brown with apices of all segments blackish. Claws and pulvilli rather large.

Abdomen. Entirely yellowish-brown and shiny; with a sparse, short and pale pilosity.

Terminalia. Cannot be described, as the abdominal tip is missing in the single male specimen available.

Total length *c.* 5,2 mm.

Measurements and numerical characters: see table 4, no. 1138.

Female. Holotype.

Head (fig. 161). The broad frons is brownish-grey tomented on upper part and on narrow lateral stripes of lower part, the lower central area is raised and polished. Also ocellar triangle and the upper postocular margin, which is strongly swollen, polished black. Rest of head brownish-grey tomented with the same polished areas around tentorial invaginations as in male. At level of antennal bases a velvety black area. A deep excavation is present in midline of upper part of occiput. Rest of head as described for male.

Thorax, wings and legs as in male.

Abdomen of a darker ground coloration than in male. Only the posterior part of the tergites narrowly yellowish-brown, while rest of the tergites are blackish-brown. Abdomen entirely shiny and with short pile as in male. Sternite 8 has a row of *c.* 12 straight and long setae apically, and basally are 6 much shorter setae.

Total length 8,1 mm.

Measurements and numerical characters: see table 4, no. 1137.

Variation. The three female specimens available are smaller than the holotype, 6,2–6,4 mm, and have quite uniformly coloured abdomens. In other respects they agree with the holotype.

Type material. Kröber (1931: 114) obviously described this species on two female specimens, as he mentions a cotype. The types were stated to be in Coll. Brauns and the type locality and dates were 'Willowmore x to 15.xi'. From the Transvaal Museum I received a female specimen labelled by the museum as 'Ectinorrhynchus braunsi Kröb./Holotype no. D:74a'. Its original labels reads as 'Type', 'Willowmore, Capland, Dr. Brauns, 15.11.1917' and 'Ectinorrhynchus Braunsi Krb./det. Kröber 1927'. The specimen must be accepted as the holotype. The position of the cotype mentioned in the description is unknown. The holotype is in a nearly perfect condition, only right p2 is missing.

Material. 1 ♂ 5 ♀. Holotype, ♀ no. 1137, CAPE PROV. (Capland), Willowmore, 15.xi.1917, Dr Brauns (TM). Other material, ♂ no. 1138, 2 ♀ nos. 1139–40, Cape Prov., Matjiesfontein, 7–13.xi.1928 & 14–27.xi.1928, R. E. Turner (BMNH and ZMC); ♀ no. 1141, Cape Prov., Vanwyksdorp, x.1937 (SAM); ♀ no. 1258, Cape Prov., Steytlerville, 10–15.ix.1967, H. K. Munro (NM).

Braunsophila Kröber, 1931

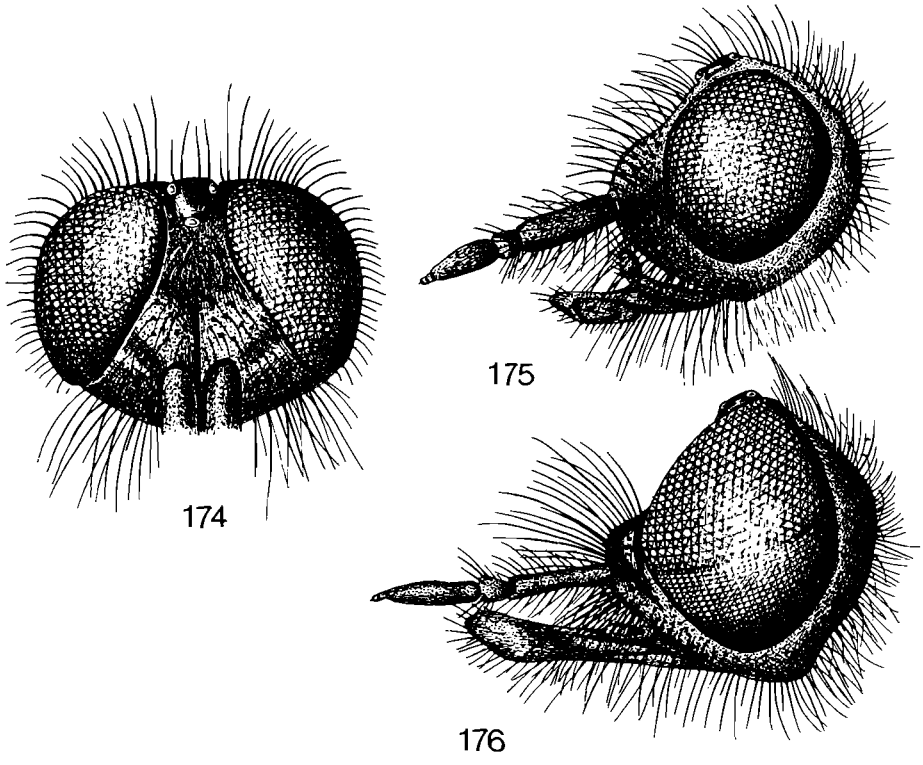
Type-species: *B. nubeculipennis* Kröber, 1931, by original monotypy.

Description.

Head (figs 174, 175). Both sexes are dichoptic, but the female frons is wider than the male frons. Both frons, face and genae with a long, black pile. First antennal segment distinctly longer than third antennal segment, slightly incrassated and with a rather long pile. Proboscis rather long and slender. Palpi with apical segment less than half as long as basal segment.

Wings dark coloured, but not banded.

Legs. t1 with 2–3 pd setae which are nearly as strong as pv setae; some additional much shorter ad setae. t2 with 2 strong pd setae in addition to the normal rows of ad, av

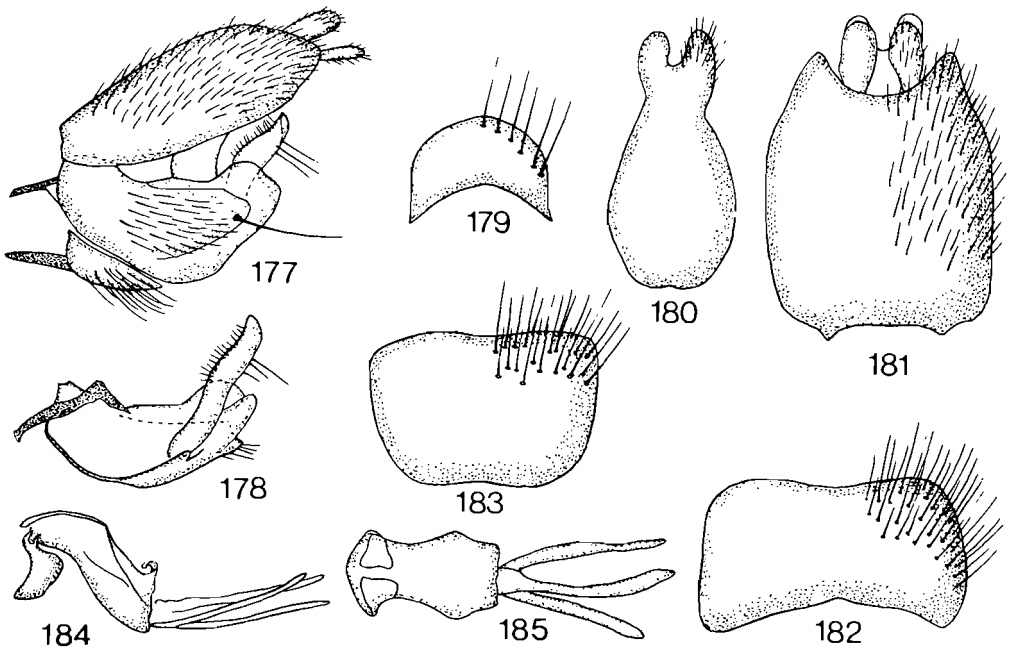


Figs 174–175. *Braunsophila nubeculipennis* Kröb., ♂ no. 1015, head in frontal and lateral views.
Fig. 176. *Ceratosathe tridactyla* gen. et sp.nov., ♂ no. 1184, head in lateral view.

and pv setae. Also pv setae of t3 are distinct.

Male terminalia (figs 177–185). Any structure representing a dorsal gonocoxal process is not present. Gonocoxite (fig. 178) quite open on inside, and ventral lobe poorly developed. Stylus comparatively long, but of a simple shape. The aedeagus shows a reduction of the dorsal distal part of phallus if compared with the two following genera, *Xestomyza* Wied. and *Ceratosathe* gen.nov.

Remarks. Braunsophila together with the two following genera, *Xestomyza* and *Ceratosathe*, certainly represent the most advanced genera in the *Xestomyza*-group. The following synapomorphous characters for these three genera can be mentioned: proboscis elongate, slender and provided with small labella; frontal protuberance strong; long pile on all parts of the head; presence of pd setae on both t1 and t2; and ventral distal part of phallus strongly developed. *Xestomyza* and *Ceratosathe* are further characterized by the complicated shape of the gonocoxite and by the dorsal, distal part of phallus which is armed with processes. This dorsal distal part of phallus is actually absent in *Braunsophila*, but whether this is an apomorphous or a plesiomorphous condition is difficult to say. All three genera are plesiomorphous in the simple shape of the stylus, and *Braunsophila* further in



Figs 177–185. Male terminalia of *Braunsophila nubeculipennis* Kröb., no. 1015. (177) terminalia in lateral view; (178) right gonocoxite seen from inside; (179) sternite 9 or hypandrium; (180) sternite 10 + paraprocts; (181) epandrium; (182) tergite 8; (183) sternite 8; (184) aedeagus in lateral view; (185) aedeagus in dorsal view.

the simple shape of the gonocoxite. *Braunsophila* is apomorphous in the complete reduction of any sclerotized bridge on inner side of the gonocoxite, whereas in both *Xestomyza* and *Ceratosathe* there are sclerotized elements left.

All three genera are represented by one species only and may together form a monophyletic group. Its sister-group can hardly be demonstrated at the moment. It is worth mentioning that the three genera are restricted to the extreme south of the Cape Province, whereas the other genera of the group have a wider distribution, reaching northwards to Natal, Transvaal or Rhodesia.

The only species is:

Braunsophila nubeculipennis Kröber, 1931. Figs 174, 175, 177–185

Braunsophila nubeculipennis Kröber, 1931: 117.

Description. Male, lectotype.

Head (figs 174, 175). Ground coloration black. Frons, face and upper part of occiput with a thin, greyish tomentum, so that these parts appear subshiny. Genae and lower part of occiput with a thicker whitish-grey tomentum. Pile of head whitish on genae, black on the other parts. Postocular and occipital setae not to be distinguished from normal pilosity. Palpi blackish, with a pilosity of moderately long and black hairs. Antennae black.

Thorax. Ground coloration black. Most of mesonotum and scutellum dulled by a thin, brownish tomentum. Two indistinct stripes of lead-grey tomentum. Notopleural area shiny. The long pile on mesonotum and scutellum exclusively black. Also the pleura have a thin, greyish tomentum. Pleural pile whitish, rather long but sparse, and present on prosternum, mesopleuron, sternopleuron and metapleural callus.

Wings. Coloration brownish, most intensively in apical third of wing, on costal margin and in a streak over basal part of discal cell. Halteres yellowish.

Legs. Coxae of same coloration as pleura. Femora, tibiae and tarsi black to brownish-black, femora towards apices and tibiae at bases being the palest parts. Claws and pulvilli small.

Abdomen. Entirely blackish and shiny. A narrow whitish hindmarginal hem is present on tergite 2. Pile moderately long and blackish, being paler on lateral areas of first tergites.

Terminalia (figs 177–185). Brownish-black to black with black pilosity. Pile on gonocoxites composed of a number of rather long setae, one of which is slightly longer and stronger. See further the generic description.

Total length 7,0 mm.

Measurements and numerical characters: see table 4, no. 1015.

Female. Head. Frons wider than in male and its lower part slightly raised, the upper demarcation of this raised area having the shape of a very spaced V. The area just above this V-line has no pile and is subshiny. More dorsally the frons has a brownish tomentum medially and a narrow stripe of greyish tomentum laterally, and the pile of these parts is black and rather short. The lower raised part of frons is subshiny blackish as is also the face, and both these parts have a long black pile. At level of antennae a bare and darker area is present. Genae and lower part of occiput whitish-grey tomented and with a whitish pile. Upper part of occiput ash-grey tomented and with a pile of rather short, stiff and partly strong setae. Rest of head as in male.

Thorax. Mesonotum with three bands which are brownish to brownish-black tomented, palest on anterior part of lateral bands. The median band has a narrow greyish tomented midline, and the bands are separated by much broader greyish tomented areas. Scutellum partly greyish, partly brownish tomented. Mesonotal pile black and much shorter than in male. Pleura as in male, but pile shorter.

Wings. Coloration may be still more intensively dark than in male.

Legs. As in male, but coloration of apices of femora and tibiae paler brownish than described for male.

Abdomen blackish and shiny as in male; its pile shorter.

Total length 7,3 mm.

Measurements and numerical characters: see table 4, no. 1014.

Variation. The male varies in total length from 5,3 to 7,0 mm with corresponding differences also in other dimensions, while the length of the female varies from 6,6 to 7,6 mm. Except in the coloration of the legs the species does not show any variation in colour and pilosity.

Type material. Kröber (1931: 117) described the species on both sexes without mentioning the total number of specimens in the type series. Two syntypic specimens, a male and a female, were received from the Transvaal Museum. Both are labelled 'Capland, Willow-

more, Aug. 1916, Dr. Brauns' and 'Type' and originate from the type series. They are identified as 'Braunsiella nubeculipennis, det. Kröber 1927', so Kröber has obviously changed the generic name after having returned the specimens to South Africa. The male specimen of these syntypes is hereby designated as the lectotype and has been labelled accordingly.

Remarks. In the Vienna Museum was located a small series consisting of two male and one female specimens of *Braunsophila nubeculipennis* originating from the Winthem collection. They are all labelled 'Caffraria' and the female bears a second old label 'Xestomyza obscura mihi/Caffraria/Ecklon & Zeyher'. These collectors were two German botanists who collected in South Africa in the early beginning of the nineteenth century (Horn & Kahle, 1935–37: 65). The specimens have also been examined by Kröber, as the female has a third label 'nov.gen./nov.spec./O. Kröber det. 1914/3. Fühlerglied fehlt'. *Xestomyza obscura* was never described and the name must be treated as a nomen nudum.

Material. 6 ♂ 7 ♀. Lectotype, ♂ no. 1015, CAPE PROV., Willowmore, viii.1916, Dr A. Brauns (TM); paralectotype, ♀ no. 1014, same data as lectotype (TM). Other material, 3 ♂ nos. 1016–18, Cape Prov., Mossel Bay, ix.1921, R. E. Turner (BMNH and ZMC); ♀ no. 1019, same locality, viii.1921, R. E. Turner (BMNH); 2 ♂ nos. 1020–21 + ♀ no. 1022, 'Caffraria', Ecklon & Zeyher, Coll. Winthem (NMW); ♀ no. 1023, Cape Prov., Resolution, Grahamstown, vi–ix.1928, Miss Walton (SAM); ♀ no. 1024, same locality, 1930, Miss Walton (SAM); 2 ♀ nos. 1025–26, Cape Prov., Albany district, 17 & 18.vi.1952, B. R. Stuckenberg (NM).

Xestomyza Wiedemann, 1820

Type-species: *X. lugubris* Wiedemann, 1820, by original monotypy.
Xestomyza Wiedemann, 1820: 10; Wiedemann, 1821: 153; Wiedemann, 1828: 323; Macquart, 1834: 386; Macquart, 1840: 21; Kröber, 1912*b*: 12; Becker, 1912: 298; Kröber, 1931: 107.
Pseudoxestomyza Kröber, 1912, **syn.nov.**
Type-species: *Ps. longirostris* Kröber, 1912*b*, by original monotypy (= *lugubris* Wied.). *Pseudoxestomyza* Kröber, 1912*b*: 11; Kröber, 1913: 268; Becker, 1912: 305; Kröber, 1931: 109.

Description.

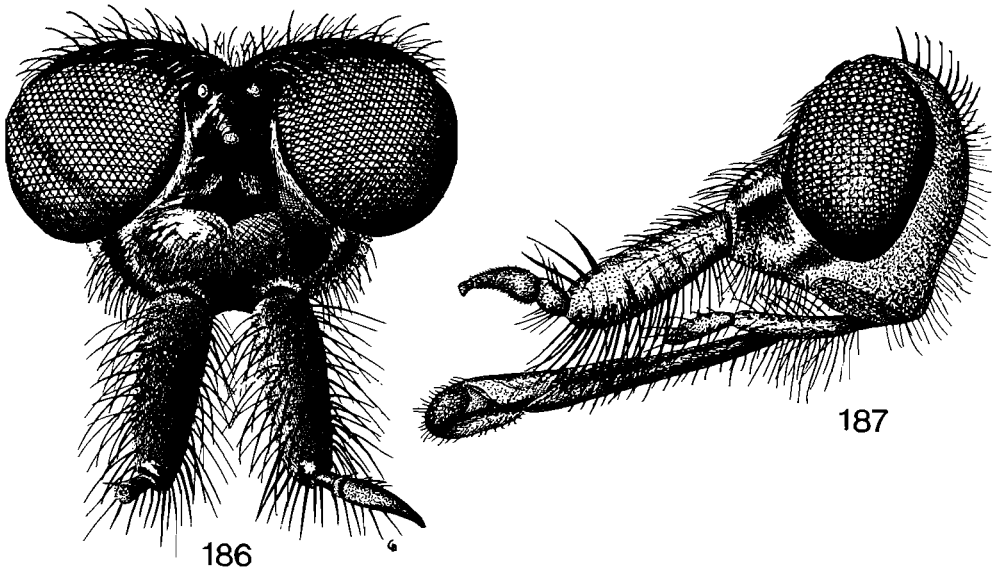
Head (figs 186, 187). Both sexes are dichoptic, the female frons being wider than the male frons. All parts of head with a long, black pile. First antennal segment about twice as long as third antennal segment, strongly incrassated and with a long, stiff pile. Proboscis very long and slender, always distinctly longer than depth of head. Palpi with apical segment less than half as long as basal segment and much narrower.

Wings dark coloured, but not banded.

Legs. f3 with 1–3 av setae. t1 with 1–3 short pd setae in addition to the 5–6 pv setae; some minute ad setae are visible, t2 with several pd setae in addition to the normal three rows, and also some pv setae on t3 are distinguishable.

Abdominal segments 6–8 in male with a dense and stiff pilosity.

Male terminalia. Gonocoxite (fig. 189) open on inside, a low bilobed structure arises from ventral margin. Gonocoxite (fig. 188) with a large, rounded extension on dorsal margin, while lower posterior part terminates into a finger-shaped process. Stylus quite simple, but with a high position. Dorsal distal part of phallus (figs 192, 193) composed of



Figs 186–187. *Xestomyza lugubris* Wied., ♂ no. 1002, head in dorsal and lateral views.

two narrow hooks, ventral distal part forming a long and wide tube.

Female terminalia. See p. 304 and figs 2, 4, 6, 9.

Remarks. The genus was founded by Wiedemann (1820: 10) for the South African species *lugubris* Wied. described in the same paper. Later, Wiedemann (1824: 24) described a *Xestomyza costalis* from Morocco, and Dufour (1833: 212) a *Xestomyza culiciformis* from Spain. Macquart (1834: 387) and, following him, Blanchard (1840: 585) placed also the West Mediterranean *Tipula chrysanthemi* F. in combination with *Xestomyza.* So did Schiner (1862: 160) and Strobl (1904: 534) with *Cionophora kollari* Egger from Dalmatia. Becker (1907: 60–61) recorded *Xestomyza chrysanthemi* F. from N. W. Africa and described from the same area *Xestomyza tuberculata* as new.

The reason why all these authors treated the above-mentioned Mediterranean species as *Xestomyza* is that all the species have developed a more or less strongly enlarged first antennal segment, giving a superficial resemblance with *Xestomyza lugubris.* This resemblance is, however, based on convergent development, and may be associated with an adaptation to specialized feeding habits, about which nothing is known. It is also worth mentioning that both *lugubris* and the mentioned Mediterranean species occur in regions with winter rainfall, and that similar species occur in the corresponding regions of North America. Though it is out of the scope of the present paper it can be mentioned that *costalis* Wied. belongs in the *Phycus*-group, whereas *chrysanthemi* F., *kollari* Egg. and *tuberculata* Beck. are related to *Thereva* Latr.

Kröber (1912*b*: 12–17) treated all the hitherto mentioned species, inclusive of *lugubris*, as *Xestomyza*, and created a new genus *Pseudoxestomyza* for a new species: *longirostris*, which is conspecific with *lugubris* Wied. *Pseudoxestomyza* Kröb. then becomes a primary

synonym to *Xestomyza* Wied. This uncritical treatment by Kröber was not accepted by Becker (1912: 298), who correctly came to the conclusion that *Xestomyza* is a strictly South African genus, but was doubtful as to the real identity of *Pseudoxestomyza*, as the type-species (*longirostris*) was unknown to him.

It has earlier in this paper been emphasized that *Xestomyza* together with *Braunsophila* Kröb. and *Ceratosathe* gen.nov. may represent a monophyletic group and are the most advanced genera of the group. A number of synapomorphous characters for the three genera is given on p. 352. *Xestomyza* and *Ceratosathe* are further synapomorphous in the shape of the dorsal distal part of phallus which is armed with processes. *Xestomyza* has apomorphous characters in the shape of the first antennal segment and in the dorsal extension of the gonocoxite. Only one species which is keyed out on p. 309.

Xestomyza lugubris Wiedemann, 1820. Figs 2, 4, 6, 9, 186, 187, 188–196

Xestomyza lugubris Wiedemann, 1820: 10; Wiedemann, 1821: 153; Wiedemann, 1828: 324; Macquart, 1834: 387; Macquart, 1840: 21; Kröber, 1912*b*: 16; Kröber, 1913: 268.
Pseudoxestomyza lugubris Wied.; Kröber, 1913: 268.
Pseudoxestomyza longirostris Kröber, 1912*b*: 12, **syn.nov.**; Kröber, 1931: 109.

Description. Male.

Head (figs 186, 187). Frons shiny blackish, only narrowly greyish tomented laterally on upper part. Face whitish-grey tomented, but with dull blackish transverse bands at level of antennal bases and below near lower eye-corners. Both frons and face have a long, black pile. Genae and occiput whitish-grey tomented, the rather wide, dorsal part of the postocular margin being polished black. Pile long and yellowish-white below, becoming darker above. Postocular setae long and thin, about 18 on each side. About 10 occipital setae on each side. Palpi blackish-brown, with pile of both black and pale hairs. Antennae black, first and second segments shiny, third segment dulled.

Thorax. Mesonotum black and shiny, with two thinly greyish tomented narrow stripes which are confluent on posterior third of mesonotum. A very narrow greyish tomented stripe in midline. Mesonotal pile long and composed of both pale and blackish hairs. Scutellum black with a thin greyish tomentum and a pile of pale and blackish hairs. Pleura black and shiny, with a sparse and short pale pile. Propleural area and prosternum has a longer and darker pile.

Wings intensively dark brownish coloured, having a yellowish-brown tinge in basal and anterior parts, but to a variable degree. Veins of the same coloration as corresponding parts of wing membrane. Halteres yellowish.

Legs. Coxae and femora blackish, only cx3 slightly tomented. Tibiae and tarsi brownish to dark brownish. Claws and pulvilli small.

Abdomen. Entirely black and shiny. Whitish hindmarginal hems are present on segments 2–4. Pile on segments 1–5 long, erect and golden yellowish, and on segments 6–8 erect, stiff and black. Also black hairs on posterior part of segment 5.

Terminalia (figs 188–196). Entirely black and with a black pile which is long, especially on the gonocoxites. For further details: see generic diagnosis.

Total length 10,6–11,2 mm.

Measurements and numerical characters: see table 5, no. 1002.

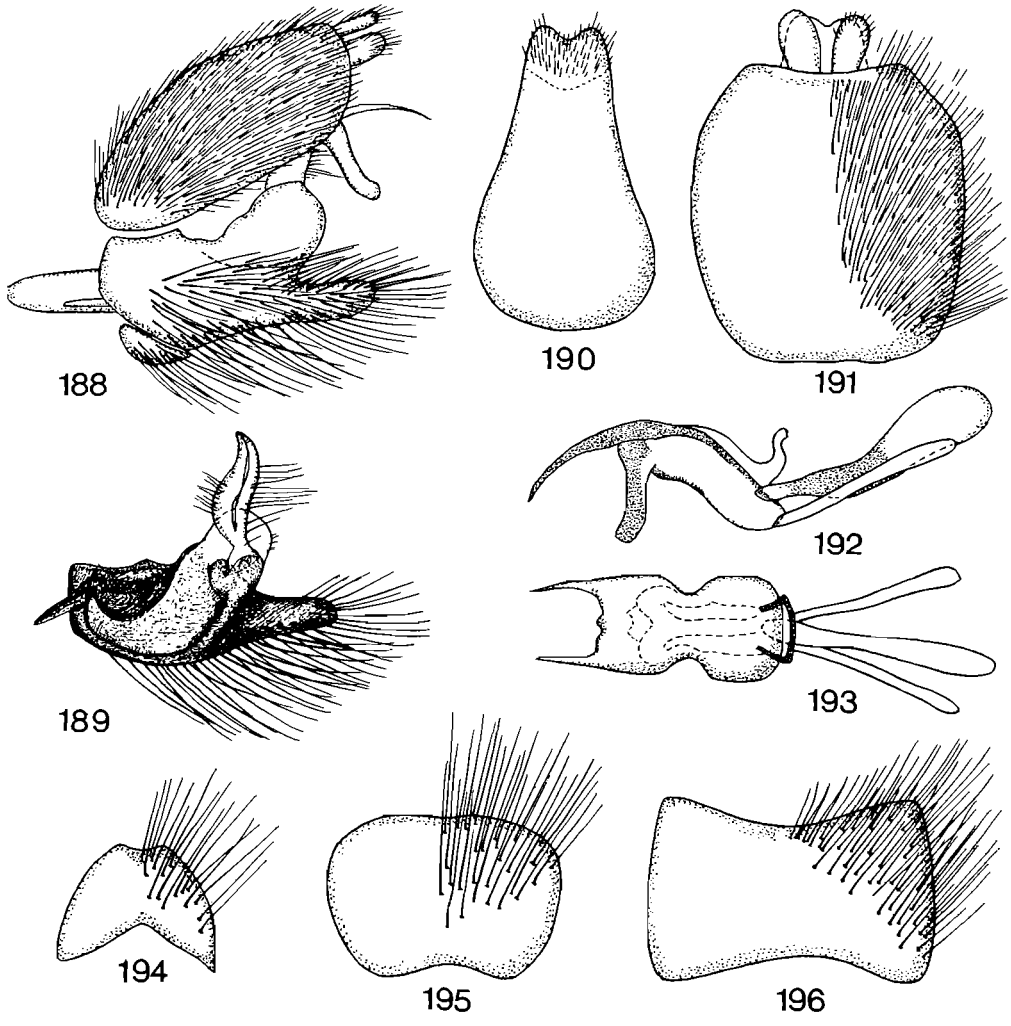
Female. Head. The frons is wider than in the male and more or less tomented in central area. Pile on all parts shorter than in male and postocular setae stronger, not hairlike. First antennal segment smaller and with shorter pile, especially dorsally.

Thorax. Pile on mesonotum, scutellum and propleural area very short and black, on other pleural sclerites practically absent. Ground coloration as in male.

Wings darker brownish than in male, only extreme anterior margin, between costa and vein R1, is yellowish-brown. Often a paler area in proximal part of cell M_1.

Legs and abdomen as in male, but abdominal pile shorter and more sparse.

Total length 8,4–9,6 mm.



Figs 188–196. Male terminalia of *Xestomyza lugubris* Wied., no. 1002. (188) terminalia in lateral view; (189) right gonocoxite seen from inside; (190) sternite 10 + paraprocts; (191) epandrium; (192) aedeagus in lateral view; (193) aedeagus in dorsal view; (194) sternite 9 or hypandrium; (195) sternite 8; (196) tergite 8.

Variation. There is some variation in the length of proboscis. This is comparatively short in specimen no. 1005 (holotype of *longirostris* Kröb.), where it does not reach to apex of first antennal segment. In the other six male specimens examined the proboscis reaches to or beyond level of antennal style (as in fig. 187). The proboscis of the female is in average not shorter than in the male.

Type material. Wiedemann (1820: 10) described *Xestomyza lugubris* on the basis of material in the Westermann collection originating from 'Promontorio bonae spei', probably collected by Westermann himself during his stay in the Cape area in 1817. There is no indication in the original description whether more or only one specimen was available, nor is the sex indicated. Based on these facts we must accept a female specimen in the Wiedemann collection of the Zoological Museum, Copenhagen, as the holotype. This holotype is in a good condition and is labelled 'X. lugubris Wied./Cape Good Hope/Decb. 1817'.

Pseudoxestomyza longirostris was described by Kröber (1912*b*: 12) on material from 'Kapland, Algoa Bai, 1.viii', and the male type was stated to be in the Vienna Museum. A male specimen in this museum, labelled 'Capland, Algoa Bay, 1.8.98, Dr Brauns' and 'Type' must therefore be accepted as the holotype. It is in a good condition.

Material. 7 ♂ 10 ♀. Holotype, ♀ no. 1007, CAPE PROV., Cape Good Hope, xii. 1817, B. W. Westermann (ZMC); holotype of *longirostris* Kröb., ♂ no. 1005, Cape Prov., Algoa Bay, 1.viii. 1898, Dr H. Brauns (NMW). Other material, ♂ no. 1001, Cape Prov., Cape Good Hope, Borg (ZMB); ♀ no. 1008, Cape Prov. (Capland), Berg S. (ZMB); ♀ no. 1004 + ♂ no. 1006, no labels (SAM); ♂ no. 1003 + ♀ no. 1009, Cape Prov., Ysterfontein (SAM); ♂ no. 1002, Cape Prov., Stellenbosch, 2.ix.1926, Dr H. Brauns (TM); ♂ no. 1208, Cape Prov., Stellenbosch, 13.ix.1923, R. J. Nel (BMNH); ♂ no. 1205, Cape Prov., Cape bon sp. (BMNH); 2 ♀ nos. 1206–07, 'Brazil, C.b.sp., Fabr.', F. Bigot coll. (BMNH); ♀ no. 1010, Lion's Head, Cape Town, viii.1920, R. E. Turner (BMNH); ♀ no. 1011, Cape Town, 1911, L. C. Péringuey (SAM to ZMC); 2 ♀ nos. 1012–13, Cape Town, 1913, G. Péringuey (SAM).

Ceratosathe gen.nov.

Derivation of name: κέρας = horn, antler + σάη = penis
Gender: femininum.
Type-species: *C. tridactyla* sp.nov., by present designation.

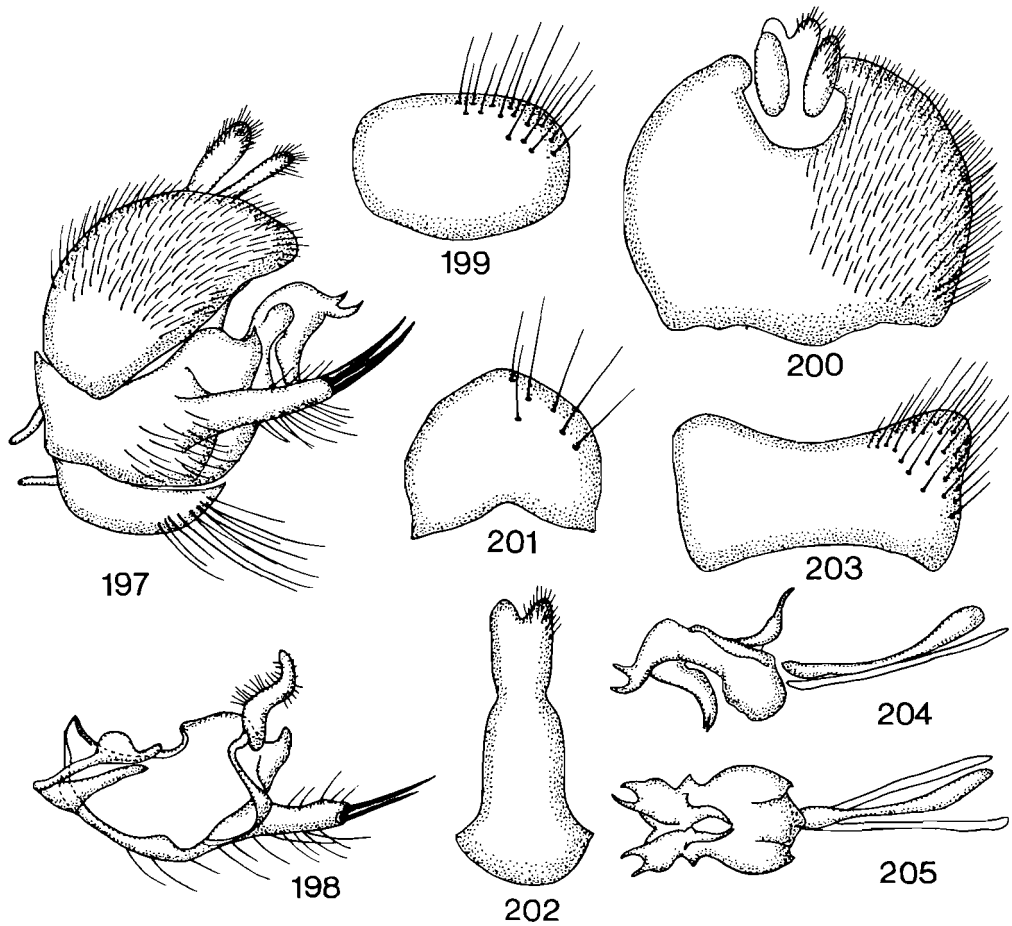
Description.

Head (fig. 176). Male holoptic, female dichoptic. Frons, face and genae as in preceding two genera with a long, black pile. First antennal segment only slightly longer than third segment and not wider than this segment. Proboscis long and slender. Palpi with apical segment less than half as long as basal segment.

Wings banded.

Legs. t1 with 2–3 pd setae which are shorter and weaker than pv setae; ad setae absent. t2 with 2 strong pd setae in addition to the normal rows of ad, av and pv setae. About 3 short and weak pv setae near apex of t3.

Male terminalia (figs 197–205). Epandrium very broad, as swollen. Gonocoxite with a remarkable finger-like process, the apex of which is provided with a horizontal row of three strong setae. Gonocoxite on inside (fig. 198) with a narrow sclerotization from ventral margin to base of stylus. Stylus itself short and S-curved. Aedeagus (fig. 205) has four tooth-



Figs 197–205. Male terminalia of *Ceratosathe tridactyla* gen. et sp.nov., no. 1184. (197) terminalia in lateral view; (198) right gonocoxite seen from inside; (199) sternite 8; (200) epandrium; (201) sternite 9 or hypandrium; (202) sternite 10 + paraprocts; (203) tergite 8; (204) aedeagus in lateral view; (205) aedeagus in dorsal view.

like processes on dorsal distal part of phallus, while the ventral distal part is long and curved. Dorsal apodeme larger than normal in the group.

Remarks. Ceratosathe is among the most advanced therevids in the group under treatment, as it possesses a number of apomorphous characters both in the external morphology and in the structure of the male terminalia. The relationship to *Braunsophila* and *Xestomyza* is discussed on p. 352 and p. 357.

Only one species which is keyed out on p. 308 and p. 309.

Ceratosathe tridactyla sp.nov. Figs 164, 176, 197–205

Description. Male, holotype.

Head (fig. 176). The eyes touch for a distance equal to height of ocellar triangle. Upper facets enlarged. Frons, face, genae and occiput black and shiny, only a narrow interrupted

stripe of greyish tomentum along ocular margin. Pile on all parts very long (*c.* 0,40 mm), erect and black, except for lower genae which have a whitish pile. Postocular and occipital setae not distinguishable from the normal pile. Palpi black with black pile. Antennae black. First segment with sparse but rather long pile.

Thorax. Ground coloration black. Mesonotum with a broad band of greyish tomentum, lateral parts shiny. Scutellum deep black, not shiny. Pile of mesonotum and scutellum long and exclusively black. Pleura with very thin greyish tomentum, especially on lower parts, but appear subshiny to shiny. Their pile rather long and pale.

Wings (fig. 164). With three very distinct bands of a brownish-black coloration. The most apical band occupies apex of wing. The two basal bands are connected at costal margin and separated by a whitish-hyaline area over apical half of discal cell. A similar whitish-hyaline band separates the apical band and the middle band. Also anal cell is darkened, and rest of base of wing is hyaline. The veins are very dark except subcostal vein and some of the vein-stems at base of wing. Halteres blackish.

Legs. Coxae and femora blackish, the former with a very thin greyish tomentum as on lower pleura. t1 and t2 yellowish-brown, with apical third to fourth gradually more blackish. t3 blackish. Metatarsi yellowish-brown with apices black, also other tarsal segments black. Claws and pulvilli rather large.

Abdomen. Entirely black and shiny, seen from in front with a dark brownish tomentum. Lateral parts of tergites 1–3 with moderately long and pale pile. Pile on rest of abdomen short and black. An indistinct whitish hindmarginal hem is present laterally on segment 2.

Terminalia (figs 197–205). Black and with black pile. For structural details: see generic description.

Total length 6,8 mm.

Measurements and numerical characters: see table 5, no. 1184.

Female. Head. The broad frons is black and shiny, only with a narrow, greyish tomented area along ocular margin of upper half. After a short interruption a tomented stripe of similar nature starts well above level of antennal bases and runs down along ocular margin and up to middle of occiput. Other parts of head black and shiny as in male. Pile on upper part of frons sparse, short and black. On other parts of head a moderately long, though much shorter than in male, pile is present, this pile being black except on genae where it appears paler, but not whitish as in male. A distinct row of 6–7 postocular setae is present. Palpi and antennae as in male, but pile on first antennal segment shorter.

Thorax. As in male, but pile of mesonotum and scutellum much shorter.

Wings and legs as described for male.

Abdomen of same coloration as in male, but pile shorter and more sparse.

Total length 5,2–7,8 mm.

Measurements and numerical characters: see table 5, no. 1188.

Variation. Both the male and the female paratypes show only little variation in coloration and other external characters. The total length of males varies from 5,2 to 7,3 mm with corresponding differences also in other dimensions in comparison with the holotype. The paratype no. 1195 is the smallest specimen examined (total length 5,3 mm) and it has only two setae on the apex of the finger-like process on the gonocoxite. In other characters of the terminalia it is identical with the holotype.

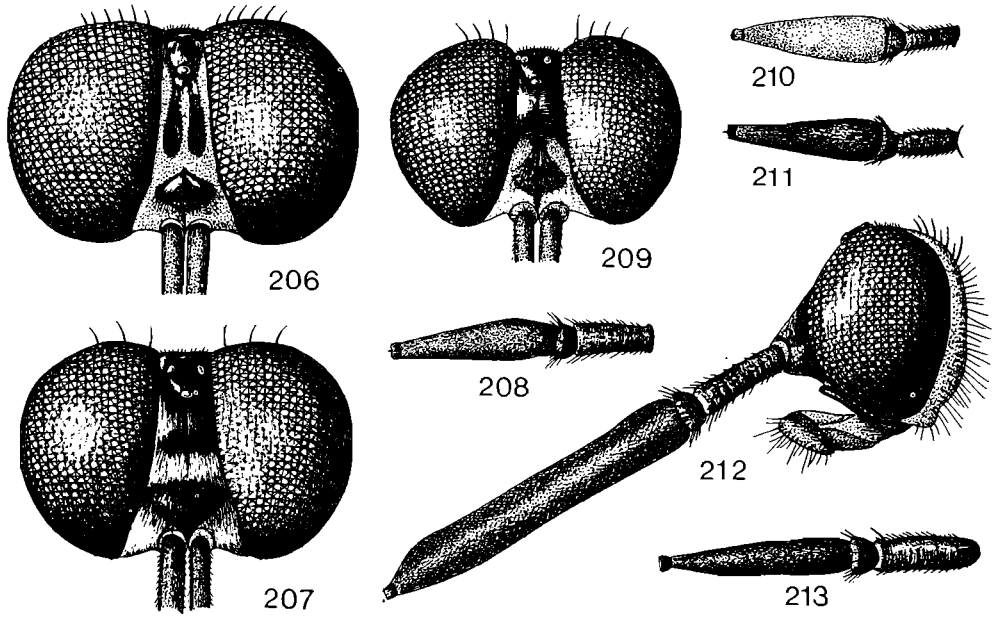
Material. 6 ♂ 11 ♀. Holotype, ♂ no. 1184, CAPE PROV., Wit River Valley, Bains Kloof, xii.1949, Mus. Exp. (SAM). Paratypes, 3 ♂ nos. 1181–83 + 5 ♀ nos. 1185–89, same data as holotype (SAM and ZMC); ♂♀ nos. 1195–96, Cape Prov., Upper Sources, Olifants River, Ceres, xii.1949, Mus. Exp. (SAM); ♂ no. 1190, Cape Prov., Doorn River, xi.1931, Miss A. Mackie (BMNH); ♀ no. 1193, Cape Prov., Doorn River, 3.xi.1931, Miss L. Ogilvie (BMNH); ♀ no. 1191, Cape Prov., Kirstenbosch, 20.x.1950, Brinck & Rudebeck (ZIL); ♀ no. 1192, Cape Prov., Swartbergpas, Platberg, ab. 1 500 m, 5–6.i.1951, Brinck & Rudebeck (ZIL); 2 ♀ nos. 1194 & 1197, Cape Prov., Cape Town, W. slope Table Mt., 21.xi.1949, B. Malkin (MEI).

Henicomyia Coquillett, 1898

Type-species: *H. hubbardii* Coquillett, 1898, by original monotypy.

Description.

Head (figs 206–213). The eyes are well separated in both sexes. Head in profile (fig. 212) distinctly higher than deep. A frontal protuberance is distinct, and the antennae have a comparatively low insertion. Frons and face bare, and pilosity of occiput short and sparse. Antennae always longer than depth of head. First and second antennal segments are slender and have a short pile. Third antennal segment longer than combined length of first and second segments and is in some species distinctly wider than first segment. The type-species shows a marked sexual difference in size of third antennal segment (cf. fig. 212 and fig. 213),



Figs 206–213. Heads and antennae of *Henicomyia* Coq. (206) head in frontal view of *H. tomentosa* sp.nov., ♀ no. 1221; (207) head in frontal view of *H. flava* sp.nov., ♀ no. 1219; (208) antenna of same; (209) head in frontal view of *H. bicolor* sp.nov., ♂ no. 1212; (210) antenna of *H. bicolor* sp.nov., ♂ no. 1213; (211) antenna of *H. nigra* sp.nov., ♂ no. 1223; (212) head in lateral view of *H. hubbardii* Coq., ♂ no. 1228; (213) antenna of *H. hubbardii* Coq., ♀ no. 1246.

but such a difference seems not present in the other species. Proboscis short and with broad labella. The two palpal segments slender and of almost equal size.

Thorax either unicolorous or with marked difference in coloration of upper and lower parts. Pilosity very short and sparse. Thoracic setae are more poorly developed in comparison with the other (African) genera. Only the posterior notopleural seta is strong; the anterior one is short and weak or even missing. Also the scutellar setae are short and weak, or absent as in the type-species.

Wings. These are basically hyaline or semihyaline with a darker area from around apex of vein R_{2+3} down to the region apical to the discal cell. Also the veins surrounding apex of second basal cell may be clouded.

Legs are long and slender and extremely short haired. Femora without setae. t1 without ad or pd setae, only a few short pv setae are present. t2 with rows of short setae of all four positions. t3 with rows of ad, pd and av setae; pv setae totally missing. Claws and pulvilli small. Coxae, tibiae and femora of p1 and p2 unicolorous yellowish-brown, or tibiae may be more whitish-yellow. Tarsi of these legs more or less darkened or totally black. Coxae, femora and tibiae of p_3 are more or less darkened, while metatarsus of p_3 is whitish as are the other tarsal segments, though to a lesser degree.

Abdomen slender, nearly cylindrical and only slightly narrower towards apex.

Male terminalia. These show very little interspecific variation. Gonocoxite of a rather simple shape. Its posterior margin (figs 214, 215) has a more or less deep incision which separates a dorsal process and a ventral process, the latter always shorter than the former. The ventral process has in the type-species a bare lobe at its apex. Such a lobe is absent in the other species. These two processes are closed on the inner side, i.e. they represent elements which can be compared with two fingers of a glove. The stylus (fig. 215) is inserted proximally to the margin closing these two fingers. The gonocoxite may thus be termed open on inside, i.e. there is no sclerotized bridge proximally to the stylus as in *Delphacura*, *Microgephyra*, and in some *Pentheria*. The stylus itself is a quite simple staff and nowhere in the genus enters into an intimate connection with structures of the posterior margin of the gonocoxite as in *Pentheria*. The phallic part of the aedeagus is extraordinarily long and slender in this genus in comparison with the African genera and has an orientation which forms an angle of *c.* 45° to the longitudinal axis of the aedeagus. The apical part of the phallus curves a little and terminates into two hooks which are more or less curved and between which the sperm-tube ends. A rudiment of a dorsal apodeme is present on the dorsal edge of the phallus. The ventral apodeme has shorter and stouter arms than in other genera.

Remarks. Henicomyia Coq. with the here included six species represents a monophyletic genus. It seems of great interest to discuss if the genus represents a sister-group to the African genera as an entirety, or, if it is a sister-group to only a part of the African complex. The poor representation of thoracic setae certainly is something original in comparison with the more well-developed setae in the African genera and is thus a plesiomorphous condition. The presence of the two long hooks of the phallus is an apomorphous character. On the other hand, the ventral apodeme is stronger and obviously of a more plesiomorphous condition than in the African genera, where it shows tendencies towards a reduction, as it becomes very slender and weakly sclerotized. Also sternite 8 of the female has a more

plesiomorphous condition in *Henicomyia* than in the African genera, where the formation of two rows of strong setae represents the derived condition. Based on these few and rather weak facts it can be emphasized that *Henicomyia* Coq. represents a sister-group of the African complex.

If we exclude the possibility of transatlantic dispersion and parallelism we are thus faced with the fact that the group was established before continental drift took place. Parallelism certainly can be excluded, but transatlantic dispersion can certainly not.

Note. Bromley (*in* Curran, 1934: 361) described a *Henicomyia brevicornis* from Kartabo, British Guiana. The holotype is in the American Museum of Natural History, New York, and was studied by the present author. It is a female, not a male as stated by Bromley, and belongs in the genus *Ataenogera* Kröb. **(new combination).**

Key to species of *Henicomyia* Coq., a New World genus

1. Scutellar setae absent. 1 notopleural seta only. Thorax practically unicolorous yellowish-brown. (Mexico, Arizona) .. .. **hubbardii** Coq., ♂♀
— Scutellar setae present though short and weak. As a rule 2 notopleural setae, but anterior one short and weak. 2
2. Thorax unicolorous, either yellowish-brown or black 3
— Thorax bicolorous, mesonotum and upper parts of pleura distinctly darker than rest of pleura.. 5
3. Thorax deep black and shiny, except for some tomented areas. Cx1 + cx2 yellowish, cx3 blackish .. .. **nigra** sp.n., ♂
— Thorax yellowish-brown and shiny, except for some tomented areas. Coxae yellowish-brown, but cx3 may appear slightly darkened 4
4. Upper part of frons entirely shiny black (fig. 207). Upper part of occiput mostly shiny **flava** sp.n., ♂♀
— Upper part of frons with 3 tomented stripes separated by blackish stripes (fig. 206). Upper part of occiput thickly tomented .. .. **tomentosa** sp.n., ♀
5. All coxae yellowish-brown. f3 distinctly yellowish at base .. **bicolor** sp.n., ♂♀
— Cx1 + cx2 yellowish-brown, cx3 blackish. f3 indistinctly yellowish at base **diversicolor** sp.n., ♀

Henicomyia hubbardii Coquillett, 1898. Figs 212, 213, 214–221

Henicomyia hubbardii Coquillett, 1898: 187; Cole, 1923: 17.
? *Henicomyia varipes* Kröber, 1912*a*: 213.

Diagnosis. *C.* 6–10 mm. Thorax practically uniformly yellowish-brown. 1 notopleural seta. Scutellar setae absent. Third antennal segment in male very strong, in female 'normal' (figs 212, 213).

Description. Male.

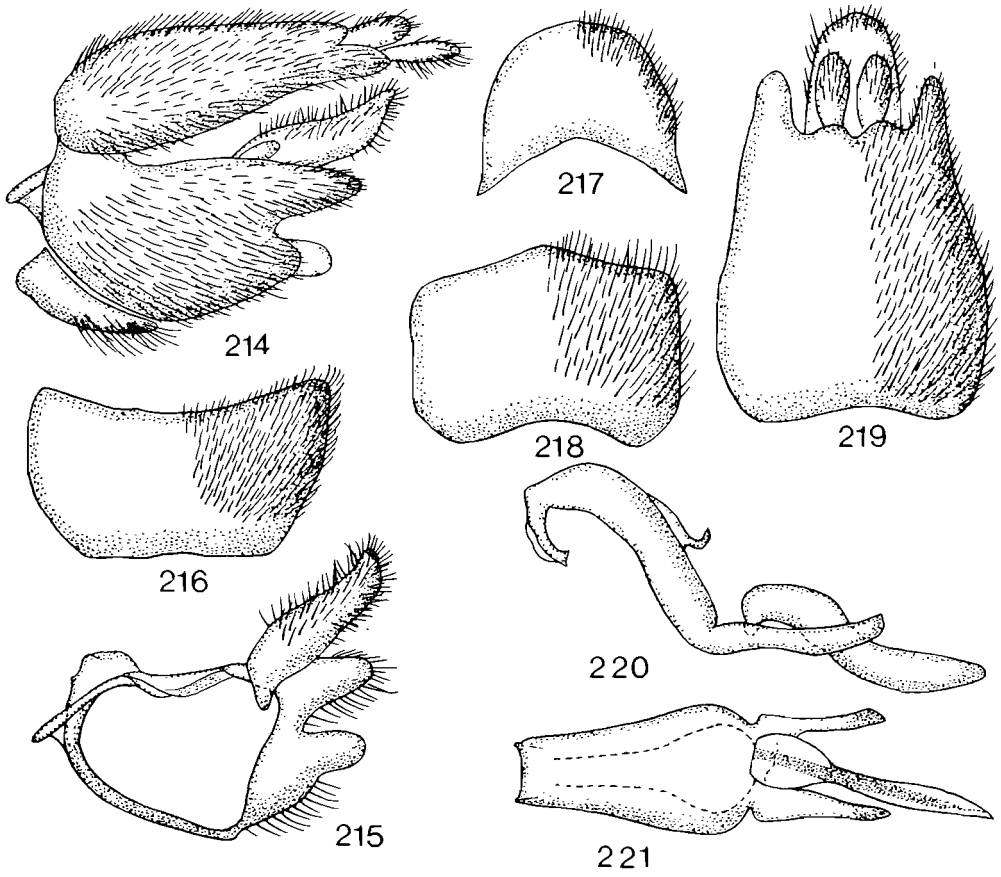
Head (fig. 212). Ground coloration black. Upper part of frons without tomentum, but finely transversely wrinkled. Lower part of frons with a whitish-grey tomentum which is rather sparse on major part of the area, leaving this area with a subshiny appearance in

certain views. Face, genae and occiput with a whitish-grey tomentum, central area of occiput yet more shiny. Frons, face and genae bare. *C.* 8 postocular + occipital setae which are short. Lower occiput with a sparse and short, whitish pile. Palpi blackish at base, being more brownish towards apex. Their pile very short and black. Antennae brownish-black, first segment with an extremely short pile.

Thorax. Ground coloration yellowish-brown and all parts shiny. In midline a stripe of whitish tomentum. This stripe is very narrow in front and rapidly increases to three times this width on posterior part of mesonotum. Also dorsal part of mesopleuron has a whitish tomented area and prosternum and propleural area is thinly tomented.

Wings. Ground coloration clear hyaline. Veins blackish-brown. A spot of a blackish-brown coloration surrounds the veins at apex of second posterior cell and a short transverse band occurs over fork of vein R_{4+5}. Knobs of halteres whitish with base brownish.

Legs. Cx1 and cx2 yellowish, cx3 brownish-black with a thin whitish-grey tomentum.



Figs 214–221. Male terminalia of *Henicomyia hubbardii* Coq., no. 1227. (214) terminalia in lateral view; (215) right gonocoxite seen from inside; (216) tergite 8; (217) sternite 9 or hypandrium; (218) sternite 8; (219) epandrium; (220) aedeagus in lateral view; (221) aedeagus in dorsal view.

Femora, t1 and t2 yellowish to yellowish-brown, t3 blackish. Tarsi of p_1 blackish, thus much darker than t_1. Tarsi of p_2 of nearly same coloration as t_2. Tarsi of p_3 whitish, thus much darker than t_3. Claws and pulvilli minute.

Abdomen. Black and shiny, with an extremely short pilosity. Posterior margins of segments 2–4 whitish to yellowish.

Terminalia (figs 214–221). Blackish-brown to black, and with a short black pile. Ventral process of gonocoxite (fig. 214) short, roundish and continuing into an oval, weakly sclerotized and unpilose lobe. Stylus (fig. 215) nearly straight and rather stout. The phallic part of aedeagus long and narrow, at apex with two ventral hooks which are moderately curved.

Total length 7,3–9,6 mm.

Measurements and numerical characters: see table 5, no. 1227.

Female. Head. Practically as in male, but frons lesser tomented on lower part. Antenna (fig. 213) with third segment much shorter and narrower than in male, i.e. a strong sexual dimorphism in antennal shape is present in this species.

Thorax, wings, legs and abdomen as in male.

Total length 6,3–9,8 mm.

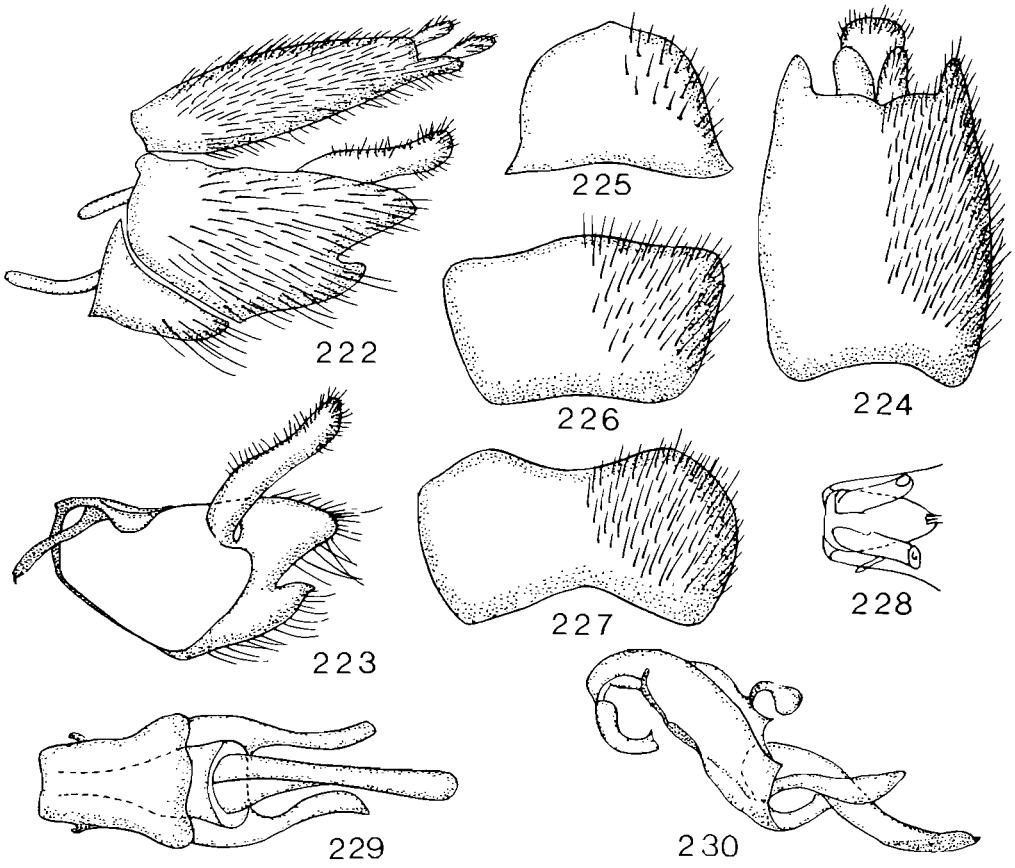
Measurements and numerical characters: see table 5, no. 1254.

Variation. The series at hand seems to show a very small variability in this species. Only the length of third antennal segment of the male seems to be variable as is often the case with a secondary sexual character.

Type material. The species was described by Coquillett (1898: 187) on the basis of a single male specimen from Arizona, Ft. Grant, July 19, 1897. The type, no. 4071, was stated to be in the U.S. National Museum, and has not been examined by the present author.

Material. 19 ♂ 10 ♀. 2 ♂ nos. 1236–37, ARIZONA, S.W. Res. Sta., 5 Mi. W Portal, Cochise Co., 1 500 m, 12.vii.1963, Vincent D. Roth; ♀ no. 1249, same locality, 30.iv.1964, same collector; 11 ♂ nos. 1227, 1229–35, 1240–42 + 6 ♀ nos. 1246–48, 1251–53, same locality, 21.vi–18.vii.1965, same collector; 2 ♂ nos. 1238–39 + ♀ no. 1250, same locality, 10–15.vi.1965, same collector; ♂ no. 1228, same locality, 24.vi.1967, same collector (All specimens originate from MEI; now deposited as follows: nos. 1228 and 1229 in USNM; nos. 1230 and 1252 in SWRS; nos. 1231 and 1240 in CNC; nos. 1232 and 1250 in NM; nos. 1233 and 1246 in UCR; nos. 1234 and 1253 in CIS; no. 1235 in CU; nos. 1236 and 1241 in DZSA; nos. 1237 and 1251 in ZMC; no. 1242 in CAS; no. 1248 in UA; nos. 1227, 1238, 1239, 1247 and 1249 in MEI); 2 ♂ nos. 1243–44, Ariz., S.W. Res. Sta., Chiricahua Mts., 22.vi.1964; Eric Fischer (No. 1243 from MEI to CAS; no. 1244 from MEI to ZMC); ♂ no. 1245, Ariz., Huachuca Mts., 1 770 m, 12.vii.1937, E. C. Jacot (UA); ♀ no. 1254, Ariz., Portal, 29.vi.1956, O. L. Cartwright (USNM); ♀ no. 1256, Ariz., Oak Creek Cañon, 18.vi.1936, G. P. Engelhardt (USNM).

Remarks. Kröber (1912*a*: 213) described his *varipes* on a specimen from Mexico City. The holotype was stated to be a male and deposited in his own collection. It may thus be supposed lost. The description fits in every detail with *hubbardii*, only the third antennal segment is described as being shorter than in *hubbardii*. I take it for most probable that Kröber has misidentified the sex and that he was not aware of the strong sexual dimorphism in antennal



Figs 222–230. Male terminalia of *Henicomyia bicolor* sp.nov., no. 1213. (222) terminalia in lateral view; (223) right gonocoxite seen from inside; (224) epandrium; (225) sternite 9 or hypandrium; (226) sternite 8; (227) tergite 8; (228) apex of aedeagus from underside; (229) aedeagus in dorsal view; (230) aedeagus in lateral view.

shape in this species. Until more material turns up I propose to treat *varipes* Kröb. as a possible synonym to *hubbardii* Coq.

Henicomyia bicolor sp.nov. Figs 209, 210, 222–230

Diagnosis. 7–9 mm. Lower shiny part of frons connected with upper shiny part, having the shape of a spade. Mesonotum and upper part of pleura black, lower part of pleura yellow. All coxae yellow. f_3 black with basal fifth yellow.

Description. Male, holotype.

Head (figs 209, 210). Ground coloration black. Frons largely shiny, but finely transversely striated. Extreme anterior margin of frons whitish-grey tomented. The tomented area also covers lateral parts of lower frons and has an enlargement at level of middle of frons; by this forming the spade-shaped shiny callus. Lower frons has a very short, black

pile. Face and genae tomented and bare. Occiput shiny on most of its surface; a stripe of whitish-grey tomentum occur on postocular margin. This stripe is narrow at vertex and gradually widens downwards. Palpi blackish. First and second antennal segments brownish-black; third segment brownish, being more blackish towards apex.

Thorax. Ground coloration of mesonotum, scutellum, propleuron, mesopleuron, pteropleuron and metapleuron black, of lower pleural sclerites yellow. Thorax appears shiny, but a thin tomentum appears on posterior part of mesonotum, on scutellum, on propleuron, on anterior and dorsal part of mesonotum, on metapleural callus and on hypopleuron. Mesonotal pile black, while pilosity of pleural sclerites is whitish.

Wings. Ground coloration greyish hyaline, darkest in apical fourth of wing. Wing with two markings as in the type-species, but the dark spot surrounding apical veins of second posterior cell is smaller, whereas the transverse band over fork of vein R_{4+5} has a more extensive distribution. Knob of halteres pale at apex, darkened around base.

Legs. All coxae of the same yellowish ground coloration as lower pleural sclerites and with a thin whitish tomentum. f1 and f2 yellowish. f3 mostly blackish, but yellowish in basal fifth and on extreme apex. t1 and t2 yellowish. t3 blackish with extreme base paler. Tarsus of p1 blackish, of p2 dirty yellowish. Metatarsus of p3 whitish, other tarsal segments blackish. Claws and pulvilli of a rather normal size.

Abdomen. Black, shiny, and with an extremely short pile. Posterior margins of segments 2–5 whitish-yellow.

Terminalia (figs 222–230). Black, shiny, and with a short black pile. Ventral process of gonocoxite shorter than in *hubbardii* (fig. 214) and without a weakly sclerotized and pigmented bare lobe. Stylus (fig. 223) narrower and not so pointed at apex. Aedeagus (fig. 230) with a shorter phallic part. The two distal, ventral hooks (fig. 228) are stronger than in *hubbardii*.

Total length 7,2 mm.

Measurements and numerical characters: see table 5, no. 1213.

Female. Practically identical with male in all characters. The only difference seems to be that the tomentum of lower frons has a more restricted distribution, so that the spade-shaped callus reaches to anterior margin of frons as well as to ocular margins. Total length varies between 7,5 and 8,7 mm.

Variation. The male paratype and the four female paratypes show no variation except in size. The male paratype measures 8,8 mm in total length. Lengths of female paratypes as given above.

Material. 2 ♂ 4 ♀. Holotype, ♂ no. 1212, BRAZIL, Nova Teutonia, 27°11'S–52°23'W, xi.1944, Fritz Plaumann (USNM). Paratypes, ♂ no. 1213, 2.xi.1958; ♀ no. 1214, 22.xi.1957; ♀ no. 1215, xii.1963; ♀ no. 1216, x.1944, same locality and collector as holotype (Nos. 1213 and 1214 from USNM to MEI; no. 1215 in CNC; no. 1216 from CNC to ZMC); ♀ no. 1217, Nova Teutonia, Sa. Catharina, no date, Fritz Plaumann (USNM).

Henicomyia diversicolor sp.nov.

Diagnosis and description. Female, holotype (male unknown).

Head as in female of *bicolor*. Antennae lost.

Thorax with the same sharp distinction between a black and a yellow coloured part as described for *bicolor*, but hypopleuron black on posterior part, not yellow as in *bicolor*.

Wings. Dark transverse band over fork of vein R_{4+5} nearly twice as broad as in *bicolor*.

Legs. Coxae differently coloured from *bicolor*, as cx1 and cx2 are yellow, while cx3 is blackish. f3 entirely black, only indistinctly paler at base and apex. Otherwise as in *bicolor*.

Abdomen as in *bicolor*.

Total length 9,3 mm.

Measurements and numerical characters: see table 5, no. 1224.

Material. 1 ♀. Holotype, ♀ no. 1224, BRAZIL, Est. do Rio, Itatiaya, 700 m, 11.x.1948, J. E. Zikan (DZSA).

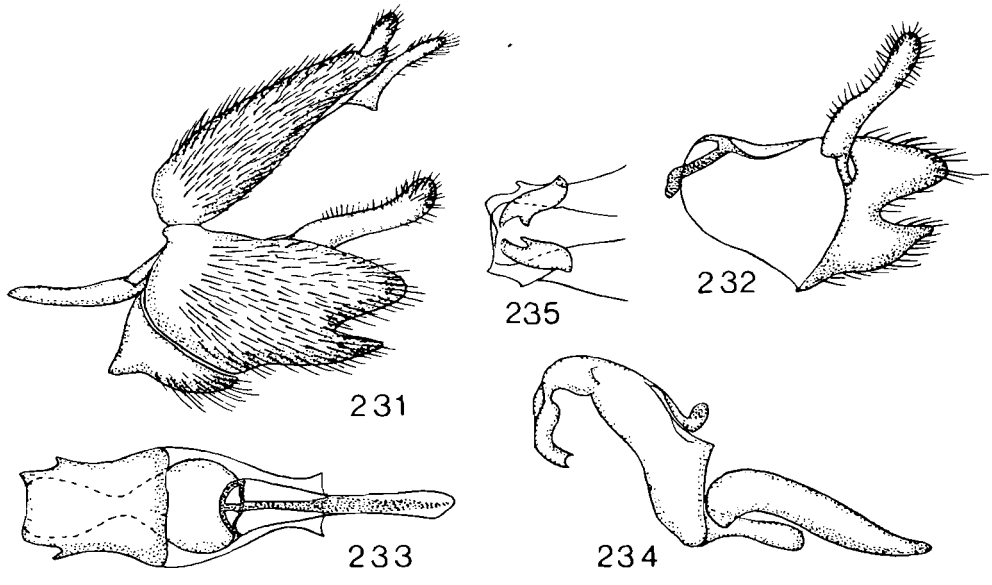
Henicomyia flava sp.nov. Figs 207, 208, 231–235

Diagnosis. 6–8 mm. Male frons as in *bicolor*. Female frons with a transverse tomented band which separates a lower and an upper shiny part. Thorax entirely yellowish. Cx1 and cx2 yellowish. Cx3 darkened, especially on posterior surface. f3 blackish with base yellowish.

Description. Male, holotype.

Head (figs 207, 208). Apart from smaller dimensions nearly as described for *bicolor*. Ground coloration may be a little paler, i.e. brownish-black.

Thorax. Ground coloration entirely yellowish, only hypopleuron appears somewhat darkened. All thoracic parts are shiny, but with a very thin tomentum on the same areas as described for *bicolor*. Pile exclusively pale and very short.



Figs 231–235. Male terminalia of *Henicomyia flava* sp.nov., no. 1218. (231) terminalia in lateral view; (232) right gonocoxite seen from inside; (233) aedeagus in dorsal view; (234) aedeagus in lateral view; (235) apex of aedeagus from underside.

Wings as in *bicolor*, but halteres seem paler.

Legs as in *bicolor*, but cx3 darkened, especially on posterior surface. f3 brownish-black with base and apex narrowly yellowish.

Abdomen as in *bicolor*.

Terminalia (figs 231–235). These are very similar to those of *bicolor*.

Total length 6,2 mm.

Measurements and numerical characters: see table 5, no. 1218.

Female. Similar to male. The tomented areas on middle of frons are fused in midline and thus form a transverse tomented band (fig. 207). Third antennal segment narrower and of a more blackish coloration. The tomented area of mesopleuron continues downwards over dorsal part of sternopleuron. The yellowish coloration of base of f3 has a larger distribution than in male and occupies about basal fifth.

Female no. 1222 may not be conspecific with the females nos. 1219–20 which form basis for the descriptive lines above. It has a somewhat darkened thorax, especially on the pleural sclerites, and f3 is nearly all yellowish, only darkened in apical fifth. The specimen is not labelled as a paratype.

Total length 7,8–9,0 mm.

Material. 1 ♂ 3 ♀. Holotype, ♂ no. 1218, BRAZIL, Annapolis, Goiaz, 7.x.1936 (USNM). Paratypes, ♀ no. 1219, S. Paulo, Porto Cabral, Rio Paraná, 6–15.x.1941, L. Travassos Filho (USNM); ♀ no. 1220, São Paulo, Pta. Albano, Rio Paraná, x.1954, Pres. Epitacio J. Lane col. (DZSA). Other material, ♀ no. 1222, M. Grosso, Salobra, vii.1939, Exp. C.Z.B. (USNM to MEI).

Henicomyia tomentosa sp.nov. Fig. 206

Diagnosis and description. Female, holotype (male unknown).

By superficial view very similar to female of *flava*, but frons (fig. 206) with a quite different pattern, consisting of two narrow black stripes separated by greyish tomented stripes on upper part of frons and of a separate roundish black callus on lower part of frons. Occiput is entirely and thickly covered with whitish-grey tomentum.

Thorax and legs as described for *flava*, but t1 paler than t2 and appears nearly whitish as does metatarsus of p3.

Wings with the same pattern, but the dark transverse band over fork of R_{4+5} is broader than in *flava*.

Abdomen black with posterior margins of segments 2–6 whitish-yellow as in *flava*. These pale posterior margins are broader than in this species and also anterior margin of segment 2 and posterior margin of tergite 1 are whitish-yellow.

Total length 8,5 mm.

Measurements and numerical characters: see table 5, no. 1221.

Material. 1 ♀. Holotype, ♀ no. 1221, COSTA RICA, Higuito, San Mateo, no date, Pablo Schild (USNM).

Henicomyia nigra sp.nov. Fig. 211

Diagnosis. 8,5 mm. Lower shiny part of frons connected with upper shiny part having the shape of a spade. Thorax all black. Cx1, cx2 and all femora yellow, while cx3 is blackish.

Description. Male, holotype.

Head (fig. 211). Ground coloration black. Frons with the same pattern as in *bicolor* (fig. 209) but the lower shiny callus, having the shape of a spade, is larger and reaches to ocular margins, wherefore the upper tomented area is separated from the tomented area around the antennal sockets. Shape of antennae as in fig. 211; their coloration blackish, third segment only slightly paler at base. Other characters as in *bicolor.*

Thorax. Entirely black and shiny, with thinly whitish tomented areas on posterior part of mesonotum, on scutellum, on propleuron, on a bow-shaped area covering anterior part of mesopleuron and middle dorsal part of sternopleuron, and further on metapleural callus and hypopleuron. Thoracic pile very short and pale.

Wings. Practically as in *bicolor.* Halteres whitish, but darkened around base of knob.

Legs. Cx1 and cx2 yellowish, cx3 blackish. All coxae whitish tomented. All femora yellow. t1 and t2 yellow, t3 black. Tarsi as described for *bicolor.*

Abdomen black and shiny, with narrow whitish posterior margins on segments 2–6. Pile short and blackish.

Terminalia. Shiny black and with a short, black pilosity. Shape of all structures practically as figured for *bicolor* (figs 222–230) and *flava* (figs 231–235). Any specific differences seem difficult to state.

Total length 8,5 mm.

Measurements and numerical characters: see table 5, no. 1223.

Material. 1 ♂. Holotype, ♂ no. 1223, PERU, Huanuco, Cochicote, 6.ix.1965, J. C. Hitchcock Jr. (USNM).

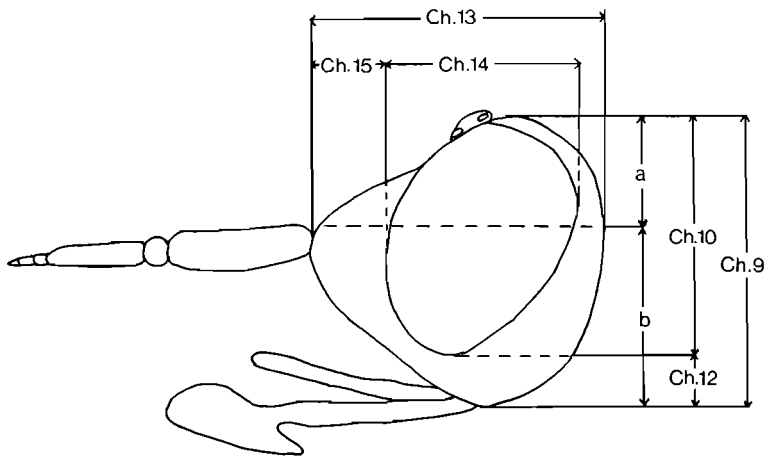


Fig. 236. Head of a Therevid-fly seen in lateral view, showing measurements of characters nos. 9–10 and 12–15.

Unrecognized species

Kröber (1912*a*: 23) described a species from Algoa Bay, Cape Province, under the name of *Ectinorrhynchus scutellaris*. This species certainly belongs in the *Xestomyza*-group, but it has not been possible to recognize the species in present material or to locate the original material which was stated to be in the Hamburg Museum and therefore now must be regarded as lost. Only the female sex was described and Kröber (1931: 114) presented an English translation of the original description.

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EXPLANATION TO CHARACTER NUMBERS

Ch. 1: Width of head.
Ch. 2: Distance between eyes at vertex.
Ch. 3: Width between outer margins of upper ocelli.
Ch. 4: Frontal width at anterior ocellus.
Ch. 5: Frontal width at level of antennae.
Ch. 6: Facial width at lower edge of eye.
Ch. 9: Height of head.
Ch. 10: Height of eye.
Ch. 12: Genal width.
Ch. 13: Depth of head.
Ch. 14: Depth of eye.
Ch. 15: Frontal protuberance.
Ch. 16: Ratio of antennal insertion (a:b; a+b = ch. 9).
Ch. 17: Length of proboscis.
Ch. 18: Length of palpus.
Ch. 19: Length of first antennal segment.
Ch. 20: Width of first antennal segment.
Ch. 21: Length of second antennal segment.
Ch. 22: Width of second antennal segment.
Ch. 23: Length of third antennal segment.
Ch. 24: Width of third antennal segment.
Ch. 25: Ratio of three sections of style (Sum of the three numbers equals length of style, in hundredths of mm).
Ch. 26: Length of mesonotum (excl. of scutellum).
Ch. 27: Width of mesonotum (between notopleural setae).
Ch. 31: Number of pairs of dc setae.
Ch. 33: Length of mesonotal pile.
Ch. 34: Length of wing (from humeral cross-vein to apex).
Ch. 35: Width of wing.
Ch. 36: Length of vein R_4 (from fork).
Ch. 37: Length of vein R_5 (from fork).
Ch. 38: Distance between apex of veins R_4 and R_5.
Ch. 46: Length of front tibia.
Ch. 47: Width of front tibia.
Ch. 48: Length of hind tibia.
Ch. 55: Length of longest pd seta of tl.
Ch. 56: Width of abdomen at centre of segment 2.
Ch. 57: Width of abdomen at centre of segment 6.
Ch. 58: Height of abdomen at centre of segment 2.

Note. The interruptions in the row of numbers have their explanation in the fact that certain characters have not been found of value for measurements in this group of Therevidae. This is due to dimensions of frontal callus, number of notopleural, supra-alar, postalar and scutellar setae, certain constant characters of the wing and of the legs. The reader is then referred to the general descriptive chapter. Most of the characters listed above should be self-explicatory, only some measurements taken of the head may need illustration (see fig. 236). All measurements are given in millimetres.

TABLE 2. Scheme of measurements for species of *Microgephyra* gen.nov. No. 1086 = holotype ♂ of *brincki* sp.nov.; no. 1122 = paratype ♀ of *brincki* sp.nov.; no. 1129 = holotype ♂ of *turneri* sp.nov.; no. 1203 = holotype ♂ of *hessei* sp.nov.; no. 1065 = holotype ♂ of *stuckenbergi* sp.nov.; no. 1072 = paratype ♀ of *stuckenbergi* sp.nov.; no. 1128 = holotype ♀ of *grandis* sp.nov.; no. 1204 = holotype ♂ of *capricornis* sp.nov.; no. 1175 = holotype ♂ of *stylata* sp.nov.

Specimen number	No.	No.	No.	No.	No.	No.	No.	No.	No.
Character number	1086	1122	1129	1203	1065	1072	1128	1204	1175
1	1,10	1,10	1,12	0,97	0,96	1,05	1,62	1,05	1,32
2	0,28	0,30	0,33	0,15	0,19	0,22	0,50	0,26	0,17
3	0,17	0,17	0,20	0,15	0,16	0,15	0,23	0,19	0,16
4	0,29	0,31	0,34	0,08	0,19	0,22	0,51	0,26	0,06
5	0,40	0,42	0,41	0,37	0,28	0,33	0,72	0,40	0,35
6	0,45	0,50	0,50	0,51	0,37	0,38	0,94	0,55	0,59
9	0,82	0,81	0,83	0,79	0,70	0,75	1,25	0,76	0,95
10	0,74	0,75	0,75	0,69	0,70	0,75	1,13	0,69	0,89
12	0,08	0,06	0,08	0,10	—	—	0,12	0,07	0,06
13	0,72	0,72	0,76	0,64	0,63	0,68	1,08	0,73	0,87

Specimen number	No.	No.	No.	No.	No.	No.	No.	No.	No.
Character number	1086	1122	1129	1203	1065	1072	1128	1204	1175
14	0,60	0,52	0,57	0,50	0,50	0,53	0,82	0,45	0,80
15	0,11	0,09	0,13	0,08	0,08	0,09	0,14	0,11	0,07
16	30 : 52	31 : 50	34 : 49	40 : 39	37 : 38	45 : 30	60 : 65	37 : 39	57 : 38
17	0,50	0,52	?	0,66	0,44	0,52	0,98	0,75	0,50
18	0,41	0,38	0,42	0,46	0,38	?	0,75	0,43	0,43
19	0,31	0,28	0,21	0,15	0,38	0,32	0,43	0,19	0,21
20	0,10	0,10	0,12	0,08	0,09	0,09	0,14	0,08	0,08
21	0,11	0,12	0,07	0,08	0,09	0,08	0,10	0,06	0,08
22	0,14	0,13	0,14	0,09	0,12	0,12	0,14	0,11	0,09
23	0,75	0,56	0,84	0,50	1,42	0,78	0,52	0,75	?
24	0,15	0,13	0,22	0,11	0,09	0,09	0,14	0,17	?
25	3 : 3 : 3	3 : 3 : 3	2 : 2 : 3	3 : 3 : 2	3 : 3 : 3	3 : 3 : 3	4 : 4 : 4	?	?
26	1,15	1,20	1,38	0,97	0,98	1,16	2,00	1,08	1,21
27	0,88	0,80	0,98	0,76	0,70	0,75	1,38	0,83	0,87
31	1	—	1–2	1	—	—	—	1–2	1
33	0,07	0,07	0,12	0,10	0,08	0,06	0,03	0,12	0,05
34	3,40	3,16	3,60	2,85	3,12	3,28	4,80	2,76	3,06
35	1,44	1,18	1,52	1,08	1,22	1,25	1,78	1,24	1,20
36	1,20	1,04	1,14	0,83	1,00	1,12	1,40	0,90	0,88
37	1,25	1,05	1,14	0,87	1,03	1,14	?	0,95	0,90
38	0,40	0,30	0,32	0,27	0,27	0,32	?	0,28	0,29
46	1,36	1,38	1,50	1,19	1,44	1,48	1,84	1,18	1,22
47	0,12	0,10	0,10	0,10	0,09	0,11	0,16	0,11	0,11
48	1,86	2,00	2,12	1,64	2,00	2,16	2,75	1,65	1,75
55	—	—	—	—	—	—	—	—	—
56	0,68	0,86	0,94	0,68	0,58	0,84	1,64	0,81	0,54
57	0,50	0,67	0,56	0,43	0,38	0,75	1,12	0,40	0,42
58	0,60	0,71	0,70	0,45	0,50	0,70	1,36	0,60	0,40

TABLE 3. Scheme of measurements for species of *Pentheria* Kröb. No. 1027 = holotype ♂ of *rufipes* (Big.); no. 1210 = paratype ♀ of *rufipes* (Big.); no. 1032 = lectotype ♂ of *ponti* nom.nov.; no. 1033 = paratype ♀ of *ponti* nom.nov.; no. 1043 = holotype ♀ of *obscura* Kröb.; no. 1049 = lectotype ♂ of *alternans* (Lw.); no. 1055 = paratype ♀ of *alternans* (Lw.); no. 1044 = holotype ♂ of *uncinata* sp.nov.; no. 1046 = holotype ♂ of *caniceps* sp.nov.; no. 1200 = holotype ♂ of *simplex* sp.nov.

Specimen number	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Character number	1027	1210	1032	1033	1043	1049	1055	1044	1046	1200
1	2,20	2,45	1,84	2,13	2,20	1,53	1,64	1,76	1,60	1,68
2	0,29	0,37	0,25	0,30	0,32	0,22	0,26	0,22	0,22	0,20
3	0,27	0,31	0,23	0,27	0,26	0,22	0,24	0,22	0,22	0,20
4	0,12	0,46	0,10	0,34	0,36	0,08	0,25	0,08	0,08	0,05
5	0,74	0,81	0,62	0,75	0,87	0,50	0,60	0,58	0,48	0,50
6	1,06	1,12	0,91	1,04	1,00	0,71	0,84	0,80	0,73	0,73
9	1,70	1,78	1,38	1,52	1,63	1,31	1,30	1,35	1,27	1,29
10	1,70	1,78	1,35	1,48	1,60	1,25	1,30	1,30	1,20	1,25
12	—	—	0,05	0,04	0,03	0,06	—	0,05	0,07	0,04
13	1,52	1,58	1,25	1,44	1,50	1,00	1,06	1,06	1,08	1,10
14	1,25	1,25	1,00	1,08	1,20	0,82	0,83	0,88	0,91	1,02
15	0,22	0,24	0,16	0,25	0,25	0,11	0,11	0,06	0,08	—
16	116 : 36	128 : 50	100 : 38	112 : 40	130 : 33	95 : 36	95 : 35	105 : 30	92 : 38	92 : 37
17	1,35	1,10	1,00	1,22	1,05	0,74	0,80	0,87	0,69	0,80
18	1,04	1,00	0,82	0,96	0,90	0,61	0,62	0,64	0,52	0,53
19	0,40	0,50	0,40	0,51	0,50	0,33	0,38	0,31	0,26	0,25
20	0,16	0,20	0,13	0,19	0,23	0,12	0,15	0,12	0,14	0,12
21	0,12	0,12	0,12	0,12	0,15	0,10	0,10	0,10	0,10	0,10
22	0,17	0,17	0,15	0,19	0,20	0,15	0,15	0,15	0,15	0,15
23	0,64	0,62	0,53	?	0,52	0,50	0,48	0,50	0,41	0,49
24	0,18	0,20	0,15	?	0,20	0,16	0,17	0,16	0,15	0,18
25	3 : 3 : 2	3 : 10 : 2	3 : 3 : 2	?	3 : 11 : 2	2 : 4 : 2	2 : 4 : 2	2 : 6 : 2	2 : 4 : 3	2 : 6 : 2
26	3,00	3,05	2,25	2,75	2,85	1,82	1,95	2,00	1,68	1,72
27	1,98	2,20	1,58	2,00	2,00	1,32	1,35	1,48	1,32	1,25

Specimen number / Character number	No. 1027	No. 1210	No. 1032	No. 1033	No. 1043	No. 1049	No. 1055	No. 1044	No. 1046	No. 1200
31	—	—	—	—	—	1	—	1	1	1
33	0,10	0,12	0,08	0,05	0,10	0,05	0,05	0,07	0,10	0,07
34	6,48	8,13	5,60	7,25	7,60	5,00	5,30	5,45	4,80	4,62
35	2,25	2,95	2,25	2,56	2,90	1,94	2,05	2,22	1,88	1,80
36	2,13	2,50	1,84	2,30	2,58	1,64	1,70	1,75	1,54	1,54
37	2,18	2,55	1,86	2,36	2,62	1,65	1,68	1,75	1,57	1,62
38	0,84	0,98	0,65	0,75	0,85	0,62	0,75	0,64	0,58	0,50
46	2,50	3,35	2,35	3,08	?	2,20	2,38	2,00	2,00	1,90
47	0,27	0,35	0,22	0,27	?	0,17	0,19	0,16	0,16	0,15
48	4,55	6,04	?	5,04	5,44	3,48	4,00	3,70	3,15	3,30
55	—	—	—	—	—	—	—	—	—	—
56	1,35	1,70	1,34	1,70	1,80	1,10	1,50	?	0,98	1,08
57	?	1,48	?	1,50	1,37	?	?	?	0,58	0,74
58	1,35	1,68	1,04	1,50	1,65	0,95	1,40	?	0,88	0,64

TABLE 4. Scheme of measurements for species of *Delphacura* gen.nov., *Cochlodactyla* gen.nov., *Hemigephyra* gen.nov., and *Braunsophila* Kröb. No. 1146 = holotype ♂ of *D. mosselensis* sp.nov.; no. 1152 = paratype ♀ of *D. mosselensis* sp.nov.; no. 1257 = holotype ♂ of *C. munroi* sp.nov.; no. 1179 = holotype ♂ of *H. atra* sp.nov.; no. 1170 = paratype ♀ of *H. atra* sp.nov.; no. 1138 = ♂ of *H. braunsi* (Kröb.); no. 1137 = holotype ♀ of *H. braunsi* (Kröb.); no 1015 = lectotype ♂ of *B. nubeculipennis* Kröb.; no. 1014 = paralectotype ♀ of *B. nubeculipennis* Kröb.

Specimen number / Character number	No. 1146	No. 1152	No. 1257	No. 1179	No. 1170	No. 1138	No. 1137	No. 1015	No. 1014
1	1,65	1,36	1,44	1,62	1,25	1,19	1,38	1,52	1,42
2	0,20	0,45	0,25	0,25	0,38	0,25	0,42	0,37	0,43
3	0,20	0,19	0,21	0,21	0,17	0,18	0,24	0,25	0,25
4	0,08	0,45	0,24	0,07	0,41	0,05	0,30	0,28	0,45
5	0,35	0,60	0,42	0,40	?	0,44	0,62	0,87	0,79
6	0,75	0,76	0,50	0,81	0,57	0,70	0,82	0,98	0,87
9	1,14	1,07	1,06	1,14	0,88	0,91	1,00	1,08	0,95
10	1,02	0,87	1,06	1,05	0,76	0,85	0,73	0,88	0,81
12	0,12	0,20	—	0,09	0,12	0,06	0,11	0,14	0,13
13	1,00	0,90	0,87	1,09	0,86	0,75	0,90	1,06	1,00
14	0,88	0,67	0,75	0,94	0,64	0,57	0,62	0,75	0,65
15	0,04	0,12	0,05	0,06	0,12	0,08	0,18	0,20	0,22
16	69 : 45	42 : 65	55 : 49	64 : 50	45: 43	54 : 47	75 : 25	62 : 46	56 : 39
17	0,64	0,80	0,72	0,83	0,65	0,25	0,75	0,90	0,87
18	0,52	0,63	0,56	0,50	0,44	0,22	0,48	0,52	0,54
19	0,37	0,47	0,23	0,38	0,29	0,37	0,48	0,44	0,40
20	0,09	0,09	0,18	0,08	0,06	0,11	0,15	0,15	0,17
21	0,10	0,10	0,10	0,12	0,08	0,10	0,14	0,12	0,12
22	0,12	0,12	0,19	0,11	0,09	0,11	0,12	0,12	0,12
23	0,47	0,47	1,20	0,37	0,32	0,37	0,35	0,31	0,27
24	0,10	0,12	0,22	0,11	0,09	0,10	0,12	0,13	0,16
25	4 : 5 : 3	4 : 5 : 3	6 : ? : 3	3 : 3 : 2	3 : 3 : 2	2 : 4 : 0	3 : 7 : 0	2 : 2 : 2	2 : 2 : 2
26	1,62	1,52	1,72	1,50	1,12	1,28	1,62	1,66	1,54
27	1,13	1,05	1,25	1,20	0,87	1,00	1,15	1,24	1,20
31	1	—	—	—	—	—	—	—	—
33	0,20	0,04	0,08	0,25	0,03	0,06	0,05	0,35	0,16
34	3,62	3,88	5,68	3,50	3,00	3,50	4,68	4,45	4,62
35	1,38	1,38	2,25	1,32	1,00	1,36	1,74	1,70	1,72
36	1,08	1,20	1,77	1,18	0,94	0,98	1,30	1,37	1,40
37	1,14	1,20	1,72	1,24	0,94	1,04	1,30	1,38	1,40
38	0,40	0,38	0,61	0,37	0,37	0,36	0,34	0,48	0,50
46	1,48	1,70	2,14	1,50	1,31	1,50	1,86	1,52	1,75
47	0,12	0,15	0,15	0,12	0,10	0,10	0,13	0,16	0,17
48	2,02	2,48	3,75	2,44	2,12	?	2,75	2,56	3,02
55	—	—	—	—	—	—	—	0,14	?
56	0,85	?	1,08	0,95	1,10	0,84	1,20	1,12	1,56
57	0,48	?	0,71	0,58	0,87	?	1,03	0,70	1,00
58	0,75	?	0,88	0,52	0,80	0,70	1,08	1,00	0,72

TABLE 5. Scheme of measurements for species of *Xestomyza* Wied., *Ceratosathe* gen.nov. and *Henicomyia* Coq. No. 1002 = ♂ of *X. lugubris* Wied.; no. 1184 = holotype ♂ of *C. tridactyla* sp.nov.; no. 1188 = paratype ♀ of *C. tridactyla* sp.nov.; no. 1227 = ♂ of *H. hubbardii* Coq.; no. 1254 = ♀ of *H. hubbardii* Coq.; no. 1213 = paratype ♂ of *H. bicolor* sp.nov.; no. 1224 = holotype ♀ of *H. diversicolor* sp.nov.; no. 1218 = holotype ♂ of *H. flava* sp.nov.; no. 1221 = holotype ♀ of *H. tomentosa* sp.nov.

Specimen number Character number	No. 1002	No. 1184	No. 1188	No. 1227	No. 1254	No. 1213	No. 1224	No. 1218	No. 1221
1	2,06	1,82	1,48	1,25	1,40	1,28	1,55	1,02	1,62
2	0,42	0,28	0,48	0,24	0,25	0,21	0,23	0,16	0,20
3	0,33	0,23	0,22	0,19	0,20	0,16	0,19	0,12	0,20
4	0,42	0,10	0,50	0,25	0,29	0,21	0,25	0,21	0,25
5	1,25	1,00	0,86	0,49	0,55	0,38	0,50	0,32	0,48
6	1,30	1,27	0,93	0,52	0,62	0,50	0,50	0,40	1,25
9	1,42	1,34	1,06	1,02	1,15	0,94	1,08	0,76	1,13
10	1,18	1,22	0,87	0,88	1,11	0,88	1,08	0,76	1,13
12	0,24	0,12	0,19	0,04	0,04	0,06	—	—	—
13	1,26	1,26	1,02	0,88	1,02	0,82	0,98	0,64	1,00
14	0,77	0,90	0,65	0,71	0,76	0,70	0,78	0,50	0,83
15	0,24	0,16	0,22	0,12	0,15	0,06	0,12	0,06	0,10
16	73 : 69	72 : 62	64 : 42	60 : 42	70 : 45	66 : 28	73: 35	55 : 21	86 : 27
17	2,64	1,36	0,76	0,62	0,75	0,62	0,62	0,32	0,60
18	1,04	0,76	0,54	0,45	0,52	0,40	0,25	0,30	0,52
19	1,08	0,41	0,35	0,48	0,50	0,26	?	0,20	0,34
20	0,35	0,12	0,10	0,15	0,16	0,11	?	0,10	0,12
21	0,20	0,15	0,12	0,09	0,10	0,08	?	0,06	0,09
22	0,15	0,12	0,11	0,20	0,18	0,15	?	0,15	0,15
23	0,45	0,38	0,34	1,50	0,83	0,77	?	0,62	0,71
24	0,15	0,12	0,12	0,26	0,16	0,23	?	0,23	0,18
25	4 : 4 : 0	2 : 2 : 1	2 : 2 : 1	0,03	0,04	0,04	?	0,04	0,04
26	2,35	1,60	1,36	1,68	1,74	1,38	1,82	1,16	1,80
27	1,72	1,52	1,12	1,13	1,28	0,98	1,20	0,75	1,36
31	—	1	1	—	—	—	—	—	—
33	0,40	0,40	0,06	0,01	0,01	0,06	0,05	0,03	0,05
34	6,45	4,65	3,36	4,75	5,58	4,30	5,96	3,58	5,54
35	2,75	1,70	1,25	1,75	2,03	1,56	2,25	1,27	2,00
36	1,88	1,50	1,10	1,63	2,00	1,40	2,20	1,21	2,00
37	1,76	1,44	1,10	1,60	1,94	1,40	2,20	1,21	1,87
38	0,70	0,55	0,36	0,29	0,45	0,37	0,53	0,37	0,60
46	2,38	1,86	1,50	1,76	1,85	1,52	?	1,25	2,00
47	0,17	0,15	0,14	0,15	0,18	0,15	?	0,12	0,22
48	4,00	3,00	2,68	2,94	3,50	2,36	3,50	1,96	3,40
55	0,13	0,12	0,10	—	—	—	—	—	—
56	1,72	1,25	1,14	0,75	1,25	0,56	0,80	?	0,95
57	1,04	0,64	1,02	0,50	1,15	0,58	?	?	1,02
58	1,60	0,75	0,65	0,65	0,72	0,48	0,90	?	0,50