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## NEW SPECIES OF AFRICAN HYMENOPTERA No. 6

BY DR G. ARNOLD

### Family MUTILLIDAE

The most comprehensive work on the Ethiopian species of this family is Bischoff's monograph (1920, *Arch. Naturgesch.* LXXXVI), which brings under one cover the bibliography and descriptions of all the species known at that time, together with the descriptions of many new forms and new genera. The genera were, however, unnecessarily multiplied, and Bradley and Bequaert (1928, *Bull. Amer. Mus. Nat. Hist.* LVIII) rightly reduced some of Bischoff's genera to subgeneric rank and synonymized a few others. Furthermore, in the writer's opinion, Bischoff's treatment of the new forms is open to criticism, for not only are his descriptions based to an excessive extent on colour and the arrangement of the pubescent markings of the abdomen, to the neglect of structural characters, but again and again he described as races of one species forms which are found in the same geographical area, or at least in areas over the whole of which the ecological conditions are more or less uniform. For my part, I cannot agree that in such areas several races of one species can exist and remain distinct. Very many of Bischoff's 'races', i.e. subspecies, are no more than varieties, but varieties of a special character the nature of which requires further elucidation.

It was clearly established by Mickel (1928, *Smithsonian Inst. U.S. Nat. Mus. Bull.* CXLIII, 17-19), in his observations on *Dasymutilla bioculata* Cress. that that species could be separated into two series according to the size, the smaller ♀♀ varying from 6.5 to 10 mm. long, and the larger from 11 to 15 mm., and that the ♂♂ could also be arranged in two similar series. He then proved by breeding experiments that the smaller sized specimens were derived from larvae which had parasitized the pupae of a small Sphecid, *Microbembix monodonta* Say, 8-14 mm. long, and the larger from larvae which had parasitized the larger *Bembix pruinosa* Fox, 16-19 mm. long. These observations clearly established the fact that the size of this particular Mutillid is dependent on the quantity of food consumed in the larval state. But there is another factor in connexion with the food of Mutillid larvae, hitherto ignored, and that is the quality. It is not to be assumed that the chemical components of the pupal hosts are in all cases the same, or that they are always in the

same proportion. In view of the fact that nearly 4000 species of Mutillidae have been described, remarkably little is known about their hosts. Mickel (loc. cit. pp. 10-11) gives a list of the hosts of forty-eight species, all that are known. Some of these, *M. europaea* L., *Dasymutilla bioculata* Cress. and *Microbembix regia* Smith, prey on a variety of hosts, but all of the same genus. On the other hand, *Dasylabris maura* L. is recorded as preying on a *Chlorion* (*Sphex*) *occitanicum* Lep. and on a species of *Sphex* (*Ammophila*). Again, *Barymutilla barbara* L. preys on *Larra anathema* Coq. (André, 1899, *Spec. Hymen. d'Eur. & Algérie*, VIII, 297), whereas its variety *brutia* Pet. preys on a *Megachile* (Ferton, 1896, *Act. Soc. Linn. Bordeaux*, XLVIII, 9). The prey of *Chlorion occitanicum* consists of long-horned grasshoppers, Ephippigeridae, whereas that of the *Sphex* consists of lepidopterous larvae. The prey of *Larra anathema* is a *Gryllotalpa*, and the food of the *Megachile* larva is pollen and nectar. It may therefore be assumed that the final metabolic products derived from eating these different kinds of larvae are not always the same, and therefore I put forward the suggestion that the differences in colour and pubescence pattern in many of the so-called races of some Mutillidae are conditioned by the nature of the food ingested, and that a more suitable term for these forms is *trophic* varieties. Furthermore, analogous to the case of the European cuckoo, in which it has been shown that there are strains which have an inherited bias towards one particular species of host, so it is suggested that such strains also exist amongst a number of the Mutillidae. At present we know of only one case in support of this supposition, that of *Barymutilla barbara* and its variety *brutia*, and more evidence will only be attainable by collecting large numbers of the cocoons of as many hosts as possible and breeding from them. Mickel (loc. cit. p. 14) states that the act of copulation in the Mutillidae requires only a few seconds. This is contrary to my own observations. The ♂ *in copula* carries the ♀ on the underside of its abdomen, and in that condition flies rather heavily from place to place, such as a grass stem or the branch of a shrub, and remains attached for minutes rather than seconds. The flight of the ♂ when searching for a mate is, on the contrary, very different, being swift, and often in concentric circles. When swept into a net, the coupled insects immediately separate, the ♀ dropping to the bottom of the net, where she can easily be overlooked if the collector is not aware of the different sort of flight which obtains when copulation is taking place.

Unless otherwise stated, the types of all the new species described in the following pages are in the collection of the National Museum of Southern Rhodesia.

The minimum magnification which is required to resolve the details of the sculpture, using a binocular microscope, is given in brackets.

#### **Gynandrotilla** n.gen.

CHARACTERS. ♂. Mandibles acute at the apex, with a pre-apical tooth, the external lower margin deeply excised. Clypeus raised in the middle, concave transversely on each side of the middle, the apical margin angularly emarginate in the middle and arcuate on each side. Head wider than the thorax, the vertex long. Eyes with a very small sinus on

the inner margin, but not reniform. Antennae 13-jointed; flagellum elongate and filiform, the first joint short, the rest longer than wide, the apical joint transversely compressed. Ocelli well developed. Thorax not constricted at the sutures, all of which are clearly defined; pronotum marginate in front and at the sides, the hind margin angular; tegulae fairly large, hirsute; hind margin of the mesonotum transverse, not extending beyond the tegulae, its posterior corners produced into oblique teeth truncated at the apex. Lateral margins of the nearly flat scutellum raised; metanotum short but distinct. Epinotum unarmed, its outline when viewed from the side, quadrantal. First tergite not transverse, widened gradually caudad, joining the second tergite on its cephalic aspect, the anterior angles at its base dilated and directed a little outwards. Seventh tergite fairly flat, wider than long, the apical margin transverse. First sternite with a median carina ending caudad in a tooth. Seventh sternite marginate at the sides, feebly concave, its apical margin transverse. Legs slender, middle and hind tibiae with a few long spines on the outside. Claws unarmed.

Genotype *G. ferruginea* n.sp.

The genus differs from the other genera with apterous ♂♂, *Brachymutilla*, *Nanomutilla*, *Apterotilla* and *Odontotilla* as follows: from the first by the distinct segmentation of the thorax, from the second by the unarmed scutellum, from *Apterotilla* by the head, which is wider than the thorax, and from *Odontotilla* by the unarmed epinotum.

#### ***Gynandrotilla ferruginea* n.sp. (Figs. 1, 2)**

♂. 7.3 mm. long. Pale ferruginous, the eyes and ocelli black, the inferior outer margin and the apex of the mandibles blackish, the second, sixth and seventh tergites reddish brown, the tegulae and tarsi flavo-ferruginous. Head and thorax with a long, decumbent, not dense, yellowish white pubescence, and with long erect setae, which are blackish on the head, white on the thorax, and most noticeable on the face, temples and lateral margins of the pronotum. Abdomen with long erect setae, black on the last two segments, white elsewhere, and with fasciae of long, decumbent, white pubescence on the apical margins of the second to fifth tergites. Clypeus without distinct sculpture; the sculpture of the rest of the head and of the thorax, excepting the smooth metapleura, consists of a coarse, raised reticulation, which is very wide-meshed on the epinotum. Tergites coarsely reticulate-rugose, the reticulations emphasized longitudinally on the second tergite. Sternites shining, the second with elongated punctures, the interspaces about as wide as the punctures, the 3rd to 6th finely punctured, the seventh sparsely and finely.

Cheeks long, half as long as the scapes. Supra-antennal tubercles prominent. Scapes long, as long as the first three joints of the flagellum. Eyes, seen from the side, two-thirds as wide as the temples.

The distance from the hind margin of the eyes to the occiput is nearly as great as from the same point to the front of the head. Hind margin of the head feebly concave. Second tergite only a little wider than long. Calcaria whitish.

Khami, S. Rhodesia. December. 1 specimen.

**Nanomutilla Arnoldi** Bisch. (Figs. 3, 4)

1920-21, *Arch. Naturgesch.* LXXXIV, LXXXVIII, ♀.

♂. 3.8-4.5 mm. long (hitherto undescribed). Head and abdomen black, thorax pale ferruginous, the pectus black, legs pale reddish brown, the fore legs paler than the others, antennae reddish brown, becoming darker towards the apex. Wings yellowish hyaline, slightly smoky apically, the veins pale brown. Head and thorax with a sparse, yellowish,

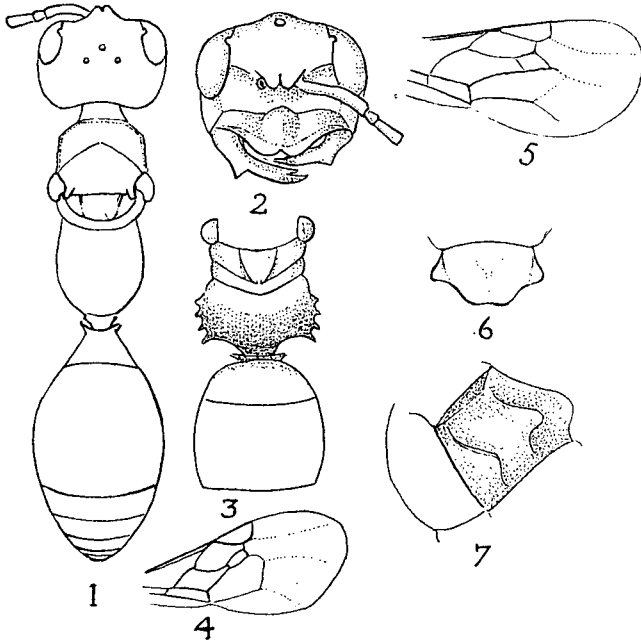


Fig. 1. *Gynandrotilla ferruginea* ♂, × 10.  
 Fig. 2. *Gynandrotilla ferruginea* ♂, head, × ca. 14.  
 Fig. 3. *Nanomutilla Arnoldi* ♂, posterior half of thorax, × 14.  
 Fig. 4. *Nanomutilla Arnoldi* ♂, fore wing.  
 Fig. 5. *Nanomutilla Stevensoni* ♂, fore wing, × 14.  
 Fig. 6. *Mutilla triodon* ♂, 7th tergite, × 6.  
 Fig. 7. *Mutilla triodon* ♂, 2nd sternite, oblique view, × 6.

decumbent pubescence and a few erect black hairs. Tergites 1-5 with sparse and short apical fasciae of white pubescence, that of the second longer at the sides than in the middle. Head dull, longitudinally rugulose, somewhat reticulate on the lower half of the face. Clypeus shining, subcarinate in the middle. Thorax, excepting the epinotum, dull, very finely reticulate-rugulose, the epinotum with a very wide-meshed reticulation, the lateral margins with four teeth of which the lowest is the longest. Abdomen dull, closely longitudinally rugulose, and with a sparse and fine puncturation superimposed. Sternites shining, rather coarsely punctured, especially the second.

Head, including the eyes, nearly twice as wide as long. Pronotum

marginate, three times wider behind than long in the middle. Scutellum as wide at the base as long, seen from above triangular, prow-shaped, the apex not projecting beyond the metanotum. Declivity of the epinotum subvertical, longer than the dorsum, their junction widely rounded. Second cubital cell stalked, oblique, subovoid. Radial cell triangular, the distal margin convex outwardly.

Redbank, S. Rhodesia (allotype) and Wankie, S. Rhodesia.

**Nanomutilla Stevensoni** n.sp. (Fig. 5)

♂. 4.7 mm. long. Head and thorax and the 4th to 7th abdominal segments black, the first three segments ferruginous. Legs pale ferruginous. Wings hyaline, strongly iridescent, the apical third of the fore wing slightly fuscous, the veins dark brown. Apical half of the mandibles flavous. Antennae dark brown, the first three joints of the flagellum paler below. Head and thorax covered with long, decumbent, pale golden pubescence. Abdominal segments 1-6 with thin apical fasciae of yellowish white pubescence. Face, vertex and pronotum sparsely punctured, mesonotum, mesopleura and scutellum slightly shining, more deeply punctured than the pronotum, the interspaces about three times as wide as the punctures. Metapleura transversely striated. Epinotum dull, punctulate, the dorsum with an elongate triangular median area, the declivity with widely spaced reticulations. Abdomen shining, the first tergite with a puncturation like that of the mesonotum, the other tergites with a sparser puncturation which becomes progressively smaller caudad. Scapes concave below, the anterior edge of the concavity forming a sharp carina. Second joint of the flagellum a little longer than the first and a little shorter than the third. Median area of the clypeus carinate, its apical margin strongly convex. Inner orbits with a small sinus, the eyes therefore not distinctly reniform. Head short behind the eyes, the hind margin convex. Pronotum parallel-sided, the anterior margin feebly, the hind margin distinctly convex. Scutellum prow-shaped, seen from above triangular and convex-sided, the apex raised into a blunt tubercle; seen from the side, conical. Lateral margins of the epinotum without teeth, the dorsum short and merging in a wide arc with the declivity. First tergite broad, with a short and ill-defined dorsal face. Seventh sternite coarsely punctured, carinate lengthwise. Second cubital cell lozenge-shaped.

Bulawayo, August (R. H. R. Stevenson).

Allied to *microsoma* André from Willowmore, C.P., from which it differs by the colour of the abdomen and the small sinus on the inner orbits.

**Mutilla triodon** Stadel. (Figs. 6, 7)

1897, *Ost-Afr. Hymen.* 50, ♀.

Bischoff, 1920, *Arch. Naturgesch.* LXXXVI, 210.

Bischoff's treatment of this genus is far from satisfactory. He lists 11 forms, including *triodon*, as subspecies of *scabro-foveolata* Sich-Rad., of which not less than five are recorded from the same area, Fort Jameson, N. Rhodesia. In the original description of *scabro-foveolata* no mention is made of the presence of three teeth on the second sternite,

a character which could hardly be overlooked, and yet Bischoff classes *pythia* Sm., *triodon* and *delagoicola* Bisch., in which the teeth are present, as races of that species. In regard to *pythia* it is to be observed that Smith does not state that the fasciae on the first three tergites are interrupted mesad, a condition which he does not overlook in describing allied forms, and therefore the specimens ascribed by Bischoff to *pythia* must be incorrectly identified.

*M. triodon* I regard as a trophic variety of *pythia*, from which it differs in having the fasciae interrupted. It is, apparently, one of the commonest Mutillids in the Abercorn, N.R. district, very many ♀♀ and a few ♂♂ having been sent to me from there by Dr Bredo. The ♀♀ vary considerably in size, measuring 13–20 mm. long, and also in the size of the teeth on the second sternite.

♂. 14–15 mm. long (hitherto undescribed). Head and abdomen black, thorax dark burnt-sienna red. Basal third of the fore and hind wings hyaline, the rest fuscous. First and second tergites with apical fasciae of yellowish white pubescence, interrupted mesad, leaving the middle third of the margin bare. Third tergite with similar pubescence all over excepting a bare median, truncated triangular area, the base cephalad. Head and thorax with fairly dense erect pilosity of black and white hairs intermixed on the head, pro-mesonotum and scutellum, and of white on the ventral surface of the epinotum. The legs have a long pilosity of black and white hairs. The pilosity on the abdomen is long, oblique and black, except on the second to fourth sternites where it is white. Median area of the clypeus triangular, irregularly punctate-rugose, the apical margin concave and with a tooth on each side. Head coarsely reticulate-punctate, the thorax, excepting the epinotum, also reticulate-punctate but more coarsely than the head. Epinotum reticulate, the interspaces large and flat, the dorsum with a small semicircular, smooth and marginate area at the base. Abdomen moderately shining, the second tergite very sparsely punctured, the other tergites and the sternites finely punctured, less closely at the base of the segments than elsewhere. Head a little narrower than the thorax, the eyes separated from the hind margin by a distance equal to a little more than half their length, the inner orbits with a feeble sinus above the middle. Sides of the head behind the eyes feebly convex, the posterior angles rounded, the occipital margin convex. Second segment of the flagellum about twice as long as the first, as long as wide and as long as the third. Anterior margin of the pronotum convex, the shoulders widely rounded. Tegulae auriculate, two and a half times longer than wide, sparsely punctured, their margins impunctate. Scutellum twice as wide as long, shallowly impressed lengthwise in the middle. Mesosternum with a broad tooth on each side in front of the middle coxae. Second sternite tricarinate, the middle carina ending in a tooth, the lateral carinae curved outwards and rising caudad, the space between the lateral and median carinae very concave. Seventh tergite with a shallow and round median depression at the base, dilated on the lateral margins into a broad, thick and rounded tooth, wider at the base than long, convex at the apical margin and, including the lateral teeth, about twice as wide as long. Calcaria of the hind tibiae whitish.

The var. *melanotica* Bisch. (loc. cit. supra 234), described by Bischoff as a subsp. nov. of *pythia* notwithstanding the fact that on a previous page he lists *pythia* as a subspecies of *scabro-foveolata*, should be considered a variety of *triodon*, from which it differs in having the thorax entirely black.

### Family FORMICIDAE

#### Subfam. PONERINAE

#### *Bothroponera mlanjiensis* n.sp. (Figs. 8, 9)

♀. 9.2–10 mm. long. Black. Legs, scapes and apical joint of the flagellum dark reddish brown, the apical margins of the tergites rufescent, more in the middle than at the sides, the middle and apex of the last tergite also rufescent. Pubescence flavo-ferruginous, short and sparse, each hair arising from a puncture. Head closely punctured, the punctures round, shallow and wider than the interspaces; frontal carinae lobate, shining, fairly finely punctured and also longitudinally rugose. Clypeus not produced, the median area narrow, tumid at the base below the frontal carinae. Mandibles closely longitudinally striate, sparsely punctured, and with seven teeth. A very narrow median space, extending from the frontal carinae to the occipital margin is longitudinally striate. Eyes small, placed in front of the middle of the sides, separated from the base of the mandibles by twice their own length. First joint of the flagellum nearly as long as wide, the second to ninth joints much wider than long, the apical joint transversely compressed in its apical half, rounded at the apex and one and a half times longer than wide. The head, excluding the mandibles, is a little longer than wide, its sides behind the eyes straight, the posterior angles rounded, the hind margin feebly concave. Thorax, excepting the epinotal declivity, the petiole and the first two abdominal segments very coarsely punctured or pitted and closely longitudinally striate, including the pits. The latter, on the thorax and petiole, are round, those of the petiole and first two abdominal segments almost twice as large as those on the thorax; the pits on the first two abdominal segments are elongate and open posteriorly. The third to fifth segments are longitudinally striate with a fine and shallow puncturation superimposed. Declivity of the epinotum dull and punctured on the margins, smooth and shining in the middle, oblique and a little longer than the dorsum. Pronotum not quite twice as wide behind as long in the middle, half as long as the rest of the thorax, its anterior margin very convex. Node of the petiole narrowed in front, perpendicular in front and behind, the dorsal face moderately convex, the hind margin very feebly concave. First tergite slightly narrowed cephalad, as long as wide behind. Pubescence, spines and calcaria of the legs flavo-ferruginous.

♀. 11.2–12 mm. long, including the mandibles. Colour and sculpture like that of the ♀. Ocelli flat, arranged in an equilateral triangle. Pronotum two and three-quarter times wider behind than long. Metanotum finely and closely punctured, half as long as the dorsum of the epinotum, which is five times wider at the base than long. Node of the

petiole much wider than in the ♂, nearly four-fifths wider behind than long, the posterior margin a little more concave than in the ♀.

Mlanje, Nyasaland. A very sluggish terricolous ant, moving about in the shady parts of the forest. A nest, containing 1 ♀ and 8 ♂♂ was found under a leaf partially imbedded in clayey soil.

The descriptions of *cariosa* Em. and *pachyderma* Em. are insufficient, being confined almost entirely to colour and sculpture. This species is too small to be *pachyderma* and, moreover, lacks the blood red ('reflet rouge de sang') on the hind margins of the tergites. From *cariosa* it differs by the lack of a 'dense flavous pubescence' and by the petiole, which is certainly not 'depressed in the middle of the posterior margin so as to make it appear widely emarginate'.

### *Anochetus angusticornis* n.sp.

♂. 7.5–8 mm. long, excluding the mandibles. Head reddish ochreous, thorax brownish ochreous, abdomen pale brown, the first segment somewhat yellowish brown, legs straw-yellow, antennae, clypeus and teeth of the mandibles pale ferruginous. A very scanty, yellowish and erect pubescence on the whole body, somewhat longer on the abdomen than elsewhere, the legs with a denser, very fine and decumbent pubescence.

Head shining, the frons in the middle, from the front of the frontal carinae, fanwise longitudinally striate, the striation extending also over the upper half of the antennal hollows and not extending backwards much beyond the level of the hind margin of the eyes. Lower half of the antennal hollows impunctate, the rest of the head with a few very small and scattered punctures. Pronotum nitidulous, concentrically rugulose, mesonotum dull, very superficially and transversely rugulose, the mesopleura and sides of the epinotum shining and microscopically rugulose. Dorsum of the epinotum dull, finely and transversely rugose, the rugae increasing in size caudad. Abdomen shining, with a very fine and sparse puncturation. Mandibles gradually widened towards the apex, the teeth long, the upper apical tooth very little shorter than the lower, the intermediate tooth short and blunt, rising from the middle of the lower tooth; the upper internal margin straight and trenchant, the lower distantly denticulate. Median area of the clypeus very narrow, with a low longitudinal carina. Antennal hollows deep, about twice as long as wide. Eyes large, composed of many facets, placed in front of the middle of the sides. Postocular hollows shallow. Head widest across the level of the eyes, one-eighth longer than wide at that point. The scapes extend beyond the posterior angles of the head by half the length of the first joint of the flagellum. The flagellum is long and thin, all the joints except the first and second at least three and a half times longer than wide, the first and second a little more than three times longer than wide, the apical joint five times longer than wide. Occiput deeply and arcuately emarginate, its upper margin distinctly carinate. Pronotum as long as wide, widest in the middle, much narrowed cephalad, subpyriform. Mesonotum two-thirds wider than long, convex transversely, with a transverse and smooth anterior margin. Metanotum



obsolete. The suture between the mesonotum and epinotum obliquely clathrate. Epinotum two and a fifth times longer than wide, parallel-sided, ending at its posterior margin on each side in a low rectangular prominence, which is barely large enough to be described as a tooth. The declivity of the epinotum is transversely rugose and about half as long as the dorsum of the epinotum. Scale of the petiole a little higher than the petiole is long, its anterior face convex transversely, concave vertically, the posterior face flat, the upper face two-thirds wider than long, convex and not emarginate. First tergite as long as wide behind and a little longer than the second.

♀. 8.2 mm. long, excluding the mandibles. The striation on the head extends backwards farther than in the ♂, or to a little beyond the posterior ocelli. The sculpture of the pronotum like that of the ♂ but stronger.

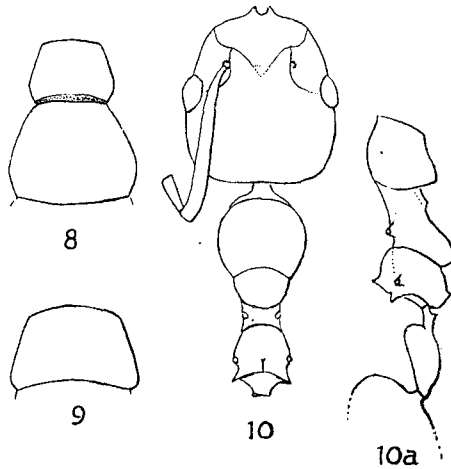


Fig. 8. *Bothroponera mlanjiensis* ♂, petiole and 1st tergite,  $\times 10$ .

Fig. 9. *Bothroponera mlanjiensis* ♀, petiole,  $\times 10$ .

Fig. 10. *Engramma tridens* ♀, head and thorax,  $\times 24$ .

Fig. 10 a. *Engramma tridens* ♀, thorax, lateral view,  $\times 24$ .

Mesonotum about two-fifths wider than long, with a sparse and very shallow puncturation and indications of a longitudinal rugulosity. Epinotum three-fourths wider at the base than at the hind margin, a little shorter than wide at the base, the hind margin concave transversely, the lateral angles carinate, not clearly dentate, the carinae extending down the sides of the declivity. The scale of the petiole is relatively thinner than in the ♂, especially the dorsal face, which has a feeble median emargination. Otherwise like the ♂. The unique specimen is de-alated.

Balla-Balla, S.R. A small nest in granite sand soil, composed of 10 ♂♀. The ♀ from Umtali, S.R., taken at light.

Distinguished from all other African species of the same size by the slender and longer joints of the flagellum and the scale of the petiole, which is neither dentate nor emarginate in the ♀.

## Subfam. DOLICHODERINAE

***Engramma tridens*** n.sp. (Figs. 10, 10a)

♀. 3.7 mm. long. Black. Anterior tarsi brownish ochreous, middle and hind tarsi pale ochreous. Coxae, trochanters and extreme base of the femora pale brown. Antennae and mandibles brown.

Pubescence greyish, short, decumbent and very sparse on the body, more plentiful on the legs and antennae. Mandibles with 8 teeth, shining and sparsely punctured. Head dull, clypeus longitudinally rugulose, the rest of the head finely reticulate-rugulose (50 diameters). Anterior margin of the clypeus arcuately emarginate in the middle. Head, excluding the mandibles, as long as wide behind, widest in the middle, narrowed in front of the eyes, the hind margin nearly half as wide again as the anterior, the sides convex, the hind margin nearly straight. Eyes large, placed in the middle of the sides. The scapes extend beyond the hind margin of the head by a little more than the length of the first joint of the flagellum. The latter is two and a half times longer than wide, the remaining joints all longer than wide. Pronotum shining and impunctate in front and half way down the middle, the remaining part closely reticulate (50 diameters). Meso- and metanotum dull, coarsely and longitudinally rugose, the mesopleura and sides of the epinotum less coarsely and somewhat shining. Metanotal stigmata very prominent. Dorsum of the epinotum dull, coriaceous-rugulose, a little wider at the base than long, the stigmata protuberant, the sides behind them rather abruptly narrowed, the hind margin with a triangular and nearly horizontal tooth on each side; a little in front of the level of the stigmata there is a very small median tooth which is continued caudad as a carina as far as the hind margin. Seen from the side, the dorsum of the epinotum rises from the meta-epinotal suture to the median tooth, and descends behind it. Scale of the petiole thick, longer than wide. Abdomen shining, the anus inferior.

Mlanje, Nyasaland, 3 ♂♂, climbing a partially decayed tree in dense virgin forest.

Allied to *E. denticulatum* Wheeler, from which it is clearly distinguished by the median tooth on the epinotum and the coarse sculpture of the thorax. In the dentiform projection between the epinotal teeth this species bears a resemblance to *Axinidris acholli* Weber, in which species there is a median tooth, resembling an axe blade in profile. However, the petiole in *acholli* is described as nodiform, which is certainly not the case in *E. tridens*. The labial palpi in *tridens* are 3-jointed, and the maxillary palpi apparently 5-jointed, as opposed to 4- and 6-jointed in *acholli*.

## Subfam. DORYLINAE

The number of species in this subfamily of which the queens are known, and the number of specimens of that sex in collections, are very small, and it is therefore of considerable interest that I am able to describe hereunder two more specimens, which have been kindly presented to the National Museum by Professor J. C. Faure of the University of Pretoria. As one of these is accompanied by the workers, it might be

supposed that since the hypopygium bears a strong resemblance to that of *D. helvolus* L. the specimens should be assigned to that species. But unfortunately the limited number of specimens of the ♀ of that species does not allow of any estimation of the range of variation in the structural details of the hypopygium, if indeed such exists. Moreover, the accompanying ♀♀ differ in several ways from those of *helvolus*. Therefore, for these reasons it seems more expedient to describe both ♀♀ under new names.

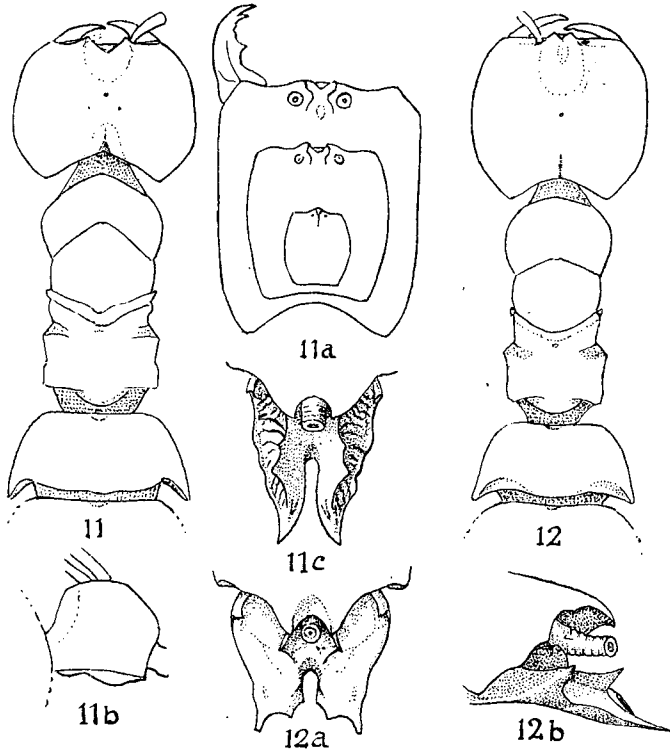


Fig. 11. *Dorylus helvolus-pretoriae* ♀, × 6.

Fig. 11 a. *Dorylus helvolus-pretoriae*, heads of ♂, ♀ media and ♀ minor, × 14.

Fig. 11 b. *Dorylus helvolus-pretoriae*, ♂ petiole, × 24.

Fig. 11 c. *Dorylus helvolus-pretoriae* ♀, hypopygium, × 6.

Fig. 12. *Dorylus Faurei* ♀, × 6.

Figs. 12 a, b. *Dorylus Faurei* ♀, hypopygium, dorsal and lateral view, × 6.

### *Dorylus helvolus* L. subsp. *pretoriae* n.subsp.

(Figs. 11, 11 a-c)

As I have given a detailed description of the specific ♀ in my Formicidae of South Africa (*Ann. S.A. Mus.* XIV, 1914-1921), only the important differences need be indicated for this race.

♀. 37 mm. long. Head and thorax castaneous, hypopygium blackish brown, the rest of the abdomen and the legs and antennae, deep bistre (Séguy, C.U.C. rouge 131). Head narrower than in *helvolus* i.sp. widest

behind the middle, a trifle more than one and one-fifth wider than long. The sides over the middle third straight. Third abdominal segment hardly wider at the apex than at the base, the fifth segment parallel-sided, its apical teeth acute. Ocelli distinct. The hypopygium resembles that of *helvolus* i.sp. in being bifurcate over its apical third, but differs in some details. The arms of the fork, in cross-section, are triangular, with the base longer than the sides, the inner side convex and the outer concave. The apex of the triangle is formed by the longitudinal ridge, also present in *helvolus* i.sp., but it is continued beyond the base of the forks and, seen from above, is unevenly trisinate. The outer face of the triangle is unevenly and very deeply corrugated and dull, but the inner face is smooth and shining.

♂ or ♀ maxima. 8.2–8.4 mm. long, excluding the mandibles. Antennae fusco-ferruginous, the hind tibiae and tarsi ferruginous, the rest of the body very dark, or blackish, brown. Puncturation and pubescence as in *helvolus* i.sp. ♀. Head parallel-sided over the anterior two-thirds, thence slightly narrowed as far as the posterior sixth, the last sixth distinctly narrowed; the length, measured from the anterior margin of the clypeus to the level of the apex of the hind angles, one-eighth longer than wide in front, and therefore wider than in *helvolus* i.sp. and much wider than in *brevipennis* Em. Pronotum, excluding the neck, very little (one-fourteenth) longer than its greatest width, a little wider than in *helvolus* (one-eighth) and than in *brevipennis* (one-sixth). Meso-epinotum, measured from the suture to the brow of the epinotal declivity, one-fourth longer than wide at the base (in *helvolus*, one-half, in *brevipennis* one-third). Node of the petiole less rounded in front than in *helvolus* ♀ i.sp., the ventral lamella much less produced.

♀ media. 5.6–6.2 mm. long. The larger of these vary in colour from a shade paler than that of the ♀ to a raw umber brown. The proportions of the head are nearly the same as in the ♀, but the sides are feebly convex, and in the smaller the sides of the head are distinctly convergent caudad. As in the type of the species, the occipital emargination is much shallower than in the ♀.

♀ minima. 2.5–3 mm. long. The larger of these have a reddish umber colour, and the smaller a dirty ochreous one. Head widest in the middle, nearly one-fifth longer than wide, the sides distinctly convex, the occipital margin almost straight in the smaller specimens. The puncturation on the whole body is sparser than in the larger castes, and distinctly smaller and shallower than in the ♀♀ minima of *helvolus* i.sp.

Pretoria, 1 ♀ and numerous workers, July, 1926. Obtained in making alterations to a grass lawn. The ♀♀ are of a much darker colour than of any other African species of the subfamily.

### **Dorylus Faurei** n.sp. (Figs. 12, 12a and 12b)

♀. ca. 32 mm. long. This specimen, like the ♀ of the preceding species, was originally preserved in alcohol, but in this case its removal from the fluid to mount it dry has caused the second to fifth abdominal segments to shrink unevenly.

Head, thorax, base of the first tergite, legs and antennae pale ferru-

ginous (Séguy, C.U.C. rouge, 146), the abdomen paler, more yellowish (C.U.C. 162), the hypopygium dark reddish brown. Smooth and very polished, excepting the hypopygium, the punctuation like that of *helvolus*, race *pretoriae*, but on the abdomen somewhat finer. A comparison of Figs. 11 and 11c with Figs. 12 and 12a will show that this species differs in many respects from *helvolus-pretoriae*, of which the more important are the following.

Head widest in the middle and two-ninths longer, excluding the mandibles, than wide, the occipital margin narrower and its median sulcus narrower. The ocelli are obsolete, the anterior one represented by a pit, the posterior by small points. Pronotum longer, excluding the neck about four-sevenths as long as wide (in *pretoriae* five-thirteenths); the pro-mesonotal suture much less angular in the middle. Metaepinotum narrower, only a trifle wider behind at the posterior angles than long at the sides (in *pretoriae* one-fifth wider), and the posterior angles of the epinotum are less acute. The hypopygium is dull, microscopically reticulate and without corrugations. At its widest, which is near the base it is wider than long, whereas in *pretoriae* it is distinctly longer than wide. The excision which forms the bifurcation is wider and less deep and the inner margin of the arms is bisinuate, not convex as in *pretoriae*, and the longitudinal ridges terminate abruptly in a sharp angle above and end distinctly cephalad of the apex of the emargination.

Pretoria, July, 1938. Found in a manure heap. Unfortunately the ♀♀ were not collected. This species is not *furcatus* Gerst. on account of the shape of the hypopygium. It might be the unknown ♀ of *brevipennis* Em. but is too large, to judge by the relative sizes of the ♀ and ♀♀ in *helvolus*.

#### Subfam. MYRMICINAE

##### Tribe SOLENOPSIDINI

#### *Monomorium albopilosum* Em. race *vingo* n.subsp. (Fig. 13)

1895, *Ann. Soc. Ent. Fr.* LXIII, 24.

♀. 3.8-4.2 mm. long. Deep black. Mandibles, anterior margin of the clypeus and the whole of its lateral sclerites, ferruginous. Basal articulation of the scapes and middle and hind trochanters fusco-ferruginous, tarsi and antennae dark brown. A long, exerted, sparse and white pilosity is seen on the clypeus, sides of the head, dorsum of the thorax and on the femora and tibiae. The petiole and abdomen have an equally scanty but longer pilosity. Mandibles dull, strongly striate, with 4 black teeth at the apex. Clypeus and the space between the frontal carinae longitudinally striate, the median area of the clypeus with a feebly carina on each side and its anterior margin slightly concave; clypeus dull, except the base of the median area. The rest of the head dull, finely and closely reticulate or granulate (30 diameters), excluding the mandibles fully one-third longer than wide, the sides feebly convex, the hind margin straight, the posterior angles widely rounded. Eyes as long as the first joint of the flagellum, placed at the middle of the sides. The scapes extend back slightly beyond the hind margin of the head; all the joints of the flagellum longer than wide, the first as long as the second

and third united; the 3-jointed club nearly as long as the rest of the flagellum, the proportions of the three joints being as 6:7:13. Frontal carinae parallel, not longer than the eyes. Thorax dull with the same sculpture as the head. Pro-mesonotum widest at its anterior third, very nearly half as long again as wide. Dorsum of the epinotum half as long as the pro-mesonotum, widest in the middle, half as long again as wide, convex transversely and almost flat lengthwise; the declivity oblique, half as long as the dorsum, the junction of the two faces widely rounded. Petiole feebly reticulate, not quite dull, the peduncle of the first joint half as long as the node, the latter longer below than high, higher than

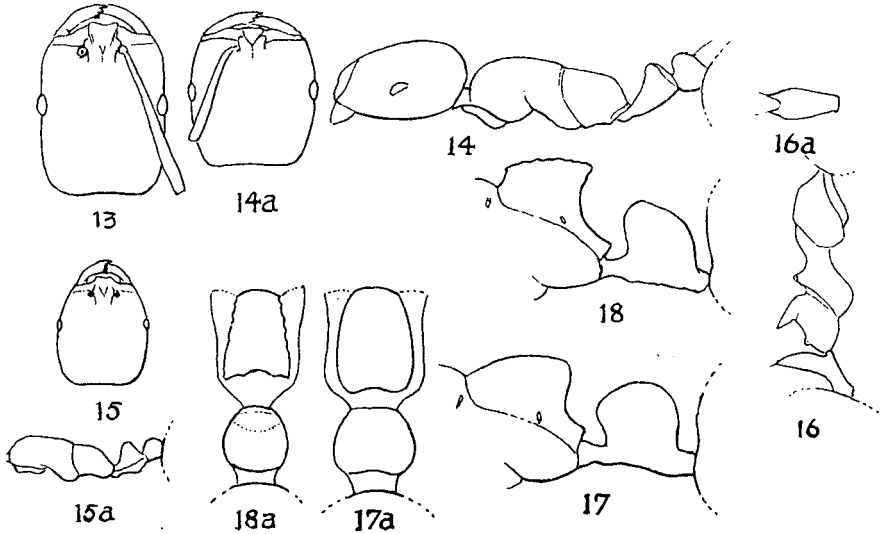


Fig. 13. *Monomorium albopilosum*, race *finjo* ♀, × 24.

Fig. 14. *Monomorium nyasae* ♀, head and thorax, × 30.

Fig. 14a. *Monomorium nyasae*, head, × 30.

Fig. 15. *Monomorium Guillarmodi* ♀, head, × 40.

Fig. 15a. *Monomorium Guillarmodi* ♀, thorax, × 40.

Fig. 16. *Acantholepis mlanjensis* ♀, thorax lateral view, × 24.

Fig. 16a. *Acantholepis mlanjensis*, scale, × 24.

Figs. 17, 17a. *Camponotus sankisianus* ♀, epinotum and petiole lateral and dorsal views, × 14.

Figs. 18, 18a. *Camponotus Mayri* ♀, epinotum and petiole, × 14.

the second joint, and, seen from above, as wide as long. The second joint of the petiole is as wide as long, very convex above, narrowed behind. First abdominal segment two and a quarter times wider at the hind margin than at the base, not quite one-third longer than wide at the hind margin.

Maastricht, Albany distinct, C.P. (*f. W. Geyer*). Larger than the type of the species and with the sides and hind margin of the head less convex and the nodes of the petiole thicker. The colour is deep black, blacker than any other South African species of the genus excepting *M. distinctum* Arn. The var. *Thales* For. originally described by Forel and

subsequently by myself as black, is actually brown on the head and thorax and blackish brown on the abdomen.

**Monomorium** (subgen. **Xeromyrmex**) **nyasae** n.sp.  
(Figs. 14, 14a)

♀. 2.5 mm. long. Cinnamon yellow (Séguy, C.U.C. orange, no. 192), the epinotum slightly darker, the abdomen a little paler or honey yellow, the club of the antenna brown, the apical segments of the abdomen more or less stained with pale brown. A very sparse, short, decumbent and yellowish pubescence is present on the head, thorax, petiole and base of the first tergite (50 diameters). Second node of the petiole with a long hair on each side above. Head, thorax and petiole dull, reticulate-punctate, stronger on the thorax (50 diameters) than on the head (70 diameters), the basal third of the first tergite dull, the rest of the abdomen smooth and shining. Head very little, about one-seventh, longer than wide, as wide behind as in front, the sides feebly convex, the posterior angles widely rounded, the hind margin almost straight. Eyes semi-elliptical, placed at the middle of the sides. The scape falls short of the hind margin of the head by as much as the length of the first joint of the flagellum; the latter is a little longer than the second and third joints united, the club is 3-jointed, the proportions of the joints being as 4:4:9. Mandibles longitudinally striate, quadridentate, the innermost tooth very small. Median area of the clypeus striate, the anterior third flattened, the apical margin straight. Pro-mesonotum one-fifth longer than wide; meso-epinotal suture deep. Dorsum of the epinotum widest in the middle, as long as wide, flat at the base, the posterior half feebly concave, twice as long as the oblique declivity, the junction of the two faces rounded. The peduncle of the first joint of the petiole is as long as the node, the latter a little higher than long, convex in front and above, nearly flat behind. The second joint of the petiole is narrowed behind, as wide in front as long and a little wider than the first joint. First abdominal segment a little longer than wide at the hind margin, the latter about half as wide again as the basal.

Mt Zomba foothills, Nyasaland. November. Nesting in sandy soil, the entrance to the nest without a crater.

Not closely allied to any other African species known to me.

**Monomorium** (subgen. **Lampromyrmex**) **Guillarmodi** n.sp.  
(Figs. 15, 15a)

♀. 1.6 mm. long. Raw umber brown. The mandibles, sides of the clypeus, second to seventh joints of the flagellum and apices of the femora and tarsi, pale brownish yellow. Abdomen with a few pale hairs, otherwise glabrous, smooth, shining and impunctate. Mandibles quadridentate, apical margin of the median area of the clypeus feebly concave. Head one-fourth longer than wide. The eyes as long as the first joint of the flagellum and placed a little in front of the middle of the sides.

The sides of the head are moderately convex and the hind margin feebly concave. First joint of the flagellum as long as the three following joints united, the second to seventh wider than long, the club three-jointed and two-thirds longer than the rest of the flagellum, its first joint as long as wide, the second wider than long and the apical nearly three times longer than wide and three-quarters longer than the first two joints of the club united. Pro-mesonotum half as long again as wide, twice as long as the epinotum, the dorsum and declivity of the latter forming a low arc, the dorsum slightly widened caudad. Node of the first joint of the petiole, seen from above, semicircular, higher than wide; the second joint transversely ovoid, not wider than the first. First abdominal segment as long as wide at the apex.

♀. 4 mm. long. Colour like that of the ♂. Head, thorax and abdomen with a few widely separated setigerous punctures. Mandibles sparsely punctured. Anterior corners of the head and the space between the frontal carinae and the triangular area longitudinally striate. Anterior margin of the clypeus strongly convex. Eyes placed at the middle of the sides of the head. The scape extends back as far as the posterior ocelli. Mesonotum nearly as wide as long and half as long again as the scutellum. Dorsum of the epinotum very short, merging gradually into the much longer declivity, which is widened below and concave transversely. Petiole as in the ♂.

Mamathes, Basutoland. September (*C. Jacot-Guillarmod*), nesting under stones.

Allied to *M. exiguum* For. var. *bulawayensis* For. but darker, the head more convex at the sides, the hind margin less concave, and the nodes of the petiole wider.

#### Subfam. FORMICINAE

##### ***Acantholepis mlanjiensis* n.sp. (Figs. 16, 16a)**

♀. 3 mm. long. Black. Basal three-fifths of the scapes and the flagellum brownish yellow, tarsi pale ochreous. Pilosity black and erect, sparse on the head and thorax, longer and a little more abundant on the abdomen. Head dull, closely reticulate (50 diameters). Pronotum fairly dull, longitudinally rugulose, the posterior third in the middle smooth and shining. Anterior half of the mesonotum reticulate, the posterior half longitudinally striate like the metanotum; they are both slightly shining. Dorsum of the epinotum dull, reticulate and longitudinally rugulose, the declivity transversely striate, the mesopleura fairly strongly striate lengthwise, the sides of the epinotum dull and rugulose. Abdomen smooth and shining. Scale of the petiole transversely rugulose on its posterior face (50 diameters).

Head ovate, as long as wide in the middle; eyes large, situated at the middle of the sides, the ocelli well-developed. Clypeus convex, with a median longitudinal elevation not reaching the fore or hind margins. Scapes extending beyond the occipital margin by one-third of their length. First joint of the flagellum twice as long as the second, and three times longer than wide at the apex. Pronotum flattened transversely, one and a half times wider than long. Metanotal stigmata high, metaepinotal suture deep. Dorsum of the epinotum convex lengthwise,



strongly concave between the posterior teeth or cones, which are directed backwards and outwards and are acute, not truncate as in *nigrisetosa* Sant. Scale of petiole feebly convex in front, as high as the peduncle is long, emarginate and bidentate above, the teeth fully half as long as the space between them and ending in a fine hair.

In virgin forest, climbing down a tree, Lujere Valley, Mt Mlanje, Nyasaland. Allied to *nigrisetosa* Sant. from which it differs chiefly in the colour of the head, the sculpture and the shape of the teeth of the epinotum and the shape of the petiolar scale.

**Camponotus** (subgen. **Orthotomyrmex**) **sankisianus** For. (Figs. 17, 17a), **C. Mayri** For. race **sankisianus** For., 1913, *Rev. Zool. Afr.* 11, 347

♀ minor. This ant, treated by Forel as a subspecies of *C. Mayri* differs so clearly from that species in sculpture, colour of the legs and the shape of the epinotum that it should be considered a distinct species.

The ♀ major, 10.5 mm. long, does not differ from the smaller ♀ except in having the epinotum less narrowed cephalad and the node of the petiole wider in front. Comparing the ♀ minor, 8.2–8.7 mm. long, with the ♀♀ of *Mayri* of the same size, there are the following differences which were overlooked by Forel.

The large but shallow pits superimposed on the fundamental reticulate-punctate sculpture, which are present on the epinotum and node in *Mayri*, are totally absent. In some specimens the upper half of the sides of the epinotum has wavy longitudinal and fine rugae, but usually, as in the ♀ major, the sculpture of that part is like that of the dorsum. In *Mayri* the vertical sides of the epinotum are very coarsely rugose. The junction of the epinotal dorsum with the sides is rectangular in *Mayri*, but widely rounded in *sankisianus*, and in the latter the posterior corners are not angular but convex. The dorsum of the epinotum in *Mayri* has a short subvertical face in front, just behind the suture, whereas in *sankisianus* it slopes gradually to the suture (cf. Figs. 17 and 18).

Apparently a common insect in the area between Lake Mweru and Abercorn, N.R., numerous specimens from several localities (*H. J. Bredo*).

## Family SPHECIDAE

### Subfam. TRYPOXYLONINAE

It is a matter of interest that of the nine new species of *Trypoxylon* described below, no less than seven were captured within an hour on a patch of mud measuring less than 2 square feet. This concentration of species in one small spot is explained by the climatic conditions prevailing at that time. In the month of November a little rill at the foot of Mt Zomba, Nyasaland, had almost dried up, leaving here and there small puddles of water surrounded by mud, to which all the *Trypoxylon* population of the neighbourhood was forced to have recourse in order to make the cells of their nests.

#### **Trypoxylon tremulum** n.sp. (Figs. 19, 19a)

♀. 7.5 mm. long. Black. Mandibles pale brownish red, black at the base. Wings hyaline, the apical margin feebly fuscous, the veins black.

There is a silvery pubescence on the clypeus and on the face below the ocular sinus, and sparsely also on the temples, mesopleura and the declivity of the epinotum. The legs and abdomen have a microscopic grey pubescence. Clypeus dull, shallowly and finely punctured. Face and vertex dull, very finely and evenly reticulate-punctate, the sculpture barely resolvable with a magnification of less than 40 diameters. Temples smooth and shining. The sculpture of the pro-mesonotum, metanotum and meso-episternum, which are nitidulous, is reticulose, with small punctures at the intersection of the impressed lines (50 diameters). The posterior part of the mesopleuron is shining and almost impunctate.

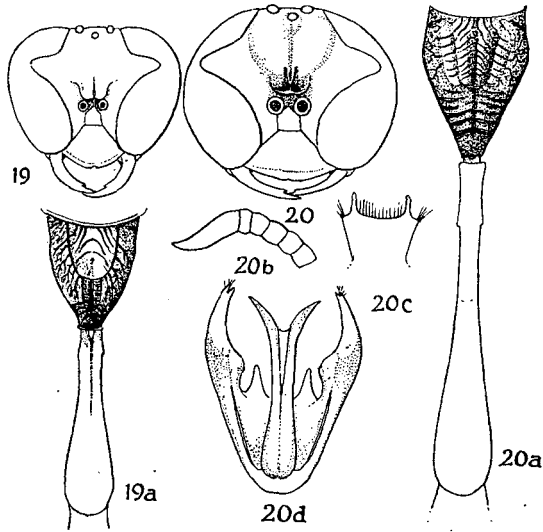


Fig. 19. *Trypoxylon tremulum* ♀, head,  $\times 18$ .

Fig. 19a. *Trypoxylon tremulum* ♀, epinotum and 1st tergite,  $\times 18$ .

Fig. 20. *Trypoxylon solivagum* ♂, head,  $\times ca 18$ .

Fig. 20a. *Trypoxylon solivagum* ♂, epinotum and 1st tergite,  $\times ca 18$ .

Fig. 20b. *Trypoxylon solivagum* ♂, apical half of flagellum,  $\times ca 18$ .

Fig. 20c. *Trypoxylon solivagum* ♂, 8th sternite,  $\times 30$ .

Fig. 20d. *Trypoxylon solivagum* ♂, genitalia,  $\times 30$ .

Dorsum of the epinotum with a broad U-shaped, shining, median area, bounded by a thin carina, obliquely rugose, the rugae fading out caudad, the apical third almost smooth; the lateral areas of the dorsum and the upper half of the sides of the declivity are widely and obliquely rugose, with a few transverse anastomoses, and are sparsely punctured. The upper two-thirds of the median part of the dull declivity is concave, finely and transversely rugulose and grooved medially, the lower third has three or four transverse costae. The sides of the epinotum are obliquely and finely striato-rugose, the rugae attenuated cephalad, not reaching the hind margin of the metapleuron, the latter smooth and shining. Abdomen moderately shining, with an exceedingly fine and sparse puncturation (50 diameters). Anterior margin of the clypeus

convex. Face without a shield, but with a short transverse lobe above each antennal socket, and with a shallow median impressed line between them.

Ocular sinus as long as wide at the base. The least interocular distance, behind the posterior ocelli, is equal to the length of the second joint of the flagellum plus half of the first. Second joint of the flagellum a little longer than the third and three times longer than wide. Pronotal dorsum slightly narrowed cephalad, the posterior transverse impression deep, the area behind it not testaceous and translucent. Petiole four and a third times longer than wide across the node, and twice as long as the second tergite. Calcaria pale brown.

Zomba, Nyasaland. November.

Related to *testaceipes* Arn. from which it differs by the colour of the tibiae and tarsi, the coarser sculpture of the epinotum and the longer and more slender first tergite.

### ***Trypoxylon solivagum* n.sp. (Figs. 20, 20a-d)**

♂. 11 mm. long. Black, the last three joints of the anterior tarsi brown. Wings hyaline, the apical margin faintly fuscous, the veins black. Clypeus and face, including the ocular sinus, with silvery pubescence. There is a sparse, white and erect pubescence on the thorax, excepting the middle of the mesonotum, the metanotum and median area of the epinotum. On the abdomen the pubescence is short, exerted, whitish and sparse on the first three segments, more abundant and blackish on the other segments. Clypeus finely and shallowly punctured. Face dull, with a fundamental reticulate-punctate sculpture (35 diameters) on which is superimposed a shallow puncturation with interspaces about twice as wide as the punctures; the ocular sinuses are impunctate. Behind the anterior ocellus to the occipital margin the puncturation is less close. Pro- and mesothorax and metanotum shining, with a puncturation very little larger than that of the face, the interspaces for the greater part fully five times wider than the punctures, but a little less on the metanotum. Metapleura smooth and shining. Epinotum shining, the dorsum with a V-shaped median area which is shallowly and widely impressed lengthwise in the middle, with three oblique costae on each side at the base, and arcuately rugose on the rest of its surface; beyond the median area there are about 6 transverse costae which become branched laterad. The declivity has six transverse costae and is deeply grooved in the middle. The sides of the epinotum are obliquely and closely rugose. Second joint of the flagellum twice as long as wide and three-sevenths longer than the third; the apical joint is curved, three and a half times longer than wide at the base and as long as the eighth to eleventh joints plus half of the seventh united. Face simple, convex, ending below in a cuneiform lobe which joins a curved, high and sharp carina lying above the antennae sockets; a median impressed line extends from the anterior ocellus to the base of the cuneiform lobe. Interocular distance on the vertex equal to the length of the second and third joints of the flagellum plus half of the first. Posterior ocelli separated from the eyes by a distance equal to a little less than their own diameter. Dorsum

of the pronotum clearly narrowed cephalad, the transverse impression deep, the area behind it not translucent and testaceous. Petiole slender, six times longer than wide across the node and a little longer than the second and third segments united. Second tergite twice as long as wide behind. Second abscissa of the radius very nearly two and a half times longer than the first.

♀. 10 mm. long. Apart from the usual sexual differences in the antennal joints, this sex differs from the ♂ in the weaker sculpture, the wider cuneiform lobe of the face, the finer puncturation of the mesonotum, the less regular and more reticulate rugae on the dorsum of the epinotum and the fewer costae on the declivity. The posterior ocelli are separated from the eyes by a distance less than half their own diameter. The interocular distance on the vertex is equal to the length of the first two joints of the flagellum. Sixth tergite not carinate.

Zomba, Nyasaland. November. 1 ♂, 3 ♀♀.

Allied to *lissonotum* Cam. but the petiole is shorter than in that species.

### **Trypoxylon gracilicorne** n.sp. (Figs. 21, 21a and 21b)

♂. 12 mm. long. Closely allied to the preceding species, *T. solivagum*, the description of which applies equally well to this species except in the following particulars.

Apex of the basal joint and the three following joints of the anterior tarsi ochreous, the apical joint brownish ochreous, the mandibles flavo-ferruginous, the calcaria pale brown. Second joint of the flagellum nearly three times longer than wide, the apical joint nearly four times longer than wide at the base and as long as the eighth to eleventh joints plus one-third of the seventh joint united. Vertex behind the posterior ocelli and between them and the eyes, impunctate. The posterior ocelli separated from the eyes by a distance equal to their own diameter. The transverse rugae on the dorsum of the epinotum are weaker, and the sides of that segment are only feebly striate. Petiole a little less than five times longer than wide across the node, slightly more than two and a half times longer than the second tergite and as long as the second and third tergites plus half of the fourth united. The second tergite is as long as the third and one and a half times longer than wide at the apical margin. Apical margin of the eighth ventral plate not transverse and feebly concave as in *solivagum* but deeply and angularly emarginate. The stipites of the genitalia are longer and narrower and the sagittae are not divergent at the apex.

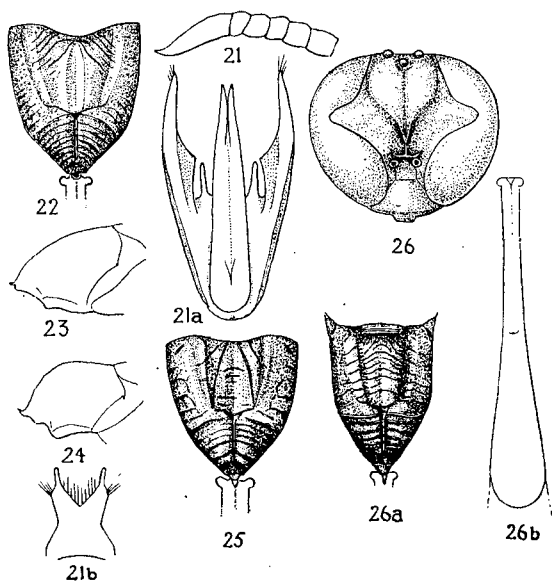
Zomba, Nyasaland. November. 1 ♂.

### **Trypoxylon letiferum** n.sp. (Fig. 22)

♀. 13 mm. long. Black. Second to fifth joints of the anterior tarsi flavo-ferruginous. Mandibles ferruginous, the palpi, calcaria and tarsal spines and claws, ochreous. Wings hyaline, the veins black, the apical margin of the fore wing faintly fuscous. Clypeus and lower part of the face and the ocular sinuses with decumbent silvery pubescence. Similar pubescence, but longer, is seen on the temples, base of the occiput,

pronotum, mesopleura, sides of the epinotal dorsum and of the declivity and the underside of the anterior femora.

Tergites with a sparse greyish pubescence. Declivity of the epinotum somewhat dull, the rest of the body shining. Median third of the anterior margin of the clypeus moderately produced. Vertex and ocular sinuses very finely and sparsely punctured, the rest of the face with a fundamental reticulate-punctate sculpture (50 diameters) on which is superimposed a larger and shallow puncturation, the interspaces twice as large as the punctures on the lower half of the face, becoming gradually



- Fig. 21. *Trypoxylon gracilicorne* ♂, apical joints of the flagellum,  $\times 18$ .  
 Fig. 21a. *Trypoxylon gracilicorne* ♂, genitalia,  $\times 30$ .  
 Fig. 21b. *Trypoxylon gracilicorne* ♂, 8th sternite,  $\times 30$ .  
 Fig. 22. *Trypoxylon letiferum* ♀, epinotum,  $\times ca 10$ .  
 Fig. 23. *Trypoxylon nodosum* ♀, epinotum,  $\times ca 10$ .  
 Fig. 24. *Trypoxylon chirindensis* ♀, epinotum,  $\times ca 10$ .  
 Fig. 25. *Trypoxylon inconstans* ♀, epinotum,  $\times 18$ .  
 Fig. 26. *Trypoxylon flavimanum* ♀, head,  $\times ca 20$ .  
 Fig. 26a. *Trypoxylon flavimanum* ♀, epinotum,  $\times ca 20$ .  
 Fig. 26b. *Trypoxylon flavimanum* ♀, 1st tergite,  $\times ca 20$ .

larger dorsad. The face has a short and narrow supra-antennal keel, joining the very short and acute transverse keel above the antennal sockets. There is a median impression, widened above to include the anterior ocellus, and on each side of it the face is swollen, more so above the sinuses than below them. Anterior face of the pronotal collar, mesothorax and metanotum with a scattered, fine and shallow puncturation, the interspaces for the greater part six times wider than the punctures. Metapleura impunctate. Dorsum of the epinotum with a large U-shaped median area, shallowly grooved down the middle and margined on each side by a broad depression. At the base there are 5

diagonal rugae on each side and a few striae at the base of the median groove, otherwise the median area is without sculpture; it is as wide at the base as long and half as wide again at the base as at the hind margin. The sides of the epinotal dorsum and the declivity are transversely costate, with the interspaces coriaceous-punctate. The median groove of the declivity ends abruptly dorsad. Sides of the epinotum with a few wrinkles in the posterior corner and below the upper margin and also with a few punctures in the upper half. Petiole moderately clavate, four and two-third times longer than its greatest width, and slightly more than twice as long as the second tergite. The latter is half as wide again at the apex as at the base. Sixth tergite compressed, but not carinate. Interocular distance on the vertex equal to the length of the first two joints of the flagellum, and one-third greater than the inferior interocular distance. Posterior ocelli separated from the eyes by a distance equal to one-third of their own diameter. Flagellum fairly slender, the second joint fully three times longer than wide, the apical joint three times longer than wide. Second abscissa of the radius two and a half times longer than the first.

Umtali, S.R. October. 1 ♀.

Allied to *cataractae* Arn. but with a different sculpture of the head and a less slender petiole. The inner carina of the hind coxae is raised basad into a blunt triangular tooth as in *cataractae* and *Carpenteri* Richards. The flagellum is more slender than in *cataractae*, in which the apical joint is only twice as long as wide at the base.

**Trypoxylon chirindensis** Arn. (Fig. 24) race **nodosum** Arn. (Fig. 23)  
1944, *Occ. Pap. Rhod. Mus.* 11, 18, ♀.

A re-examination of a long series of this insect leads to the conclusion that *nodosum* should be raised to specific rank. Not only is it consistently larger than *chirindensis*, but in addition to the differences in the shape of the petiole, there are two other important ones which were overlooked. The declivity of the epinotum in the ♀ of *nodosum* is much more oblique (cf. Figs. 23 and 24) and the hind femora are more slender, being a little more than three and a half times longer than wide at their widest, whereas in *chirindensis* they are barely three and a third times longer. In both, as in *letiferum* and *cataractae* the inner carina of the hind coxae is expanded basad into a blunt tooth.

**Trypoxylon inconstans** n.sp. (Fig. 25)

♀. 10-12 mm. long. Black. Mandibles and inner side of the anterior tibiae brownish ochreous, calcaria black. Wings hyaline, the apical margin faintly fuscous, the veins black. Clypeus and face, below and including the ocular sinuses, and temples, with silvery pubescence. Longer pubescence of the same sort but exerted and sparse occurs on the pronotum, mesopleura, mesosternum and sides of the epinotal declivity. The sculpture of the face is like that of *solivagum* Arn. consisting of a fundamental reticulate-punctate sculpture (45 diameters) on which

is superimposed a larger puncturation, with interspaces from two to three times wider than the punctures.

Pro-mesothorax shining, finely punctured, the interspaces from four to five times as wide as the punctures. Mesopleura shining and impunctate, metanotum with a few very small punctures. Sides of the epinotum shining, finely and superficially striato-rugose, and near the dorsal margin sparsely punctured. Dorsum of the epinotum with a U-shaped median area, feebly concave lengthwise and margined on each side by a shallow impression; the sculpture of the median area is variable, but in the main consists of two rugae divergent from the base, enclosing an ovoid area traversed by three or four finer rugae. The basal angles of the median area have two or three diagonal rugae. The outer half of the sides of the dorsum are transversely rugose, the inner half finely punctured. Upper half of the epinotal declivity transversely rugose and punctured, the lower half with about six costae, the interspaces punctured; the median groove wide above. Anterior margin of the clypeus depressed and shining, its median third slightly produced. The face is like that of *solivagum* Arn. but the supra-antennal keel is acute and less widened posteriorly. Interocular distance on the vertex one fourth greater than the inferior interocular distance and equal to a little more than the length of the first two joints of the flagellum. Second joint of the flagellum three times longer than wide and three-sevenths longer than the third; the apical joint is twice as long as wide at the base. Posterior ocelli separated from the eyes by a distance equal to one-third of their own diameter. Petiole fully six times longer than wide across the node, fully as long as the second and third united. The second segment is very little wider caudad than cephalad, and slightly more than twice as long as wide at the apex. Sixth tergite transversely compressed, but not distinctly carinate. Inner keel of hind coxae expanded basad into a rounded tooth.

Umtali, S.R. November. 6 ♀♀.

Allied to *chirindensis* Arn. from which it differs by the more slender flagellum, the longer petiole, the closer puncturation of the mesonotum, the sparse rugosity of the epinotum, and the face, which is much less deeply impressed lengthwise in the middle.

### ***Trypoxylon flavimanum* n.sp. (Figs. 26, 26a and 26b)**

♀. 8.5-9 mm. long. Black. Palpi ochreous. Mandibles, extreme apex of the anterior femora, anterior tibiae and tarsi, and all the calcaria, ochreous. Wings clear hyaline, the apical margin of the fore wing faintly smoky, the veins black. Clypeus, lower half of the face, temples, lateral margins of the mesonotum, mesopleura and the declivity of the epinotum with silvery pubescence. The face above the level of the ocular sinuses, excepting the lateral margins, including the median supra-antennal protuberance, strongly tumid, forming a more or less scutate area, distinctly higher than the rest of the face, and higher than in *T. cataractae* Arn. This area is dull and closely punctate, with ill-defined reticulations between the punctures (40 diameters). From behind the anterior ocellus to the occipital margin the vertex is less closely punctured and slightly

shining; a low sinuate ridge separates the vertex from the feebly punctured occiput. Temples shining, microscopically punctured. The median third of the anterior margin of the clypeus moderately produced, the clypeus nearly twice as wide as long. Interocular distance on the vertex half as great again as the inferior interocular distance and equal to the length of the first two joints of the flagellum plus half of the third. The distance between the posterior ocelli and the eyes is equal to half the diameter of the ocellus. Second joint of the flagellum nearly three times as long as wide, the apical joint twice as long as wide at the base. Pro-mesothorax shining, punctured, the punctures largest on the episternum, as large as those on the face, fairly sparse and small on the pronotum; on the mesonotum the interspaces are from two to three times as wide as the punctures. Metanotum and metapleura shining, the former with a few small punctures.

Epinotal dorsum shining, the median area U-shaped, one-fourth longer than wide at the base, one-third wider at the base than at the hind margin, shallowly grooved down the middle, obliquely rugose at the base, transversely elsewhere, some of the rugae extending outwards over the lateral depressions, the sides beyond the latter sparsely punctured. Declivity of the epinotum with seven or eight costae, the median longitudinal groove deep and dilated above.

Sides of the epinotum shining, fairly strongly punctured, and with some short rugae on the posterior third. Petiole six times longer than wide across the node, as long as the second and third tergites plus half of the fourth; the second tergite three-sevenths longer than wide behind and shorter than the third. Inner keel of the hind coxae slightly raised basad, but not sufficiently to form a tooth. Second abscissa of the radius three and a half times longer than the first.

Zomba, Nyasaland. November. 3 ♀♀.

Not related to *testaceipes* Arn. which also has ochreous anterior tibiae and tarsi. Nearer to *cataractae* Arn. than any other species, but with a much longer petiole than in that species, which is also considerably larger.

### **Trypoxylon latiscutatum** n.sp. (Fig. 27)

♀. 15 mm. long. Black. Mandibles fusco-ferruginous, palpi and calcaria dark brown. Wings hyaline, the apical margin, including the radial cell, faintly smoky, the veins black. Clypeus and face below the scutate area with silvery pubescence, the temples, sides of pro-mesothorax, the declivity of the epinotum and the base of the petiole with exerted whitish pubescence.

Face and vertex dull, the scutate area fairly strongly punctured, the punctures increasing in size towards the margins, a median line from the anterior ocellus to the apex of the scutate area impunctate, the ocular sinuses more sparsely punctured. Behind the scutate area and between the posterior ocelli the vertex has punctures larger than those of the scutate area. Temples and occiput shining, very finely punctured. Pronotal collar a little more finely punctured than the mesonotum, the latter as strongly punctured at the sides as the vertex, a little less closely and less coarsely over the middle third, and obliquely rugose at the sides



in front of the tegulae. Scutellum and metanotum punctured like the pronotum. Mesopleura as strongly punctured as the sides of the mesonotum. Median area of the epinotal dorsum U-shaped, slightly wider at the base than long, widely impressed lengthwise in the middle, bounded on each side by a wide depression, the basal fourth with a few oblique rugae, the rest transversely and closely rugose, the rugae strong in the median part, thence thinning on each side and becoming stronger again over the lateral depressions and reaching to the lateral margins of the dorsum. The spaces between the rugae are shining, shallowly and finely punctured. The declivity has a wide triangular depression above, just below the dorsum, continued downwards as a narrow groove; it is transversely rugose, about 9 rugae, and punctured in the interspaces.

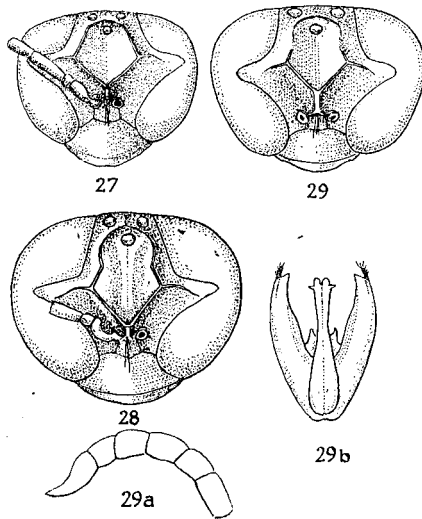


Fig. 27. *Trypoxylon latiscutatum* ♀, head,  $\times 10$ .  
 Fig. 28. *Trypoxylon crassipunctatum* ♀, head,  $\times ca 14$ .  
 Fig. 29. *Trypoxylon turbulentum* ♂, head,  $\times 21$ .  
 Fig. 29a. *Trypoxylon turbulentum* ♂, apical joints of flagellum,  $\times 30$ .  
 Fig. 29b. *Trypoxylon turbulentum* ♂, genitalia,  $\times 30$ .

The sides of the epinotum are dull, closely striato-rugose, the striae extending cephalad as far as the metapleural suture. Petiole shining, with a median furrow extending from the base to a little beyond the stigmata, only moderately dilated behind, six and a half times longer than wide across the node, as long as the second and third tergites plus half of the fourth united. The second tergite is parallel-sided, two and a third times longer than wide, very nearly as long as the third. Anterior margin of the clypeus convex, not produced in the middle, twice as wide as long. The scutate area of the face is as long as wide across the lateral angles, which emit a carina for a short distance into the ocular sinuses. Interocular distance on the vertex equal to the length of the first two joints of the flagellum plus one-fifth of the third, and one-fourth greater than the distance between the eyes at the base of the clypeus. The underside

of the transverse carina above the antennal sockets has 3 or 4 yellow setae. Second joint of the flagellum four times longer than wide and half as long again as the third, the apical joint three times as long as wide at the base. Posterior ocelli a little farther from each other than from the eyes, from which they are separated by a little less than their own diameter. Second abscissa of the radius twice as long as the first.

Zomba, Nyasaland. November. 2 ♀♀.

Allied to *cognatum* Arn. but larger and with wider and differently shaped facial shield, and with a very different sculpture on the epinotum.

***Trypoxylon crassipunctatum* n.sp. (Fig. 28)**

♀. 11.7 mm. long. Black. Palpi and apical joint of all the tarsi brownish ochreous, the calcaria ochreous. Wings hyaline, the apical margin narrowly and faintly fuscous. Clypeus, face below the scutate area and the ocular sinuses with dense silvery pubescence, the temples with longer pubescence of the same colour, the sides of the thorax and of the epinotal declivity with whitish and exserted pubescence. Clypeus twice as wide as long, its anterior margin strongly convex. Scutate area of the face one and a half times longer than wide across the lateral angles, the latter emitting a curved carina which almost reaches the lower margin of the ocular sinus. Above the lateral angles the carina bounding the scutate area is incurved for about one-third of its length and is then continued in a broad arc above, enclosing the anterior ocellus. The scutate area is dull, broadly grooved lengthwise in the middle, narrowly truncate at the apex, closely and microscopically punctured and with some large punctures at the sides above the lateral angles. A row of large punctures margins the scutate area on the outside, from the lateral angles up to the level of the posterior ocelli. Occiput and temples finely punctured. Dorsum of pronotum moderately shining, finely, shallowly and sparsely punctured. Mesonotum shining, closely punctured, the interspaces twice as wide as the punctures, which are smaller at the sides and in front than in the middle, where they are slightly lengthened transversely, giving an impression of a transverse rugosity. The punctures on the shining mesopleura are about half as large as those on the middle of the mesonotum and are more widely spaced. Scutellum shining, the puncturation half as large as that of the middle of the mesonotum. Metanotum with a few punctures; metapleura impunctate. Median area of the epinotal dorsum U-shaped, as wide at the base as long, with about 6 oblique rugae at the base and 5 or 6 transverse ones beyond the base, the median longitudinal depression narrow and shallow; the transverse rugae extend outwards to the lateral margins of the dorsum. Declivity closely and transversely rugose, the interspaces punctured, the median longitudinal groove deep and narrow.

Sides of the epinotum over the posterior three-fourths obliquely, strongly and closely rugose and fairly dull, the smooth anterior fourth shining. Interocular distance on the vertex equal to the length of the first two joints of the flagellum plus half of the third and only one-fourth greater than the interocular distance at the base of the clypeus. Posterior ocelli five times farther from each other than from the eyes, from which

they are separated by a distance equal to their own diameter. Anterior angles of the pronotal dorsum very slightly rounded. Petiole nearly six times longer than wide across the node, a little shorter than the second and third tergites united. The second tergite is nearly parallel-sided, two-fifths longer than wide behind and not much longer than the third. Second abscissa of the radius about twice as long as the first. Sixth tergite strongly compressed, almost subcarinate near the apex.

Zomba, Nyasaland. November. 1 ♀.

Not closely related to any other Ethiopian species; easily recognized by the shape of the facial shield and the coarse puncturation of the mesonotum. The species *turbulentum* described hereunder also has the margin of the facial shield incurved above the lateral angles, but it is a smaller species with a very different sculpture of the face and epinotum.

***Trypoxylon turbulentum* n.sp.** (Figs. 29, 29a and 29b)

♂. 8.7 mm. long. Black. Palpi ochreous, apices of the anterior femora and tibiae brown, the last three joints of the anterior tarsi brownish ochreous, the middle and hind tarsi dark brown, the calcaria yellowish white. Wings hyaline, the veins dark brown. Clypeus and lower half of the face, including the whole of the ocular sinuses, and the temples with a dense silvery pubescence. The thorax with the usual long whitish pubescence. Clypeus fully twice as wide as long, its anterior margin feebly convex. Facial shield with a narrow and shallow, impunctate median longitudinal impression, otherwise dull, closely and strongly punctured, the interspaces barely wider than the punctures. This puncturation is superimposed on a fundamental reticulate-puncturation which is barely resolvable with a magnification of 50 diameters.

The sides of the face outside the shield, and the ocellar area, are more coarsely punctured than the shield. Occiput with a sparse and shallow puncturation, temples finely punctured.

Facial shield one and a half times longer than wide across the lateral angles, the latter emit a curved carina which extends to the base of the ocular sinuses. Above the angles, the lower third of the carina is incurved, thence extends in a broad arc above, enclosing the anterior ocellus; the carina is ill-defined for a short distance above the incurved section. Interocular distance on the vertex one and a half times greater than the inferior interocular distance across the base of the clypeus, and equal to the length of the first three joints of the flagellum. The posterior ocelli are separated from the eyes by a distance equal to three-fifths of their own diameter. Second joint of the flagellum a little more than twice as long as wide and a little longer than the third, the apical joint short, curved, acute at the apex and a little shorter than the two preceding joints united. Thorax, excepting the epinotum, shining. Pronotum fairly closely punctured, the declivous anterior face somewhat concave, the anterior angles widely rounded, the posterior part behind the transverse groove testaceous and translucent. Mesothorax with a sparse and shallow puncturation, a little smaller than that of the ocellar area, the interspaces from three to four times wider than the punctures. Metanotum finely and sparsely punctured. Median area of the epinotal dorsum

U-shaped, a little wider at the base than long, one and a half times wider at the base than at the apex, shining, the basal third obliquely rugose, the median groove transversely rugose and wide, the sides dull, closely and finely rugose. The sides of the dorsum outside the median area and the declivity transversely rugose, the interspaces with a few anastomoses and indistinct punctures. Sides of the epinotum dull, closely and finely striate. Petiole slender, six times longer than wide across the node, the latter narrow, not more than twice as wide as the petiole at the stigmata; the petiole is very nearly as long as the second and third tergites united. The second tergite is nearly three times as long as wide, as long as the third, and nearly parallel-sided. Second abscissa of the radius two and a half times longer than the first.

♀. 8.5-8.7 mm. long. Interocular distance on the vertex equal to the length of the first two joints of the flagellum plus nearly half of the third. Second joint of the flagellum nearly three times longer than wide, the apical joint simple. Mesonotum a little more strongly punctured than in the ♂. The lateral areas of the epinotal dorsum more finely sculptured, obliquely striate; the median area is a little broader than in the ♂. Sixth tergite carinate in the middle, from the base to the apex. Otherwise like the ♂.

Zomba, Nyasaland. November. 1 ♂, 2 ♀♀.  
Allied to *crassipunctatum* Arn.

#### Subfam. PHILANTHINAE

#### *Philanthus femoralis* n.sp.

♂. 10 mm. long. Black. The abdomen excepting the basal two-thirds of the first segment, burnt sienna red. The following parts are very pale yellow: clypeus, sides of the face as far up as the ocular sinus, a trilobed macula between the antennal sockets, the fore and middle tibiae in front, the pronotal collar excepting the sides, a band, emarginate in front, on the posterior half of the scutellum, and the metanotum. Pubescence on the head and thorax black, short and erect, the clypeus with a few long fulvous hairs, the mesosternum and coxae with long black hairs, the lower margin of all the femora with a rather dense pilosity of thin, long and brown hairs. Wings pale fuscous, darker towards the base. Mandibles black, with a small whitish spot at the base. Clypeus and yellow parts of the face very sparsely punctured and smooth. The upper part of the face, vertex and temples closely and deeply reticulate-punctate, the reticulations emphasized lengthwise in the middle of the face; a small space in front of the anterior ocellus shining and impunctate. Yellow area of the pronotal collar shining and sparsely punctured, the sides closely punctured. Mesonotum and mesopleura deeply and coarsely reticulate-punctate, the mesonotum trisulcate longitudinally, the space between the outer and inner sulci shining and more coarsely punctured than the rest of the segment.

Scutellum and metanotum shining, the former sparsely punctured behind, more closely at the sides and in front, the interspaces larger than the punctures. Dorsum of the epinotum with a semicircular median area, strongly reticulate-punctate and with an ovoid pit in the middle

which is transversely rugose on each side of a median carina; the margins of the median area are smooth, shining and slightly raised. The rest of the epinotum is strongly reticulate-punctate, the declivity with a median longitudinal groove in its upper half. Tergites with a greasy lustre, microscopically reticulate, sparsely and coarsely punctured at the sides; sternites 2-4 shallowly punctured in their posterior half, the punctures becoming gradually smaller and closer together on each succeeding segment, the fifth and sixth dull, closely and finely punctured, the fourth to sixth closely covered with long yellow hairs. Interocular distance at the bottom of the eyes twice as great as on the vertex, where it is equal to the length of the first three joints of the flagellum plus half of the fourth. The second joint is not quite half as long again as wide at the apex. Posterior ocelli as far from the eyes as from each other. Dorsum of the epinotum as long as the scutellum. Seventh tergite with a few large elongated punctures and narrowed apically, the hind margin straight.

Tupela, Mweru district, N. Rhodesia. January. 1 ♂ (*H. J. Brédo*).

Related to the *laticeps* group, from all of which it is clearly distinguished by the long hairs on the underside of the femora and on the 4th to 6th sternites.

#### ***Philanthus Bredoi* n.sp. (Figs. 30, 30a)**

♀. 15 mm. long. Black. Mandibles ferruginous in the middle. The following parts are yellowish white: clypeus, sides of the face up to the ocular sinus but not reaching inwards as far as the level of the margins of the median area of the clypeus, two short oblique lines between the antennal sockets, the pronotal collar, a transverse band on the posterior third of the scutellum and a transverse macula on the metanotum. The following parts are ferruginous: a small spot on the upper part of the temples, the apical joint of the flagellum, the apices of the femora, the tibiae and tarsi, and the tegulae. The following parts are orange yellow: a band on the middle of the first tergite, narrowed mesad and not reaching the hind margin, the second tergite excepting the apical margin, the second sternite excepting the extreme base, the third sternite in the middle, two spots on the fourth and a narrow apical band on the third tergite which becomes whitish caudad. Sixth sternite ferruginous. Wings hyaline, the anterior half of the radial cell and the apex of the fore wing slightly cloudy, the veins and pterostigma ferruginous. Vertex, underside of the head, the thorax and first tergite with long and pale yellow pilosity, dense on the head and mesopleura; the underside of the femora with a few long and pale hairs. The pale areas of the head and of the pronotal collar sparsely punctured and shining. Face and vertex up to the posterior ocelli dull, closely reticulate-punctate, the vertex behind the ocelli slightly shining, more sparsely punctured, the interspaces twice as wide as the punctures, the temples reticulate-punctate, but more shallowly than the vertex. Sides of the pronotum rugulose. Mesonotum dull, reticulate-punctate, the punctures oblique and twice as large as those on the vertex. Mesopleura, metapleura and sides of the epinotum dull, microscopically punctured, with a larger but shallow

puncturation superimposed. Scutellum nitidulous, sparsely punctured, the punctures as large as those of the mesonotum. Metanotum dull, punctured like the scutellum. Triangular area of the epinotal dorsum not clearly defined, sculptured like the mesopleura, the area outside it somewhat more closely punctured; the triangular area has a median carinate groove, widened caudad and transversely rugulose. Declivity of the epinotum a little more closely punctured than the lateral areas of the dorsum, shining and impunctate at the bottom and with a median pit above. Tergites dull, microscopically reticulate, the fifth sparsely punctured on the apical half, the pygidium dull, closely punctured, with

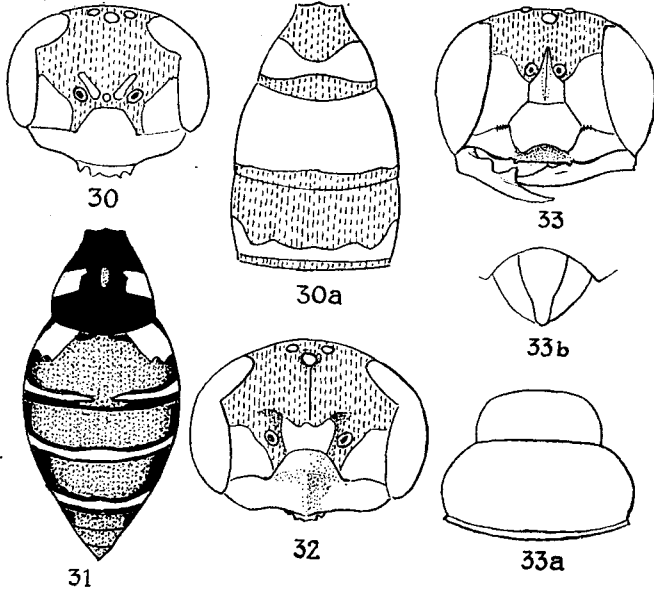


Fig. 30. *Philanthus Bredoi* ♀, head,  $\times 6$ .  
 Fig. 30a. *Philanthus Bredoi* ♀, 3 basal tergites,  $\times 6$ .  
 Fig. 31. *Philanthus amabilis* ♂, abdomen,  $\times 6$  (stippled parts ferruginous).  
 Fig. 32. *Philanthus sparsipunctatus* ♀, head,  $\times 10$ .  
 Fig. 33. *Cerceris tshontandae* ♀, head,  $\times ca 10$ .  
 Fig. 33a. *Cerceris tshontandae* ♀, first two tergites,  $\times ca 10$ .  
 Fig. 33b. *Cerceris tshontandae* ♀, pygidium,  $\times ca 10$ .

a wavy rugosity in the basal half, the apex rounded and feebly emarginate in the middle. Sternites shining, the fourth to sixth sparsely and finely punctured.

Median area of the clypeus as long as wide, the anterior margin with a short bisinuate lobe and a tooth on each side. Interocular distance on the vertex nearly equal to the length of the first four joints of the flagellum. The second joint of the flagellum is twice as long as wide at the apex and twice as long as the third. Posterior ocelli nearly one and a half times farther from the eyes than from each other. First segment of the abdomen about twice as wide at the hind margin as at the base and not quite as long as wide at the hind margin. Tarsal comb with

ferruginous spines, of which there are 6 on the basal joint. Hind tibiae with six spiniferous serrations.

Mbisi Forest, near Sumbuwango, Tanganyika. June. 2 ♀♀ (*H. J. Brédo*).

By the shape and sculpture of the epinotal dorsum this species belongs to the *P. triangulum* group. The second specimen is a little smaller than the type, the transverse band on the first tergite is interrupted in the middle and the second tergite has a triangular black macula in the middle which does not reach the hind margin.

***Philanthus amabilis* n.sp. (Fig. 31)**

♀. 16.5 mm. long. Head and thorax black, the temples, occiput, basal two-thirds of the mandibles and tegulae, ferruginous. The following parts are yellowish white: clypeus and sides of the face from the bottom to a little below the ocular sinus, two small spots between the antennal sockets, the pronotal collar, metanotum and an oval spot on the lower half of the sides of the epinotum. First abdominal segment black, its tergite on each side with a pale yellow macula slightly narrowed mesad, the remaining segments flavo-ferruginous, the base of the fourth and fifth tergites narrowly infuscated. The underside of the antennae and the whole of the last two segments, ferruginous. All the tarsi, the underside of the anterior femora, the anterior tibiae and the apical half of the underside of the middle and hind femora, ferruginous. Wings hyaline, the upper half of the radial cell and the apex of the fore wing slightly fuscous. Face and mesonotum with a short, erect and brownish yellow pubescence, the temples, sides of the thorax and the first tergite with long greyish pilosity. Clypeus shining, very sparsely punctured. Yellow areas of the face shining, punctured, the interspaces from two to three times wider than the punctures, the rest of the head closely and finely reticulate-punctate and dull, the temples more shallowly than the rest of the head. Pronotal collar sparsely and shallowly punctured, the sides of the pronotum rugulose. Mesonotum and scutellum reticulate-punctate, the interspaces on the mesonotum narrower than the punctures, the latter a little larger than those on the face, the interspaces on the basal half of the scutellum as wide as the punctures. The puncturation of the mesopleura is like that of the mesonotum but the interspaces form an indistinct rugulosity. Dorsum of the epinotum shining and impunctate from the base to the hind margin on the outer halves, the inner halves shining, closely and shallowly punctured, in the middle with a smooth elliptical groove; declivity shining, rugose, punctured, with a deep median pit in the middle above and a smooth depressed area on each side below. Tergites dull, the basal one with a shallow and sparse puncturation, the second to fifth microscopically reticulate, the pygidium transversely rugose and shallowly punctured; sternites shining, the fourth to sixth sparsely punctured.

Median area of the clypeus, including the lobe, as long as wide. Interocular distance on the vertex nearly equal to the length of the first four joints of the flagellum. The second joint of the flagellum is twice as long as wide at the apex and as long as the third. Posterior ocelli nearly twice as far from the eyes as from each other. Cheeks shorter than the

first joint of the flagellum. First tergite fully one-third longer than the second, one-fifth longer than wide at the base. Tarsal comb short, the basal joint with six ferruginous spines. Hind tibiae with six spiniferous serrations.

♂. 15 mm. long. Antennae ferruginous, the fifth to ninth joints of the flagellum fuscous above. The face between the antennal sockets has a wide V-shaped yellow macula. The ferruginous areas on the temples and occiput are paler and more extensive than in the ♀. Scutellum with a yellow macula. The yellow maculae on the sides of the epinotum are longer than in the ♀, extending from the dorsum almost to the lower margin.

Tarsi yellow, tibiae and femora ferruginous. Otherwise the colour of the head and thorax is like that of the ♀. First tergite black, with a large yellow macula on each side, more deeply and more closely punctured than in the ♀, the first sternite ferruginous. The remaining tergites are ferruginous, the second with a large subquadrate yellow macula on each side at the base and with a yellow apical band, the third and fourth also with yellow apical bands. The bands, and the sides of the tergites including the fifth are margined with black. Sternites 2-7 ferruginous, the apical ones darker, black at the base and apex, the second, third and fourth with a small transverse yellow spot on each side. The sculpture is similar to that of the ♀, but is finer on the face and deeper and larger on the thorax.

The reticulate-puncturation of the epinotum dorsum extends almost to the basal corners, so that the shining impunctate area is smaller than in the ♀, and the median groove is narrower and transversely rugose. The proportions of the first tergite are much the same as in the ♀ but the segment does not slope gradually cephalad as in that sex but has a subvertical anterior face. Second joint of the flagellum fully three times longer than wide at the apex and two and a third times longer than the third joint. Interocular distance on the vertex equal to a little more than the length of the first four joints of the flagellum. Cheeks longer than in the ♀, twice as long as the first joint of the flagellum. The genitalia are very much like those of *P. major* Kohl, to which this species is allied, but the sculpture and colour in *major* are very different. In sculpture, especially of the abdomen, it is more like *P. promontorii* Arn. but in that species the stipites of the genitalia are curved downwards in the apical half, whereas in *amabilis* they are porrect.

Mbisi Forest, Tanganyika. March and June. 2♂♂, 2♀♀ (*H. J. Brédo*).

#### ***Philanthus sparsipunctatus* n.sp. (Fig. 32)**

♀. 10.5-11 mm. long. Head and thorax black, the following parts yellowish white: clypeus, lower half of the sides of the face, a broad V-shaped macula between the antennal sockets, a spot on the base of the scape, a long streak attenuated at both ends on the temples, the pronotal collar except in the middle, a spot on the tegulae, an oblong spot on the cuneoli of the scutellum and the middle of the metanotum. Mandibles ferruginous, the apex fuscous. First abdominal segment black, the tergite with a pale yellow triangular macula, its apex directed inwards, on each side of the middle, and sometimes with an indistinct median



reddish spot at the base and at the apex. Tergites 2-6 ferruginous, becoming progressively darker on each succeeding segment, the second to fifth with narrow pale yellow apical bands, that of the second connected with triangular lateral yellow maculae. Tarsi, anterior tibiae and the upper side of the middle and hind tibiae, pale ochreous. Sternites 2-6 pale lemon yellow, their apical margins slightly ferruginous. Wings hyaline, the veins dark brown, the pterostigma pale yellow. Head and thorax, excepting the epinotal dorsum, with erect white pubescence and pilosity, the latter longer on the temples and sides of the thorax than elsewhere. Clypeus and pale areas of the face shining, the latter closely punctured, the clypeus sparsely so. The anterior two-thirds of the median area of the clypeus forms an obtuse angle with the basal portion, it is raised in the middle or almost subcarinate and has a short bisinuate brownish lobe on the anterior margin. The black area of the face, as far as the posterior ocelli, is closely longitudinally rugose and strongly punctured between the rugae. Vertex, occiput and temples sparsely punctured and nitidulous. Sides of the pronotum obliquely rugulose. Mesonotum shining, closely punctured in the anterior corners, less closely at the hind margin, the rest of the segment, and also the scutellum, with large and scattered punctures, the largest of which are about twice as large as those on the face. Mesopleura fairly closely punctured. Metanotum shining, closely punctured at the sides, sparsely in the middle. Dorsum of the epinotum smooth, shining and impunctate over its whole surface and with a clathrate median groove which is dilated caudad. Sides and declivity of the epinotum nitidulous, closely punctured, the anterior half of the sides with a feeble transverse rugulosity. Tergites fairly dull, microscopically rugulose, the fifth in the apical half and the sixth at the base with a few large punctures. Sternites shining, the last three sparsely punctured.

Median area of the clypeus one-fifth wider than long. Vertex wide, the interocular distance there being equal to two-thirds of the interocular distance across the base of the clypeus and equal to the length of the first six joints of the flagellum. Posterior ocelli as far from the eyes as from each other. Second joint of the flagellum five-sevenths longer than wide at the apex and half as long again as the third, the fourth to sixth joints a little wider than long, the apical joint ferruginous in its apical half. Declivity of the epinotum longer than the dorsum, subvertical, the junction of the two faces narrowly rounded. First tergite two and a half times wider behind than long, its anterior face subvertical; the second tergite one and a half times longer than the first. Comb of the anterior tarsi composed of long spatulate spines, of which there are six on the basal joint. Hind tibiae with six serrations.

♂. 10 mm. long. Black. Legs coloured as in the ♀. The yellowish white areas of the head are, the median area of the clypeus, an L-shaped macula on each side of the face and a small transverse one between the antennal sockets. Temples entirely black. A very small spot on the middle of the metanotum is white. Tegulae without a white spot. Abdomen black, the second tergite with pale yellow lateral maculae in the posterior half which are angularly extended inwards above. The third and fourth tergites with narrow, apical white bands. The second

sternite at the sides, and the third and fourth over the basal two-thirds, ferruginous. Sculpture like that of the ♀, but less sparse on the mesonotum. Second joint of the flagellum twice as long as wide at the apex, the third to ninth as long as wide. Interocular distance on the vertex equal to the length of the first five joints of the flagellum plus half of the sixth. Pterostigma pale brown.

Abercorn, N. Rhodesia. July and August. 4 ♀♀, 1 ♂ (*H. J. Brédo*).

Related to *P. tenellus* Arn. having the same kind of sculpture and clypeus.

### ***Philanthus bucephalus* Smith**

1856, *Cat. Hymen. Brit. Mus.* IV, 472.

This species sometimes has the wings yellowish hyaline instead of fuscous, in which case it superficially resembles examples of the clear-winged variety of *P. fuscipennis*. It can be distinguished from that form as follows. Pronotal dorsum not linear. First three tergites more strongly punctured, and more closely, especially on the third. The second joint of the flagellum is twice as long as wide at the apex, whereas in *fuscipennis* it is two and a third times longer. The mesonotum has no shining wide interspaces in the middle, and the lateral margins of the epinotal triangular area are not flattish, clearly defined and rugulose as they are in *fuscipennis*. The genitalia are, however, barely different.

### ***Philanthus abyssinicus* Arn.**

1932, *Occ. Pap. Rhod. Mus.* I, 7.

A new name is required for this species since *abyssinicus* has already been used for a variety of *P. dichrous* Kohl (var. *abyssinicus* Arn. 1925, *Ann. Trans. Mus.* 162). The name is to be altered to *rubidus*.

## Subfam. CERCERINAE

### ***Cerceris tshontandae* n.sp. (Figs. 33, 33*a* and 33*b*)**

♀. 10.7 mm. long. Head and thorax black, with the following parts pale chrome yellow: basal half of the mandibles (the apical half black), clypeus, lower half of the face, facial carina, scapes, a large macula on the temples extending from the posterior orbits to the occipital margin but not reaching the bottom of the temples, the pronotal collar, tegulae, scutellum and metanotum. Tergites 1-5 pale chrome yellow, black at the extreme base, the second with a black, median pre-apical spot, the third and fourth with a median black triangle, the apex caudad, the sixth tergite and all the sternites, ferruginous. Flagellum flavo-ferruginous. Vertex with a dull yellow line on each side behind the ocelli. Coxae and trochanters ferruginous, femora and tibiae chrome yellow, the posterior femora and tibiae reddish on the inside, the tarsi reddish yellow. Wings hyaline and slightly smoky, the costa, subcosta and pterostigma ochreous, the other veins brown. Clypeus not quite dull, finely punctured, the median area a little wider than long, its apical third inflected, the pre-apical margin arcuate and rounded at the corners

and with a few large punctures behind, the inflected portion slightly concave, its apical margin straight and with a small tooth on each side. Yellow area of the face very finely punctured, and with a sparse and larger puncturation superimposed. A small area just above the antennal sockets is shining and rugulose. The rest of the face as far as the anterior ocellus is reticulate-punctate, the vertex is less closely punctured, the punctures about twice as large as those of the face, the interspaces shining and nearly as wide as the punctures, the temples punctured like the face. Pronotum dull, the anterior face and the sides finely rugose, the dorsum finely and sparsely punctured. Mesonotum shining, longitudinally rugose, deeply punctured between the rugae, the punctures twice as large as those of the vertex. Mesopleura strongly reticulate-punctate. Scutellum shining and sparsely punctured, the punctures hardly as large as those of the face. Metanotum shining, finely punctured, metapleura transversely rugose. Triangular area of the epinotum strongly, evenly and obliquely costate, with 9 costae on each side, the rest of the dorsum and the declivity as strongly reticulate-punctate as the mesopleura; the sides of the epinotum transversely rugose and punctate. Tergites 1-5 slightly glossy, punctured, the punctures not large on the first, largest on the second to fourth, where they are as large as those on the mesonotum, with interspaces as wide as the punctures on the fourth, wider on the other tergites. Sixth tergite dull, the pygidial area microscopically and closely punctured, with some large punctures at the sides. Sternites shining, their apical portion finely, the basal and tumid portion, coarsely and sparsely punctured.

Mandibles with two large teeth on the inner margin. Inner orbits feebly divergent below. Interocular distance on the vertex equal to the length of the first six joints of the flagellum plus half of the seventh. The second joint is twice as long as wide. Posterior ocelli one and a half times farther from the eyes than from each other. Temples wide, one and a half times as wide as the eyes. Pronotal collar as long as the second joint of the flagellum. Mesopleura with an oblique epimeral crest, clearly visible from above, and with two teeth on the lower margin, of which the posterior one, just in front of the coxae, is small and blunt.

Dorsal face of the first tergite three times wider than long, the second tergite twice as long as the first and two and a third times wider behind than long. Pygidial area one and a half times longer than wide, considerably narrowed apically. Hind tibiae with six serrations.

Tshontanda, Wankie district, S.R. November. 1 ♀.

This species falls into group H in my key to the species (1931, *Ann. Trans. Mus.* xiv, 140), but is not closely allied to any species in that group.

### ***Cerceris longilabris* n.sp. (Figs. 34, 34a and 34b)**

♀. 13 mm. long. Black. A more or less dumbbell-shaped macula on the median area of the clypeus and a semicircular one on the base of its lateral sclerites, the frontal carina and a vertical bar on each side of the face extending up to the level of the antennal sockets, yellowish white. Mandibles, antennae and legs ferruginous, the fourth to ninth joints of the flagellum blackish above, the fore and middle femora

behind, the hind femora excepting the apex and a streak on the outside of the fore and middle tibiae, blackish. Tegulae ferruginous. Second tergite with a large pale lemon yellow macula on each side, the third to fifth with apical bands of the same colour, widely dilated laterad, the apical margin of the fifth segment and the whole of the sixth segment, ferruginous. Wings pale fuscous, including the veins and pterostigma. Clypeus shining, very finely and sparsely punctured, the lower half of the face dull, closely and finely punctured, the upper part of the face and the vertex and temples dull, longitudinally rugulose and also closely

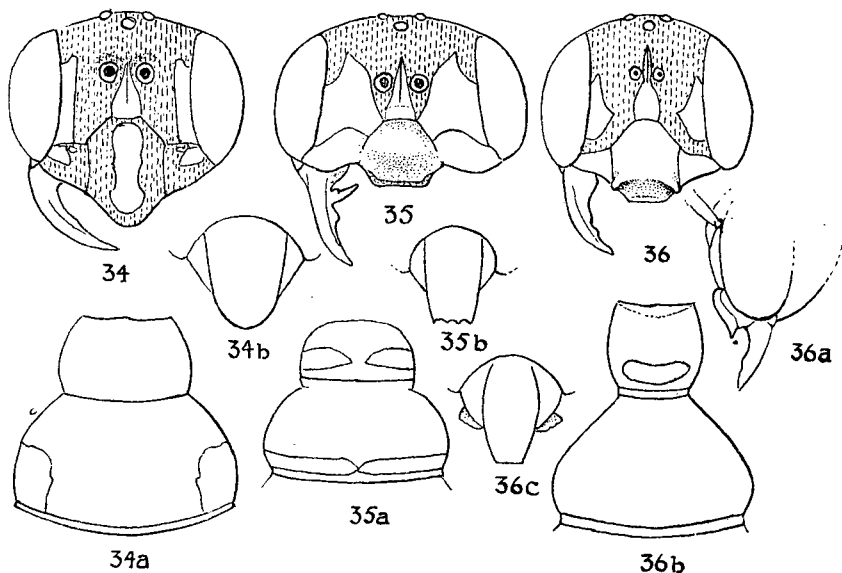


Fig. 34. *Cerceris longilabris* ♀, head,  $\times ca$  10.  
 Fig. 34a. *Cerceris longilabris* ♀, first two tergites,  $\times ca$  10.  
 Fig. 34b. *Cerceris longilabris* ♀, pygidium,  $\times ca$  10.  
 Fig. 35. *Cerceris multicolor* ♀, head,  $\times 12$ .  
 Fig. 35a. *Cerceris multicolor* ♀, first two tergites,  $\times 12$ .  
 Fig. 35b. *Cerceris multicolor* ♀, pygidium,  $\times 12$ .  
 Fig. 36. *Cerceris Cuthbertsoni* ♀, head,  $\times 12$ .  
 Fig. 36a. *Cerceris Cuthbertsoni* ♀, head, lateral view,  $\times 12$ .  
 Fig. 36b. *Cerceris Cuthbertsoni* ♀, first two tergites,  $\times 12$ .  
 Fig. 36c. *Cerceris Cuthbertsoni* ♀, pygidium,  $\times 12$ .

punctured. Pronotum dull, closely punctured, with traces of rugae at the sides, the anterior face sharply marginate laterally. Mesonotum and scutellum dull, finely longitudinally rugose and punctured between the rugae, the punctures shallow and fairly small. Mesopleura, sides and declivity of the epinotum closely reticulate, the interspaces shining, the reticulations wider apart on the upper half of the declivity. Metapleura transversely rugose, metanotum finely and closely punctured. Dorsum of the epinotum reticulate, the triangular area obliquely costate, transversely so in the apical angle. Tergites 1-5 moderately shining, finely punctured, fairly closely on the first, more sparsely on each succeeding segment, the interspaces on the second from three to four times as wide

as the punctures. Pygidial area dull and rugose. Sternites shining, their apical halves finely punctured. Mandibles edentate on the inner margin. Median area of the clypeus feebly convex transversely, one-sixth longer than wide, the apical margin strongly convex. Interocular distance on the vertex equal to the length of the first five joints of the flagellum. The second joint of the flagellum is half as long again as the third, and about twice as long as wide at the apex. Posterior ocelli very nearly twice as far from the eyes as from each other. Temples a little wider than the eyes. First tergite broad, twice as wide as long, the second tergite nearly twice as wide behind as long and one-third longer than the first. Pygidial area one-third longer than wide, widest at the base, the apical margin convex. Basal joint of the anterior tarsi with seven spines on the outer margin; the hind tibiae with seven spiniferous serrations. The dorsum of the pronotum is fairly flat, not narrowed in the middle, and as long as the third joint of the flagellum.

Kaputa, Mweru district, N. Rhodesia. January. 2 ♀♀ (*H. J. Brédo*).

This species belongs to the small group in which the median area of the clypeus is produced, and longer than wide, group A in my key, and differs from all the other species in that group by the sparse and fine puncturation of the tergites.

***Cerceris multicolor* n.sp.** (Figs. 35, 35*a* and 35*b*)

♀. 8.5 mm. long. Head and thorax black, with the following parts white or slightly yellowish white on the head: clypeus, frontal carina, lower half of the face (the pale area there narrowed above and not touching the inner orbits), a long triangular macula on the upper part of the temples, the pronotal collar, tegulae, a small spot on the epimerum, the outer thirds of the scutellum, the metanotum and a more or less ovoid macula on the posterior half of the sides of the epinotum. The first and the fourth to sixth tergites black, the second and third ferruginous and infuscated at the sides; the first to fourth with apical white bands, that of the first interrupted in the middle, the fifth with a small median, transverse yellowish streak near the apical margin. Sternites fusco-ferruginous, darker at the sides than in the middle, the second and third paler than the others. Mandibles flavo-ferruginous, the teeth and the apex fuscous. Scapes yellow below, blackish above, flagellum pale ferruginous below, fusco-ferruginous above. Fore and middle legs flavo-ferruginous, the basal half of the femora brownish red, the hind femora and tibiae reddish ochreous, the hind tarsi ferruginous. Wings hyaline, tinged with yellow, the apex beyond the cells, the veins and the pterostigma brown. Pubescence very scanty and short, a long pilosity absent. Clypeus and pale areas of the face shining, coarsely and sparsely punctured, except the anterior half of the median area which is closely punctured. The rest of the head coarsely punctured, the punctures about one-fifth as wide as the anterior ocellus, the interspaces shining, punctulate and for the greater part a little wider than the punctures. Pronotal dorsum, metanotum and the white parts of the scutellum shining, finely and very sparsely punctured. Sides and anterior face of the pronotum punctate and irregularly rugose. Mesonotum and

middle of the scutellum shining, sparsely punctured, the punctures a little smaller than those of the vertex. Mesopleura coarsely rugosopunctate, metapleura transversely costate. Triangular area of the epinotum dull, microscopically rugulose (50 diameters), feebly grooved lengthwise in the middle, the rest of the epinotum sparsely punctured, the anterior fourth of the sides transversely striate. Tergites 1-5 moderately shining, with a puncturation as large as that of the mesonotum but more dense. Pygidial area nitidulous and without sculpture. Sternites shining, shallowly and fairly sparsely punctured, the second subcarinate in the middle over the basal half. Mandibles with a long and acute tooth near the base and a blunt and broad one at about the middle of the inner margin. Head very wide. Median area of the clypeus convex lengthwise over the basal half, one-fourth wider than long, the brown apical margin nearly straight and reflexed. Inner orbits moderately divergent below. Interocular distance on the vertex equal to the length of the first seven joints of the flagellum. Posterior ocelli nearly twice as far from the eyes as from each other. Second joint of the flagellum twice as long as wide. Temples as wide as the eyes. Pronotal collar as long as the second joint of the flagellum. First tergite nearly semicircular, nearly twice as wide behind as long, the second tergite a little longer than the first and two and a half times wider behind than long. Pygidial area about one and a half times longer than wide at the base, the sides feebly convex, the apical margin quadridentate. Hind tibiae with seven spinigerous serrations.

Mamathes, Basutoland. January. 3 ♀♀ (*C. Jacot-Guillarmod*).

In one of the paratopotypes, in the collection of the collector, the white markings on the epinotum and first tergite are absent, and in the other the fourth and fifth abdominal segments and the sides of the sixth are ferruginous like the second and third. Allied to *quadridentata* from which it differs, inter alia, in colour and the shape of the clypeus and the basal tergites.

### ***Cerceris Cuthbertsoni* n.sp. (Figs. 36, 36a-c)**

♀. 9 mm. long. Black, the following parts pale lemon yellow: a semi-circular macula on the median area of the clypeus, a low triangular area on each side of the face below the base on the inner orbits, the frontal triangle, the extreme base of the mandibles, a narrow line, interrupted in the middle, on the hind margin of the pronotal collar, a similar line in the middle of the metanotum, a transverse macula on the first tergite, an apical band, dilated at the sides, on the second tergite and another, somewhat reddish cephalad, on the fifth tergite. The following parts are ferruginous: mandibles, anterior half of the clypeus, antennae with the fifth to tenth joints fuscous above, the tegulae, the legs with the upper side of the femora streaked with black, the apical half of the fifth sternite and the sixth tergite and sternite. The second sternite at the sides and the third over its apical half, yellow. Wings hyaline, the radial cell and apical margin slightly fuscous. Clypeus and lower half of the face dull, finely and closely punctured (30 diameters) the median area with a few large punctures. Anterior face of the pronotal collar transversely and finely rugose, the metapleura transversely costate, the metanotum finely

punctured, the triangular area of the epinotum shining, sparsely punctured and with a few oblique rugae at the base and a punctate median longitudinal groove. All the rest of the head, thorax and tergites strongly punctured, the puncturation of the head fairly close or almost reticulate-punctate, the punctures on the thorax about twice as large as those of the head, the interspaces on the scutellum and middle part of the mesonotum a little larger than the punctures, on the second and following tergites smaller than the punctures, the latter as large as those of the thorax. Pygidial area barrel-shaped, nearly twice as long as wide. The interspaces on the head, thorax and tergites are punctulate and moderately shining. Sternites shining, their tumid areas coarsely punctured; the fifth sternite has the tumid area raised caudad into a transverse ridge which is visible when the insect is viewed from behind. Mandibles with two indistinct teeth. Median area of the clypeus as long as wide, the apical third inflected, smooth and shining, the pre-apical margin arcuate and ending on each side in a blunt tooth. Facial carina high and acute. Posterior ocelli as far from the eyes as from each other. Interocular distance on the vertex equal to the length of the first six joints of the flagellum. The second joint of the flagellum is nearly three times longer than wide. First tergite broadly barrel-shaped, as long as wide, the second tergite one-fourth longer than the first and two-thirds wider than long. Hind tibiae with five spiniferous serrations.

Silozi, Matopo Hills, S.R. November. 1 ♀.

Allied to *ruficauda* Cam. from which it differs by the shape of the clypeus, the sparser and less coarse puncturation, the colour, and the longer second joint of the flagellum. Named in memory of the late Alexander Cuthbertson, who added so much to our knowledge of the Rhodesian Muscidae.

#### Subfam. ASTATINAE

#### *Astata fuscistigma* Cam.

1905, *Rec. Albany Mus.* 1, 258, ♂.

Arnold, 1923, *Ann. Transv. Mus.* x, 43, ♀.

Race *nana* n.subsp.

Specimens from Mossel Bay, C.P. (*R. E. Turner*) differ from the type by their smaller size, ♂ 9.5 mm. long, ♀ 8 mm. long, and in the relatively finer and closer rugosity of the epinotum and the feebler development of the transverse anastomoses. In the ♀ the inner orbits are more convergent above, the width of the face across the hind margin of the clypeus being four-fifths wider than across the vertex, whereas in the type of the species it is five-sevenths wider. The genitalia of the ♂ are identical with those of the type. The difference in size is probably due to a smaller species of prey.

*A. albopilosella* Cam. must also be considered as only a race of *fuscistigma*, as the genitalia are indistinguishable.

#### *Astata rugifrons* n.sp.

♀ .9 mm. long. Black. Mandibles excepting the black apex, apices of the femora, the tibiae and tarsi and the abdomen excepting the first

segment, ferruginous. Scapes and first two joints of the flagellum ferruginous, the remaining joints dark brown. Wings hyaline, the veins and pterostigma dark brown. Head, thorax and first tergite with a long, erect and fairly abundant white pilosity. Clypeus shining, its anterior half closely punctured. Face transversely rugose and punctured between the rugae which become feebler towards the vertex. Ocellar area and vertex behind the ocelli sparsely and finely punctured and shining, the interspaces larger than the punctures. Occiput and temples impunctate and shining. Thorax, excepting the epinotum, shining and punctured, the punctures as large as those on the vertex and very sparse except on the anterior third of the mesonotum and on the mesopleura. Dorsum of the epinotum shining, longitudinally rugose and with transverse anastomoses, the declivity coarsely reticulate-rugose. Pygidial area dull, triangular, very finely reticulate, with a median longitudinal carina and with the lateral margins raised; the rest of the abdomen shining and with a scattered puncturation. Spines on the legs black. Median area of the clypeus produced into a short lobe, its anterior margin straight. Interocular distance across the base of the clypeus one and a half times greater than across the vertex, where it is equal to the length of the first four joints of the flagellum plus two-thirds of the fifth. Posterior ocelli half as far again from each other as from the eyes. Second joint of the flagellum short, two and a half times longer than wide at the apex and one-fourth longer than the third. Pronotal collar linear; mesonotum three-fourths wider than long. Epinotal dorsum one-fourth wider at the base than at the apex and about two-thirds wider at the base than long. Truncating vein of the radial cell straight and oblique, as long as the fourth abscissa of the radius, the third abscissa twice as long as the second.

Abercorn, N. Rhodesia. July. 2 ♀♀ (*H. J. Brédo*).

Allied to *tropicalis* Arn. from which it differs by its smaller size, different sculpture of the face and epinotum, shorter antennal joints, much shorter clypeal lobe, the black first tergite, and the pygidium.

#### Subfam. STIZINAE

#### **Stizus Bredoi** n.sp. (Figs. 37, 37*a-c*)

♂. 14.5-17 mm. long. Black. The following parts ferruginous: occiput, temples, pronotum, the upper part of the mesopleura to a variable extent, the lateral margins of the mesonotum, the scutellum to a variable extent, sometimes the middle of the metanotum, the lateral margins of the epinotal declivity, the apical margins and the sides of tergites 1-4, the fifth to seventh except at the extreme base, the apical margin of the first sternite and the remaining sternites except at the extreme base. The ferruginous colour on tergites 4-6 is sometimes replaced at the apical and lateral margins by yellow or reddish yellow, and the first four tergites have a steely-blue lustre. Owing to the yellowish decumbent pubescence on the abdomen the tergites appear paler, or brownish black, when viewed from behind. Mandibles dull yellow at the base, becoming darker towards the apex which is black. Labrum, clypeus and sides of the face and a median line which reaches the anterior ocellus,



yellow; the median and lateral streaks rufescent above. Antennae and legs pale ferruginous, the upper side of the median and hind femora more or less streaked with black. Wings hyaline, tinged with yellow, the veins ochreous. Clypeus and pale areas of the face with silvery pubescence. Rest of the head, and the thorax, with a short, fairly dense and yellowish grey pubescence. Clypeus dull, closely and very finely punctured. Face and vertex up to the posterior ocelli, dull, with a very fine fundamental puncturation on which are superimposed larger, shallow and widely separated punctures. Thorax with a slight gloss, and a close, fine and oblique puncturation which is largest on the mesonotum; the mesopleura and sides of the epinotum have in addition a large, sparse and round puncturation. Dorsum of the epinotum reticulate-punctate. Clypeus moderately convex transversely and lengthwise, a little more than twice as wide as long, the apical margin concave. Eyes moderately convergent below, the interocular distance on the vertex equal to the

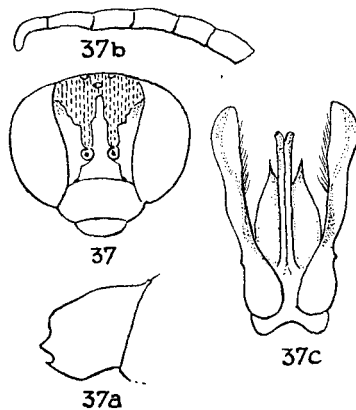


Fig. 37. *Stizus Bredoi* ♂, head,  $\times 6$ .  
 Fig. 37a. *Stizus Bredoi* ♂, epinotum, lateral view,  $\times 6$ .  
 Fig. 37b. *Stizus Bredoi* ♂, apical joints of the flagellum,  $\times ca 10$ .  
 Fig. 37c. *Stizus Bredoi* ♂, genitalia,  $\times ca 10$ .

length of the first three joints of the flagellum and nearly four-ninths greater than the inferior interocular distance. Flagellum long, all the joints excepting the first much longer than wide, gradually attenuated towards the apex, the second joint three times longer than wide, the apical joint strongly curved, and flattened on the underside. Posterior ocelli three-fifths farther from each other than from the eyes. Lateral margins of the epinotal declivity excised above and below, leaving between the excisions a broad triangular tooth. First sternite carinate over the basal half in the middle, the other sternites unarmed, but the fifth has a slightly raised triangular area, the apex cephalad, which is densely covered with a decumbent fulvous pubescence. Seventh tergite narrowly truncate at the apex. Only one longitudinal vein is emitted from the apex of the medial cell in the hind wing. Second cubital cell of the fore wing not petiolate, nearly four times wider on the cubitus than on the radius. The proportions of the first three abscissae of the radius are as

7:4:12. Apical half of the stipites with a fine, dense and white pubescence. The inner paramera are abruptly attenuated apically and end in a black spine.

♀. 15-16 mm. long. Head ferruginous, the apex of the mandibles black, the posterior margin of the clypeus, the lower half of the face and the underside of the scapes, yellow. The rest of the body with the colour pattern similar to that of the ♂, but the ferruginous colour is darker, and more extensive on the mesopleura and sides of the mesonotum. The scutellum and metanotum and the sides of the epinotal dorsum are dark reddish brown. Labrum and anterior margin of the clypeus with a large and sparse puncturation. Sixth tergite nitidulous, a little longer than wide at the base, with a few large punctures in addition to the oblique, fundamental puncturation. Otherwise the sculpture is like that of the ♂. Interocular distance on the vertex nearly one-fourth greater than the interocular distance across the base of the clypeus and equal to the length of the first four joints of the flagellum plus one-third of the fifth joint. Flagellum shorter than in the ♂, the second joint two and a half times longer than wide, the third to fifth longer than wide, the sixth to tenth as long as wide, the apical joint nearly half as long again as wide at the base, not curved, rounded at the apex. Posterior ocelli two-sevenths farther from each other than from the eyes. There is an arcuate impressed line behind the posterior ocelli and a feeble carina between them, which is present also in the ♂ but much less distinct.

Abercorn, N. Rhodesia. September-October. Numerous examples of both sexes (*H. J. Brédo*).

This species cannot be placed in any of the known groups on account of the shape of the antennae and the pubescent patch on the fifth sternite of the ♂. It is more nearly related to the *discolor* and *pubescens* groups than to any others. It is remarkable that this fairly large species should have escaped notice up to the present.

#### Subfam. BEMBICINAE

#### *Bembix odontopyga* Turner (Fig. 38)

1917, *Ann. Mag. Nat. Hist.* (8), XIX, 439, ♂.

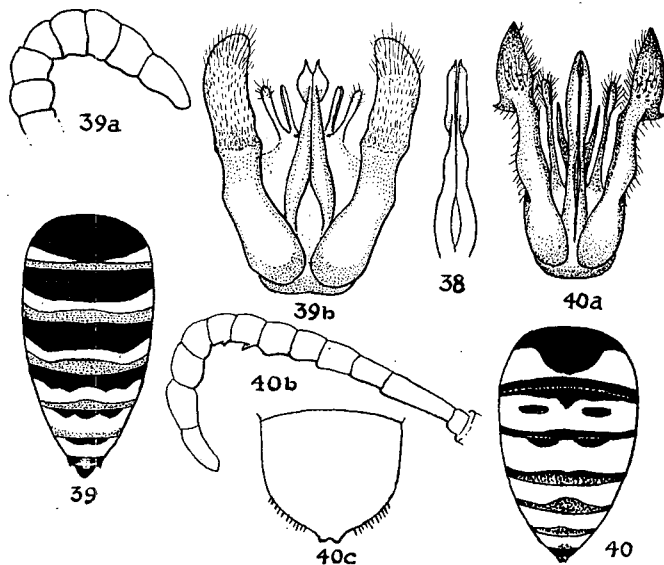
Arnold, 1929, *Ann. Transv. Mus.* XIII, 344 (Figs. 12, 12a and 12b).

The specimens from Sanyati Valley, Penkrige and Mutambara, S. Rhodesia which I attributed to this species belong to another closely allied one which is described below.

A series of *odontopyga* from Abercorn, N. Rhodesia differs in the ♂ from the typical form in having the lateral maculae on the second and third tergites, and also the small spot on the seventh tergite, reduced or even obsolete.

The ♀, 16-17 mm. long, hitherto undescribed, differs from the ♂ as follows. The twin black maculae on the clypeus are much larger, covering the median basal two-thirds. The scapes are yellow, with only one or two small black spots at the apex. The underside of the flagellum is fusco-ferruginous. There are two small yellow spots in front of the anterior ocellus. Hind margin of the pronotum, lateral margins of the mesonotum, a spot on the lateral margins of the scutellum, and some-

times also the metanotum, the anterior half of the metapleura, a streak on the hind margin of the sides of the epinotum, yellow. The yellow bands on the fourth and fifth tergites are sometimes widely interrupted in the middle and the apical two-thirds of the sixth tergite is yellow. Sternites shining and sparsely punctured, the sixth more closely than the others. Interocular distance on the vertex equal to the length of the first three joints of the flagellum plus half of the fourth. The second joint is a little more than four times longer than wide at the apex and a little more than twice as long as the third. Sixth tergite triangular, the apex widely rounded.



- Fig. 38. *Bembix odontopyga* ♂, sagittae,  $\times ca$  14.  
 Fig. 39. *Bembix denticauda* ♂, abdomen,  $\times 3$  (stippled areas ferruginous).  
 Fig. 39a. *Bembix denticauda* ♂, apical joints of flagellum,  $\times ca$  14.  
 Fig. 39b. *Bembix denticauda* ♂, genitalia,  $\times ca$  14.  
 Fig. 40. *Bembix albicapilla* ♂, abdomen,  $\times 4$ .  
 Fig. 40a. *Bembix albicapilla* ♂, genitalia,  $\times ca$  14.  
 Fig. 40b. *Bembix albicapilla* ♂, flagellum,  $\times ca$  14.  
 Fig. 40c. *Bembix albicapilla* ♂, 7th tergite,  $\times 10$ .

***Bembix denticauda* n.sp. (Figs. 39, 39a and 39b)**

♂. 17–19 mm. long. Black. The following parts lemon yellow: labrum, mandibles excepting the black apex, underside of the scapes, clypeus, lower half of the sides of the face, temples, sides of the pronotum and the coxae, more or less. The following parts are dull chrome yellow: legs (the upper side of the tibiae and the upper and underside of the femora streaked with black), transverse pre-apical bands on the first six tergites, interrupted in the middle on the first, dilated at the sides on all and wider on the fourth to sixth than on the preceding tergites and apical narrow bands, slightly widened laterad, on sternites 2–6. Seventh tergite brownish black, flavo-ferruginous across the middle, the

seventh sternite flavo-ferruginous. The apical margins of the first five tergites are pale umber brown. Wings hyaline, costa and subcosta brown, the other veins reddish brown. Head, thorax, base of the first tergite and the femora with a rather dense, long and pale yellowish grey pilosity, the abdomen with yellowish and oblique pubescence, much more abundant than in *odontopyga*. The puncturation is like that of *odontopyga*, except that of the seventh tergite, which is not so coarse and on which the punctures are round. Clypeus subcarinate in the middle over the basal half, the apical half flattened in the middle. Flagellum like that of *odontopyga* but the ninth and tenth joints are not truncate on the outer margin and the apical joint is longer, twice as long as wide at the base (three-fifths longer in *odontopyga*). Interocular distance on the vertex equal to the length of the first three joints of the flagellum plus half of the fourth, as in *odontopyga*. The second, sixth and seventh sternites are like those of *odontopyga* and the seventh tergite has a tooth on each side as in that species. Middle femora not serrate. The genitalia differ from those of *odontopyga* in having the pubescent apical part of the outer paramera flatter, more convex on the outer margin, and the expanded apical part of the sagittae much shorter.

♀. 17 mm. long. A quadrangular macula on each side of the clypeal carina, black; the carina more strongly developed than in the ♂. The yellow on the sides of the face extend upwards as far as the level of the anterior ocellus. The pronotal collar on the hind margin, as well as the sides, yellow. A vertical streak on the upper half of the mesopleura and the anterior half of the metapleura, a narrow pre-apical band on the scutellum, the sides of the same and a narrow apical band on the metanotum, dull yellow. The yellow fasciae on the tergites are rufescent anteriorly. Sixth tergite and sternite ferruginous. Otherwise like the ♂ in colour. The mesonotum is less closely punctured than in the ♂, and the abdomen less pubescent. Sternites shining, the second with a narrow impunctate area in the middle; on each side of the latter the sternite is sparsely and coarsely punctured and then again closely punctured at the sides. The third to fifth sternites are finely punctured at the base, more sparsely and less finely near the apical margin. Sixth sternite strongly punctured. Interocular distance on the vertex as in the ♂. The second joint of the flagellum is more slender than in *odontopyga* ♀, being five times longer than wide at the apex and very nearly two and a third times longer than the third joint. Basal joint of the anterior tarsi with seven spines on the outer margin. Otherwise like the ♂.

Melsetter, S.R., 1 ♀, 1 ♂ (types); Umsoleswe River, Port E.A. 1 ♀, and 1 ♂ each from Melsetter, Songwe River and Lomagundi, S.R. Sanyati Valley and Penkridge, S.R.

Closely allied to *odontopyga* Turn. but sufficiently different in colour, structure of the outer paramera of the genitalia, and in the ♀, the length of the second joint of the flagellum, to merit separation as a distinct species. The colour is somewhat variable. In the specimen from the Umsoleswe River the hind margin of the scutellum and of the metanotum, a vertical streak on the upper half of the mesopleura and the anterior half of the metapleura are yellow, and the transverse yellow fascia the first tergite is much narrowed in the middle. The sixth abdominal

segment is entirely ferruginous. The ♂ from Lomagundi has two narrow elongate brownish spots on the base of the clypeus. In colour to a certain extent, and in the shape of the seventh tergite this species shows a resemblance to the West African *tenifasciata* Park.

***Bembix albicapilla* n.sp.** (Figs. 40, 40a-c)

♂. 15 mm. long. Black. Labrum and a narrow streak on the temples and two small spots below the anterior ocellus, ochreous. Hind margin of the scutellum at the sides ochreous, a small spot at the top of the epinotal declivity, lemon yellow. Broad bands on tergites 1-6, covering the greater part of each segment, lemon yellow, that of the first abruptly narrowed in the middle, that of the second slightly sinuate on each side and angularly emarginate in front, that of the third bisinuate in front. The apical margins of the first and second tergites are narrowly black, of the third to fifth brownish black, the sixth segment is wholly yellow and the seventh is black with two very small ochreous spots at the apex. Sternites black, the second to fifth with subtriangular lemon yellow maculae at the sides, the sixth yellow, excepting the triangular raised platform which is black. Legs ochreous, the upper side of the anterior femora excepting the apex, an oblong macula on the underside of the anterior tibiae and the upperside, excepting the apex, of the middle and hind femora, black. Posterior angles of the mesonotum ferruginous. Wings hyaline, the veins dark brown, the medial and submedial cells slightly brownish. Clypeus with a dense adpressed silvery pubescence, the rest of the head, the thorax and the base of the first tergite, with a long, erect and white pilosity, fairly dense on the head and the sides of the thorax. Abdomen with a short and yellowish pubescence. Lower half of the mesopleura and the sides of the epinotum slightly shining and with a large, shallow and oblique puncturation, the rest of the thorax very closely punctured with round punctures, the interspaces on the mesonotum and scutellum a little larger than the punctures in a longitudinal direction and smaller in the transverse; the metanotum and epinotal dorsum reticulate-punctate. Tergites finely and closely punctured, not quite dull, the sternites shining, coarsely punctured, the interspaces from three to four times wider than the punctures in the middle, but less at the sides. Clypeus strongly convex. Inner orbits moderately divergent above and below, the interocular distance on the vertex equal to the length of the first seven joints of the flagellum. Second joint of the flagellum much shorter than *B. capensis* Lep. only three times longer than wide at the apex and barely twice as long as the third; the seventh to eleventh joints excavated below, the fourth and fifth slightly dilated on the inner margin but less than in *capensis*, the seventh and eighth spinose behind, the apical joint longer and more narrowed towards the apex than in *capensis*, two and three-fifths longer than wide at the base and about one-third longer than the penultimate joint. Second sternite with a large compressed tooth, acute at the apex, not rounded as in *capensis*. The sixth sternite has a triangular platform which is more acute at the apex than in *capensis* and the seventh tergite is less widely truncate at the apex and more distinctly emarginate there than in that species. The genitalia differ considerably from those of *capensis*; the dilated

apical part of the outer paramera is more acute at the apex, less convex on the outer margin and produced into a sharp tooth on the outside, at the base of the dilatation.

Insuza River, S.R. 1 ♂.

Related to *B. capensis*, but clearly distinct on account of the differences in colour, the joints of the flagellum and the shape of the genitalia.

***Bembix versuta* n.sp. (Figs. 41, 41a-d)**

♂. 17 mm. long. Belonging to the *fuscipennis* group and not unlike *B. capensis* in general appearance but with feebly infumated wings and distinctly different genitalia.

Black. The following parts are pale chrome yellow: labrum, mandibles excepting the fuscous apex, clypeus excepting a large transverse clepsy-

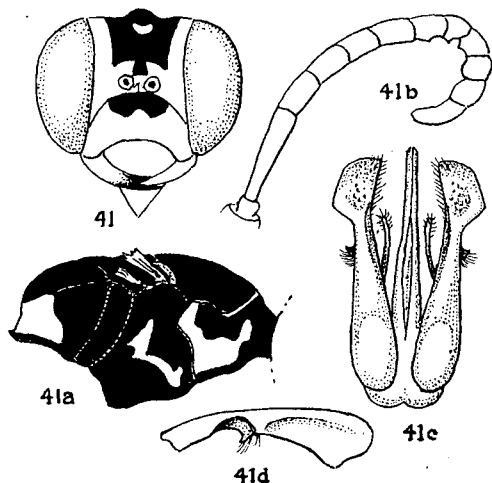


Fig. 41. *Bembix versuta* ♂, head,  $\times 6$ .  
 Fig. 41a. *Bembix versuta* ♂, thorax,  $\times 6$ .  
 Fig. 41b. *Bembix versuta* ♂, flagellum,  $\times ca$  14.  
 Fig. 41c. *Bembix versuta* ♂, genitalia,  $\times ca$  14.  
 Fig. 41d. *Bembix versuta* ♂, right stipes, lateral view,  $\times ca$  14.

drate black macula at the base, the sides of the face up to the level of the anterior ocellus, the temples, the dorsal edge and the greater part of the sides of the pronotum, the pronotal tubercles, a large angular macula on the mesopleura, a narrow V-shaped line on the epinotum below the dorsum, the posterior half of the sides of the epinotum including the outer margins of the declivity, the legs and the posterior half of the coxae and trochanters. The upperside of the femora and the underside of the anterior tibiae are streaked with black. The colour pattern of the tergites is like that of *B. capensis* and consists of glaucous white, sinuate median fasciae which become gradually lemon yellow laterad; the seventh tergite, however, is black. First sternite black, the second black, with a median transverse yellow fascia which includes the posterior half of the tooth and also with a very narrow yellow apical fascia; the other sternites are black, with angular lemon yellow maculae at the sides.

Wings hyaline, the basal half of both wings feebly infuscated with brown. Pilosity on the head and thorax yellowish grey and not long. Punctuation of the thorax and abdomen like that of *capensis*, except the seventh tergite, which is shining, sparsely and more coarsely punctured. Inner orbits feebly divergent above and below. Clypeus strongly convex transversely, not flattened in the middle in front, with a median carina extending over the basal fourth. Interocular distance on the vertex equal to the length of the first six joints of the flagellum. Second joint of the flagellum four times longer than wide at the apex and very nearly twice as long as the third, the seventh to ninth spinose on the outer margin, the eighth to eleventh flattened or slightly excavated below, the tenth and eleventh with an ovate white spot on the underside. Second sternite with a large transversely compressed tooth, as high as long and more acute at the apex than in *capensis*. Sixth sternite with a triangular platform, not raised so much apically as in *capensis*. Seventh sternite tricarinate. Basal joint of the middle tarsi dilated as in *capensis*, but the edge of the dilatation is blunt and opaque, not trenchant and translucent as in that species. Basal joint of the anterior tarsi with six spines on the outer margin. The stipites are abruptly dilated at about the apical third, the sides a little behind that part are deeply excavated and the posterior angle of the excavation is produced into a blunt tooth bearing on its underside a dense tuft of pubescence. The sagittae are unusually long, extending beyond the apex of the outer paramera.

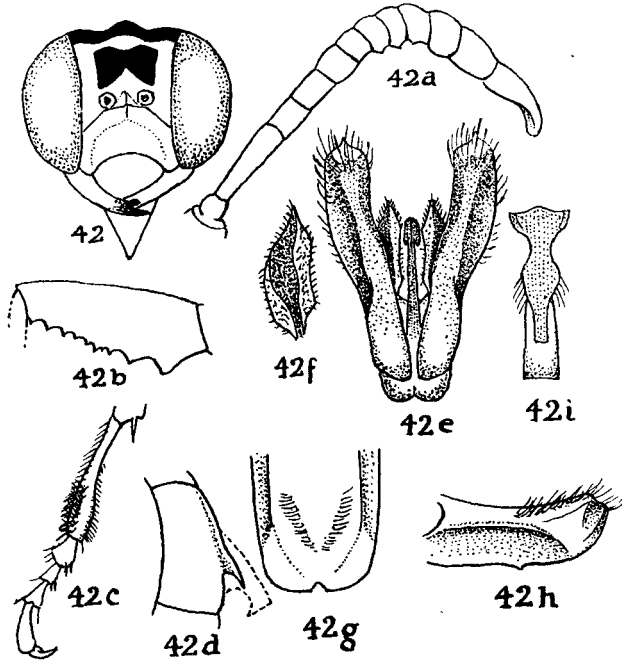
Kaputa, Mweru district, N. Rhodesia. January. 1 ♂ (*H. J. Brédo*).

***Bembix diversidens* n.sp.** (Figs. 42, 42*a-i*)

♂. 18 mm. long. Black. Labrum, mandibles except the black apex, clypeus, lower half and sides of the face, a sinuate transverse band below the anterior ocellus, the temples, the upper margin and most of the sides of the pronotum, an elongate macula on the lower anterior corner of the mesopleura and the underside of the first two joints of the flagellum, lemon yellow; the third and following joints of the flagellum are blackish above and ochreous below.

Legs, including the anterior coxae and spots on the trochanters, lemon yellow, the femora and tibiae streaked with black above, the posterior femora also black on the underside. Fourth to sixth tergites with dull yellow maculae at the sides, narrowed mesad, the sixth also with a median streak of the same colour. Wings hyaline, the veins blackish. Face, temples, sides of the thorax and the epinotum with a long whitish pilosity, the mesonotum with yellowish brown and erect pubescence, the tergites with brownish pubescence, except over the apical fourth, where it is black. Sternites with a sparse and pale brown pubescence. Punctuation of the thorax and tergites fairly dense, the apical third of the seventh tergite shining, somewhat coarsely and sparsely punctured. Sternites shining, the punctuation fairly large, the interspaces wider than the punctures. Clypeus subcarinate at the base, the apical two-thirds, except at the sides, distinctly flattened. Inner orbits moderately divergent below. Second joint of the flagellum fully one and a half times longer than wide at the apex, nearly twice as long as the

third, the sixth to tenth wider than long, the seventh to ninth dentate on the outer margin, the eighth to twelfth excavated below, the apical joint twisted, two and a half times longer than wide at the base and two-thirds longer than the preceding joint. Interocular distance on the vertex equal to the length of the first six joints of the flagellum. Second sternite with a median carina which ends at about the second third in a short and acute tooth. Sixth sternite with a wide triangular platform, its lateral margins rounded and with the apex nearly reaching the hind margin



- Fig. 42. *Bembix diversideus* ♂, head,  $\times 6$ .  
 Fig. 42a. *Bembix diversideus* ♂, flagellum,  $\times ca 14$ .  
 Fig. 42b. *Bembix diversideus* ♂, middle femur,  $\times 10$ .  
 Fig. 42c. *Bembix diversideus* ♂, middle tarsus,  $\times 10$ .  
 Fig. 42d. *Bembix diversideus* ♂, 2nd sternite (dotted line, paratype),  $\times 10$ .  
 Fig. 42e. *Bembix diversideus* ♂, genitalia,  $\times ca 10$ .  
 Fig. 42f. *Bembix diversideus* ♂, median paramera,  $\times ca 10$ .  
 Fig. 42g. *Bembix diversideus* ♂, 7th sternite, ventral view,  $\times ca 10$ .  
 Fig. 42h. *Bembix diversideus* ♂, 7th sternite, lateral view,  $\times ca 10$ .  
 Fig. 42i. *Bembix diversideus* ♂, 8th sternite, dorsal view,  $\times ca 10$ .

of the segment. Seventh sternite a little longer than wide, the apical margin convex and angularly excised in the middle, the sides vertical and separated from the transversely convex upper face by a longitudinal torus; the upper face has two rows, convergent caudad, of long erect pubescence. Eighth sternite not produced into a spine as in the majority of the species of the genus; it is dilated in the middle, thence nearly parallel-sided as far as the apical margin which is broad and transverse. Seventh tergite nearly as long as wide at the base, broadly U-shaped. The genitalia are unlike those of any other species of the genus. The outer



paramera, which have a white apical macula, have a small tooth on the wide apical margin and the ventral rami of the median paramera are lamellate, lanceolate and densely setulose, membranous on each side and heavily chitinized in the middle. Middle femora strongly dentate on the lower margin, with 8 teeth, of which the two basal ones are blunt and broad. The middle basitarsus is flattened and dilated over the apical third and densely pubescent and setose.

A second specimen, in which the genitalia are identical with those of the type, differs from the latter only in having the exerted pubescence on the fourth to sixth tergites paler, or yellowish, and the tooth on the second sternite strikingly different. It is lamelliform, nearly as long as the segment, directed obliquely caudad, broadly truncate apically, the lower edge straight but the upper curved, so that the apical truncation at its junction with the upper edge forms an acute angle.

Abercorn, N. Rhodesia. July (type), August (paratype). *H. J. Brédo.*

Not related to any other African species. To judge by Fig. 8, Plate II in Handlirsch's monograph of the genus, in which exceptionally the eighth sternite appears to be figured with the other parts of the genitalia, *B. monedula* Hndl. also has a lamellate and broad eighth sternite, but that species is quite different in colour, structure of the outer paramera and middle femora.

***Bembix melanopa* Hndl. race *litoralis* Arn.**

1929, *Ann. Transv. Mus.* XIII, 356.

By article 35 of the *International Rule of Zoology Nomenclature*, the name of this race is a homonym of *B. littoralis* Turner 1908. The name *algoensis* is herewith proposed as a substitute.