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A revision of six minor genera of
Myrmicinae (Hymenoptera: Formicidae)
in the Ethiopian zoogeographical region

Barry Bolton

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Contents

Synopsis	246
Introduction	246
Measurements and indices	246
Abbreviations of museums	247
<i>Ankylomyrma</i> Bolton	247
<i>Atopomyrmex</i> André	249
Synonymic list of species	250
Key to species (workers)	250
Treatment by species	250
<i>Baracidris</i> gen. n.	252
Key to genera of Ethiopian region Myrmicinae with 2-segmented antennal club (workers)	253
List of species	255
Key to species (workers)	255
Treatment by species	255
<i>Cyphoidris</i> Weber	256
List of species	257
Key to species (workers)	257
Treatment by species	257
<i>Ocymyrmex</i> Emery	260
Synonymic list of species	262
Key to species (workers)	262
Treatment by species	264
<i>Pristomyrmex</i> Mayr	282
Synonymic list of species	283
Key to species (workers)	283
Treatment by species	284
<i>Terataner</i> Emery	288
List of species	290
Key to species (workers)	290
Treatment by species	291
Synopsis of Malagasy region species	296
Key to species (workers)	297
Acknowledgements	298
References	298
Index	307

Synopsis

The ant genera *Ankylomyrma* Bolton, *Atopomyrmex* André, *Cyphoidris* Weber, *Ocymyrmex* Emery, *Pristomyrmex* Mayr (= *Odontomyrmex* André, = *Hylidris* Weber, = *Dodous* Donisthorpe) and *Terataner* Emery (= *Tranetera* Arnold) are revised for the Ethiopian zoogeographical region. Keys and descriptions of species are presented for each genus and the genera are defined on a world-wide basis. In *Atopomyrmex* two species are recognized and four new infraspecific synonyms are established. Three new species are described in the previously monotypic genus *Cyphoidris*. Twenty-three species of *Ocymyrmex* are recognized of which seven are described as new; seven new synonyms are established and new status as valid species is granted to seven previously infraspecific forms. Five *Pristomyrmex* species are recognized of which one is new; five new synonyms are proposed in this genus. In *Terataner* the former subgenus *Tranetera* is newly synonymized and six species recognized, of which one is new. The six *Terataner* species of Madagascar are summarized, one new species is described and a key presented. The genus *Baracidris* is described as new, containing two new species from west and central Africa. A key to Ethiopian region myrmicine genera in which the antennal club has two segments is given under *Baracidris*.

Introduction

This paper is presented as a contribution towards a revision of the subfamily Myrmicinae in the Ethiopian zoogeographical region. The subfamily Myrmicinae is by far the largest and most diverse in the region (and the world), containing some 43 genera in sub-Saharan Africa at present. These genera can be categorized roughly as small (1–10 species), moderate (10–40 species) and large (more than 40 species). The vast majority of Ethiopian region myrmicine genera fall into the small category (29 genera), about nine genera come in the moderate category and only five reach the final category, of which three (*Tetramorium* Mayr, *Pheidole* Westwood and *Crematogaster* Lund) are huge, with well over 100 species each in the region. A good indication of distribution of genera on a world basis is given by Brown (1973), and a discussion of the most prevalent ant genera is presented by Wilson (1976).

Of the seven genera discussed in this paper only *Ocymyrmex*, with 23 species, reaches the moderate category; the rest, *Ankylomyrma* (1 species), *Atopomyrmex* (2 species), *Baracidris* (2 species), *Cyphoidris* (4 species), *Pristomyrmex* (5 species) and *Terataner* (6 species), are all small in terms of number of species. Only two of the genera under consideration here have species which occur outside of the Ethiopian region, *Terataner* and *Pristomyrmex*; the rest are peculiar to the region. *Terataner*, apart from its six African species, has another six in the Malagasy region whilst *Pristomyrmex* species are widely distributed in the Old World tropics, reaching a peak in the Indo-Australian region.

Measurements and indices

Total Length (TL). The total outstretched length of the individual, from mandibular apex to gastral apex.

Head Length (HL). The length of the head proper, excluding the mandibles, measured in a straight line from the anteriormost point of the median clypeal margin to the mid-point of the occipital margin, in full-face view. (In species with strongly concave occipital margin the head length is measured to the mid-point of a line connecting the posterolateral projections.)

Head Width (HW). The maximum width of the head in full-face view, measured behind the eyes except in *Ankylomyrma* (eyes in the posterior corners) and in *Ocymyrmex* (head often narrows rapidly behind eyes) where HW is measured immediately in front of the eyes.

Cephalic Index (CI).

$$\frac{HW \times 100}{HL}$$

Scape Length (SL). The maximum straight-line length of the antennal scape excluding the basal constriction or neck close to the condylar bulb.

Scape Index (SI).
$$\frac{SL \times 100}{HW}$$

Pronotal Width (PW). The maximum width of the pronotum in dorsal view. In *Terataner* PW is measured behind the prominent angular or dentiform corners.

Alitrunk Length (AL). The diagonal length of the alitrunk in lateral view from the point at which the pronotum meets the cervical shield to the posterior base of the metapleural lobes or teeth.

All measurements are expressed in millimetres.

Abbreviations of museums

AMNH, New York	American Museum of Natural History, New York, U.S.A.
BMNH	British Museum (Natural History), London, U.K.
CAS, San Francisco	California Academy of Sciences, San Francisco, California, U.S.A.
IE, Bologna	Istituto di Entomologia dell'Università, Bologna, Italy.
IRSNB, Brussels	Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium.
MCSN, Genoa	Museo Civico di Storia Naturale 'Giacomo Doria', Genoa, Italy.
MCZ, Cambridge	Museum of Comparative Zoology, Cambridge, Massachusetts, U.S.A.
MHN, Geneva	Muséum d'Histoire Naturelle, Geneva, Switzerland.
MNHN, Paris	Muséum National d'Histoire Naturelle, Paris, France.
MNHU, Berlin	Museum für Naturkunde der Humboldt-Universität, Berlin, Germany (D.D.R.).
MRAC, Tervuren	Musée Royal de l'Afrique Centrale, Tervuren, Belgium.
NM, Basle	Naturhistorisches Museum, Basle, Switzerland.
NM, Bulawayo	National Museum, Bulawayo, Zimbabwe.
USNM, Washington	United States National Museum, Washington, D.C., U.S.A.
ZM, Kiev	Zoological Museum, Institute of Zoology, Academy of Sciences of Ukrainian, S.S.R., Kiev, U.S.S.R.

ANKYLOMYRMA Bolton

(Figs 1, 2)

Ankylomyrma Bolton, 1973b: 235. Type-species: *Ankylomyrma coronacantha* Bolton, loc.cit.; by original designation.

DIAGNOSIS OF WORKER. Monomorphic arboreal myrmicine ants. Mandibles with 5 sharply defined large triangular teeth, the mandibles almost entirely concealed by the clypeus when closed. Palp formula 5, 3, the palpomeres very long (apical maxillary palpomere equal in length to apical antennal segment). Clypeus very large, projecting forwards over the mandibles as a broad shelf. Median portion of clypeus raised, broad posteriorly and broadly inserted between the widely separated frontal lobes. Frontal lobes concealing antennal insertions, prolonged back by a pair of irregular frontal carinae which run past the inner margins of the eyes to the occipital margin. Frontal carinae forming dorsal margins of a weak scrobe which is bounded below by a ridge running from below the eye to the mandibular insertions. Eyes large, situated at

extreme posterolateral corners of head, within the scrobal area as defined by the frontal carinae and ridge. Antennae 12-segmented, without a strongly defined club, the flagellomeres increasing in size apically. Occipital margin bounded by a broad transverse lamella which projects into a series of dentiform processes; occiput behind the lamella broad and flat. Promesonotum swollen, large and convex, without sutures but with 4 pairs of roughly triangular teeth or prominences. Propodeum short and strongly bispinose. Metapleural lobes absent. Mesopleuron divided by a broad transverse suture and a broad suture separating meso- and metapleuron present. Petiole strongly bispinose, with a broad anterior peduncle which grades into the node. Gaster consisting almost entirely of the massively enlarged and strongly vaulted first tergite. The first sternite is visible as a narrow collar fringing the ventral portion of the forward-pointing orifice of the tergite; remaining gastral segments very small and telescoped inside. Sting strongly developed and projecting anteriorly below the pedicel segments.

In the original description of this remarkable ant I placed the genus tentatively in the tribe Meranoplini. I am aware now that this move was incorrect and that *Ankylomyrma* is not close to *Meranoplus* or any other member of that now-disbanded tribe (for discussion see Bolton, 1981). The real relationships of *Ankylomyrma* are an enigma for, although there are a number of characters implying alliance with genera such as *Atopomyrmex*, *Terataner* and their allies, such as low dental count, high palp formula, broad clypeus and structure of petiole, there are also objections to such a placement. Chief among these must be the position of the eyes, situated as they are at the extreme posterior corners of the sides of the head and within what is strictly the scrobal area. In *Terataner* and allies the eyes are always positioned well forward of the occipital corners and below the scrobes when such are present. The incredible occipital fringe and unique gastral development of *Ankylomyrma* are of course very derived characters which, though they serve to isolate the genus, do nothing to indicate its relationships. The only known species is as follows.

Ankylomyrma coronacantha Bolton

(Figs 1, 2)

Ankylomyrma coronacantha Bolton, 1973b: 235, figs 1–3. Holotype worker, GHANA: Eastern Region, Mt Atewa; by pyrethrum knockdown, sample A4/3, 12.vii. 1969 (*D. Leston*) (BMNH) [examined].

WORKER. TL 6.3–6.8, HL 1.48–1.50, HW (at maximum in front of eyes) 1.38–1.42, CI 92–96, SL 1.06–1.12, SI 76–80, PW 1.20–1.22, AL 1.92–1.95 (4 measured).

Mandibles delicately and superficially longitudinally striate, with scattered fairly conspicuous pits. Palpi very long, the maxillary palps projecting beyond the posteroventral margin of the head when stretched out, their total length c. 1.60. Anterior clypeal margin with a median impression. Main features of head as given in generic diagnosis and Fig. 2. Eyes large, maximum diameter 0.36–0.38, about 0.27–0.28 × HW, situated at posterolateral corners of head. Frontal carinae irregular, running inside eyes to occipital margin. Scrobal area bounded below by a ridge which runs from the mandibular insertions to the extensive prominence at the occipital corner, below the eye. Occipital margin with a transverse raised broad lamella which projects into a number of teeth or spines, projecting especially strongly at the occipital corners. Promesonotum fused and swollen, the dorsum much higher than the propodeum in profile. Metanotal groove absent. Pronotum with three pairs of teeth or tubercles; dorsally with a pair of broad tubercles which are large and are seen to be blunt or truncated in anterior view; dorsolaterally, just anterior to pro-mesonotal junction, with a pair of broad acute, sometimes conical projections; humeral angles bluntly dentate, the teeth prominent in dorsal view. Mesonotum at point where sclerite begins to slope down to the propodeum with a pair of broad, acute teeth. Propodeal dorsum short, the entire dorsal face forming the base for a pair of long, stout spines. Apices of tibiae each terminating in a pair of cuticular tooth-like outgrowths. Petiole strongly bispinose, in profile the peduncle short and continuous with the dorsal surface of the node. Subpetiolar process a small tooth, anteriorly situated. First gastral tergite massive, developed into a subspherical ball which has an opening anteriorly, below the postpetiole. First sternite forms a narrow collar around the ventral portion of the orifice so that almost all of the visible gaster consists only of the first tergite. Sting strong and projecting anteriorly. Dorsum of head coarsely reticulate-rugose, the rugae strongly raised and enclosing broad foveolate spaces. Ground-sculpture of fine shagreening or superficial punctulation. This sculpture also present on

sides of head below the scrobes but the scrobal area itself merely densely reticulate-punctate. All pronotum and raised dorsum of mesonotum sculptured as dorsum of head but the pleurae, the sloping portion of the mesonotum and the propodeum with fine dense but superficial reticulation only. Petiole, postpetiole and first gastral tergite coarsely foveolate, the interspaces finely reticulate or reticulate-punctulate. Dorsum of head with numerous stout erect hairs which are also present, but sparser, on dorsum of promesonotum and dorsal portion of first gastral tergite; the hairs are denser and finer ventrally on the first tergite but do not occur on the sloping posterior half of the mesonotum, the propodeum or the petiole. Black with appendages lighter, orange-brown to red-brown.

This large and very spectacular ant is arboreal, but beyond that nothing is known of its biology.

MATERIAL EXAMINED

Ghana: Mt Atewa (*D. Leston*). **Cameroun:** Korup (*D. Jackson*).

ATOPOMYRMEX André

(Figs 3–11)

Atopomyrmex André, 1889: 226. Type-species: *Atopomyrmex mocquerysi* André, op. cit.: 227; by monotypy.

DIAGNOSIS OF WORKER. Polymorphic arboreal myrmicine ants. Mandibles short and stout, the apical (masticatory) margin armed in smallest workers with 2 teeth followed by 2 denticles and an unarmed straight edge; in slightly larger workers the edge crenulate or feebly denticulate. Most medium-sized and large workers with 2 teeth + 4–5 denticles but in large workers all the teeth may be worn down and rounded. Palp formula 4, 3 in all sizes; in smallest workers the two basalmost maxillary palp segments may be partially fused. Median portion of clypeus shield-like, broad, posteriorly broadly inserted between the frontal lobes. Anterior clypeal margin indented to concave medially, the median portion separated from the lateral parts by a longitudinal carina on each side. Anterior tentorial pit represented by a deep and sharply incised hole which is roughly circular, situated immediately behind the clypeus close to the antennal insertions and more obvious in larger workers. Development of frontal carinae varying with worker size. In smallest workers short and only feebly divergent, ending in front of the level of the anterior margins of the eyes. In largest workers extending back beyond the level of the posterior margins of the eyes and strongly divergent from source to level of eyes; behind this roughly parallel. Workers between largest and smallest showing intermediate development of frontal carinae. Antennal scrobes absent in smallest workers, becoming longer and deeper with increasing size; conspicuous and capable of accommodating the scape in largest workers. Antennae 12-segmented with a 3-segmented club. With head in full-face view the eyes situated behind the midlength of the sides, and the occipital corners broadly and evenly rounded. Pronotum more or less flat to shallowly concave transversely, bluntly marginate laterally, the margination more acute in smaller workers. Promesonotal suture vestigial to absent from dorsum but at sides forming an impression separating pronotum and mesonotum. Mesonotum in profile usually broadly and bluntly bituberculate behind, then sloping almost vertically to the broad metanotal groove. In medium to large workers the mesonotum with a shallow but quite broad transverse impression at about the midlength. Propodeum in profile raised immediately behind the metanotal groove then sloping downwards to a pair of strong spines. Metapleural lobes inconspicuous, very narrow and low. Propodeal spiracle circular. Lower margin of metapleuron without a broad groove running forward from the orifice of the metapleural glands; instead the margin rounded and folded under, giving the appearance of being smoothly eroded away, the hind coxa appearing to rest upon the bulla of the metapleural gland. Ventral surface of alitrunk with a very conspicuous roughly circular deep pit between the hind coxae, a sieve-plate apparently present at the bottom of the pit. Petiole dorsally with a pair of short stout spines of variable size. Dorsal surfaces of head and body without standing hairs, such hairs present only on mouthparts and gastral sternites.

Atopomyrmex is a small genus of strongly polymorphic arboreal ants. The two species included, *mocquerysi* and *cryptoceroides*, nest in the wood of standing trees and forage arboreally, frequently coming down the trunk but only rarely venturing onto the ground. Arnold (1916) points out that *mocquerysi* is usually carnivorous and, when disturbed, exudes a whitish secretion from the anal glands. Nests are made in hollow stems or rotten parts of standing timber but it is not

known if the species tunnel their own galleries or take over the galleries of termites and boring beetles. Of the two species *mocquerysi* is very widely distributed, being found in wooded and forested areas almost throughout sub-Saharan Africa; Wheeler (1922: 181) gives a distribution map. *A. cryptoceroides* has a more limited range, being confined to the rain-forest zones of west of central Africa, where it is sympatric with *mocquerysi*.

The genus most closely related to *Atopomyrmex* is the Ethiopian and Malagasy genus *Terataner*. Differences separating them, and other related genera, are noted in the discussion of *Terataner* (p. 290). At its inception *Atopomyrmex* contained only *mocquerysi*. Soon afterwards *cryptoceroides* was added and this was followed by a number of others, added later by several authors. Later still these extra species were progressively removed from *Atopomyrmex* until the present time, when *mocquerysi* and *cryptoceroides* are again its only members. These species, originally described in *Atopomyrmex* but now placed elsewhere, are as follows. The species *alluaudi* Emery, *bottegoi* Emery, *foreli* Emery, *luteus* Emery, *scotti* Forel, and *steinheili* Forel were transferred to *Terataner* by Emery (1912); *nodifier* Emery was originally made type-species of genus *Atopula* Emery but is now included in *Tetramorium* Mayr, see Bolton (1976; 1980); *selebensis* Emery was made type-species of *Dilobocondyla* Santschi, by Santschi (1910); *escherichi* Forel was transferred to *Dilobocondyla* by Forel (1913c); *ceylonicus* Emery was made type-species of *Paratopula* Wheeler, by Wheeler (1919).

Synonymic list of species

cryptoceroides Emery

deplanatus Mayr

mocquerysi var. *curvispina* Forel

mocquerysi subsp. *cryptoceroides* var. *melanoticus* Wheeler (unavailable)

mocquerysi André

mocquerysi var. *australis* Santschi

mocquerysi var. *obscura* Santschi **syn. n.**

mocquerysi var. *arnoldi* Santschi **syn. n.**

mocquerysi st. *opaca* Santschi **syn. n.**

mocquerysi var. *erigens* Santschi **syn. n.**

mocquerysi st. *opacus* var. *nigellus* Santschi (unavailable).

Key to species (workers)

- 1 Sides of head behind eyes blanketed by a fine and very dense reticulate-puncturation. (Woodland and forest zones throughout Africa) *mocquerysi* (p. 251)
- Sides of head behind eyes smooth and glossy between widely separated small pits. (Rainforests of West and Central Africa) *cryptoceroides* (below)

Treatment by species

Atopomyrmex cryptoceroides Emery

(Figs 9, 11)

Atopomyrmex cryptoceroides Emery, 1891: 561, pl. 15, figs 5, 6. Holotype female, IVORY COAST: Assinie (C. Alluau) (MCSN, Genoa) [examined].

Atopomyrmex deplanatus Mayr, 1895: 113. Holotype worker, SIERRA LEONE: 'Riv. N' Gamie, Chûtes de Samlia (*A. Mocquerysi*) (IRSNB, Brussels). [Synonymy by Emery, 1899: 477.]

Atopomyrmex mocquerysi var. *curvispina* Forel, 1911: 3:1. Syntype workers, ZAIRE: Kondué (*E. Luja*) (MHN, Geneva) [examined]. [Synonymy by Emery, 1922: 240.]

Atopomyrmex mocquerysi subsp. *cryptoceroides* var. *melanoticus* Wheeler, 1922: 182, fig. 44. Syntype workers, ZAIRE: between Lukolela and Basoko (*H. O. Lang*) (BMNH) [examined]. [Name not available.]

WORKER. Answering to the description of *mocquerysi* and falling into the size range noted there; differing from *mocquerysi* as follows.

cryptoceroides

Sides of head behind eyes smooth and shining between widely scattered pits, not blanketed by reticulate-punctate sculpture and never with rugulae in this area.

Propodeal dorsum strongly rugose, without or only with vestiges of punctate sculpture.

Pronotal dorsum closely and coarsely rugose, without dense punctate ground-sculpture.

Propodeal spines in dorsal view with their basal portions projecting outwards before angling backwards (Fig. 11), the projecting portion concealing the spiracle which is not at all visible from above.

Propodeal spiracle large and relatively close to the margin of the declivity below the spine; diameter of spiracle equal to or greater than the distance separating the spiracular hind margin from the edge of the declivity at its closest point (Fig. 9).

MATERIAL EXAMINED

Ghana: Tafo (G. S. Cotterell); Tafo (Strickland); Mampong (D. Leston); Kibi (D. Leston); Bunso (D. Leston); Osenasi (D. Leston); Asamankese (D. Leston); Etukrom (D. Leston); Mpraeso (D. Leston).
Zaire: Ituri For., Beni (T. H. E. Jackson).

mocquerysi

Sides of head behind eyes blanketed by dense reticulate punctate sculpture; sometimes rugulae may also occur in this area.

Propodeal dorsum predominantly or entirely reticulate-punctate, if rugulae occur they are secondary to the punctation.

Pronotal dorsum usually with rugae present but with punctate ground-sculpture which is usually conspicuous and dense.

Propodeal spines in dorsal view directed more or less evenly backwards, not projecting outwards basally; the spiracle (or at least its annulus) clearly visible from above (Fig. 10).

Propodeal spiracle smaller and some distance away from the margin of the declivity below the spine; diameter of spiracle less than the distance separating the spiracular hind margin from the edge of the declivity at its closest point (Fig. 8).

Atopomyrmex mocquerysi André

(Figs 3–8, 10)

Atopomyrmex mocquerysi André, 1889: 227. Syntype workers, SENEGAL: Dakar (*A. Mocquerys*) (MNHN, Paris) [examined].

Atopomyrmex mocquerysi var. *australis* Santschi, 1914a: 16. Syntype workers, SOUTH AFRICA: Natal, Zululand (*I. Trägårdh*) (NM, Basle) [examined]. [Synonymy by Wheeler, 1922: 885.]

Atopomyrmex mocquerysi var. *obscura* Santschi, 1923: 283. Syntype workers, IVORY COAST: Jacqueline (*Lohier*); and BENIN: Cotonou (*Silvestri*) (MRAC, Tervuren; NM, Basle) [examined]. **Syn. n.**

Atopomyrmex mocquerysi var. *arnoldi* Santschi, 1923: 283. Syntype workers, ZAIRE: Eala (*R. Mayné*) (NM, Basle; MRAC, Tervuren) [examined]. **Syn. n.**

Atopomyrmex mocquerysi st. *opaca* Santschi, 1923: 283. Syntype workers, ANGOLA: 'Rivière Cubia, entre Combo et Cubra' (*Rohan-Chabot*) (MRAC, Tervuren; NM, Basle) [examined]. **Syn. n.**

Atopomyrmex mocquerysi var. *erigens* Santschi, 1924: 205. Syntype workers, ZAIRE: Yambata (*Di Giorgi*) (NM, Basle; MRAC, Tervuren) [examined]. **Syn. n.**

Atopomyrmex mocquerysi st. *opacus* var. *nigellus* Santschi, 1930: 72. Syntype workers, ANGOLA: Rio Mbalé and Chimporo (*A. Monard*) (NM, Basle) [examined]. [Name not available.]

WORKER. Standard measurements are obviously not of great value where continuously polymorphic species are involved, as one size grades into another without any break. However, when graphs of the relationships of various dimensions are plotted a number of allometric relationships become apparent. Most easily noticeable of these are the following. The CI increases with increase in HW; the relative lengths of the scapes (SI) decrease as HW increases; the frontal carinae increase in length and strength as HW increases. The size of the eye has little or no dependence on the size of the head, the eyes of the largest workers being relatively only slightly increased in size over those of the smallest (as expressed by the ratio of ocular diameter to HW). Overall size range in the species is TL 4.0–8.7, HL 0.96–2.24, HW 0.88–2.30, CI 92–104, SL 0.70–1.22, SI 49–80, PW 0.68–1.40, AL 1.34–2.50 (85 measured).

Basic characters as given under generic diagnosis, differentiation from *cryptoceroides* as tabulated above. Mandibles pitted, the surface between the pits finely and densely shagreened to finely striate. Frontal carinae increasing in length and strength with increasing worker size (Figs 5–7). In smallest workers short, ending in

front of the level of the anterior margins of the eyes, forming a short and narrow laterally projecting flange on each side and only very slightly divergent. In larger workers the frontal carinae lengthening and becoming more obviously divergent, the laterally projecting flange broadening. In largest workers the carinae reaching back beyond the level of the eyes, divergent to eye level then becoming almost parallel, the laterally projecting flange very prominent throughout most or all of the length of the carinae. Antennal scrobes absent in small workers, becoming better defined with increased size; in large workers the scrobe conspicuous, narrow but quite deep and capable of accommodating the scape. Change in head shape with increased size as in Figs 5-7. Maximum diameter of eye 0.18-0.36, about 0.14-0.20 × HW, the relative size of the eyes not radically increased in larger workers. Outline shape of alitrunk as in Figs 3, 4. Propodeal spines very variable in length, thickness and degree of curvature. In dorsal view the spines not projecting outwards in their basal portions, the propodeal spiracle or at least its annulus visible from above. In profile the propodeal spiracle some distance away from the margin of the declivity below the spine, the diameter of the spiracle less than the distance separating it from the margin of the declivity. Petiolar teeth conspicuous, varying in length and thickness. Sculpture in general increasing in intensity and frequently also in density from smaller to larger workers. Dorsum of head with scattered shallow pits, the surface between them varying from smooth or almost smooth to densely reticulate-punctate. This ground-sculpture is overlaid between the frontal carinae by fine dense longitudinal striation. As the frontal carinae increase in length so the area of striate sculpture becomes stronger and extends further back on the head. In larger specimens the space between the frontal carinae becomes strongly rugose or costate and this sculpture may reach back almost to the occipital margin. Sides of head densely reticulate-punctate everywhere. With increasing size there is a tendency for the progressive encroachment of rugulose sculpture across the reticulate-punctate surface from the front to the back of the sides. Small workers have only the punctate sculpture but as size increases rugulae appear anteriorly which gradually strengthen and spread further back on the head. Pronotal dorsum longitudinally rugose at least centrally, the rugae varying in intensity and sometimes divergent posteriorly. Ground-sculpture reticulate-punctate and usually distinct, sometimes faint and frequently with larger superimposed punctures present. Pronotal sculpture continuing onto mesonotum in smaller workers, but in larger individuals (and also in some smaller ones) the sculpture becomes reduced on the mesonotum so that only the punctate ground-sculpture is present or rugae occur but are restricted to the anterior part of the sclerite. In large workers there is usually a striking reduction in mesonotal sculpture so that most or all of the dorsum is feebly punctulate or even smooth and shining. Propodeal dorsum densely reticulate-punctate, usually without trace of rugulose sculpture but sometimes with one or two weak rugulae present. Petiole, postpetiole and first gastral tergite finely and very densely reticulate-punctate to densely shagreened. Dorsal surfaces of body without standing hairs of any description. Colour very variable, ranging from dull yellowish brown to blackish brown but most commonly bicoloured, with head and alitrunk reddish, gaster dark brown to black. In some the head alone reddish and the rest of the body darker, in others the head and gaster dark and the alitrunk lighter.

MATERIAL EXAMINED

Ghana: Tafo (*B. Bolton*); Mampong (*P. Room*); Bunso (*D. Leston*); Wiawso (*D. Leston*); Legon (*D. Leston*); Mepom (*D. Leston*); Okumaning (*D. Leston*). **Nigeria:** Gambari (*B. Bolton*); Mokwa (*C. Longhurst*). **Cameroun:** Nkoemvon (*D. Jackson*). **Zaire:** Yangambi (*N. L. H. Krauss*); Lukolela to Basoko (*H. O. Lang*). **Sudan:** Keilak (*R. C. H. Sweeny*). **Kenya:** Kibwesi (*S. A. Neave*). **Uganda:** Masindi (*R. Lucius*). **Tanzania:** Kilossa (*S. A. Neave*); Morogoro (*A. Loveridge*); Zanzibar (*W. M. Aders*); Zanzibar (*L. F. Brown*); Duthumi (*A. Loveridge*); Kigoma Reg., Mahale Mts. (*S. Uehara*). **Zambia:** N'Changa (*C. T. Macnamara*); Mwendwa (*Dollman*). **Malawi:** Port Herald (*J. E. S. Old*). **Zimbabwe:** Umgusa Riv., Sipopoma (*G. Arnold*); Victoria Falls (*G. Arnold*).

BARACIDRIS gen. n.

(Figs 12-14)

Type-species: *Baracidris meketra* sp. n.

DIAGNOSIS OF WORKER. Minute monomorphic myrmicine ants. Outline shape of head as in Figs 13, 14. Mandibles narrow, the apical (masticatory) margin armed with 5 teeth which decrease in size from apical to basal, the two basalmost teeth small. Basal borders of mandibles unarmed; the mandibles enclosing a space between their basal borders and the anterior clypeal margin when their apical margins are overlapping. Palp formula 2, 2, the first maxillary palpomere small (worker and queen of *meketra* dissected). Median portion of clypeus sharply raised centrally and in the form of a narrow longitudinal ridge which runs from the anterior margin to the frontal lobes. Anterior clypeal margin projecting medially (*meketra*) or in the form of a

truncated lobe (*sitra*). Lateral portions of clypeus unmodified, not prominent not raised into a wall in front of the antennal insertions. Frontal lobes small, very closely approximated, almost touching anteriorly and separated only by the extremely narrow strip of the median clypeus which is inserted between them. The frontal lobes end immediately behind the antennal fossae; frontal carinae and antennal scrobes are absent. Antennae with 12 segments, the flagellum ending in a strong 2-segmented club of which the apical segment is much the larger. Scapes short, when laid back on the head conspicuously failing to reach the occipital margin. Eyes minute and inconspicuous, situated approximately at the midlengths of the sides of the head. Alitrunk and pedicel segments as in Fig. 12. Promesonotum fused and forming a single long shallow convexity in profile. Metanotal groove impressed. Propodeum short, much shorter than the promesonotum, armed with a pair of blunted, broad but short, triangular teeth. Metapleural lobes very broad and rounded, strongly prominent, linked to the propodeal teeth above by a lamella. Petiole nodiform with a short, thick anterior peduncle; in dorsal view the peduncle about as broad as the node. Postpetiole with a strongly projecting blunt or truncated ventral process in profile; cylindrical in dorsal view. Standing hairs absent from dorsal surfaces of head and body, present only on the clypeus and gastral apex.

Known from two species, the minute ants of the genus *Baracidris* seem to be endemic in the wet forest zones of West and Central Africa where they inhabit the leaf-litter and topsoil layers. The genus most closely related to *Baracidris* is *Adelomyrmex* Emery whose known distribution includes the Neotropics, New Guinea, Fiji and Samoa. One of the African species was wrongly referred to *Adelomyrmex* in an earlier publication (Bolton, 1973a). *Adelomyrmex* shares a number of diagnostic characters with *Baracidris*, particularly in having similarly constructed antennae of 12 segments ending in a large 2-segmented club. Differences separating the genera may be tabulated as follows.

<i>Baracidris</i>	<i>Adelomyrmex</i>
Basal border of mandibles unarmed.	Basal border of mandibles with a tooth at or proximal to the midlength of the border.
Maxillary palp 2-segmented.	Maxillary palp 1-segmented (Gotwald, 1969).
Median strip of clypeus raised into a narrow ridge; anterior clypeal margin unmodified or with a simple lobe.	Median portion of clypeus swept upwards into a strongly raised sharp-edged longitudinal platform which projects sharply forwards into a lobe; anterior clypeal margin sweeping downwards and outwards away from and behind the apex of this lobe.
Hairs absent from dorsal surfaces of head and body.	Hairs present on dorsal surfaces of head and body.
Postpetiole short-cylindrical in dorsal view, with a large truncated ventral process.	Postpetiole not short-cylindrical in dorsal view, usually without a truncated ventral process.
Petiole low in profile.	Petiole usually high and narrow in profile, only rarely low.
Metapleural lobes very large and continuous with the propodeal teeth above.	Metapleural lobes small, separated from the propodeal spines above.
Range: West & Central Africa.	Range: Neotropics, New Guinea, Fiji, Samoa.

Among the Myrmicinae of the Ethiopian zoogeographical region *Baracidris* is unique in possessing 12-segmented antennae with a 2-segmented club. This character, coupled with the very closely approximated frontal lobes with the median clypeus narrowly inserted between them, the short 5-dentate mandibles, reduced palp formula of 2, 2 and the shape of the pedicel segments, renders *Baracidris* quickly recognizable. The key presented below will separate the myrmicine genera of the region which have a conspicuously 2-segmented antennal club. *Crematogaster* is included as a few species have such a club although the vast majority of species in this genus have the club 3-segmented.

Key to genera of Ethiopian region Myrmicinae with 2-segmented antennal club (workers)

- 1 Mandibles elongate and linear, produced into long narrow projecting blades; never triangular/subtriangular, never serially dentate 2
- Mandibles triangular or subtriangular, not produced into long narrow projecting blades; apical (masticatory) margins usually serially dentate but teeth sometimes reduced 6

- 2 Apex of each mandibular blade armed with a fork of 2–3 spiniform teeth set in a more or less vertical series, with or without denticles between these teeth 3
- Apex of each mandibular blade either with a single long tooth at the dorsal apex subtended by a series of denticles, or with a series of denticles only 5
- 3 Apical fork of mandibles with 3 spiniform teeth. Blades of mandibles without preapical teeth. Petiole node with a pair of teeth or short spines. Antennal scrobes absent
MICRODACETON Santschi
- Apical fork of mandibles with 2 spiniform teeth. Blades of mandibles with preapical teeth. Petiole node unarmed. Antennal scrobes present 4
- 4 Antennae with 4 segments. Head with large orbicular hairs present. Mandibles very strongly bowed, with a single preapical spiniform tooth *QUADRISTRUMA* Brown
- Antennae with 6 segments. Head without orbicular hairs. Mandibles not strongly bowed, with preapical armament of 1–2 teeth or denticles *STRUMIGENYS* F. Smith
- 5 Head with large orbicular hairs present; clypeal margin with spatulate or strap-like projecting hairs. Antennal scape with a broad anteriorly projecting lobe. Head shield-like and broad
EPITRITUS Emery
- Head with simple hairs; clypeal margin without spatulate or strap-like projecting hairs. Antennal scape linear, without broad anteriorly projecting lobe. Head not shield-like, longer than broad *CLADAROGENYS* Brown
- 6 Antennae with 4–6 segments 7
- Antennae with 8–12 segments 12
- 7 Antennal scrobes absent. Propodeum unarmed, smoothly rounded. Basal tarsal segment on each leg (but especially the first) very strongly swollen *MELISSOTARSUS* Emery
- Antennal scrobes present above the eye. Propodeum bidentate or bispinose. Basal tarsal segment on each leg slender 8
- 8 Clypeus very large, covering most of mandibles so that only their apices are visible in full-face view, the mandibles thus appearing very short. Dorsal surfaces of head capsule and body hairless but specialized hairs present on clypeus and scapes *MICCOSTRUMA* Brown
- Clypeus smaller, not covering most of mandibles; in most cases merely covering the basal borders so that the whole length of the mandible is visible in full-face view. Dorsal surfaces of head and body usually conspicuously hairy 9
- 9 Apical margin of mandible with > 20 denticles, the basal 4–8 of which may be enlarged
SERRASTRUMA Brown
- Apical margin of mandible with < 10 teeth of variable size 10
- 10 With mandibles fully closed their basal borders separated from the anterior clypeal margin by a conspicuous impression or gap. Cephalic hairs reduced to 2–3 on posterior dorsum
TRICHOSCAPA Emery
- With mandibles fully closed their basal borders contiguous with or overlapped by the anterior clypeal margin. Cephalic hairs numerous 11
- 11 Mandibles very strongly convex and downcurved, armed with relatively few, strongly developed, stout teeth *CODIOMYRMEX* Wheeler
- Mandibles not strongly convex nor downcurved, armed with numerous small spiniform teeth or denticles *SMITHISTRUMA* Brown
- 12 Antennae with 8–9 segments 13
- Antennae with 10–12 segments 15
- 13 Propodeum bidentate, bispinose or sharply angled. Dimorphic species
OLIGOMYRMEX Mayr (part)
- Propodeum unarmed. Monomorphic species 14
- 14 Eyes absent. Mandibles with 5–6 teeth. Promesonotum not marginate laterally
CAREBARA Westwood
- Eyes present. Mandibles with 4 teeth. Promesonotum marginate laterally *PAEDALGUS* Forel
- 15 Postpetiole articulated on dorsal surface of first gastral segment. Petiole dorsoventrally flattened and without a node
CREMATOGASTER Lund
- Postpetiole articulated on anterior surface of first segment. Petiole with a node of some form 16
- 16 Propodeum unarmed and rounded. Antennae with 10 segments *SOLENOPSIS* Westwood
- Propodeum bidentate or bispinose. Antennae with 10–12 segments 17
- 17 Frontal lobes very close together so that the portion of the clypeus running between them is extremely narrow, reduced to a line. Antennae with 12 segments *BARACIDRIS* gen. n.
- Frontal lobes not very close together, the portion of the clypeus running between them not reduced to a line. Antennae with 10–11 segments 18

- 18 Clypeus bicarinate. Dimorphic species without intermediates *OLIGOMYRMEX* Mayr (part)
 - Clypeus not bicarinate. Polymorphic species *PHEIDOLOGETON* Mayr

List of species

meketra sp. n.

sitra sp. n.

Key to species (workers)

- 1 Central portion of anterior clypeal margin not produced into a narrow truncated lobe (Fig. 13).
 Occipital margin in full-face view indented or concave medially. Head slightly narrower and antennal scapes relatively longer, CI 80–82, SI 75–79. (Ivory Coast, Ghana, Nigeria)
meketra (p. 255)
- Central portion of anterior clypeal margin produced into a narrow truncated lobe (Fig. 14).
 Occipital margin in full-face view not indented or concave medially. Head slightly broader and antennal scapes relatively shorter, CI 86, SI 70. (Gabon).
sitra (p. 256)

Treatment by species

Baracidris meketra sp. n.

(Figs 12, 13)

HOLOTYPE WORKER. TL 1.8, HL 0.44, HW 0.36, CI 82, SL 0.28, SI 78, PW 0.26, AL 0.50.

Mandibles sculptured with fairly large scattered pits, shining, without striate sculpture. Apical tooth of mandible large, the second smaller, the remaining three teeth very small. Anterior clypeal margin projecting forwards medially but not forming a narrow truncated lobe. Structure of clypeus and frontal lobes as given in generic diagnosis. Antennal scapes short and stout (SI 75–79 in entire type-series), when laid back on the head distinctly failing to reach the occipital margin. First funicular segment large, longer than broad; segments 2–9 of funiculus annular and distinctly broader than long. The two apical funicular segments which form the strong club dissimilar in size, the preapical much shorter than the apical (0.05 as opposed to 0.22). Eye minute, with a single ocellus of diameter *c.* 0.015 – 0.020, approximately 0.05 × HW. With head in full-face view the occipital margin indented or slightly concave medially. Promesonotum forming a single long shallow convexity in profile, the metanotal groove impressed. Propodeal dorsum in profile feebly convex and sloping posteriorly to the short but quite broad triangular teeth. The propodeal teeth are joined by a lamella below to the enlarged, strongly prominent and very broadly rounded plate-like metapleural lobes, the two together forming an efficient shield all down the propodeal declivity. Propodeal spiracle round. With alitrunk in dorsal view the promesonotum three times longer than the propodeum (0.32 and 0.10 respectively), the pronotal shoulders broadly rounded. Propodeal dorsum terminating posteriorly in a sharply defined arch between the bases of the laterally flattened teeth, the declivity almost vertical and bounded on each side by the very prominent teeth and metapleural lobes, and the lamella which links them. A single small carina traverses the declivity at the level of the propodeal teeth. Petiole in profile with a short, thick anterior peduncle which is distinctly shorter than the length of the node; the peduncle with a small anteroventral process. Postpetiole in profile with the sternite produced into a large truncated ventral process. In dorsal view the petiole node as long as broad (*c.* 0.12), the anterior peduncle broader than long and much shorter than the dorsal length of the node; the node itself scarcely broader than the peduncle. Postpetiole dorsally slightly broader than long, about equal in length to the petiole node and parallel-sided, appearing short-cylindrical. Base of first gastral tergite concave at the postpetiolar articulation. Dorsum and sides of head with small, close-packed foveolate punctures, the spaces between which are smooth and shining. Spaces between punctures usually smaller than the diameter of the punctures. On the sides of the head above and behind the eyes there is a tendency for the punctures to be aligned. Dorsal alitrunk similarly sculptured but the punctures less conspicuous and more widely scattered, with extensive smooth shining spaces between them. Sides of alitrunk and all surfaces of pedicel segments punctate, denser on the metapleuron than elsewhere on the alitrunk and denser on the sides of the petiole and postpetiole than dorsally. First gastral tergite unsculptured except for scattered minute punctulae. Hairs absent except on clypeus, mouthparts and gastral apex. All dorsal surfaces of head and body thin and sparsely clothed with extremely fine short appressed pubescence. Colour uniform light brown, the appendages lighter in shade than the body.

PARATYPE WORKERS. TL 1.7–1.8, HL 0.44–0.47, HW 0.36–0.38, CI 80–82, SL 0.27–0.30, SI 75–79, PW 0.26–0.28, AL 0.49–0.50 (4 measured). As holotype but the Ghana specimens slightly darker in colour

than those from Nigeria and with the cephalic sculpture somewhat more sharply defined. Propodeal teeth vary slightly in length and width but are always shorter than the metapleural lobes. One or two fine transverse carinae may be present on the propodeal declivity, between the teeth.

PARATYPE FEMALE (dealate). TL 2.0, HL 0.46, HW 0.39, CI 85, SL 0.28, SI 72, PW 0.30, AL 0.56. As worker but eyes larger (maximum diameter 0.10, $c. 0.26 \times HW$) and with ocelli present. Alitrunk with full complement of flight sclerites, the pronotum forming a clearly visible collar anteriorly in dorsal view. Mesoscutellum much higher than and somewhat overhanging the propodeal dorsum. Mesoscutum and scutellum with foveolate punctures and a smooth unsculptured median longitudinal strip; otherwise as holotype.

Holotype worker, **Nigeria**: Ile-Ife, 21.vii.1971 (*J. T. Medler*) (BMNH).

Paratypes. **Nigeria**: 1 worker with same data as holotype. **Ghana**: 1 worker and 1 dealate female, Tafo, 4.ix.1970, cocoa litter sample (*B. Bolton*). **Ivory Coast**: 1 worker, Abidjan, Banco Forest, i.1963 (*W. L. Brown*) (BMNH; MCZ, Cambridge).

All specimens originated in forest; those from Ghana were extracted from a sample of cocoa leaf litter which had built up between the roots of a large forest tree, left in the plantation to provide shade for the cocoa.

Baracidris sitra sp. n.

(Fig. 14)

HOLOTYPE WORKER. TL 2.0, HL 0.51, HW 0.44, CI 86, SL 0.31, SI 70, PW 0.31, AL 0.56.

Answering to the description of *meketra* above as regards general shape, sculpture etc., but differing as follows.

Anterior clypeal margin produced into a short truncated simple lobe. Occipital margin of head in full-face view transverse or exceedingly feebly convex, not indented or concave medially. Larger, more stockily built species with relatively broader head and shorter antennal scapes—compare standard measurements. Apart from these the lengths of apical and preapical funicular segments in *sitra* are 0.26, 0.07 respectively, and the dorsal lengths of promesonotum and propodeum are 0.35, 0.12 respectively. Petiole node in dorsal view slightly broader than long (0.13 by 0.10). Propodeal dorsum more strongly convex and the lamella linking the teeth to the metapleural lobes broader, minimum width of the lamella 0.06 (as opposed to 0.03 in *meketra* holotype).

Holotype worker, **Gabon**: Plateau d'Ipassa, VM9, IPA7 (*J. A. Barra*) (MCZ, Cambridge).

The two minute species of this genus are closely related, but the first and second characters noted above, plus the differences in dimensions, serve to separate them. Like most of the *meketra* material the holotype and only known specimens of *sitra* seems to come from a leaf-litter sample.

CYPHOIDRIS Weber

(Figs 15–17)

Cyphoidris Weber, 1952: 26. Type-species: *Cyphoidris spinosa* Weber, loc. cit.; by original designation.

DIAGNOSIS OF WORKER. Monomorphic myrmicine ants. Mandibles triangular with an elongate apical (masticatory) margin bearing 10–14 small teeth or denticles which decrease in size from apex to base. Palp formula 4, 3. Median portion of clypeus narrow and raised, bicarinate above and narrowly inserted between the frontal lobes. Lateral portions of clypeus unmodified, not forming a shield-wall or raised ridge in front of the antennal insertions. Frontal lobes not strongly expanded but covering the antennal insertions, prolonged posteriorly as a pair of strongly developed frontal carinae which form the dorsal margins of a pair of strong and conspicuous broad scrobes; the scrobes run back almost to the occiput. Ventral margin of scrobe a longitudinal ridge or ruga running above the eye, the latter of moderate size and situated in front of the midlength of the sides. Antennae 11-segmented, with a conspicuous 3-segmented club apically. Alitrunk in profile with promesonotum fused and swollen, the dorsum dome-like and strongly convex in outline, much elevated above the level of the propodeum. Propodeum bispinose; the spiracle close to the margin of the declivity, the orifice circular and directed posteriorly. Metapleural lobes low and triangular. Petiole with an elongate anterior peduncle and well developed node. Sting terminating in a narrow spatulate appendage apically.

An easily defined genus, *Cyphoidris* is the only African representative of a group of genera centring on *Lordomyrma* Emery, most of which have an Indo-Australian or Neotropic distribution. *Cyphoidris* is close to *Lordomyrma* itself but differs as the latter has 12-segmented antennae, a reduced palpomere count, and has the propodeal spiracle set well forward from the margin of the declivity. Of the known species of *Cyphoidris*, *exalta* and *spinosa* are of Central African origin and inhabit the leaf litter layer; *parissa* originates in West Africa, and *weneri* is the only known East African representative of the genus.

List of species

exalta sp. n.

parissa sp. n.

spinosa Weber

weneri sp. n.

Key to species (workers)

- | | | |
|---|--|-------------------------|
| 1 | Basal half of first gastral tergite densely and strongly shagreened. (Liberia) | <i>parissa</i> (p. 258) |
| – | Basal half of first gastral tergite unsculptured except for hair-pits | 2 |
| 2 | Propodeal dorsum flat in profile, not continuing curve of mesonotum. Dorsal alitrunk not strongly densely reticulate-rugose everywhere | 3 |
| – | Propodeal dorsum in profile continuing curve of mesonotum. Dorsal alitrunk strongly densely reticulate-rugose everywhere. (Rwanda) | <i>weneri</i> (p. 259) |
| 3 | Dorsal alitrunk with abundant conspicuous standing hairs (Fig. 15). (Ivory Coast, Zaire, Angola) | <i>spinosa</i> (p. 257) |
| – | Dorsal alitrunk with inconspicuous short decumbent hairs (Fig. 17). (Cameroun) | <i>exalta</i> (p. 258) |

Treatment by species

Cyphoidris spinosa Weber

(Figs 15, 16)

Cyphoidris spinosus Weber, 1952: 26, figs 7, 8. Holotype worker, ZAIRE: Ituri Forest, 15 miles [24 km] N. of Beni, 25.ii.1948, no. 2129.2 (*N. A. Weber*) (AMNH, New York) [examined].

WORKER. TL 3.8–4.3, HL 0.90–0.98, HW 0.81–0.91, CI 88–93, SL 0.68–0.76, SI 83–86, PW 0.60–0.72, AL 1.08–1.22 (10 measured).

Mandibles smooth with scattered pits or at most with faint traces of fine longitudinal striation; number of small teeth on mandible varying from 10–12. Anterior clypeal margin arcuate or with a very shallow impression medially, the median portion of the clypeus raised and bicarinate longitudinally. Main features of head as in generic diagnosis and Fig. 16. Eyes of moderate size, maximum diameter 0.16–0.18, about 0.20–0.22 × HW, situated below the ventral margin of the scrobe and in front of the midlength of the sides of the head. Frontal carinae sharply defined, relatively close together and diverging slightly posteriorly but in general not becoming radically broader than the distance across the frontal lobes. At eye level the separation of the frontal carinae is 0.36–0.42, about 0.44–0.46 × HW.

Outline of alitrunk as in Fig. 15, the promesonotum conspicuously swollen and on a much higher level than the propodeal dorsum. Propodeum armed with a pair of strong spines which are straight to feebly upcurved. Metanotal groove absent; metapleural lobes triangular and conspicuous. Petiole in profile with an elongate peduncle and a well developed node, the dorsum of the node sloping downwards posteriorly so that the posterior face is short. Anterior and dorsal surfaces of postpetiole forming a single convexity, the posterior face truncated. In dorsal view the nodes of both the petiole and postpetiole broader than long. Dorsum of head strongly longitudinally rugose, with 5–7 rugae between the frontal carinae at eye-level. The rugae are irregular and tend to meander slightly, a few anastomoses usually being present. Scrobal area for the most part smooth but usually with 1–2 fine rugulae traversing the width of the scrobe behind the antennal fossa. Sides of head behind eyes finely reticulate-rugose, this sculpture extending round the posterior margins of the scrobes to the occiput. Spaces between rugae everywhere on head unsculptured or at most with the faintest superficial traces. Dorsal alitrunk everywhere finely but strongly reticulate-rugose with broad shining interspaces. Petiole dorsum rugulose, the postpetiole varying from rugulose to only faintly sculptured. Gaster unsculptured. All dorsal surfaces of head and body densely clothed with fine acute hairs. Colour dark reddish brown to blackish brown.

C. spinosa, known only from Zaire, Ivory Coast and Angola, is a leaf litter inhabiting species of the forest zone. The closest related species of the genus, *exalta*, is compared with *spinosa* below.

MATERIAL EXAMINED

Angola: Duque de Bragança Falls (*P. M. Hammond*). Ivory Coast: Agboville (*I. Löbl*).

Cyphoidris exalta sp. n.

(Fig. 17)

HOLOTYPE WORKER. TL 4.3, HL 0.96, HW 0.88, CI 92, SL 0.74, SI 84, PW 0.64, AL 1.16.

Answering to the description of *spinosa* in general characters but differing markedly in sculpture and pilosity, as follows.

<i>exalta</i>	<i>spinosa</i>
Sides of pronotum smooth.	Sides of pronotum reticulate-rugose.
Promesonotal dorsum weakly and predominantly transversely rugulose, with few meshes.	Promesonotal dorsum strongly and conspicuously reticulate-rugose.
Postpetiole in dorsal view unsculptured.	Postpetiole in dorsal view sculptured.
Occipital corners without long fine hairs.	Occipital corners each with a single long fine hair which is prominent and conspicuous.
Occipital margin and sides of head behind eyes with short, curved, decumbent to appressed hairs.	Occipital margin and sides of head behind eyes with projecting curved hairs.
Dorsal margins of frontal carinae without a spaced row of long curved hairs; such hairs also absent elsewhere on head where only very short, curved pilosity is present.	Dorsal margins of frontal carinae with a spaced row of long curved hairs, such hairs also present elsewhere on head and projecting freely above the level of the shorter ground-pilosity.
Dorsal surfaces of alitrunk, petiole and postpetiole with inconspicuous short, curved decumbent hairs (Fig. 17).	Dorsal surfaces of alitrunk, petiole and postpetiole with conspicuous long standing hairs (Fig. 15).
First gastral tergite with short curved hairs.	First gastral tergite with elongate projecting hairs.

PARATYPE WORKER. TL 4.2, HL 0.95, HW 0.85, CI 89, SL 0.74, SI 87, PW 0.62, AL 1.12. As holotype.

Holotype worker, *Cameroun*: Korup Reserve, 14.ii.1980, in rotten log (*D. Jackson*) (BMNH).

Paratype. 1 worker with same data as holotype (MCZ, Cambridge).

Cyphoidris parissa sp. n.

HOLOTYPE WORKER. TL 3.7, HL 0.84, HW 0.76, CI 90, SL 0.62, SI 82, PW 0.58, AL 1.00.

Mandibles smooth with scattered small pits, the apical margin armed with 11–12 low denticles. Anterior clypeal margin convex but medially slightly flattened and apparently with a minute median indentation. Median portion of clypeus raised and the raised section bicarinate above. Frontal carinae strongly developed, running back beyond the level of the eyes but fading out well in front of the occipital margin, forming the dorsal borders of the broad but shallow conspicuous scrobes. Frontal carinae slightly diverging posteriorly, their separation at the level of the midlengths of the eyes only c. 0.30, about 0.40 × HW. Eyes distinctly longer than wide, their maximum diameter 0.18, about 0.24 × HW. With the head in full-face view the sides rounding broadly and evenly into the occipital margin, without trace of an occipital corner; the occipital margin itself evenly shallowly convex, not impressed or concave medially. Alitrunk in profile with the promesonotum strongly swollen and dome-like, much higher than the surface of the propodeum; the latter sloping posteriorly to a pair of narrow spines which are very feebly sinuate along their length. Metapleural lobes short-triangular and acute. Petiole node in profile with the anterior face higher than the posterior so that the dorsal surface slopes downwards posteriorly; posterodorsal angle of node more obtuse than anterodorsal angle. Postpetiole with a sharp anteroventral dentiform process (which is seen in ventral view as a short transverse flange). In dorsal view both petiole node and postpetiole broader than long. Dorsum of head unsculptured except for a median carina between the frontal carinae and some extremely faint vestiges of feeble sculpture between the frontal carinae. Alitrunk unsculptured and shining. Petiole and postpetiole unsculptured, the latter with traces of punctulate sculpture posteriorly. First gastral tergite densely, strongly and conspicuously shagreened on the basal half, this sculpture fading out apically on the

sclerite. Dorsum of head with numerous short fine curved hairs. Dorsal alitrunk and pedicel segments without hairs but with scattered sparse short pubescence which is appressed and very inconspicuous. First gastral tergite without hairs but with a fairly dense coat of short appressed pubescence superimposed upon the shagreened surface of the sclerite and quite conspicuous. Scapes and tibiae with pubescence but without hairs. Colour dark reddish brown, the gaster darker in shade than the head.

Holotype worker, **Liberia**: Gibi, Smithsonian Firestone Exp. 1940 (*W. M. Mann*) (USNM, Washington).

The only known representative of *Cyphoidris* from West Africa, *parissa* is easily separated from both its Central African congeners by its lack of strong cephalic sculpture, unsculptured alitrunk, strongly shagreened first gastral tergite, lack of hairs on the dorsal body behind the head, and presence of a sharp subpostpetiolar process.

Cyphoidris werneri sp. n.

HOLOTYPE WORKER. TL 3·7, HL 0·91, HW 0·83, CI 91, SL 0·62, SI 75, PW 0·63, AL 1·08.

Mandibles smooth and shining with scattered small pits, the apical margin armed with 10–11 small denticles. Anterior margin of clypeus conspicuously impressed medially. Narrow median portion of clypeus bicarinate above. Frontal carinae strongly developed and forming the dorsal margins of the broad but shallow antennal scrobes, the carinae diverging posteriorly and fading out well before reaching the occipital margin. Separation of the frontal carinae at the level of the midlengths of the eyes *c.* 0·37, about 0·45 × HW. Eyes longer than wide, their maximum diameter 0·17, about 0·20 × HW. Alitrunk with promesonotum swollen but not more or less evenly convex in profile as is usual in the genus. Instead there is a long plateau-like dorsum which is much less strongly convex than the ascending face of the pronotum in front or the descending face of the mesonotum behind. Propodeal dorsum in profile continuing the downward slope of the mesonotum, the surfaces not separable. Propodeal spines with their extreme apical portions upcurved. Metapleural lobes low and broadly triangular. Alitrunk in dorsal view broadest across the pronotal shoulders, evenly narrowing posteriorly. Petiole node low and quite small in profile, its dorsal surface sloping downwards posteriorly and the anterodorsal angle better defined than the posterodorsal which tends to round into the posterior face. In dorsal view nodes of both petiole and postpetiole conspicuously broader than long and the latter much broader than the former. Dorsum of head predominantly longitudinally rugose, the rugae irregular and with cross-meshes developing behind the level of the eyes. Cross-meshes increase in density posteriorly and a rugoreticulum is present occipitally. Sides of head below the scrobes finely reticulate-rugose, the scrobes themselves much less strongly sculptured than the rest of the head, being mostly smooth with a few feeble transverse rugulae. Entire dorsum of alitrunk very densely strongly and closely reticulate-rugulose, the reticular meshes small and the rugulae raised so that in places the surface appears reticulate-foveolate. Dorsal surfaces of rugulae with a beaded appearance due to presence of aligned minute punctures; the entire surface blanketed with sculpture, without smooth areas. Sides of alitrunk similarly but more loosely sculptured, the pleurae and sides of propodeum with smooth areas between the more widely separated rugulae. Propodeal declivity smooth, with vestiges of transverse rugulae between the spines. Nodes of petiole and postpetiole both dorsally and laterally sculptured as dorsal alitrunk. First gastral tergite unsculptured except for fairly conspicuous pits from which hairs arise. All dorsal surfaces of head and body densely clothed with short fine curved hairs which are subdecumbent to decumbent. Long hairs absent except on clypeus and a row on the upper surface of each frontal carina. Colour blackish brown with a dull reddish tint, the latter most apparent on the sides of the alitrunk. Antennae and legs dull orange-yellow.

PARATYPE WORKERS. TL 3·5–3·8, HL 0·84–0·92, HW 0·76–0·84, CI 90–93, SL 0·60–0·66, SI 74–79, PW 0·58–0·64, AL 0·98–1·08 (14 measured). As holotype but maximum diameter of eye 0·15–0·17, about 0·18–0·20 × HW.

Holotype worker, **Rwanda**: Rangiro, ix.1976, litter (*P. Werner*) (MHN, Geneva).

Paratypes. 14 workers with same data as holotype (MHN, Geneva; BMNH; MCZ, Cambridge).

C. werneri is the only known species of this genus from East Africa. It is easily distinguished from its congeners in West and Central Africa by its strong blanketing alitrunkal sculpture and by the fact that the propodeal dorsum continues the steep slope of the posterior part of the mesonotum. Apart from these features *werneri* lacks the gastral shagreening typical of *parissa*, is much more densely hairy than *exalta*, and has shorter scapes and generally much coarser sculpture than *spinosa*.

OCYMYRMEX Emery

(Figs 18–32)

Ocymyrmex Emery, 1886: 364. Type-species: *Ocymyrmex barbiger* Emery, loc. cit.; by monotypy.

DIAGNOSIS OF WORKER. Monomorphic myrmicine ants. Mandibles short and powerful, armed with five sharp teeth which decrease in size from apex to base. The third and fourth teeth, counting from the apical, are paired, having flanking teeth internally on the masticatory margin which are only visible when the mandibles are open. Palp formula 4, 3 in *barbiger*, but 3, 3 is the predominant count (thus in *ankhu*, *celer*, *foreli*, *fortior*, *micans*, *monardi*, *nitidulus*, *phraxus*, *picardi*, *shushan*, *sobek*, *sphinx*, *velox*). Ventral surface of head with a strongly developed psammophore, the ammochaete hairs arising on the gular surface, base of the ventral borders of the mandibles and bases of the mouthparts. Clypeus large, projecting over the basal borders of the mandibles; posteriorly the clypeus broadly inserted between the frontal lobes. Frontal lobes well developed but short, mostly or wholly covering the antennal insertions, ending at the same level as do the antennal fossae; frontal carinae and antennal scrobes absent. Antennae with 12 segments, filiform, without an apical club. Eyes well developed, situated slightly behind the midlength of the sides of the head and usually failing to break the outline of the sides in full-face view. Mesothoracic spiracles opening high on the sides, clearly visible in dorsal view, with a slit-like or crescent-shaped orifice. Propodeal spiracle extremely elongate, slit-shaped and very conspicuous. Propodeum unarmed, rounded in all known species. Legs extremely long and slender, their coxae large and powerful. Petiole with a long narrow anterior peduncle and with a rounded node which is usually low and small. Behind the node a short posterior peduncle is present which runs to the articulation with the postpetiole. Postpetiole low and generally shallowly curved, often voluminous but not usually forming a prominent node. Sting small, perhaps not functional. First segment of gaster often with a narrow neck-like constriction basally (not in *barbiger* and allies), the sides of the tergite usually with a series of roughly transverse, parallel indentations or grooves.

DIAGNOSIS OF FEMALES (queens). Extremely ergatoid, answering to all the characters stated above and differing from the workers only slightly, having thicker scapes, broader and more parallel frontal lobes, and usually possessing conspicuous transverse sculpture on the head. Characters normally associated with female ants, such as larger eyes, presence of ocelli, swollen alitrunk with flight sclerites and wings etc., are never developed. Females are discussed in more detail below.

This easily defined and spectacular genus, which has not been revised previously, is confined to the Ethiopian zoogeographical region where its 23 species inhabit dry to semi-desert conditions in the eastern and southern parts of the continent. All the species nest directly into the ground, either in the open or at the bases of plants. In the former case the nest is usually in sandy soil and a crater is formed around the entrance hole. Arnold (1916), who was acquainted with and reviewed the South African species, pointed out the remarkable swiftness of these ants, saying that for speed they far outstrip 'all other ants with which I am acquainted, so much so that they appear almost to fly over the surface of the ground'. Prins (1965) has recorded that *Ocymyrmex* species are granivorous but will also attack and destroy other insects.

In the classification of both Emery (1922) and Wheeler (1922) the genus *Ocymyrmex* is the sole constituent of its own tribe, the *Ocymyrmecini*, and Kugler's (1978) study of the sting structure does nothing to undermine this view. In general the construction of the head in *Ocymyrmex* suggests affinities with the pheidoline genera, but so many specialized characters are present that this cannot be certain. What does seem certain is that *Ocymyrmecini* is best retained as a separate tribe. It is easily isolated by the form of the alitrunk spiracles, which are unique amongst the Myrmicinae.

Arnold (1916) and Emery (1922) both recorded that no females of *Ocymyrmex* had ever been found, but they were both aware of the presence of strange variants in a number of nest-series which had transverse sculpture on the head instead of the usual longitudinal form. Several of these variants were described from isolated examples as separate species or subspecies, despite the fact that long ago Arnold (1916) had recorded that they occurred in the same nests as the more normally sculptured form.

It is now apparent that these forms are in fact the ergatoid females of the species; their resemblance to the workers is truly remarkable. Most characters regarded as normal for female ants are absent or have been suppressed, the body is extremely worker-like, without trace of flight sclerites, and the head lacks ocelli or enlarged eyes. The head, however, has three specializations which serve to distinguish the females from their workers; compare Figs 22 and 23.

Firstly, the outer margins of the frontal lobes are more widely separated in their posterior halves in females, and the margins of the frontal lobes behind the level of the antennal insertions are parallel or nearly so, whereas in workers they are obviously convergent behind.

Secondly, the antennal scapes are broader and frequently slightly shorter in females than in workers.

To illustrate these two points all available females were measured for width across the margins of the frontal lobes at their posteriormost point (FW), and the maximum width of the shaft of the scape (SW) discounting the apical swelling when present. The same measurements were taken for an equal number of workers chosen at random from the series in which the respective females originated. These measurements were compared with the standard measures of HW and SL, as follows (where n = number of females measured).

species		HW	FW	FW/HW	SL	SW	SW/SL	
<i>fortior</i>	female	1.68-1.80	0.48-0.54	0.28-0.31	1.48-1.66	0.18-0.19	0.11-0.12	(n = 5)
"	worker	1.72-1.96	0.40-0.46	0.23-0.26	1.46-1.70	0.12-0.16	0.08-0.09	
<i>nitidulus</i>	female	1.67-1.76	0.48-0.52	0.28-0.30	1.40-1.52	0.15-0.16	0.10-0.11	(n = 8)
"	worker	1.72-1.78	0.40-0.44	0.22-0.25	1.48-1.58	0.12-0.14	0.08-0.10	
<i>picardi</i>	female	2.48-2.50	0.70	0.28	2.28-2.36	0.22-0.24	0.09-0.10	(n = 2)
"	worker	2.44-2.60	0.58-0.62	0.24	2.40-2.54	0.18-0.20	0.08	
<i>velox</i>	female	2.08-2.18	0.50-0.56	0.24-0.26	2.08-2.16	0.20-0.22	0.10	(n = 3)
"	worker	2.14-2.18	0.44-0.46	0.20-0.21	0.20-0.26	0.18-0.20	0.08-0.09	
<i>barbiger</i>	female	1.48-1.60	0.44-0.46	0.29-0.30	1.34-1.48	0.16	0.11-0.12	(n = 2)
"	worker	1.52-1.60	0.40-0.44	0.26-0.27	1.40-1.52	0.12-0.14	0.09	
<i>flaviventris</i>	female	1.50-1.64	0.44-0.46	0.28-0.31	1.40-1.48	0.15-0.17	0.11	(n = 3)
"	worker	1.54-1.76	0.36-0.40	0.23-0.24	1.46-1.66	0.12-0.14	0.08-0.09	
<i>weitzckeri</i>	female	1.64	0.49	0.30	1.42	0.17	0.12	(n = 1)
"	worker	1.60	0.38	0.24	1.42	0.14	0.10	
<i>foreli</i>	female	1.64-1.76	0.50-0.53	0.30	1.52-1.65	0.16-0.18	0.11	(n = 2)
"	worker	1.68-1.76	0.40	0.23-0.24	1.56-1.76	0.14	0.08-0.09	
<i>sobek</i>	female	1.80-1.84	0.50-0.54	0.28-0.29	1.62-1.68	0.17-0.18	0.10-0.11	(n = 4)
"	worker	1.76-1.84	0.42-0.44	0.23-0.24	1.66-1.70	0.14-0.15	0.08-0.09	

Finally, the dorsum of the head behind the level of the eyes usually has strong regular transverse sculpture in females, whereas such sculpture is generally longitudinal in workers. Exceptions to this occur in *robecchii* where both known specimens have transverse sculpture, implying that they are female, but lack the specialized characters of scapes and frontal lobes noted above. They are treated as workers in this paper although it is realized that they may turn out to be females. In *hirsutus* most workers have arched-transverse sculpture on the head, but in this case it is coarse, sharply developed, irregular and vermiculate. In some species (*velox*) the cephalic sculpture is reduced in both castes and may not be apparent.

A few individual workers in any species may show some transverse costulae or rugulae close to the occipital margin, especially in species where the main longitudinal cephalic sculpture arches outwards towards the occipital corners, but none have the extensive transverse sculpture developed by their respective females and their frontal lobes and antennal scapes are of the worker form.

As the females are apterous the founding of new nests must be by colony fission or by single newly mated females setting out on their own. Quite probably a relatively large number of females are retained in the nest at all times as captures are frequent. Whether all females in a colony lay eggs or whether this function is dominated by a single laying female who suppresses the rest is not known, but I suspect the latter as stray females appear to be fairly common in worker samples collected outside the nest and which are, apparently, behaving like workers.

Males, not dealt with here, are very poorly represented in collections, being known only for the species *fortior*, *barbiger* and *weitzckeri*.

Synonymic list of species*ankhu* sp. n.*barbiger* Emery*barbatus* Emery*barbiger* var. *robustior* Stitz **syn. n.***barbiger* var. *flavescens* Stitz **syn. n.***cavatodorsatus* Prins*celer* Weber*cursor* sp. n.*flaviventris* Santschi **stat. n.***foreli* Arnold **stat. n.***fortior* Santschi **stat. n.***weitzckeri* st. *transversus* Santschi **syn. n.***arnoldi* Forel **syn. n.***weitzckeri* [sic] st. *abdominalis* Santschi*weitzaeckeri* [sic] var. *usakosensis* Stitz **syn. n.***hirsutus* Forel*laticeps* Forel*micans* Forel **stat. n.***monardi* Santschi **stat. n.***nitidulus* Emery **stat. n.***phraxus* sp. n.*picardi* Forel*carpenteri* Donisthorpe **syn. n.***robecchii* Emery*shushan* sp. n.*sobek* sp. n.*sphinx* sp. n.*turneri* Donisthorpe*velox* Santschi*weitzckeri* Emery*weitzckeri* subsp. *wroughtoni* Forel **syn. n.***zekhem* sp. n.**Key to species (workers)**

- 1 Anterior clypeal margin without a conspicuous semicircular median impression, the margin entire or at most flattened or feebly eroded in the middle 2
- Anterior clypeal margin with a conspicuous semicircular median impression, the impression usually flanked by a pair of denticles or teeth 8
- 2 With head in full-face view the large eyes ($0.28 \times HW$) very obviously breaking the outline of the sides (Fig. 25). Middle of anterior clypeal margin with a low, broad bluntly triangular prominence. (South West Africa) *turneri* (p. 279)
- With the head in full-face view the smaller eyes ($< 0.25 \times HW$) failing to break the outline of the sides. Middle of anterior clypeal margin without a triangular prominence 3
- 3 First gastral tergite in dorsal view strongly constricted basally and forming a narrow neck, the sclerite in this region roughly parallel-sided and no broader than the postpetiole. Petiole node low and broadly rounded in profile, with a blunt angular ventral process about half-way along the peduncle (Fig. 29) 4
- First gastral tergite in dorsal view not constricted basally, without a narrow neck, the sclerite broadening evenly from its articulation with the postpetiole. Petiole node high and domed in profile, without trace of a ventral process at the midlength of the peduncle (Fig. 32) 5
- 4 Larger species, HW 2.04, PW 1.30; head narrower, CI 98. Metapleural lobes large and very strongly prominent, plainly visible with alitrunk in absolute profile, not concealed by the bulge of the metapleural glands. (Angola) *cursor* (p. 267)
- Smaller species, HW 1.70–1.74, PW 1.08–1.14; head broader, CI 102–103. Metapleural lobes very small, not prominent, scarcely or not visible with alitrunk in absolute profile, mostly or entirely concealed by the bulge of the metapleural glands (Fig. 29). (Angola) *laticeps* (p. 271)
- 5 Larger species, HL > 2.0 . Promesonotal outline in profile low and evenly rounded, propodeal

- dorsum more or less flat; dorsal outline of entire alitrunk not saddle-shaped (Fig. 32) 6
- Smaller species, HL < 1.50. Promesonotal outline in profile high and dome-like, propodeal dorsum sloping sharply upwards posteriorly; dorsal outline of entire alitrunk strongly saddle-shaped. (South Africa) *cavatodorsatus* (p. 266)
- 6 Basal half of first gastral tergite with conspicuous hairs which are as long as those on the mesonotal and propodeal dorsa. Smaller species with longer scapes, HW 1.90, SI 116. Entire ant black to the naked eye, the gaster the same colour as the alitrunk. (South West Africa) *zekhem* (p. 281)
- Basal half of first gastral tergite without hairs or at most with 1-2 minute inconspicuous hairs which are much shorter than those on the mesonotal and propodeal dorsa. Larger species with shorter scapes, HW > 2.0, SI range 94-105. Entire ant not black to the naked eye 7
- 7 Tricoloured species with alitrunk dull red to blackish red, gaster orange to yellow and head an intermediate shade. Hairs on dorsal alitrunk usually white, only rarely coloured. SI 101-105, CI 95-97 (Angola, South West Africa) *velox* (p. 280)
- Colour uniform rich orange-brown, or sometimes with the gaster slightly lighter. Hairs on dorsal alitrunk reddish brown. SI 94-102, CI 97-101. (Angola) *ankhu* (p. 265)
- 8 Large or very large species, HW > 2.00, SL > 1.90 9
- Smaller species, HW < 2.00, SL < 1.90 11
- 9 Hairs on dorsal alitrunk dark reddish brown to blackish. Extremely large species, HW 2.30 or more. (Zimbabwe, Botswana, South West Africa, Angola) *picardi* (p. 275)
- Hairs on dorsal alitrunk white to silvery. Large species but not approaching the above in size, HW in range 2.02-2.15 10
- 10 Antennal scapes relatively longer, SI > 100 (range 103-106). Dorsum of head behind level of eyes with dense transverse costulate sculpture, ground-sculpture between the costulae vestigial. (Somali Republic) *robecchii* (p. 276)
- Antennal scapes relatively shorter, SI < 100 (range 93-98). Dorsum of head behind level of eyes with dense longitudinal rugular sculpture, ground-sculpture between the rugulae a coarse conspicuous punctulation or granulation. (Botswana) *sphinx* (p. 278)
- 11 First gastral tergite not constricted basally, not forming a roughly parallel-sided neck behind the postpetiole, the gaster broadening more or less evenly from immediately behind the postpetiole. Palp formula 4, 3. (South Africa, South West Africa) *barbiger* (p. 265)
- First gastral tergite constricted basally, forming a roughly parallel-sided neck behind the postpetiole which is no wider than the postpetiole. Palp formula 3, 3 12
- 12 Spaces between costulae on dorsum of head smooth and shining, either without or with only vestigial ground-sculpture; the surface smooth and polished, often with a slick and very shiny appearance. Commonly the costulae themselves are low, rounded and glossy, not sharply defined; sometimes the costulae effaced in places leaving unsculptured areas 13
- Spaces between costulae or rugulae on dorsum of head with punctulate or granular ground-sculpture which is conspicuous, the surface not appearing smooth and polished, without a slick and very shiny appearance. Costulae or rugulae on dorsum of head always strongly and often sharply developed, very distinct 14
- 13 Pronotum in profile with dorsal outline more or less flat (Fig. 19) or even slightly concave. Head longer and narrower, CI 92-93. (Sudan) *celer* (p. 267)
- Pronotum in profile with dorsal outline evenly convex (Fig. 18). Head shorter and broader, CI 96-100. (Ethiopia, Somali Republic, Kenya, Uganda, Tanzania) *nitidulus* (p. 274)
- 14 Petiole node much enlarged, swollen in profile and very conspicuous (Fig. 20). Sculpture of petiole node coarse, strongly developed everywhere, with strong coarse rugae running right round the node 15
- Petiole node not greatly enlarged (Figs 26-28, 30, 31). Sculpture of petiole node not strongly developed everywhere, usually feebly and unevenly sculptured to unsculptured; commonly with fine or weak rugulae but these only rarely encircling the whole node. A few sharp transverse rugulae may be present dorsally but in this case the node is not much enlarged in profile 16
- 15 Alitrunk very dark dull reddish brown or reddish black, usually appearing as black to the naked eye. Gaster yellow or yellowish red, much lighter than and contrasting strongly with the dark alitrunk. Head a shade of dull red intermediate between that of alitrunk and gaster. (Zimbabwe, Botswana) *sobek* (p. 277)
- Colour uniform orange-red to red throughout, the gaster usually the same shade as the head and alitrunk but sometimes slightly lighter or darker. (Zimbabwe) *foreli* (p. 269)

- 16 Dorsum of head behind level of posterior margins of eyes mostly or wholly sculptured with extremely tightly packed fine rugulae which are sharply and narrowly vermiculate and which are mostly or entirely transverse in direction. (South West Africa) *hirsutus* (p. 271)
- Dorsum of head behind level of posterior margins of eyes not sculptured as above, usually with longitudinal costulae or rugulae which may be obscured in some places by dense ground-sculpture. Transverse sculpture usually absent but if a few transverse components are present then they are not sharply and narrowly vermiculate 17
- 17 Alitrunk dull brick-red to black 18
- Alitrunk yellowish orange to bright red 21
- 18 Dorsum of head from inner margin of eye to antennal fossa and the area extending back from this to the occiput blanketed by strong irregular granular sculpture which masks or replaces the costulae or rugulae usually seen in this area. (South West Africa, Angola) *monardi* (p. 273)
- Dorsum of head from inner margin of eye to antennal fossa and the area extending back from this to the occiput costulate or rugulose, without blanketing granular sculpture 19
- 19 Petiole node in dorsal view very broad, distinctly much broader than long (Fig. 30), the maximum width of the node greater than the length of the petiole from its spiracle to the apex of the collar where it articulates with the postpetiole. (Lesotho, South Africa) *weitzeckeri* (p. 280)
- Petiole node in dorsal view more slender, at most as broad as long (Figs 26, 27), the maximum width of the node usually distinctly less than the length of the petiole from its spiracle to the apex of the collar where it articulates with the postpetiole 20
- 20 Petiole in profile shaped as in Fig. 27, the dorsal surface of the peduncle and the anterior face of the node confluent or nearly so, without a marked change of slope where the two surfaces meet. (Tanzania) *phraxus* (p. 274)
- Petiole in profile shaped as in Fig. 26, the dorsal surface of the peduncle and the anterior face of the node not at all confluent, with a marked change of slope where the two surfaces meet. (Zambia, Zimbabwe, Botswana, South Africa, South West Africa, Angola) *fortior* (part; p. 269)
- 21 With the alitrunk in profile the promesonotum forming a high dome-like convexity (Fig. 31). (South West Africa) *shushan* (p. 277)
- With the alitrunk in profile the promesonotum evenly shallowly convex 22
- 22 Sculpture of dorsum of head between eyes and from this level to occiput everywhere longitudinally costulate, not vermiculate nor dominated by coarse punctulate ground-sculpture, the costulae quite regular and evenly spaced. (Zambia, Zimbabwe, Botswana, South Africa, South West Africa, Angola) *fortior* (part; p. 269)
- Sculpture of dorsum of head between eyes and from this level to occiput densely finely longitudinally rugulose, the rugulae conspicuously irregular, being wavy to vermiculate and with a strong granular or punctulate ground-sculpture which may become the dominant component in places 23
- 23 Peduncle of petiole ventrally with an elongate convex keel-like process (Fig. 28). Slightly larger species, HW 1.54–1.70, SL 1.44–1.54. (Botswana, South West Africa) *flaviventris* (p. 268)
- Peduncle of petiole ventrally without a keel-like process. Slightly smaller species, HW 1.40–1.56, SL 1.38–1.44. (South West Africa) *micans* (p. 272)

Treatment by species

The members of the genus *Ocymyrmex* are very uniform in structure and are not easily divisible into meaningful species-groups. For this reason they are set out below in alphabetical order.

To some extent the genus can be split into three unequal complexes of species based on the degree of constriction of the first gastral tergite. *O. barbiger*, *cavatodorsatus* and *turneri* have the base of the gaster unconstricted, quite broad basally and continuing to broaden behind. In *velox*, *picardi*, *ankhu* and *zekhem* the gaster is narrow basally and gradually broadens behind without forming a narrow neck. In all other species a conspicuous narrow neck, often parallel-sided, is developed. *O. sphinx* forms an intermediate stage between these last two complexes.

The presence or absence of a median clypeal impression seems at first sight a means of dividing the genus into groups but, although a useful key character, it does not serve to aggregate related species. Examination of species without the clypeal impression shows that in most cases they are more closely related to forms possessing it than to the others which lack it.

Ocymyrmex ankhu sp. n.

HOLOTYPE WORKER. TL 10·2, HL 2·34, HW 2·35, CI 100, SL 2·30, SI 98, PW 1·50, AL 2·96.

Anterior clypeal margin entire, without a strong median notch flanked by a pair of teeth but only with a tiny erosion of the apron where the weak median clypeal carina runs into it. Maximum diameter of eye 0·42, about 0·18 × HW, the eyes conspicuously failing to break the outline of the sides of the head in full-face view. Sides of head extremely weakly divergent anteriorly, rounding broadly and evenly into the occipital margin which is shallowly convex on each side of a median indentation. Alitrunk in profile with the promesonotum low and very shallowly convex, almost flat dorsally but with the posterior half of the mesonotum sloping more steeply downwards. Propodeal dorsum almost flat, with an exceedingly shallow depression in the surface just in front of the level of the spiracle. Posteriorly the propodeal dorsum rounding broadly and evenly into the shallowly convex declivity. Metapleural lobes low and truncated posteriorly. Petiole in profile large, broadly dome-like and rounded, the anterior peduncle without trace of a ventral process. In dorsal view the petiole node very slightly longer than broad, rounded and with evenly convex sides. Postpetiole in dorsal view broader than long. Base of first gastral tergite no broader than the postpetiole but not constricted to a narrow neck; instead the sides diverge quickly and evenly from the base. Dorsum of head between eyes with faint superficial vestiges of fine and quite dense rugular or costulate sculpture which in places is almost effaced. Ground sculpture absent except for the faintest remnants of a minute superficial reticulation, the surface mostly smooth and glossy and the scattered hair pits quite clearly visible. Occipital region of head mostly smooth but a narrow strip in front of this with feeble transverse sculpture. Pronotal dorsum mostly smooth, with marginal remnants of fine arched rugulae and vestiges of the longitudinally sculptured area between the mesothoracic spiracles just visible. Remainder of dorsal alitrunk very finely and feebly transversely rugulose, with a tendency for the rugulae to fade out centrally. Sides of alitrunk more strongly and more sharply rugulose or costulate, weaker on the pronotal sides than elsewhere. Petiole, postpetiole and gaster unsculptured except for a fine superficial reticulation. Dorsal surfaces of head, alitrunk, petiole and postpetiole with numerous strong reddish brown hairs. Basal half of first gastral tergite hairless but more apically the segment with 1–2 very short, inconspicuous hairs. Colour a uniform rich orange-brown, the gaster very slightly lighter in shade than the head and alitrunk.

PARATYPE WORKERS. TL 9·7–10·2, HL 2·26–2·34, HW 2·22–2·34, CI 97–101, SL 2·22–2·34, SI 95–102, PW 1·40–1·48, AL 2·84–2·92 (7 measured). Maximum diameter of eye 0·42–0·44, about 0·18–0·19 × HW. As holotype.

Holotype worker, **Angola**: 5 miles [8 km] E. of Vila Arriaga, 1000 m, 21.v.1958 (*E. S. Ross & R. E. Leech*) (CAS, San Francisco).

Paratypes. 7 workers and 1 female with same data as holotype (CAS, San Francisco; BMNH; MCZ, Cambridge).

O. ankhu is closest related to *velox* and shares most of its diagnostic characters. However, *ankhu* is more or less uniformly coloured and has the body pilosity reddish brown. In *velox* the body is conspicuously tricoloured and the hairs are usually white.

Ocymyrmex barbiger Emery

Ocymyrmex barbiger Emery, 1886: 364, pl. 17 figs 9–11. Syntype workers and male, SOUTH AFRICA: Cape of Good Hope (*L. Peringuey*) (MHN, Geneva; MCSN, Genoa) [examined].

Ocymyrmex barbatus Emery, 1892: 114, 117. [Lapsus for *barbiger* Emery.]

Ocymyrmex barbiger var. *robustior* Stitz, 1923: 146. Syntype worker, SOUTH WEST AFRICA: Lüderitzbucht, 5–13.vii.1911; and Swakopmund, 12–19.iv.1911 (*W. Michaelsen*) (MNHU, Berlin) [examined] **Syn. n.**

Ocymyrmex barbiger var. *flavescens* Stitz, 1923: 147. Syntype worker, SOUTH WEST AFRICA: Okaputa, 5.v.1911 (*W. Michaelsen*) (MNHU, Berlin) [examined]. **Syn. n.**

WORKER. TL 6·7–7·2, HL 1·54–1·84, HW 1·42–1·76, CI 90–97, SL 1·38–1·58, SI 87–98, PW 0·94–1·10, AL 2·00–2·20 (20 measured).

Anterior clypeal margin with a semicircular median impression which is flanked by a pair of teeth. The impression is usually deep and conspicuous but in some individuals may be broad and quite shallow. The flanking teeth are generally well developed but commonly are broadly triangular and blunted, sometimes little more than broadly rounded prominences. Maximum diameter of eye 0·32–0·35, about 0·19–0·22 × HW, in full face view not breaking the outline of the sides of the head. Promesonotum forming an evenly rounded low convexity which slopes downwards behind to the propodeum, the dorsum of which varies from more or less flat to slightly inclined. Propodeal dorsum rounding broadly and evenly into the

declivity. Metapleural lobes low but prominent, their free edges rounded to bluntly truncated posteriorly. Petiole node in profile usually quite high, bluntly rounded-subconical in shape, but sometimes the dorsum more flattened and the node appearing less regular in shape. Petiole node in dorsal view usually broader than long, less commonly only about as broad as long. Postpetiole always broader than long in dorsal view, discounting the anterior articulating portion. Base of first gastral tergite without a neck-like constriction. Head finely and densely rugulose, with fine punctulate ground-sculpture; the pattern formed by the rugulae very variable on the dorsum but apparently following a step by step change. In many the cephalic rugulae are regular and longitudinal, parallel on the central strip and running straight back to the occipital margin, but the more lateral rugulae tending to diverge and arch outwards behind the eyes. This seems the basic pattern from which the following derive sequentially. Firstly, the median-line rugulae begin to diverge posteriorly, forcing the more lateral rugulae to arch outwards even more. Next, the point at which the median-line rugulae begin to diverge shifts gradually forward, arching the lateral components more strongly outwards all the time. When the point of divergence of the mid-line rugulae has shifted a certain distance forwards a number of V-shaped rugulae appear in front of the impression in the centre of the occipital margin, which occupy the space vacated by the now divergent mid-line rugulae. Then, as the point of divergence of the mid-line rugulae shifts still further forward the V-shaped rugulae also shift forward on the head and their angle becomes more obtuse the further forward they shift. This process continues until ultimately the head is mostly transversely sculptured behind the eyes, although the rugulae tend to retain their broadly V-shaped nature more posteriorly on the head. Pronotal dorsum usually with extensive longitudinal sculpture, the more lateral components arching across in front of the central longitudinals. Space between mesothoracic spiracles usually longitudinally rugose, sometimes obliquely so and very rarely the sculpture here more or less transverse. Remainder of dorsal alitrunk transversely rugose. Petiole with transverse rugulae ventrally which usually extend for some distance up the sides of the node, commonly to the dorsum. In more strongly sculptured samples the rugulae continue across the top of the node but often the dorsum is more weakly sculptured. Postpetiole finely shagreened or with fine superficial patterning only. All dorsal surfaces of head and body with hairs, those on the first gastral tergite more numerous and longer in *barbiger* than is usual in the genus, the gastral hairs frequently approaching the length and density seen on the alitrunk. Elsewhere in the genus gastral hairs on the first tergite are much shorter and much sparser than on the alitrunk. Colour of head and alitrunk orange to dull brick red, the gaster darker, frequently dull brown with a reddish tint or even blackish brown.

One of three known species in which the base of the first gastral tergite is not constricted to a narrow neck, *barbiger* is separable from both others showing this character (*cavatodorsatus*, *turneri*) by its possession of an impressed anterior clypeal margin and its strong sculpture.

MATERIAL EXAMINED

South West Africa: Maltahoe dist., Sesriem Farm (*M. C. Day*). **South Africa:** Cape Prov., Orange Riv., Kakamas (*G. Arnold*); C.P., Orange Riv., no loc. (*G. Arnold*); C.P., Betty's Bay (*G. Arnold*); C.P., Willowmore (*G. Arnold*); Willowmore (ex coll. Mayr); Willowmore (*H. Brauns*); C.P., Table Mt (*G. Arnold*); C.P., Victoria West (*G. Arnold*); C.P., Mossel Bay (*R. E. Turner*); C.P., Camps Bay (*R. E. Turner*); C.P., Die Panne (*M. C. Day*); C.P., Pt Elizabeth (*W. L. Brown*); C.P., Grahamstown (*L. Weatherill & W. L. Brown*).

Ocymyrmex cavatodorsatus Prins

Ocymyrmex cavatodorsatus Prins, 1965: 1021 figs 1, 2. Syntype workers, SOUTH AFRICA: Cape Prov., Dist. Upington, Louisvale, 6.viii.1964, AcAx 3412 (*A. J. Prins*) (Res. Inst. for Plant Protection, Pretoria, South Africa).

I have not seen the types of this species but it is obvious from Prins' original description that *cavatodorsatus* is a very distinctive species. Its main diagnostic characters are as follows.

WORKER. TL 4.5, HL 1.02, AL 1.41. Anterior clypeal margin without a semicircular median impression. Eyes not breaking outline of sides of head in full-face view. Alitrunk in profile characteristically shaped, with the promesonotum forming a single high, strongly arched convexity, the posterior mesonotum and anterior propodeum forming a uniform deep concavity and the remainder of the propodeum arching upwards again posteriorly before rounding narrowly into the deep and almost vertical declivity; the entire alitrunk having a strong saddle-shaped appearance in profile. Petiole node high-subconical in profile, longer than broad in dorsal view. Postpetiole broader than long in dorsal view. Base of first gastral tergite in dorsal view without a neck-like constriction, the sides of the tergite evenly convex behind the point of articulation with the postpetiole. Dorsum of head from level of eyes to occiput smooth and shining. Promesonotal arch dorsally

smooth and shining, including the area between the mesothoracic spiracles. Remainder of dorsal alitrunk with faint transverse rugae which are almost effaced; the propodeal declivity smooth. Head bright red to yellowish red, the alitrunk yellowish red to brick red, the gaster distinctly darker, piceous.

As Prins points out, this species is related to *barbiger* in its lack of a basal gastral constriction. It is separated from *barbiger* by its lack of a clypeal impression, much reduced sculpture and strongly saddle-shaped alitrunk. In these aspects it seems closely related to *turneri*, another species without a gastral constriction, which also lacks a clypeal impression and has reduced sculpture. However, *turneri* has the alitrunk jet black, the clypeal margin prominent medially, the eyes large and breaking the outline of the sides of the head, the scapes with $SI > 100$ (apparently $SI < 100$ in *cavatodorsatus* to judge by Prins' fig. 1.) and has a transverse arched crest on the alitrunk at the promesonotal junction.

Ocymyrmex celer Weber stat. n.

(Fig. 19)

Ocymyrmex weitzeckeri subsp. *celer* Weber, 1943: 368. Syntype workers, SUDAN: Torit, N. of Imatong Mts, 6.viii.1939, no. 1462 (*N. A. Weber*) (MCZ, Cambridge) [examined].

WORKER: TL 8.1–8.5, HL 1.98–2.04, HW 1.82–1.88, CI 91–94, SL 1.68–1.73, SI 89–95, PW 1.12–1.16, AL 2.30–2.46 (4 measured).

Anterior clypeal margin with a conspicuous median impression which is flanked on each side by a low broad tooth. Sides of head in front of eyes more or less parallel in full-face view, not obviously diverging anteriorly as is frequent in the genus. Maximum diameter of eye 0.38–0.39, about $0.21 \times HW$. Dorsum of pronotum in profile flat to indented, sloping upwards behind to its junction with the mesonotum; the promesonotum not forming a single even convexity. Dorsum of propodeum rounding broadly and evenly into the sloping declivity. Metapleural lobes deep but narrow, rounded and little projecting. Petiole node in profile small, low and rounded, in dorsal view longer than broad. Postpetiole in dorsal view slightly longer than broad. First gastral tergite with a neck-like constriction basally. Dorsum of head finely densely and regularly longitudinally costulate, the costulae low and superficial, weakly developed, parallel and arching outwards behind the eyes. Spaces between the costulae highly polished, without strong granular or punctulate ground-sculpture; the whole head with a slick and glossy appearance. Pronotum with weak to feeble arched-transverse costulate sculpture dorsally, which may be almost effaced centrally, the space between the mesothoracic spiracles with longitudinal or transverse costulate sculpture. Remainder of dorsal alitrunk transversely and more strongly costulate. Sides of alitrunk regularly densely sharply costulate everywhere. Petiole node with transverse rugulae ventrally which may extend for some distance up the sides, and with faint rugulae on the dorsal peduncle, but the dorsum of the node unsculptured or only with the faintest vestiges present. Postpetiole only with superficial patterning. All dorsal surfaces of head and alitrunk with numerous hairs of varying length; first gastral tergite with hairs shorter and much sparser than on alitrunk. Colour glossy dull red, the gaster dark brown.

Along with *nitidulus* this species can be separated from all others in which the clypeus is impressed and the first gastral segment constricted by the slick and glossy appearance of the head. In all others the ground-sculpture on the head consists of quite conspicuous granulation or punctulation, but in *celer* and *nitidulus* this is very reduced or absent, leaving the spaces between costulae smooth or very nearly so, and shining. The two may be distinguished by the shape of the pronotum, which in *nitidulus* is convex and, together with the mesonotum, forms an evenly convex surface. In *celer* the pronotum is flat and an even convexity does not result, compare Figs 18 and 19.

MATERIAL EXAMINED

Sudan: Torit (*N. A. Weber*).

Ocymyrmex cursor sp. n.

HOLOTYPE WORKER. TL 9.7, HL 2.08, HW 2.04, CI 98, SL 1.94, SI 95, PW 1.30, AL 2.74.

Anterior clypeal margin with a minute and very shallow inconspicuous indentation in the apron medially, without a conspicuous semicircular impression flanked by a pair of teeth. With the head in full-face view the

occipital margin very shallowly but quite broadly concave. Maximum diameter of eye 0.44, about $0.22 \times$ HW. Promesonotum in profile evenly rounded, sloping posteriorly. Anterior half of propodeal dorsum very feebly concave but above the spiracle very shallowly convex before rounding broadly and evenly into the declivity. Metapleural lobes prominent and narrowly rounded, easily visible in profile, not concealed by the bulge of the metapleural glands. Peduncle of petiole with a broadly triangular low blunt process on its ventral surface, about half-way between the insertion and the level of the spiracle. Node of petiole in profile low and broadly rounded, with a differentiated dorsal surface which is almost flat. In dorsal view the petiole node as long as broad, the postpetiole broader than long. Base of first gastral tergite constricted, forming a neck in dorsal view. Dorsum of head costulate, predominantly longitudinally so but with a few arching in over the eye. Ground-sculpture a fine superficial granulation or punctulation which is more conspicuous away from the midline of the head. Centre of pronotal dorsum almost smooth, with only vestigial sculpture; in front of this arched-transverse costulae are present and behind it longitudinal costulae run back between the mesothoracic spiracles. Remainder of dorsal alitrunk and propodeal declivity transversely rugose. Sides of alitrunk densely and evenly costulate-rugose, the sculpture regular except around the propodeal spiracle. Petiole ventrally transversely rugose from the level of the process and the peduncle dorsally with a few weak transverse rugae. The node itself more weakly sculptured, mostly with superficial patterning only but the posterior face with a few weak transverse rugulae. Postpetiole only with superficial patterning. Dorsal surfaces of head and alitrunk with numerous hairs of varying length but first gastral tergite only with scattered short hairs. Alitrunk glossy dull red, the head lighter and with an orange tint, the gaster darker, reddish brown.

Holotype worker, **Angola**: Kopeio, vii.1931 (*T. D. A. Cockerell*) (BMNH).

The closest relative of *cursor* is *laticeps*, also from Angola. Differentiation of the two species is discussed under *laticeps*.

Ocymyrmex flaviventris Santschi stat. n.

(Fig. 28)

Ocymyrmex hirsutus var. *flaviventris* Santschi, 1913: 431. Holotype worker, SOUTH WEST AFRICA: Windhoek (*Viehmeyer*) (NM, Basle) [examined].

WORKER. TL 7.1-7.4, HL 1.64-1.80, HW 1.54-1.70, CI 93-97, SL 1.44-1.58, SI 90-96, PW 0.98-1.04, AL 2.04-2.28 (17 measured).

Anterior clypeal margin with a narrow but deep semicircular impression medially, the impression flanked by a pair of teeth. Occipital corners broadly rounded, the margin medially with a small indentation. Eyes with maximum diameter 0.38, about $0.22 \times$ HW. Promesonotum in profile evenly shallowly convex, the propodeal dorsum posteriorly rounding narrowly into the declivity which is almost vertical. Metapleural glands swollen and projecting strongly to the rear, in profile concealing all but the extreme tips of the metapleural lobes; the projection of the metapleural glands enhanced by the near-vertical propodeal declivity. Peduncle of petiole ventrally with an elongate keel-like process which is semitranslucent and unsculptured, evenly shallow convex throughout its length. Petiole node small in profile, evenly rounded. In dorsal view the petiole node broader than long, the maximum width of the node about equal to the distance from the spiracle to the apex of the collar where the petiole articulates with the postpetiole. Postpetiole in dorsal view slightly longer than broad. Base of first gastral tergite constricted and forming a neck. Dorsum of head longitudinally very densely finely rugulose, the rugulae close-packed and irregular, being narrowly wavy or even minutely vermiculate in places. Ground-sculpture a conspicuous granulation or punctulation. Rugulae between and on median strip just behind the frontal lobes more regular than elsewhere. Dorsal alitrunk transversely densely rugose, the sculpture longitudinal only between the mesothoracic spiracles and on the arched portion of the pronotum. Sides of alitrunk rugose everywhere. Petiole with a few transverse rugae beneath the node and on the dorsum of the peduncle. Elsewhere on the petiole sculpture is vestigial to absent. Postpetiole unsculptured except for faint superficial patterning. All dorsal surfaces of head and alitrunk with numerous hairs of varying length. Propodeal dorsum with long hairs arising from a fairly dense mat of much shorter hairs. First gastral tergite with sparse scattered hairs which are much shorter than those on the alitrunk. Colour bright orange-yellow, the gaster lighter and more yellow than the head and alitrunk.

O. flaviventris is characterized by its light orange-yellow colour, keel-like process below the petiole peduncle, broad node, prominent metapleural glands and uneven cephalic sculpture. It is

closest related to *shushan* and *hirsutus*, but in the former the promesonotum forms a conspicuous high dome and the latter lacks a keel-like subpeduncular process as well as having the cephalic sculpture transverse behind the level of the eyes.

MATERIAL EXAMINED

Botswana: Damara Pan (*G. U. Son*); nr Nkata (*G. U. Son*).

Ocymyrmex foreli Arnold *stat. n.*

Ocymyrmex weitzaeckeri [sic] var. *foreli* Arnold, 1916: 197. Syntype workers, ZIMBABWE: Redbank, 7.iv.1912 (*G. Arnold*) (BMNH; NM, Bulawayo) [examined].

WORKER. TL 7.3–8.0, HL 1.76–1.86, HW 1.64–1.76, CI 92–95, SL 1.56–1.72, SI 92–98, PW 1.08–1.14, AL 2.28–2.44 (14 measured).

Anterior clypeal margin with a semicircular impression but this impression frequently shallower and broader than is usual in the genus; flanked by a pair of low broad tubercles or blunt small teeth formed by a thickening of the clypeal apron. Maximum diameter of eye 0.34–0.36, about 0.20–0.22 × HW. Promesonotum in profile evenly shallowly rounded and convex. Propodeal dorsum more or less flat to slightly convex, rounding broadly and evenly into the declivity. Metapleural lobes small and rounded. Petiole node in profile large, almost or quite as massively developed as in *sobek*, Fig. 20. In dorsal view the petiole node appearing swollen, as broad as or broader than long; postpetiole dorsally as broad as long, discounting the anterior articular section. Base of first gastral tergite constricted and forming a neck behind the postpetiole. Dorsum of head finely and densely longitudinally regularly costulate-rugulose, the components sharply defined and parallel. On the central part of the dorsum the sculpture is longitudinal, running straight back to the occiput or at most diverging slightly on each side of the occipital impression. More laterally on the dorsum the rugulae are divergent and arch outwards behind the eye. Ground-sculpture of head finely punctulate or granular. Pronotal dorsum usually with arched-transverse costulate sculpture followed by a patch of longitudinal sculpture which runs back between the mesothoracic spiracles. However, in some workers the sculpture here is oblique and in a few is more or less transverse. Remainder of dorsal alitrunk and also propodeal declivity transversely costulate or rugose. Petiole node coarsely sculptured everywhere, with strong, sharply defined rugae which encircle the node, running continuously across the dorsal and ventral surfaces and down the sides. Peduncle of petiole also with transverse rugulae both dorsally and ventrally, but these are weaker or effaced on the sides. All dorsal surfaces of head and alitrunk with numerous hairs; first gastral tergite also with hairs but these are shorter and much sparser than those on the alitrunk. Colour usually uniform orange-red to red throughout, but sometimes the gaster slightly lighter or darker than the alitrunk.

This species, known at present only from Zimbabwe, is closest related to *sobek* with which it shares the character of possessing a massively developed petiole node which is coarsely sculptured. The two are separable on colour pattern as in *sobek* the alitrunk is dark reddish brown to almost black, the gaster yellow and contrasting strongly with the alitrunk. The head is dull red, intermediate in colour between alitrunk and gaster. Beside this, the sculpture on the petiole is more sharply defined and regular in *foreli* than in *sobek*.

MATERIAL EXAMINED

Zimbabwe: Bembesi Riv. (*G. Arnold*).

Ocymyrmex fortior Santschi *stat. n.*

(Fig. 26)

Ocymyrmex weitzaeckeri st. *fortior* Santschi, 1911: 209. Syntype workers, ANGOLA: Benguela, Cucala (*J. Cruchet*) (NM, Basle) [examined].

Ocymyrmex weitzaeckeri st. *transversus* Santschi, 1911: 209. Holotype female [not worker], ANGOLA: Benguela, Cucala (*J. Cruchet*) (NM, Basle) [examined]. **Syn. n.** [Types of *fortior* and *transversus* originate in a single series.]

Ocymyrmex arnoldi Forel, 1913b: 138. Syntype workers, males, ZIMBABWE: Bulawayo (*G. Arnold*) (MHN, Geneva) [examined]. **Syn. n.**

Ocymyrmex weitzaeckeri [sic] st. *abdominalis* Santschi, 1914a: 16. Syntype workers, SOUTH AFRICA: Natal, Zululand, Entendweni, 20.viii.1905 (*I. Trägårdh*) (NM, Basle) [examined]. [Synonymized with *arnoldi* by Arnold, 1916: 197.]

Ocymyrmex weitzaeckeri [sic] var. *usakosensis* Stitz, 1923: 146. Syntype workers, SOUTH WEST AFRICA: Usakos, iv-vi.1911 (*W. Michaelsen*) (syntypes presumed lost, not in MNHU, Berlin). **Syn. n.**

WORKER. TL 6.7-8.2, HL 1.68-2.00, HW 1.58-1.98, CI 94-99, SL 1.40-1.70, SI 85-91, PW 1.04-1.22, AL 2.04-2.44 (20 measured).

Anterior clypeal margin with a semicircular median impression which is flanked on each side by a small tooth or denticle. Maximum diameter of eye 0.36-0.40, about 0.20-0.23 × HW. Promesonotal dorsum evenly shallowly convex in profile, the convex portion not strongly raised above the level of the propodeum so that the slope of the posterior half of the mesonotum is very shallow indeed. Propodeal dorsum flat or slightly sloping, rounding evenly into the declivity, the slope of which is quite steep but by no means vertical. Metapleural lobes low and bluntly rounded, sometimes mostly concealed by the bulge of the metapleural glands but usually easily visible. Peduncle of petiole commonly without a ventral process but quite frequently a low rounded bulge is present, which in a few may be shorter and more prominent, forming a broad, low and rounded angle. Petiole node small and low in profile, evenly rounded, the transition from dorsal surface of peduncle to anterior face of node involving a marked change of slope. Petiole node in dorsal view slender, small, varying from longer than broad to slightly broader than long, but the maximum width of the node usually less than the length from the petiolar spiracle to the apex of the collar where petiole and postpetiole articulate. Postpetiole in dorsal view longer than broad, sometimes only slightly so, but usually the difference easily visible. Base of first gastral tergite strongly constricted and forming a narrow neck behind the postpetiole. Dorsum of head finely, densely and usually very regularly sharply longitudinally costulate, the costulae usually parallel or nearly so over most or all of the area. In many samples all costulae run straight back on the head, but commonly the outermost components tend to curve outwards behind the eyes. Very rarely there is a tendency for the costulae to converge on the midline posteriorly, in which case a few transverse members may be developed on the occipital surface. Ground-sculpture of fine punctulation is present everywhere. Dorsal alitrunk densely costulate or rugose, the usual pattern being with arched transverse sculpture on the anterior part of the pronotum followed by an area of longitudinal sculpture which runs back just beyond the mesothoracic spiracles, followed by coarser transverse sculpture on the remainder of the alitrunk dorsum. Exceptions to this are usually due to the extension of the longitudinal component on the pronotum at the expense of the transverse. At its most extreme the longitudinal component reaches forward almost to the cervical shield, and the other costulae are arched so steeply around it that they appear longitudinal everywhere except on the extreme anterior part. Very rarely the longitudinal costulae may extend back to the mesonotal-propodeal junction. In a few cases the costulae between the mesothoracic spiracles are oblique, and now and then an individual is found in which the entire dorsal alitrunk is transversely sculptured. Ventral surface of petiole with transverse rugulae of variable intensity, usually fairly distinct but grading through to very faint. These rugulae may extend for some distance up the sides of the node before fading out, but rarely reach the dorsum. Dorsum of peduncle and anterior and posterior faces of node usually with weak transverse rugulae, very faint and scratch-like in places; the dorsum of the node itself only rarely with vestiges of rugular sculpture, generally unsculptured or with a superficial patterning. Postpetiole only with a superficial patterning of more or less smooth. All dorsal surfaces of head and alitrunk with hairs of varying length, the hairs of the first gastral tergite much shorter and sparser than on the alitrunk. Head and alitrunk varying from dull brick-red to lighter red, the two always the same colour; gaster darker, blackish brown to black.

O. fortior is one of the more widely distributed and commoner species of the genus, ranging widely from Angola to Zimbabwe and South Africa. Among the species with a strongly constricted base to the gaster and a developed clypeal impression *fortior* is defined more by its lack of specialized characters than the possession of them, as can be seen in the key. The closest related species appear to be *phraxus* and *micans*. The former has a differently shaped petiole than *fortior*, which is evenly rugulose dorsally on the node as opposed to the feebly or unsculptured surface seen in *fortior*; *phraxus* is also darker in colour, appearing black with a red head to the naked eye. *O. micans* has different cephalic structure from *fortior* and is also orange to orange-red in colour, with a lighter yellowish gaster.

MATERIAL EXAMINED

Zambia: Mwengwa (*H. Dollman*). **Zimbabwe:** Bulawayo (*G. Arnold*); Khami Riv. (*G. Arnold*); Lonely Mines (*H. Swale*); R. Zambesi (*H. Swale*); Victoria Falls (*M. Grabham*); Victoria Falls (*W. L. Brown*); Bindurg (*G. H. Bunzli*). **Botswana:** R. Semowane (*M. C. Day*); between Kastwe and Damara Pan (*H. Lang*). **South Africa:** Transvaal, Barberton (*F. S. Parsons*); Transvaal, Saltpan (*H. Lang*); Transvaal, Lydenburg (*H. Lang*); Natal (*G. Arnold*).

Ocymyrmex hirsutus Forel

Ocymyrmex weitzckeri subsp. *hirsutus* Forel, 1910b: 13. Syntype workers, SOUTH WEST AFRICA: Severelela and Kooa (*L. Schultze*) (MHN, Geneva) [examined].

Ocymyrmex hirsutus Forel; Santschi, 1913: 431. [Raised to species.]

WORKER. TL 6.9–7.8, HL 1.54–1.82, HW 1.48–1.74, CI 93–97, SL 1.40–1.62, SI 90–95, PW 0.96–1.14, AL 2.04–2.36 (7 measured).

Anterior clypeal margin with a conspicuous semicircular median impression which is flanked by a pair of teeth or denticles. Occipital margin in full-face view slightly indented or flattened to feebly concave medially, not evenly transversely convex. Maximum diameter of eye 0.32–0.38, about 0.21–0.23 × HW. Alitrunk in profile with promesonotum evenly convex, sloping behind to the propodeum. Dorsum of propodeum sloping very weakly, rounding broadly and evenly into the declivity. Metapleural lobes short and bluntly triangular. Petiole in profile with a small, low, evenly rounded node, the peduncle without a ventral process but broadly and very shallowly sinuate in some workers. Petiole node in dorsal view varying from as broad as long to distinctly broader than long. Postpetiole dorsally longer than broad. Base of first gastral tergite constricted and forming a narrow neck behind the postpetiole. Rugulose sculpture on dorsum of head fine, irregular and very densely packed, with fine punctulate to granular ground-sculpture between the narrow rugulae. To the level of the posterior margins of the eyes the rugulae are mostly or entirely longitudinal to arched-longitudinal, the pattern varying from specimen to specimen. Behind this level the rugulae are transverse or arched-transverse, tightly packed and narrowly vermiculate. In some the rugulae are so fine and close together, and so narrowly vermiculate, that the occipital sculpture appears as a disorganised mass of narrow irregular wiggly transverse lines. Dorsal alitrunk and declivity of propodeum transversely rugose except between the mesothoracic spiracles where the sculpture is longitudinal. Extent of this longitudinally sculptured area variable, the further forward the rugulae extend the more strongly arched is the transverse sculpture of the pronotum. In some the pronotal dorsum is mostly arched-longitudinally rugose. Sides of alitrunk rugose, the sides of the pronotum finer and less densely so than the pleurae. Petiole with a few transverse rugae ventrally and the peduncle also with a few dorsally, but otherwise the segment only superficially sculptured. Postpetiole unsculptured. All dorsal surfaces of head and body except first gastral tergite densely clothed in acute hairs of varying length, very numerous on the dorsal alitrunk. On the sides of the pronotum the hairs are directed forwards; on the pleurae they point backwards and downwards. First gastral tergite with sparse short hairs on the surface and with a denser transverse apical row. Colour reddish, the gaster the same colour as the alitrunk or lighter.

Apart from its dense pilosity *hirsutus* can quickly be recognized by the distinctive sculpture of the head, described above. Transverse sculpture on the area of the head behind the eyes is also found in *robecchii* and in females of the various species of *Ocymyrmex*, but in all of these the sculpture consists of regular transverse costulae, not narrowly vermiculate rugulae.

Ocymyrmex laticeps Forel

(Fig. 29)

Ocymyrmex laticeps Forel, 1901: 306. Syntype workers, ANGOLA: Mossamedes, Cubango-Cuito (*H. H. Braun & Van der Kellen*) (MHN, Geneva) [examined].

WORKER. TL 7.2–7.6, HL 1.66–1.70, HW 1.70–1.74, CI 102–103, SL 1.56, SI 90–92, PW 1.08–1.14, AL 2.20–2.24 (2 measured).

Middle of anterior clypeal margin flat to very feebly concave, without a semicircular notch or impression. With head in full-face view the occipital margin with only the shallowest of faint indentations medially. Maximum diameter of eye 0.36–0.38, about 0.21–0.22 × HW. Alitrunk in profile with promesonotum evenly shallowly convex, the posterior part of the mesonotum very shallowly concave and sloping down to the propodeum, the anterior half of which is itself slightly sloping; behind this the propodeum levels out before rounding broadly and evenly into the declivity. Metapleural lobes vestigial, merely a thin laminar strip on each side of the petiolar articulation, their width distinctly much less than (about half of) the width of the propodeal spiracle. Petiole in profile as in Fig. 29, the anterior peduncle with a broad low triangular process about half way along its ventral surface. Petiole node in dorsal view narrow, its maximum width c. 0.35, less than the distance from the spiracle to the posterior collar of the petiole. Postpetiole in profile swollen, low in front then forming an evenly convex low dome; the sternite strongly developed and bulging. In dorsal view the postpetiole much longer than broad, gradually increasing in width from front to back.

First gastral tergite strongly constricted basally, forming a narrow neck behind the postpetiole. Dorsum of head with longitudinal fine dense rugulae which become less regular and more disorganized away from the midline and which tend to arch outwards posteriorly, towards the occipital corners, where they become fainter. Spaces between the rugulae with punctulate ground-sculpture except in the median strip behind the frontal lobes. Genae and sides of head below eyes regularly costulate, the costulae fine and dense, sharply defined and fading out on the occipital corners. Sides of alitrunk costulate to rugose, the sculpture finer on the sides of the pronotum, coarser elsewhere, regular except for an area in front of the propodeal spiracle where some wavy rugae are present. Petiole and postpetiole unsculptured except for a vestigial superficial patterning; the petiole ventrally with vestiges of a few transverse rugulae which are faint or incomplete. Dorsal alitrunk transversely or arched-transversely rugulose except between the mesothoracic spiracles where longitudinal sculpture is present. Convex portion of promesonotum less strongly sculptured than remainder of dorsal alitrunk. All dorsal surfaces of head and body with sparse hairs which are apparently absent from the first gastral tergite, but the specimens available have been much abraded so this is not certain. Colour red, the alitrunk darker than the head and pedicel segments where the cuticle has an orange tint. Base of gaster yellowish orange, much darker posteriorly.

This species, known only from the type-series, is closest related to *cursor*, which is also from Angola. They differ as follows

<i>laticeps</i>	<i>cursor</i>
Smaller species, HW 1.70–1.74, SL 1.56, PW 1.08–1.14.	Larger species, HW 2.04, SL 1.94, PW 1.30.
Head slightly broader than long, CI 102–103.	Head slightly longer than broad, CI 98.
Metapleural lobes vestigial, scarcely or not visible in absolute profile.	Metapleural lobes large, conspicuous in absolute profile.
Anterior half of propodeal dorsum sloping downwards, posterior half more or less level.	Anterior half of propodeal dorsum shallowly concave, posterior half rising and shallowly convex.
Petiole node in profile with a short, narrowly rounded dorsum.	Petiole node in profile with an elongate, almost flat dorsum.
Postpetiole longer than broad in dorsal view.	Postpetiole broader than long in dorsal view.

Sculpture in the two species is very similar and they also share the characters of lacking a semicircular clypeal impression and possessing a broad ventral process on the peduncle of the petiole. Five other known species do not have a semicircular impression in the middle of the anterior clypeal margin, *cavatodorsatus*, *velox*, *ankhu*, *zekhem* and *turneri*, but none of these has the strongly developed constriction of the first gastral tergite seen in *laticeps* and *cursor*, and all lack a subpetiolar process. Apart from this *turneri* is small (HW < 1.30) and has large eyes which break the outline of the sides in full-face view; *velox* has a high, strongly convex petiole node (Fig. 32) and very feeble cephalic sculpture; and *cavatodorsatus* has the alitrunk strongly saddle-shaped in profile and the posterior half of the cephalic dorsum unsculptured.

Ocymyrmex micans Forel stat. n.

Ocymyrmex weitzeckeri var. *micans* Forel, 1910b: 12. Holotype worker, SOUTH WEST AFRICA: Okahandja (Peters) (MHN, Geneva) [examined].

WORKER. TL 6.2–6.9, HL 1.54–1.70, HW 1.40–1.56, CI 91–92, SL 1.38–1.44, SI 92–98, PW 0.92–1.00, AL 2.00–2.16 (2 measured).

Anterior clypeal margin with a semicircular median impression which is flanked by a pair of small teeth. Occipital margin very slightly concave or indented medially. Maximum diameter of eye 0.32–0.36, about 0.23 × HW. With alitrunk in profile the promesonotum evenly shallowly convex. Propodeal dorsum rounding broadly and evenly into the declivity. Metapleural lobes small and only feebly projecting, in profile mostly or wholly concealed by the bulge of the metapleural glands. Petiole node well defined, the dorsum narrowly and evenly rounded in profile, dome-like. Postpetiole swollen, the tergite low in front then rising behind into a distinctly convex, smoothly rounded node. In dorsal view the petiole node broad and conspicuous, its maximum width slightly greater than the distance from the spiracle to the apex of the petiolar collar where it articulates with the postpetiole. Postpetiole in dorsal view narrow in front, becoming

much broader behind, the width greater than the length. Base of first gastral tergite strongly constricted and forming a narrow neck behind the postpetiole. Sculpture of dorsum of head of dense, closely packed fine longitudinal irregular rugulae which, away from the midline in the area behind the level of the eyes, curve out towards the occipital corners. Behind the level of the eyes a conspicuous punctulate ground-sculpture is present which in places may be the dominant component of the sculpture. Where this is the case the rugulae are distinctly uneven, becoming wavy or even vermiculate. Dorsal alitrunk and propodeal declivity transversely rugose except between the mesothoracic spiracles where the sculpture is longitudinal. On the pronotum the rugae are arched-transverse around the longitudinal component. Sides of alitrunk regularly rugose, the rugae weakest and most widely spaced on the sides of the pronotum. Petiole and postpetiole unsculptured or the former with a few weak transverse rugulae ventrally and scattered vestigial marks elsewhere. All dorsal surfaces of head and body with numerous hairs of varying length except for the first gastral tergite where the hairs are short and sparse. Colour orange to orange-red, the gaster lighter in shade than the alitrunk.

O. micans, known at present only from the Okahandja region of South West Africa, is closest related to the widely distributed *fortior*. The two are separated on cephalic sculpture which is stronger, more sharply defined and more regular in *fortior*, and the punctulate ground-sculpture never dominates the rugulose/costulate component in this species. Besides this, the postpetiole of *fortior* is relatively long and narrow, always longer than broad, whereas in *micans* the postpetiole is distinctly swollen posteriorly and its width exceeds its length. Similarly, the petiole node in dorsal view is always markedly expanded in *micans*, only moderately so in *fortior*.

MATERIAL EXAMINED.

South West Africa: Okahandja (*M. C. Day*).

Ocymyrmex monardi Santschi stat. n.

Ocymyrmex weitzeckeri st. *monardi* Santschi, 1930: 68. Syntype workers, ANGOLA: Cakindo (*A. Monard*) (NM, Basle) [examined].

WORKER. TL 7.4–8.1, HL 1.78–1.88, HW 1.68–1.86, CI 95–99, SL 1.60–1.72, SI 92–95, PW 1.06–1.24, AL 2.22–2.40 (3 measured).

Anterior clypeal margin medially with a distinct semicircular impression which is flanked on each side by a small tooth. Eyes with maximum diameter 0.37–0.40, about 0.21–0.22 × HW. Promesonotum in profile evenly rounded, sloping posteriorly to the propodeum which itself slopes very shallowly to the evenly rounded posterior angle where the dorsum meets the declivity. Metapleural lobes small, broadly rounded to truncate posteriorly, not triangular. Metapleural glands not strongly swollen nor strongly projecting posteriorly, in profile not concealing even the bases of the metapleural lobes. Petiole in profile with the node evenly rounded, dome-like; in dorsal view the node as broad as long or slightly longer than broad. Postpetiole in dorsal view very slightly longer than broad. Base of first gastral tergite constricted. Sculpture on dorsum of head characteristic; space between frontal lobes and median strip of dorsum behind the frontal lobes finely and densely longitudinally costulate, with feeble punctulate ground-sculpture between the costulae. Behind the level of the eyes the costulae of this median area become much weaker and show signs of diverging, or fade out altogether, being replaced partially or entirely by coarse punctulate or granular sculpture which is very dense and conspicuous. The space between the inner margin of the eye and the antennal fossa, and the area extending back from this level to the occiput covered with dense irregular granular sculpture. Dorsal alitrunk and propodeal declivity transversely rugose except for the space between the mesothoracic spiracles and the median strip of the pronotum in front of this level, where the rugae are longitudinal. Petiole and postpetiole unsculptured except for faint superficial patterning or the former at most with a few vestigial transverse rugulae ventrally. All dorsal surfaces of head and body with hairs, but those on the first gastral tergite shorter and much sparser than on the alitrunk, where strong hairs are conspicuous. Alitrunk dull red to reddish tinted black, the head somewhat lighter in shade.

This moderately sized quite darkly coloured species is closely related to *fortior*, but is separated from it and from other close forms by the distinctive pattern of sculpture on the head.

MATERIAL EXAMINED

South West Africa: Swakopmund (*M. C. Day*).

Ocymyrmex nitidulus Emery stat. n.

(Figs 18, 22, 23)

Ocymyrmex robecchii st. *nitidulus* Emery, 1892: 116. Holotype female [not worker], SOMALI REPUBLIC: Obbia (*Robecchi*) (MCSN, Genoa) [examined].

WORKER. TL 7.4–7.8, HL 1.70–1.90, HW 1.64–1.82, CI 96–100, SL 1.48–1.60, SI 86–96, PW 1.08–1.20, AL 2.20–2.30 (20 measured).

Anterior clypeal margin with a conspicuous median semicircular impression which is flanked on each side by a low tooth or denticle, this tooth usually quite low and rounded, uncommonly strongly prominent. Maximum diameter of eye 0.34–0.40, about 0.20–0.22 × HW. Shape of alitrunk as in Fig. 18, the promesonotum evenly and broadly convex, sloping posteriorly to the propodeal dorsum; the latter rounding evenly into the declivity. Metapleural lobes small and low, bluntly rounded or broadly and bluntly truncated, sometimes reduced to a narrow little-projecting strip. Petiole node in profile small, low and smoothly rounded. In dorsal view the petiole node varying from slightly longer than broad to slightly broader than long. Postpetiole as broad as long to slightly broader than long in dorsal view. First gastral tergite constricted and forming a neck basally. Dorsum of head sculptured with low, rounded, feeble longitudinal costulae which may be very reduced or even effaced in places. Spaces between the costulae without ground-sculpture, the surface smooth and polished, with a slick and glossy appearance. Sides of alitrunk closely and finely sharply constulate, the dorsum sharply transversely costulate except between the mesothoracic spiracles where the sculpture is usually longitudinal. Pronotal dorsum in front of the longitudinal sculpture finely arched-costulate to smooth, the sculpture always weaker than elsewhere on the alitrunk, sometime partially or wholly effaced or the costulae reduced to vestiges. This weakening of the sculptural intensity may also affect the longitudinal costulae between the mesothoracic spiracles. Ventral surface of petiole node with a few transverse rugulae which may be very feeble but which normally extend for some distance up the sides of the node before fading out. Dorsum of petiole node unsculptured or at most with vestiges remaining. Dorsum of peduncle usually with transverse fine rugulae but these may be very reduced and faint. Postpetiole unsculptured or at most with some fine superficial patterning. All dorsal surfaces of head and alitrunk with numerous hairs of varying length, the first gastral tergite with hairs shorter and sparser than elsewhere. Colour glossy dull red, the gaster darker, blackish brown to black; entire body with a polished and shining appearance.

Only *nitidulus* and *celer*, among the species with the clypeus impressed and gaster constricted basally, lack strong ground-sculpture between the costulae or rugulae of the dorsal head. This gives them a slick and very polished appearance which immediately separates them from their allies in which granular or punctulate ground-sculpture is present, and which in consequence are dull and less polished. *O. nitidulus* and *celer* are separated by the shape of the pronotum, which is flat in the latter, rounded in the former (compare Figs 18 and 19), and by the shape of the head which is longer and narrower in *celer* than in *nitidulus*.

MATERIAL EXAMINED

Ethiopia: Meisso (*K. Guichard*). **Kenya:** Kajiado (*G. Nyamasyo*), Kajiado (*J. Darlington*). **Uganda:** N. Turkana Prov. (Lake Rudolf expd.). **Tanzania:** Longido West (*A. Loveridge*).

Ocymyrmex phraxus sp. n.

(Fig. 27)

HOLOTYPE WORKER. TL 7.9, HL 1.92, HW 1.82, CI 95, SL 1.58, SI 87, PW 1.15, AL 2.32.

Anterior clypeal margin with a deep median impression which is flanked on each side by a tooth. Sides of head in front of eyes more or less parallel, the head not broadening anteriorly. Maximum diameter of eye 0.38, about 0.21 × HW. Promesonotum forming an even, low convexity in profile which slopes gently downwards posteriorly. Propodeal dorsum rounding evenly into the declivity. Metapleural lobes low and rounded. Petiole in profile with a small node which is not sharply differentiated from the peduncle; the dorsum of the peduncle runs into the anterior face of the node without a marked change in slope. This surface is confluent behind with the dorsum, which is low and broadly evenly rounded. In dorsal view the node is narrow and almost parallel-sided, its maximum width not much greater than that of the posterior peduncle. Postpetiole longer than broad in dorsal view, discounting the anterior articulatory section. First gastral tergite constricted basally, forming a narrow neck behind the postpetiole. Dorsum of head densely sculptured with fine, sharply defined parallel longitudinal rugulae which are slightly divergent posteriorly

and more divergent laterally where they tend to arch outwards behind the eyes. Spaces between the rugulae filled with a fine dense and conspicuous punctulate ground-sculpture. Pronotum with arched-transverse costulae, with a patch of longitudinal sculpture between the mesothoracic spiracles. Remainder of dorsal alitrunk transversely rugose except for a small disorganized patch between the propodeal spiracles. Alitrunk dorsally lacking the punctulate ground-sculpture seen on the head. Petiole with a number of very fine rugulae which encircle the node, the postpetiole only with fine superficial patterning, or light shagreening. Dorsal surfaces of head and alitrunk all with numerous hairs, those on the first gastral tergite much shorter and sparser than those on the alitrunk. Alitrunk a dark, deep red, dully shining. Head dark red but lighter in shade than the alitrunk, the contrast easily visible to the naked eye. Gaster blackish brown to black, darker than the rest of the body.

PARATYPE WORKERS. TL 7.7–8.0, HL 1.90–1.96, HW 1.80–1.86, CI 94–96, SL 1.56–1.60, SI 85–89, PW 1.14–1.16, AL 2.26–2.34 (5 measured). Maximum diameter of eye 0.36–0.38, about 0.20–0.21 × HW. As holotype but some with the petiole node slightly broader in dorsal view and with the disorganized rugular patch on the propodeal dorsum less obviously developed.

Holotype worker, **Tanzania**: Shinyanga, viii.1949 (B. K. Coll.) (BMNH).

Paratypes. 4 workers with the same data as holotype (BMNH; MHN, Geneva).

Non-paratypic material examined. **Tanzania**: no further data.

The non-paratypic series matches the type-series well but has sculpture slightly more intense in development and has some workers which are slightly smaller, HL 1.78–1.90, HW 1.70–1.82, CI 95–96, SL 1.54–1.64, SI 90–93.

The sculpture of the petiole in *phraxus* is reminiscent of a reduced version of that found in *sobek*, but in the latter the node is greatly swollen and very distinctive (Fig. 20), and the gaster is yellowish, much lighter than the alitrunk.

Ocymyrmex picardi Forel

Ocymyrmex picardi Forel, 1901: 306. LECTOTYPE worker, ANGOLA: Mossamedes, Cubango-Cuito (MHN, Geneva), here designated [examined].

Ocymyrmex carpenteri Donisthorpe, 1933: 195. Holotype female [not worker], BOTSWANA: Ngamiland, ix.1930–i.1931 (*G. D. H. Carpenter*) (BMNH) [examined]. **Syn. n.**

Note. The number of specimens in the original syntypic series of *picardi* was not stated by Forel. At the time of this study only two specimens, mounted on a single pin, were found bearing the label 'typus'. Of these the top specimen is a worker and fits the original description perfectly; it is here designated as lectotype of *picardi*. The lower specimen, now remounted on a separate pin, is a female and is not mentioned in the original description.

WORKER. TL 11.6–12.6, HL 2.52–2.80, HW 2.44–2.68, CI 93–97, SL 2.30–2.52, SI 90–98, PW 1.60–1.80, AL 3.40–3.68 (20 measured).

Very large species. Anterior clypeal margin with a conspicuous median semicircular impression which is flanked by a small tooth on each side. Maximum diameter of eye 0.46–0.51, about 0.19–0.20 × HW. With the head in full-face view the occipital margin varying from approximately transverse to feebly indented medially. Promesonotum in profile evenly and broadly convex, sloping posteriorly to the propodeal dorsum which, in this species, is not as strongly depressed below the level of the promesonotum as is usual elsewhere in the genus. Propodeal dorsum rounding broadly and evenly into the declivity. Metapleural lobes rounded, visible in profile, not concealed by the bulge of the metapleural glands. Petiole node in dorsal view as broad as or broader than long. Postpetiole slightly longer than broad in dorsal view, discounting the anterior articular portion. Base of first gastral tergite narrow, in dorsal view no broader than the postpetiole, but the sides evenly diverging from their junction with the postpetiole, without a roughly parallel-sided neck. Dorsum of head finely, densely and more or less evenly longitudinally costulate, the costulae rarely approximately straight, much more commonly diverging behind towards the occipital corners. Infrequently a few transverse costulae may be present occipitally. Individual costulae commonly irregular, tending to be narrowly sinuate or wavy, especially away from the midline of the dorsum. Ground-sculpture a fine dense punctulation. Dorsal alitrunk and propodeal declivity transversely rugose except for the space between the mesothoracic spiracles and part of the pronotal dorsum, where sculpture is longitudinal to oblique. Sides of alitrunk rugose, the sculpture less regular on the pleurae than on the sides of the pronotum. Petiole with transverse rugae ventrally, below the node, and also with a few dorsally on the peduncle in front of the node.

On the node itself sculpture is usually restricted to a superficial patterning with vestigial rugulae, but occasionally one or two stronger transverse rugulae may be present dorsally, or vertically on the sides, or both. Postpetiole unsculptured except for superficial patterning. All dorsal surfaces of body with scattered strong dark hairs which are reddish brown to blackish; those on the first gastral tergite very sparse and much shorter than those on the alitrunk. Colour very dark red to black, the head usually slightly lighter in shade than the alitrunk and the gaster generally darker.

A very conspicuous species, the largest known in the genus, *picardi* appears to be quite widely distributed in southern Africa. By its size alone it is unlikely to be confused with any other species.

The female (queen) of *picardi* was first described by Donisthorpe as a worker, under the name of *carpenteri*. The holotype matches the female in the same series as the *picardi* lectotype and the synonymy is thus absolute. The female of *picardi* fits the description given above and its dimensions fall within the ranges given. The only differences from the worker lie in those characters discussed under the generic diagnosis, namely the broader straighter margins to the frontal lobes, broader antennal scapes and sharp transverse sculpture on the posterior portion of the dorsum of the head.

MATERIAL EXAMINED

Zimbabwe: Umgusa Riv., Sawmills (*G. Arnold*); Insiza Riv. (no name). **Botswana:** Sevrelela (*L. Schultze*); Okavango Delta, Smiti (*A. Russell-Smith*); Kalabura (ex coll. Donisthorpe); Tsabong (*G. Arnold*); Nkate (Vernay-Lang expd.); Matopo Pan (*G. U. Son*); Shaleshonto (*G. U. Son*). **South West Africa:** Kalahari Desert (no name).

Ocymyrmex robecchii Emery

(Fig. 24)

Ocymyrmex robecchii Emery, 1892: 114, fig. Syntype workers, SOMALI REPUBLIC: Uebi (*Robecchi*), and Erdal (*Pavesi*) (MHN, Geneva; MCSN, Genoa) [examined].

WORKER. TL 9.2–9.3, HL 2.20–2.22, HW 2.02–2.04, CI 92, SL 2.08–2.16, SI 103–106, PW 1.26–1.28, AL 2.52–2.60 (2 measured).

Anterior clypeal margin with a strong semicircular median impression flanked by a pair of short rounded denticles. Outline shape of head as in Fig. 24, the head longer than broad (CI < 100), with sides which converge posteriorly, and with the occipital margin strongly impressed medially. Maximum diameter of eye 0.40, about 0.20 × HW. Scapes long, SI > 100. With alitrunk in profile the mesonotum anteriorly forming a distinct hump behind the pronotum, the two not forming a single continuous convexity. Orifices of mesothoracic spiracles protected by a pair of low tumuli or welts which project from the surface. Mesonotal dorsum sloping shallowly downwards posteriorly and confluent with the propodeal dorsum which is flat to very feebly concave to the level of the spiracle where it becomes shallowly convex and rounds broadly and evenly into the declivity. Metapleural lobes large and strongly developed, prominent, broadly subtriangular in shape and slightly upcurved. Peduncle of petiole without a ventral process. Petiole node in dorsal view very narrow, slightly expanded. Postpetiole in dorsal view much longer than broad. Basal portion of first gastral tergite constricted, forming a narrow neck behind the postpetiole. Dorsum of head with arched-longitudinal costulae on the genae and frontal lobes, the costulae curving in towards the midline posteriorly. Remainder of dorsum to occipital margin densely transversely costulate. Ground-sculpture vestigial, merely a superficial patterning between the costulae. Sides of alitrunk strongly, regularly and sharply costulate everywhere, the dorsum similarly sculptured, as is the propodeal declivity. All dorsal sculpture transverse except between the mesothoracic spiracles. Petiole encircled by fine rugulae or costulae which are most strongly developed ventrally. Postpetiole and gaster unsculptured. All dorsal surfaces of head and body with scattered acute hairs of varying length; those on the first gastral tergite shorter and sparser than elsewhere. Colour dark dull red, the postpetiole and gaster lighter, yellowish.

A large and conspicuous species, *robecchii* is characterized by its strongly impressed median clypeal notch, transverse cephalic sculpture, strongly impressed occipital margin, long scapes and large size. Although the two specimens seen possess the transverse cephalic sculpture characteristic of females in this genus, they lack the associated characters of shorter thicker scapes and broader, more parallel-sided frontal lobes which are usually associated with this caste (see discussion under the generic diagnosis). For this reason I have chosen to treat these specimens as

bona fide workers for the time being, and have used the direction of cephalic sculpture as a key character in case they do not turn out to be females. This of course cannot be ascertained until more material becomes available.

Ocymyrmex shushan sp. n.

(Fig. 31)

HOLOTYPE WORKER. TL 6.7, HL 1.66, HW 1.58, CI 95, SL (antennae missing), PW 1.02, AL 2.14.

Anterior clypeal margin with a small but distinct median semicircular impression, which is flanked by a pair of short, acute teeth. Maximum diameter of eye 0.34, about $0.22 \times$ HW. Sides of head behind eyes evenly convex and narrowing, rounding into the occipital margin with which, if it were not for the median impression in the latter, they would form a very regular arc. In profile the posterior pronotum and anterior part of mesonotum high and strongly convex, forming a dome-like outline above the level of the mesothoracic spiracles. Pronotum in front of this and mesonotum behind it sloping away evenly, increasing the dome-like appearance. Posterior portion of mesonotum and dorsum of propodeum more or less flat in profile, the latter rounding broadly into the convex declivity. Metapleural lobes small and low, rounded. Peduncle of petiole flat dorsally but sinuate ventrally. Petiole node in profile low dome-like, smoothly and evenly rounded. Postpetiole in profile subglobular, Fig. 31. In dorsal view the petiole node much broader than long, all surfaces smoothly rounded; postpetiole slightly longer than broad. Base of first gastral tergite constricted and forming a neck behind the postpetiole. Dorsum of head finely and densely longitudinally rugulose, the rugulae diverging away from the midline posteriorly. Ground-sculpture between the rugulae a strong and conspicuous punctulation which in places seems as strongly developed as the regular sculpture. Pronotum with a few strong transverse costulae on the cervical shield but behind this the costulae which arch up from the sides become very faint or vestigial when traversing the dorsum. Between the mesothoracic spiracles and extending for a short distance forwards and backwards is a patch of low longitudinal rugosity. Remainder of alitrunk and propodeal declivity transversely rugose or costulate. Petiole node smooth and shining, the anterior peduncle with some very faint transverse striae. Postpetiole unsculptured. Body everywhere lacking the conspicuous punctulate ground-sculpture which is so well developed on the head. All dorsal surfaces of head and body with numerous hairs, those on the first gastral tergite shorter and sparser than those on the alitrunk. Colour uniform bright orange.

Holotype worker, **South West Africa**: Gobasis, 17.xii.1933 (*J. Ogilvie*) (BMNH).

This bright orange species is characterized amongst forms with both a gastral constriction and an impressed clypeal margin by the strongly convex anterior portion of the dorsal alitrunk and the shape of the petiole, as described above.

Ocymyrmex sobek sp. n.

(Fig. 20)

HOLOTYPE WORKER. TL 7.8, HL 1.90, HW 1.82, CI 96, SL 1.70, SI 93, PW 1.18, AL 2.44.

Anterior clypeal margin with a conspicuous median semicircular impression which is flanked by a pair of small teeth. Occipital margin in full-face view feebly indented medially, the margin continuous with the sides through a broad, shallow curve. Maximum diameter of eye 0.40, about $0.22 \times$ HW. Promesonotum in profile evenly convex, the dorsum of the propodeum rounding broadly and evenly into the declivity. Metapleural lobes small, subtriangular in shape, but plainly visible in profile and not concealed by the bulge of the metapleural glands. Ventral surface of peduncle of petiole without a projecting process, the node strongly swollen and conspicuous (Fig. 20). In profile the large node with a developed posterodorsal angle, not rounded as is usual in the genus. In dorsal view the petiole node massive, almost as large as the postpetiole; the latter also somewhat swollen, about as high as long in profile and broader than long in dorsal view. Base of first gastral tergite constricted, in dorsal view forming a neck behind the postpetiole which is narrower than the maximum width of the postpetiole itself. Dorsum of head finely and densely costulate to rugulose, the sculpture most regular on the central strip of the dorsum. On each side of this central strip the rugulae more wavy and irregular, and tending to diverge posteriorly towards the occipital corners, arching round above the eyes. Spaces between the rugulae with fine dense punctulate ground-sculpture. Anterior portion of pronotum with arched-transverse rugae, behind this with an area where the rugae are almost longitudinal, very slightly oblique, running back between the mesothoracic spiracles; remainder of dorsum and also propodeal declivity coarsely transversely rugose. Sides of alitrunk coarsely

rugose. Node of petiole coarsely rugose, the rugae continuous, running transversely on the ventral surface, up the sides of the node and across the dorsum; on the dorsum less regular than elsewhere. Anterior face of node and dorsum of peduncle in front of node also transversely rugose. Postpetiole unsculptured except for fine superficial shagreening. Dorsal surfaces of head, alitrunk and pedicel segments with numerous strong hairs. First gastral tergite with hairs much shorter and sparser than elsewhere. Alitrunk dull reddish black (appearing black to the naked eye); gaster dull yellowish red, much lighter than the alitrunk and contrasting strongly with it; head a dull red intermediate in shade between gaster and alitrunk so that the ant appears tricoloured to the naked eye.

PARATYPE WORKERS. TL 7.6–8.0, HL 1.70–1.90, HW 1.64–1.88, CI 93–100, SL 1.56–1.74, SI 92–99, PW 1.08–1.20, AL 2.20–2.44 (11 measured). Maximum diameter of eye 0.36–0.40, about 0.22–0.24 × HW. Answering description of holotype but some with the posterodorsal angle of the petiole more rounded and the pronotal sculpture showing the usual variation, with differences in extent and direction of the longitudinal component. In most the longitudinal rugae are antero-posteriorly straight, but in some (as in the holotype) they are oblique and in a few decidedly transverse. Sculpture pattern on the dorsum of the head is usually as described above but in a few the rugulae run straight back everywhere, not diverging towards the occipital corners, and in one the rugulae between the eye and the central strip of the head are more or less all transverse.

Holotype worker, **Botswana**: Smiti, no. 16, mopane woodland, 11.ix.1975 (*A. Russell-Smith*) (BMNH).

Paratypes. 11 workers with same data as holotype (BMNH; MCZ, Cambridge; NM, Basle; MHN, Geneva; NM, Bulawayo).

Non-paratypic material examined. **Zimbabwe**: Victoria Falls (*G. Arnold*); Victoria Falls (*H. Swale*); Victoria Falls (*M. Grabham*). **Botswana**: Kabulabula (*G. U. Son*).

Size range in the non-paratypic material is TL 7.6–8.8, HL 1.80–2.00, HW 1.70–1.96, CI 93–98, SL 1.64–1.80, SI 91–98, PW 1.12–1.28, AL 2.24–2.52 (15 measured). Measurements of eyes all fall within the range of the paratype-series.

This strongly sculptured and conspicuously coloured species is closest related to *foreli*. Among the species with a clypeal impression and a distinctly constricted first gastral segment only two, *sobek* and *foreli*, have the petiole much enlarged and very strongly sculptured. The two are best separated on their colour, as indicated in the key, but it is also notable that the rugae on the petiole node are narrower and more sharply defined in *foreli* than in *sobek*, where they tend to be blunted and much less regular on the dorsum.

Ocymyrmex sphinx sp. n.

(Fig. 21)

HOLOTYPE WORKER. TL 9.3, HL 2.18, HW 2.04, CI 94, SL 1.96, SI 96, PW 1.32, AL 2.86.

Large species. Anterior clypeal margin with a conspicuous semicircular impression medially which is flanked on each side by a low but broad triangular tooth. Occipital margin feebly indented medially in full-face view. Maximum diameter of eye 0.43, about 0.21 × HW, the eyes distinctly failing to break the outline of the sides of the head in full-face view. Promesonotum rounded in profile, sloping posteriorly to the propodeum which is almost flat and which rounds evenly into the steep declivity. Metapleural lobes small, narrowly rounded and prominent, in absolute profile just visible behind the bulge of the projecting metapleural glands. Petiole node small and rounded in profile, the peduncle with a feebly convex area midway along its ventral surface but without a developed process. Petiole node in dorsal view distinctly broader than long, strongly developed, constricted behind at the posterior peduncle. Postpetiole about as broad as long in dorsal view, excluding the anterior articular portion. Base of first gastral tergite narrow, no wider than the postpetiole, but not forming as conspicuously narrowed a neck as is usual in this genus. Instead the gaster begins to widen gradually almost immediately behind its articulation with the postpetiole, the sides at first gradually and then more strongly divergent in dorsal view. Dorsum of head finely, densely and irregularly longitudinally rugulose everywhere, with dense conspicuous coarse punctulate to granular ground-sculpture between the rugulae. On the central strip of the dorsum the rugulae are most regular behind the frontal lobes, posteriorly they become narrowly vermiculate. Occipitally and laterally on the dorsum the rugulae are narrowly vermiculate everywhere and tend to arch outwards behind the eyes. Rugae on pronotal dorsum arched-transverse anteriorly. An area of longitudinal sculpture occurs between the mesothoracic spiracles, visible in paratypes, but in the holotype a pin is inserted at this point and the

sculpture destroyed. Remainder of dorsal alitrunk and declivity coarsely transversely rugose. Petiole and its peduncle finely transversely rugose ventrally; behind the level of the spiracle the rugae continuing up the sides of the node and across the dorsum. Transverse rugae also present on dorsum of peduncle. Dorsum of postpetiole finely granular and matt. All dorsal surfaces of head and alitrunk densely clothed with hairs, many of them quite short. Propodeum dorsally also with dense pubescence. Hairs on first gastral tergite very short and sparse. Colour a very dull dark red, the gaster black.

PARATYPE WORKERS. TL 9.5–10.1, HL 2.16–2.28, HW 2.08–2.14, CI 93–96, SL 1.95–2.06, SI 94–98, PW 1.38–1.44, AL 2.90–3.02 (12 measured). Maximum diameter of eye 0.44–0.46, about 0.20–0.22 × HW. As holotype but some showing shorter pilosity than others, apparently due to the hairs having been broken off.

Holotype worker, **Botswana**: 18 miles [29 km] NE. of Kalkfontein, 12–13.iv.1972, no. B3 (*M. C. Day*) (BMNH).

Paratypes. **Botswana**: 19 workers, Kuke Pan, 26.iii.1930, Vernay-Lang Kalahari Expd. (*G. U. Son*) (MCZ, Cambridge; BMNH; NM, Bulawayo).

At first glance this species appears to be a smaller version of *picardi* but, apart from being consistently smaller it has silvery body hairs where those of *picardi* are dark reddish brown to blackish, has much denser pilosity and pubescence on the propodeal dorsum and has much stronger, denser and more sharply defined ground-sculpture on the dorsum of the head than is seen in *picardi*. The cephalic sculpture of *sphinx* is much the same as that seen in *monardi*, but this latter species is much smaller and has the petiole node unsculptured.

Ocymyrmex turneri Donisthorpe

(Fig 25)

Ocymyrmex turneri Donisthorpe, 1931: 499. Holotype worker, SOUTH WEST AFRICA: Walvis Bay, 1.xii.1927 (*R. E. Turner*) (BMNH) [examined].

WORKER. TL 5.8, HL 1.40, HW 1.28, CI 91, SL 1.40, SI 109, PW 0.80, AL 1.76.

Small species. Anterior clypeal margin without a median impression, on the contrary the middle of the anterior clypeal margin projecting forward as a low, broad triangular prominence. Eyes relatively large, maximum diameter 0.36, about 0.28 × HW. In full-face view the eyes very conspicuously breaking the outline of the sides of the head. Antennal scapes relatively long, SI > 100. Promesonotum in profile rounded, with a low transversely arched crest running across the dorsum at the junction of pronotum and mesonotum, arching forward from the mesothoracic spiracle on each side. Posterior part of mesonotum and anterior part of propodeum concave in profile, the posterior portion of the propodeum convex and curving evenly into the declivity behind. Petiole node in profile high, subconical, with a narrowly rounded dorsum, the posterior face convex, the anterior face longer, almost flat and less steeply sloped than the posterior face. Petiole node in dorsal view longer than broad, the postpetiole broader than long. First gastral tergite without a constricted basal neck. Dorsum of head glossy, sculptured with very feeble superficial rugulae which are transversely arched and are almost effaced occipitally. Ground-sculpture between the faint rugulae absent. Dorsal alitrunk unsculptured, smooth and highly polished except for vestiges of faint transverse rugulae on the extreme anterior portion of the pronotum and the propodeal declivity. On the sides of the alitrunk the pleurae with strong, widely spaced and roughly parallel rugae, otherwise unsculptured except for vestiges on the sides of the pronotum near the base. Petiole and postpetiole only with faint superficial patterning which is almost effaced in places. All dorsal surfaces of head and body with scattered hairs of varying length but the holotype (and only known specimen) appears to be considerably abraded and in life this species may well be as hairy as other species in the genus. Alitrunk jet black and shiny, head and gaster blackish brown.

O. turneri is one of the smallest species known in the genus and is easily distinguished from all others by having an unconstricted base to the gaster, large eyes which break the outline of the sides of the head, reduced sculpture, relatively long antennal scapes and a clypeal margin which projects medially into a low triangular prominence. To date it remains known only from the holotype.

Ocymyrmex velox Santschi

(Fig. 32)

Ocymyrmex velox Santschi, 1932: 387. Syntype workers, SOUTH WEST AFRICA: Otjimbimbi, Kunene R., iii.1923 (*G. Arnold*) (NM, Basle; NM, Bulawayo) [examined].

WORKER. TL 10.0–10.7, HL 2.20–2.40, HW 2.08–2.30, CI 95–97, SL 2.10–2.29, SI 101–105, PW 1.30–1.42, AL 2.48–2.96 (8 measured).

Large species; anterior clypeal margin entire or very feebly eroded medially giving a weakly crenellated appearance, without a median semicircular impression. Maximum diameter of eyes 0.40–0.43, about 0.19–0.20 × HW. Frontal lobes distinctly convergent posteriorly, the occipital margin indented medially in full-face view. Antennal scapes relatively long, SI above. Promesonotum forming an even low convexity in profile which may be somewhat flattened above in some individuals. Propodeal dorsum more or less flat, usually sloping shallowly downwards posteriorly to the evenly rounded junction with the declivity; the alitrunk not saddle-shaped. Metapleural lobes low and rounded. Petiole node relatively large in profile, high, dome-like and evenly rounded, the anterior peduncle without a ventral process. In dorsal view the petiole node longer than broad. Postpetiole in dorsal view slightly broader than long. Base of first gastral tergite in dorsal view not forming a narrow bottle-neck-like constriction. The tergite basally is no wider than the postpetiole but the sides diverge evenly from immediately behind the articulation. Sculpture of head very feeble, faint and even effaced in places, at most consisting of a few weak and superficial irregular rugulae. Ground-sculpture where present only of a weak superficial patterning or shagreening. Dorsal alitrunk transversely rugulose, with or without a patch of longitudinal sculpture on the pronotum and between the mesothoracic spiracles. Rugulae on the propodeal dorsum may be irregular or broken. Petiole and postpetiole dorsally only with superficial patterning, or the former with faint rugular vestiges. Ventral surface of petiole with weak transverse rugulae which may extend up the sides of the node and onto the dorsum, but these are vestigial in some individuals. Dorsal surfaces of head and alitrunk with hairs but these are very rare or even absent on the first gastral tergite. Alitrunk dull red to blackish red, the head a lighter red and the gaster lighter still, orange or even yellow in some individuals.

O. velox is one of the seven known species in this genus which lack a conspicuous semicircular impression in the middle of the anterior clypeal margin. The others are *turneri*, *laticeps*, *cursor*, *ankhu*, *zekhem* and *cavatodorsatus*. Of these *turneri* is a small shiny species with large eyes which break the outline of the sides of the head, and *cursor* and *laticeps* have the dorsum of the head strongly sculptured and have the first gastral tergite constricted into a narrow neck basally. *O. cavatodorsatus* shares most characters with *velox*, but the shape of the alitrunk is very different; besides this *cavatodorsatus* is much smaller and has the sculpture of the alitrunk much reduced. Separation of *velox* from *ankhu* and *zekhem* is discussed under those names.

MATERIAL EXAMINED

South West Africa: Otjiwarongo (*G. Hobohm*). Angola Cahama (*E. S. Ross & R. E. Leech*).

Ocymyrmex weitzackeri Emery

(Fig. 30)

Ocymyrmex weitzackeri Emery, 1892: 116. Syntype workers, LESOTHO: Leribe (*Weitzacker*) (MCSN, Genoa) [examined].

Ocymyrmex weitzackeri subsp. *wroughtoni* Forel, 1910b: 13. Syntype workers, male, SOUTH AFRICA: Natal (*Wroughton*) (MHN, Geneva) [examined]. *Syn. n.*

WORKER. TL 6.8–7.8, HL 1.70–1.80, HW 1.62–1.72, CI 94–99, SL 1.44–1.58, SI 88–94, PW 1.02–1.10, AL 2.16–2.30 (8 measured).

Anterior clypeal margin with a conspicuous semicircular median impression flanked by a pair of short teeth. Occipital margin in full-face view with a median indentation. Maximum diameter of eyes 0.36–0.40, about 0.22–0.23 × HW. Promesonotum evenly convex in profile, the propodeal dorsum flat to very shallowly convex, rounding evenly into the declivity which is almost vertical. Metapleural lobes small but prominent, their apices narrowly rounded. Petiole in profile as in Fig. 30. Petiole node in dorsal view very broad, distinctly broader than long and its width greater than the distance from the spiracle to the apex of the collar where the petiole articulates with the postpetiole. Postpetiole node in dorsal view broader than long (excluding the anterior articulating portion). Base of first gastral tergite strongly constricted behind the

postpetiole and forming a distinct neck. Head finely and densely rugulose everywhere, with punctulate or granular ground-sculpture. Pattern of the rugulae varying between individuals. On the dorsum from the level of the eyes to the occiput the rugulae never all running straight back. Either the rugulae away from the median strip diverge towards the occipital corners, or the rugulae close to the inner or posterior margins of the eyes are irregular to vermiculate; in some the rugulae are extensively vermiculate on the head. Dorsal alitrunk and propodeal declivity transversely rugose except for the area between the mesothoracic spiracles where the sculpture is longitudinal. Other components of the pronotal sculpture arch around the anterior end of these longitudinal rugae. In some workers the pronotum appears to be entirely longitudinally rugose in dorsal view as the median rugae extend so far forward that the more laterally situated rugae must parallel them almost to the cervical shield before arching round. Petiole with a few transverse rugae ventrally which may extend for some distance up the sides; the node with a few weak to vestigial transverse rugulae, those traversing the peduncle in front of the node stronger than those on the node itself. Postpetiole unsculptured except for the usual faint superficial patterning. All dorsal surfaces of head and body with fairly dense pilosity, the hairs of varying length; those on the first gastral tergite shorter and sparser than elsewhere on the body. Colour everywhere dark red to blackish red, in some specimens very dark indeed, almost entirely black.

Known only from the two type-series above and the two short series recorded below, *weitzckeri* has served as the base from which many infraspecific forms have been described in the past. Of all the names formerly attached to it only *wroughtoni* has proved to be synonymous; the treatment of the remainder is summarized under the synonymic list of species.

MATERIAL EXAMINED

South Africa: Orange Free State, Donga (*R. W. Slobey*); Transvaal, no loc. (*G. Arnold*).

Ocymyrmex zekhem sp. n.

HOLOTYPE WORKER. TL 8.4, HL 2.06, HW 1.90, CI 92, SL 2.20, SI 116, PW 1.40, AL 2.50.

Anterior clypeal margin entire, without trace of a median notch or impression. Maximum diameter of eye 0.40, about 0.21 × HW, the eyes only just failing to break the outline of the sides in full-face view. Sides of head in front of eyes straight, diverging anteriorly; behind the eyes the sides rounding broadly and evenly into the occipital margin, the latter very shallowly impressed medially in full-face view. Antennal scapes the longest yet known in the genus (see SI, above). With the alitrunk in profile the promesonotum low, evenly shallowly convex. Posterior part of mesonotum and anterior part of propodeum sloping gently downwards posteriorly, the posterior half of the propodeal dorsum levelling off for a short distance before rounding smoothly into the gently convex declivity. Metapleural lobes low and narrow, rounded and only slightly projecting, but not at all concealed by the metapleural gland bulla in absolute profile. Petiole in profile with ventral surface of peduncle shallowly sinuous but without a developed process. Dorsal surface of peduncle also irregular and passing through a blunt angle about one-third the way from the base. Petiole node evenly rounded and dome-like in profile; long and narrow in dorsal view, longer than broad and no broader than the posterior peduncle, the sides of the node scarcely convex. Postpetiole in dorsal view broader than long. Base of first gastral tergite no wider than the postpetiole in dorsal view but not forming a narrow neck; instead the sides of the tergite diverge quickly and evenly from the base. Dorsum of head with sculpture almost effaced, the surface between the eyes with faint narrow longitudinal costulae which are quite close-packed and almost effaced in places. Occipitally the costulae present are even weaker than between the eyes and are transverse. Ground-sculpture between the narrow costulae everywhere vestigial or absent, the surface shining and mostly smooth. Dorsum of pronotum transversely arched-rugose, centrally with an area of longitudinal rugosity; everywhere else the alitrunk transversely rugose. Sides of alitrunk more strongly sculptured than dorsum, the rugae no denser but more sharply defined and more strongly developed. Petiole, postpetiole and gaster unsculptured except for a faint superficial reticular pattern. All dorsal surfaces of head and body with numerous standing hairs. Basal half of first gastral tergite with a number of conspicuous long hairs which are as long as those on the dorsal alitrunk. Head very dark dull red, alitrunk glossy jet black, remainder of body blackish brown but the pedicel segments with a reddish tint. Legs and antennae dark dull red to reddish dark brown, approximately the same colour as the sides of the head.

Holotype worker, **South West Africa:** Tsisab Cyn., Brandberg Mts, 550 m, 11.v.1958 (*E. S. Ross & R. E. Leech*) (CAS, San Francisco).

O. zekhem is one of the seven species known in this genus which lack a notch or impression in the anterior clypeal margin. Of these seven species two, *laticeps* and *cursor*, have the base of the first

gastral tergite constricted and forming a narrow neck, which quickly separates them from *zekhem*. Two other species, *turneri* and *cavatodorsatus*, are differentiated from *zekhem* by being much smaller and having shorter scapes, as well as by their possession of specializations not seen in *zekhem*. In *turneri* the eyes are large ($0.28 \times \text{HW}$) and very conspicuously break the outline of the sides of the head in full-face view; in *cavatodorsatus* the alitrunk outline is strongly saddle-shaped. The only other known species which lack a clypeal notch are *ankhu* and *velox*, a close species-pair. In both these species, however, the scapes are shorter than in *zekhem* and the first gastral tergite lacks conspicuous long hairs on the basal half. Such pilosity is distinct in *zekhem* where the hairs are as long as those on the dorsal alitrunk, whereas in both *ankhu* and *velox* hairs are frequently absent from the first tergite, and when present they are very sparse, short and inconspicuous.

PRISTOMYRMEX Mayr

(Figs 33–37)

- Pristomyrmex* Mayr, 1866: 903. Type-species: *Pristomyrmex pungens* Mayr, op. cit.: 904; by monotypy.
Odontomyrmex André, 1905: 207. Type-species: *Odontomyrmex quadridentatus* André, op. cit.: 208; by monotypy. [Synonymy by Mann, 1919: 341.]
Hylidris Weber, 1941: 190. Type-species: *Hylidris myersi* Weber, loc. cit. (= *Pristomyrmex africanus* Karavaiev); by original designation. [Synonymy by Brown, 1953: 9.]
Dodous Donisthorpe, 1946: 145. Type-species: *Dodous trispinosus* Donisthorpe, loc. cit.; by original designation. [Synonymy by Brown, 1971: 3.]

DIAGNOSIS OF WORKER. Distal portion of each mandible in anterior view suddenly broadened, much broader than proximal portion. Apical (masticatory) margin usually with 4 teeth arranged as apical + preapical + short diastema + 2 basals, of which the first basal is usually the smallest tooth. An offset basal denticle may also be present as may a tooth about midway on the basal margin. In some species there is a tendency for the two basal teeth to fuse, resulting in a broad basal tooth with two points. With wear these appear as a single broad blunt tooth. Less commonly the mandible with 3 teeth only (apical + preapical + long diastema + single basal), or with 5 teeth. Palp formula usually 1, 3 or 2, 3 (1, 3 in *africanus* and *orbiceps*; 2, 3 in *trogor*; 5 extralimital species also dissected) but higher in *pungens*-group with 4, 3 in *cribrarius* and 5, 3 in *pungens* itself. Lateral portions of clypeus in front of antennal insertions reduced to a thin plate or ridge, often translucent and usually projecting. Median portion of clypeus shield-like, broad between the antennal insertions and frequently with a median carina, its anterior margin prominent and with a projecting apron which is usually equipped with teeth or denticles but sometimes is merely crenulate. Median portion of clypeus projecting over the mandibles when the latter are closed. Frontal lobes reduced or absent so that the articulations of the antennae are mostly or wholly exposed and the roughly circular depressed areas containing the antennal sockets are clearly visible. Frontal carinae variously developed, ranging from absent to conspicuous, sometimes bounded below by a genal carina running longitudinally outside the depressed area of the antennal insertions. Antennae with 11 segments, with a strong 3-jointed apical club. Eyes present in all known species, situated approximately at the midlength of the sides of the head, very variable in size. Alitrunk fusiform, without sutures dorsally. Pronotum often armed with spines, teeth or tubercles of varying size but frequently only with minute prominences or unarmed. Propodeum with a pair of spines or teeth. Propodeal spiracle circular. Metapleural lobes present and usually conspicuous. Orifice of metapleural glands situated some distance up the pleuron, not in the posterior lower corner. Below the gland orifice is a smooth and usually concave area running down towards the coxa, the concave area is bounded by a ridge on each side and appears to be a specialized surface from which the products of the glands may evaporate easily. Petiole nodiform, with a long anterior peduncle. Gaster commonly without hairs or only very sparsely hairy. Sting long and very slender, the apical portion often very thin and hair-like.

Discounting synonyms and infraspecific forms the genus *Pristomyrmex* contains about 38 named species to date. Of these names five valid species belong to the Ethiopian region (see below), six to Australia (Taylor, 1965; 1968), and two to the Malagasy region (Brown, 1971). The remaining 26 names apply to the Oriental/Indo-Australian forms for which no synthesizing taxonomic study has ever been undertaken. Without doubt a proportion of these names represent synonyms and equally without doubt a fair number of new species from these regions await description, so 26 may in fact be a good indication of the actual number of species in the Oriental and Indo-Australian regions, with a preponderance of forms in the latter.

The genus most closely related to *Pristomyrmex* is the monotypic *Perissomyrmex* Smith (1947: 281), which differs mainly in having the antennae with only 9 segments, as opposed to 11 in *Pristomyrmex*. *Perissomyrmex* was based on a couple of specimens intercepted in quarantine in the U.S.A., ostensibly on a ship from Guatemala. But, although Kempf (1972: 182) includes *Perissomyrmex* in his Neotropical catalogue and that area has been tacitly accepted as the place of origin, there is no hard evidence that Guatemala is in fact the original home of the genus. It so resembles *Pristomyrmex* that an Old World origin must be suspected, and the recent discovery by Cesare Baroni Urbani of a second *Perissomyrmex* species in Bhutan (as yet undescribed) adds weight to the argument that South America is not the place of origin but that the specimens of the type-species were brought to the U.S.A., via Guatemala, from somewhere in the Oriental region, or possibly the Indo-Australian region, by human commerce.

Most *Pristomyrmex* species nest in rotten wood, either in fallen twigs in the litter layer or in larger pieces of timber. Some nest in rotten parts of standing trees but most appear to prefer the ground, foraging in the leaf litter and top soil. Of the five African species three, *fossulatus*, *cribrarius* and *trogor*, seem fairly limited in distribution, with the first known from South Africa, the second from South Africa and Mozambique, and the latter only from Zaire. *P. orbiceps* is widely distributed throughout the wet forest zones of west and central Africa whilst the last species, *africanus*, has an extremely wide range and seems able to inhabit woodlands and forests virtually throughout sub-Saharan Africa.

Synonymic list of species

africanus Karavaiev

myersi Weber **syn. n.**

myersi subsp. *mbomu* Weber **syn. n.**

myersi subsp. *primus* Weber **syn. n.**

myersi subsp. *beni* Weber **syn. n.**

cribrarius Arnold

fossulatus (Forel)

orbiceps (Santschi)

laevigatus Weber **syn. n.**

trogor sp. n.

Key to species (workers)

- 1 Sides of petiole and postpetiole with coarse rugose sculpture. Sides of head behind eyes with abundant short stout projecting straight hairs. (South Africa, Mozambique) *cribrarius* (p. 285)
- Sides of petiole and postpetiole smooth and shining. Sides of head behind eyes without projecting straight hairs 2
- 2 Frontal carinae absent; the backward projections of the frontal lobes terminating at the ends of the antennal fossae, not reaching back even as far as the level of the anterior margins of the eyes (Fig. 36). Antennal scapes relatively long, SI 100 or more. (Zaire) *trogor* (p. 287)
- Frontal carinae present; the backward projections of the frontal lobes running back to or beyond the level of the posterior margins of the eyes (Fig. 37). Antennal scapes relatively short, SI in range 80–94 3
- 3 Eyes relatively small, maximum diameter only 0.12–0.15 × HW, with only 4–5 ommatidia in the longest row. Pronotum armed with a pair of acute teeth or short broad spines. (Extremely widespread in Africa) *africanus* (p. 284)
- Eyes relatively large, maximum diameter 0.18–0.29 × HW, with 7 or more ommatidia in the longest row. Pronotum only with a pair of low blunt tubercles, without acute teeth or short spines 4
- 4 Head between frontal carinae to occiput smooth and shining, without foveolate punctures. Maximum diameter of eye 0.18–0.21 × HW. Petiole node not wedge-shaped in profile. (Ivory Coast, Ghana, Nigeria, Cameroun, Gabon, Zaire, Angola) *orbiceps* (p. 286)
- Head between frontal carinae to occiput with distinct foveolate punctures. Maximum diameter of eye 0.26–0.29 × HW. Petiole node in profile wedge-shaped, roughly triangular and tapering dorsally. (South Africa) *fossulatus* (p. 285)

Treatment by species

Pristomyrmex africanus Karavaiev

(Fig. 34)

Pristomyrmex africanus Karavaiev, 1931: 47, fig. 5. Holotype worker, KENYA: Mabira, no. 5322 (*Dogiel & Sokolov*) (ZM, Kiev) [examined].

Hylidris myersi Weber, 1941: 190, figs 8, 9. Syntype workers, SUDAN: Equatoria, Aloma Plateau, Khor Aba, 3700 ft [1290 m], 10.viii.1939, no. 1470, 1474 (*N. A. Weber*) (BMNH; MCZ, Cambridge) [examined].

Syn. n.

Hylidris myersi subsp. *mbomu* Weber, 1952: 19. Holotype worker, CENTRAL AFRICAN REPUBLIC: Ubangi-Shari, Bas Mbomu, 5 miles [8 km] W. of Bangassau, 12.iii.1948, no. 2210 (*N. A. Weber*) (AMNH, New York) [examined]. **Syn. n.**

Hylidris myersi subsp. *primus* Weber, 1952: 19. Holotype worker, ZAIRE: Stanleyville [Kisangani], 19.iii.1948, no. 2235 (*N. A. Weber*) (AMNH, New York) [examined]. **Syn. n.**

Hylidris myersi subsp. *beni* Weber, 1952: 20. Syntype workers, ZAIRE: 15 miles [24 km] N. of Beni, 25.ii.1948, no. 2129 (*N. A. Weber*) (AMNH, New York; MCZ, Cambridge) [examined]. **Syn. n.**

WORKER. TL 2.7–3.4, HL 0.70–0.90, HW 0.68–0.92, CI 97–104, SL 0.62–0.86, SI 85–94, PW 0.46–0.60, AL 0.68–0.92 (20 measured).

Base of mandible with 1–2 fairly strong rugulae present; frequently these fade out distally but in a few they may extend to the apical margin. Apical (masticatory) margin with a strong apical and preapical tooth followed by a diastema and a broad basal tooth formed by the fusion of two basal denticles. Frequently this broad basal tooth shows two points but these are often worn down and only a single blunt prominence remains. Clypeus usually with a median longitudinal carina but this is variously reduced or lost in different samples. Anterior clypeal margin with a median denticle and 1–2 pairs on each side of it, sometimes the lateral pairs not strongly developed. Frontal carinae present, running back to or beyond the level of the posterior margins of the eyes and strongly divergent in their anterior halves. Strongly developed scrobes absent but sides of head between frontal carinae and eyes slightly concave and forming an unsculptured scrobal area. Maximum diameter of eye 0.09–0.12, about 0.12–0.15 × HW and with 4–5 ommatidia in the longest row. With the head in full-face view the occipital margin broadly and shallowly concave to conspicuously indented medially, the sides convex. With the alitrunk in profile the pronotum armed with a pair of acute triangular teeth or short spines; propodeum armed with a pair of spines which are somewhat variable in length and thickness. Metapleural lobes prominent and rounded. Petiole and postpetiole in profile rounded, without acute angles. Shape of petiole node variable but generally as in Fig. 34. Dorsum of head between frontal carinae to occipital margin with foveolate punctures present at least from level of eyes backwards. Both intensity of development and number of punctures very variable; at one extreme the punctures are dense, sharply incised and conspicuous whilst at the other extreme the punctures are sparse, shallow and feebly incised. Sides of head in front of, below, and behind eyes also with foveolate punctures, and punctures usually also present at the posterior end of the scrobal area. Alitrunk unsculptured or at most the dorsum with a few feeble rugular traces on the pronotum. Petiole, postpetiole and gaster unsculptured. Mouthparts, ventral surface and dorsum of head with dense fine pilosity, on the dorsum the hairs arising along the line of the frontal carinae longer than those arising between the carinae. Pronotal dorsum with a transverse row of 3–4 pairs of hairs anteriorly; mesonotum with 3–4 pairs of hairs arising on the lateral margins; propodeum hairless. Petiole, postpetiole and first gastral tergite without hairs but hairs present on apex of gaster. Scapes and tibiae with pubescence, more conspicuous on the former than on the latter. Colour varying from orange-brown to blackish brown, frequently with the gaster darker in shade than the alitrunk and head.

Differentiation of this, the most widely distributed species of this genus, from *orbiceps* is tabulated under the latter name. *P. africanus* separates easily from *cribrarius* as the latter is densely hairy, strongly sculptured, has a palp formula of 4, 3 (as opposed to 1, 3 in *africanus*), and has much larger eyes. *P. trogor* differs from *africanus* as the former lacks frontal carinae and has longer scapes, a less densely hairy alitrunk and lacks foveolate punctures on the dorsum of the head. The foveolate cephalic sculpture seen in *africanus* is, however, also present in *fossulatus*, but in this species the eyes are much larger (0.26–0.29 × HW) and the pronotum has only a pair of blunt tubercles, not sharp teeth such as are seen in *africanus*.

MATERIAL EXAMINED

Ghana: Kibi (*D. Leston*); Mt Atewa (*B. Bolton*). **Cameroun:** Nkoemvon (*D. Jackson*). **Gabon:** Plateau

d'Ipassa (*J. A. Barra*). **Kenya:** 1°25'S, 35°10'W [sic] to 1°38'S, 35°17'E (*N. A. Weber*). **Zaire:** Yangambi (*M. Maldague*). **Angola:** R. Chicapa, Saurimo (*Luna de Carvalho*); Dundo (no name); Dundo (*Luna de Carvalho*), R. Kahingo (*Mwaoka*); Salazar (*P. M. Hammond*).

Pristomyrmex cribrarius Arnold

(Fig. 35)

Pristomyrmex cribrarius Arnold, 1926: 281, fig. 81. Holotype female, MOZAMBIQUE: Amatongas Forest (*G. Arnold*) (NM, Bulawayo) [examined].

WORKER. TL 3.2–3.4, HL 0.84–0.90, HW 0.86–0.92, CI 101–102, SL 0.66–0.72, SI 77–79, PW 0.56–0.60, AL 0.82–0.86 (3 measured).

Basal portions of mandibles rugulose but this fading out distally so that the area near the apical margin is mostly or entirely smooth. Apical (masticatory) margin of mandible with three teeth; apical and preapical tooth acute and roughly the same size, behind them is a long diastema followed by the broad and truncated basal tooth. The broad basal tooth may be the result of fusion of two denticles and specimens with a broad-based tooth but a bidentate crown must be expected. Clypeus with a strong sharp median longitudinal carina; anterior clypeal margin with a small truncated lobe medially where the carina meets the margin, this lobe flanked on each side by a few smaller denticles which are variable in number and shape. Palp formula 4, 3. Frontal carinae present and strongly divergent, reaching back to, or just beyond, the level of the posterior margins of the eyes. Below the frontal carinae to eye level is a short, weakly impressed scrobal area, bounded below by a weak genal carina which runs above the eye. Eyes large, maximum diameter 0.18–0.20, about 0.21–0.22 × HW and with 9–10 ommatidia in the longest row. With head in full-face view the occipital margin transverse to evenly very feebly concave, not indented medially. Pronotum armed with a pair of short but broad-based acute triangular teeth. Propodeum with a pair of long spines which are slightly sinuate along their length. Metapleural lobes small, bluntly triangular in shape. General shape of alitrunk and pedicel segments as in Fig. 35. Dorsum of head between frontal carinae and back to occipital margin densely covered with broad, shallow foveolate punctures which are much broader than the distances separating them. In places the foveolae are roughly aligned so that the cuticle separating them appears as regular sculpture. Similar sculpture is present below, behind and in front of the eyes, but the scrobal area lacks such sculpture and the clypeus is unsculptured except for the strong median carina. Entirety of dorsal alitrunk with strongly developed but blunt rugae which are predominantly longitudinal. Sides of alitrunk rugulose. Sides and dorsum of petiole node with a few coarse longitudinal rugae. Sides of postpetiole with a few strong rugae, the tergite in profile bounded by a raised ridge or rim. In dorsal view the rim appearing as in Fig. 35, the space between the converging lines being smooth and shiny. Gaster unsculptured. Dorsal surfaces of head, alitrunk, petiole and postpetiole with abundant short erect to suberect hairs. Scapes and tibiae with similar freely projecting hairs and numerous hairs projecting from the sides of the head in full-face view. First gastral tergite without hairs. Colour brown, the gaster darker than the head and alitrunk but the appendages lighter.

This very distinctive species is apparently rare, being known only from the type-collection made in Mozambique and a short series from South Africa noted below. It is easily separable from all the other African *Pristomyrmex* by its dense pilosity, coarse sculpture, high palp formula and oddly shaped postpetiole.

MATERIAL EXAMINED

South Africa: Natal, Dukuduku For. Res. (*W. L. & D. E. Brown*).

Pristomyrmex fossulatus (Forel)

Tetramorium (*Xiphomyrmex*) *fossulatum* Forel, 1910a: 428. Syntype workers, SOUTH AFRICA: Natal, Will Broak [Willbrook] (*Wroughton*) (MHN, Geneva) [examined].

Pristomyrmex fossulatus (Forel) Santschi, 1916: 51.

WORKERS. TL 2.7–3.2, HL 0.65–0.72, HW 0.62–0.70, CI 95–97, SL 0.54–0.60, SI 82–90, PW 0.46–0.52, AL 0.68–0.70 (3 measured).

Mandibles with vestiges of striate sculpture basally but mostly smooth with scattered small pits. Apical (masticatory) margin of mandible with strongly developed apical and preapical teeth followed by a diastema and a basal tooth which may be truncated. Clypeus with a sharp median longitudinal carina. Median

portion of clypeus with the anterior margin shallowly concave and armed with denticles; a median denticle and 2–3 others on each side. Frontal carinae present and distinct, running back to the level of the posterior margins of the eyes and forming the dorsal margins of the narrow, short antennal scrobes. Lower margin of scrobe delimited by a longitudinal ruga above the eye, which runs back from the antennal fossa approximately to the midlength of the eye. Eyes large, maximum diameter c. 0.18, about 0.26–0.29 × HW, with 8–10 ommatidia in the longest row. With the head in full-face view the side convergent behind the eyes and rounding into the occipital margin which is straight to very feebly and shallowly concave. With the alitrunk in profile the pronotum only with a low, broad, blunt tubercle, without the teeth or spines frequently encountered in this genus; in dorsal view the tubercles appear as low, bluntly rounded angles. Propodeum with a pair of strong spines which are distinctly longer than their basal width. Metapleural lobes narrow and strongly prominent. Petiole in profile wedge-shaped, strongly tapering dorsally and with the apex of the triangular shape blunted. In dorsal view the petiole node broader than long. Subpetiolar process a long narrow low flange. Dorsum of head between frontal carinae with scattered large shallow foveolate punctures. Similar punctures also present on the sides of the head but generally less conspicuous. Dorsal alitrunk also with foveolate punctures but here they are very sparse, widely separated, very shallow and inconspicuous. Apart from these punctate areas the entirety of the head and body smooth and shining, with pedicel segments and gaster completely unsculptured. Hairs present on mouthparts and gastral apex, otherwise the dorsum only with 4–5 pairs on the head behind the level of the antennal insertions, following the line of the frontal carinae; alitrunk with a single pair, on the mesonotum; petiole with 0–1 and postpetiole with 1–2 pairs dorsally; first gastral tergite hairless. Colour glossy light brown.

Known only from the type-series collected in South Africa, *fossulatus* is related to *africanus* and *orbiceps*. It separates easily from the former as its eyes are much larger (0.26–0.29 × HW as opposed to 0.12–0.15 × HW) and its alitrunk lacks the sharp pronotal teeth or broad spines seen in *africanus*. The eye size of *orbiceps* is closer to that of *fossulatus* (but still smaller); *orbiceps* lacks the foveolate cephalic sculpture of *fossulatus* and also lacks the very distinctively shaped petiole node seen in the latter.

Pristomyrmex orbiceps (Santschi)

(Fig. 37)

Xiphomyrmex orbiceps Santschi, 1914b: 367, fig. 30. Syntype workers, CAMEROUN: Victoria (*Silvestri*); and GHANA: Aburi (*Silvestri*) (NM, Basle) [examined].

Pristomyrmex orbiceps (Santschi) Santschi, 1916: 51.

Hyliidris laevigatus Weber, 1952: 20, fig. 12. Holotype worker, ZAIRE: 13 miles [21 km] S. of Asa, lat. 4°40'N, long. 25°40'E., 3.iii.1948, no. 2170.1 (*N. A. Weber*) (AMNH, New York) [examined]. **Syn. n.**

WORKER. TL 2.9–3.4, HL 0.72–0.90, HW 0.75–0.94, CI 100–106, SL 0.62–0.74, SI 80–87, PW 0.48–0.62, AL 0.72–0.88 (25 measured).

Base of mandible usually with 1–2 rugulae present but these fading out distally so that the blade near the apical margin is almost or entirely smooth. Apical (masticatory) margin with strong apical and preapical tooth followed by a diastema and a broad basal tooth formed by the fusion of two basal denticles. In many specimens this broad basal tooth shows two points but with wear only a single blunt prominence remains. Clypeus frequently with a weak median longitudinal carina but this tends to be reduced, present only posteriorly, or entirely absent. Anterior clypeal margin equipped with small denticles, usually 5 in number, consisting of a median and 2 on each side. Degree of development of the denticles is variable, ranging from a bluntly crenulate appearance to very distinct. Frontal carinae present, running back at least to the level of the posterior margins of the eyes and strongly divergent in their anterior halves. Strongly developed scrobes absent but the sides between the frontal carinae and the eyes sloping outwards and flat to very shallowly concave. Maximum diameter of eye 0.14–0.19, about 0.18–0.21 × HW and usually with 7–9 ommatidia in the longest row, though in smaller individuals only 6 may be present. With the head in full-face view the occipital margin shallowly concave to quite conspicuously indented medially, the sides convex. With the alitrunk in profile the pronotum armed with a low broad blunt tubercle, without the conspicuous acute teeth or spines seen in other species; in dorsal view these tubercles appearing as low bluntly rounded angles. Propodeum armed with a pair of spines which are usually longer than their basal width but which are variable in length and, at minimum, may be only as long as their basal width. Metapleural lobes prominent and rounded. Petiole and postpetiole in profile rounded, without acute angles. Dorsum of head between frontal carinae to occipital margin smooth and highly polished. Sides of head mostly smooth but with some

scattered foveolate punctures in front of, below, and behind the eyes. These punctures are generally fairly conspicuous but in some individuals they may be faint or even vestigial, especially behind the eyes. In most specimens, but especially in larger ones, a few punctures occur on the side of the head on a line linking the posterior margins of the eyes with the posterior extension of the frontal carinae, but these are frequently vestigial or absent. Alitrunk, petiole, postpetiole and gaster unsculptured. Hairs very sparse, present on mouthparts, ventral surface of head and gastral apex, but otherwise as follows. Dorsum of head behind level of antennal insertions with 2-3 pairs of hairs along the line of the frontal carinae. Occipital corners with one pair of hairs, Dorsal alitrunk without hairs except for a single pair on the mesonotum, and this pair is frequently lost by abrasion. Petiole, postpetiole and first gastral tergite without hairs. Scapes and tibiae lacking hairs but with fairly conspicuous pubescence which is usually more obvious on the former than on the latter. Colour uniform blackish brown to black, the appendages lighter.

P. orbiceps is a widely distributed species, occurring throughout the wet forest zones of West and Central Africa. Nests are constructed in fallen twigs or larger pieces of wood in the leaf litter layer and workers forage singly in the litter. The separation of *orbiceps* from other African species is straightforward. It differs from *cribrarius* as that species is heavily sculptured and densely hairy. *P. trogor* lacks frontal carinae, has long scapes and relatively small eyes. The widely distributed *africanus* differs from *orbiceps* as follows:

<i>orbiceps</i>	<i>africanus</i>
Pronotum with a pair of blunt tubercles.	Pronotum with a pair of acute teeth or short spines.
Maximum eye diameter 0.18-0.21 × HW.	Maximum eye diameter 0.12-0.15 × HW.
Eye with usually 7-9 ommatidia in the longest row (sometimes with 6).	Eye with only 4-5 ommatidia in longest row.
Dorsum of head behind antennal insertions with 2-3 pairs of hairs.	Dorsum of head behind antennal insertions with more than 5 pairs of hairs.
Dorsal alitrunk with 1 pair of hairs.	Dorsal alitrunk with 4 or more pairs of hairs.
Head between frontal carinae smooth.	Head between frontal carinae with foveolate punctures, at least posteriorly.
Scapes relatively somewhat shorter, SI range 80-87.	Scapes relatively somewhat longer, SI range 85-94.

MATERIAL EXAMINED

Ivory Coast: Divo (*L. Brader*); Banco For. nr Abidjan (*W. L. Brown*); Orstom Exp. Sta. (*W. L. Brown*). **Ghana:** Kibi (*D. Leston*); Bunso (*D. Leston*); Mampong (*D. Leston*); Mampong (*P. Room*); Tafo (*B. Bolton*); Mt Atewa (*B. Bolton*). **Nigeria:** Gambari (*B. Bolton*); Gambari (*B. Taylor*). **Cameroun:** Nkoemvon (*D. Jackson*). **Gabon:** Plateau d'Ipassa (*J. A. Barra*); Makokou (*W. H. Gotwald*). **Angola:** Dundo (no name).

Pristomyrmex trogor sp. n.

(Figs 33, 36)

HOLOTYPE WORKER. TL 4.0, HL 0.96, HW 0.99, CI 103, SL 1.00, SI 101, PW 0.61, AL 0.96.

Mandibles basally with some weak rugular sculpture but this fading out distally so that near the apical margin the blade is smooth. Apical (masticatory) margin with a large apical tooth followed by a slightly smaller preapical, a diastema and two basal denticles which arise at each end of a raised welt representing the fused bases of the two denticles (in worn specimens this would appear as a single broad truncated basal tooth). Median portion of clypeus without a longitudinal median carina except posteriorly where a vestige remains. Anterior clypeal margin with a small median tooth and a couple of smaller denticles on each side. Frontal carinae absent, the posterior extensions of the frontal lobes strongly divergent but short, fading out in front of the level of the anterior margins of the eyes. The genal carina which bounds the outer margin of each antennal fossa strong, curving in towards the extensions of the frontal lobes but not meeting them. Antennal scrobes absent, the scapes relatively long (SI, above). Eyes small, maximum diameter 0.15, about 0.15 × HW. With the head in full-face view the occipital margin indented medially, the sides shallowly but evenly convex. Pronotum armed with a pair of short triangular spines, propodeum with a pair of slightly larger spines; outline shape of alitrunk as in Fig. 33. Metapleural lobes fairly large, rounded. Dorsum of alitrunk flat to shallowly concave between the pronotal spines and between the lateral hair-bearing welts of the mesonotum. Petiole node high in profile, the dorsum sloping downwards posteriorly and rounding into the posterior face. Anterior and dorsal faces of postpetiole in profile forming a single evenly curved surface.

In dorsal view the petiole node about as long as broad, the postpetiole very slightly longer than broad and broadening from front to back. Entirety of head and body smooth and glossy, unsculptured except for a few ridges on the metapleuron leading up to the orifice of the metapleural glands. Dorsum of head with numerous fine curved hairs, some of which are very long. Mandibles, clypeal margin and ventral surface of head with equally dense but generally shorter fine hairs; similar hairs also present on anterior coxa. Alitrunk without hairs except for 2 pairs arising from the mesonotal welt. Petiole, postpetiole and first gastral tergite without hairs; apex of gaster and sternites behind the first with a few hairs present. Scapes and tibiae with short, fine, apically directed hairs. Colour uniform glossy chestnut-brown.

PARATYPE WORKERS. TL 3.4–4.0, HL 0.88–0.96, HW 0.89–0.98, CI 101–103, SL 0.90–0.98, SI 100–102, PW 0.56–0.61, AL 0.86–0.98 (4 measured). Maximum diameter of eye 0.14–0.16, about 0.14–0.16 × HW. As holotype but some darker brown in colour.

Holotype worker, **Zaire** (B. Congo on data label): S. Slope of Mt Kahuzi, 1900 m, 5.ix.1957 (*E. S. Ross & R. E. Leech*) (CAS, San Francisco).

Paratypes, 19 workers and 1 male with same data as holotype (BMNH; MCZ, Cambridge; CAS, San Francisco).

P. trogor is related to *africanus*, *fossulatus*, and *orbiceps* but is easily recognizable as in all of these species frontal carinae are strongly developed whereas in *trogor* they are absent, compare Figs 36 and 37. Besides this the antennal scapes in *trogor* are relatively long, with SI 100 or more, whereas the scapes are shorter in *africanus*, *fossulatus* and *orbiceps* with SI range 82–90. *P. africanus* and *fossulatus* also differ from *trogor* by having broad foveolate punctures on the dorsum of the head. *P. orbiceps* lacks the strong pronotal spines seen in *trogor*, having instead a pair of low broad rounded tubercles.

TERATANER Emery

(Figs 38–55)

Terataner Emery, 1912: 103. Type-species: *Atopomyrmex foreli* Emery, 1900: 274; by original designation.

Tranetera Arnold, 1952: 130 [as subgenus of *Terataner*]. Type-species: *Atopomyrmex bottegoi* Emery, 1896: 155; by original designation. **Syn. n.**

DIAGNOSIS OF WORKER. Monomorphic arboreal myrmicine ants. Mandibles armed with 5 or 6 teeth. Palp formula 5, 3 (*alluaudi*) or 4, 3 (*bottegoi*, *elegans*, *luteus*, *piceus*, *scotti*). Anterior clypeal margin with a median notch or impression. Median portion of clypeus broad and broadly inserted between the frontal lobes, bounded laterally by a pair of widely separated carinae which run to the anterior margin; lateral portions of clypeus unmodified. Frontal lobes narrow, continuing back into a pair of more or less straight frontal carinae which are usually roughly parallel and relatively close together on the dorsum of the head. Towards the occiput the frontal carinae either fade out or are sharply angled outwards as a ridge or row of tubercles which runs to the sides of the head. Antennal scrobes absent or at most the sides of the head below the frontal carinae with a broad and very shallow concavity. Antennae 12-segmented with a 3-segmented club, the scapes when laid back failing to reach the occipital margin. Eyes large and conspicuous, situated at or in front of the midlength of the head. Occipital corners tuberculate or denticulate in full-face view. Pronotum marginate laterally and usually also anteriorly, the lateral marginations generally simple but sometimes expanded into ornate lobes or flanges. Pronotal shoulders angulate, denticulate or tuberculate in dorsal view. Promesonotal suture absent on the dorsum or represented by a line or slight indentation, only rarely easily visible. Mesonotum usually marginate laterally and forming a low projecting angle or tubercle in dorsal view; rarely immarginate and armed with a sharp denticle laterally. Metanotal groove impressed, most frequently only shallowly so but deep in some species; very shallow indeed in some samples of *elegans*. Propodeum bluntly marginate to rounded laterally, unarmed or with a pair of denticles or teeth. Metapleural lobes large and strongly developed; ventral margin of metapleuron with a strong broad groove running forward from the orifice of the metapleural glands. Ventral surface of alitrunk between hind coxae entire, simple, without a broad deep circular pit. Middle and hind tibiae frequently with a distinct simple spur, the spur reduced in some and indistinguishable from the hairs of the tibial apex in others. Petiole with a short, stout anterior peduncle, the node narrow and tapering dorsally so that it appears triangular or conical in profile. In anterior or posterior view the narrow dorsum of the node either forms a transverse crest or is indented medially so that a pair of blunt prominences are formed laterally. In some these prominences are acute and dentiform, in others developed into quite long teeth; rarely the petiole is strongly bispinose.

In one species (*scotti*) the petiole is developed into a very high plate dorsally which has a central emargination. Postpetiole simple or armed dorsally with a transverse crest or a single spine. Pilosity very variable, some species densely hairy, others almost hairless. Sculpture generally of coarse rugae or sulci, but reduced in the African species *piceus*, *elegans*, *luteus* and *velatus*.

Terataner is a small genus of arboreal ants containing 12 species, six of which occur in the Ethiopian region and six in the Malagasy region. Nests are constructed in rotten parts of standing timber, often some considerable distance above the ground. Of the African species four occur quite widely in West and Central African forests (*luteus*, *elegans*, *piceus*, *velatus*), one is East African (*bottegoi*) and the last (*transvaalensis*) is known only from South Africa. The first four named form a complex of closely related species; the last two form a close species-pair which shows marked similarity to the Malagasy species *foreli*, *rufipes*, *steinheili* and *xaltus*. Apart from these Madagascar has another species, *alluaudi*, which is certainly the most bizarre representative of the genus as it is presently understood. The final species of the Malagasy region, *scotti*, is known only from a single worker from the Seychelles. A synopsis of the Malagasy species is given at the end of this section.

Females (queens) are known for a few species and in general show the same characters as the workers, except for the usual modifications associated with this caste. Males are very poorly known, having been recorded only for *elegans*, *scotti* and *foreli*, the total number of specimens amounting to six or seven.

Arnold (1952) proposed a subgenus of *Terataner* which he called *Tranetera*, erected to include only the species *bottegoi* and *transvaalensis*, with the former nominated as type-species. In the same paper he chose to treat *Atopula* Emery as a subgenus of *Terataner*. It has since been shown (Bolton, 1976; 1980) that the type-species of *Atopula*, *A. nodifera* (Emery), is in fact a tetramoriine, and the name *Atopula* has fallen as a straight synonym of *Tetramorium* Mayr.

Turning now to *Tranetera*, it seems probable that Arnold erected this name on the strength of original descriptions alone, and did not see any material other than that of *transvaalensis* which, however, he did recognize as being close to *bottegoi*. From his description of the subgenus only three characters emerge to differentiate *Tranetera* from *Terataner*, namely that in *Tranetera* the promesonotal suture was clearly defined, the metanotal groove (= meso-epinotal suture) was not depressed, and that the petiole was quadrate and without spines. Opposed to this the six species which he left in *Terataner* (*alluaudi*, *foreli*, *luteus*, *rufipes*, *scotti* and *steinheili*; *piceus* is not mentioned and the description of *elegans* had not then appeared) were supposed to have the promesonotal suture obsolete or slightly indented at the sides, the metanotal groove deeply depressed and the petiole not quadrate, armed with two long spines.

Taking the last character, it is obvious when specimens are compared that an almost complete morphocline is present. Only one species has the petiole transverse above, *transvaalensis*, and even here a feeble indentation can be seen; only one species, *alluaudi*, has the petiole strongly bispinose. Between these two extremes the petiole dorsally is indented to emarginate in *bottegoi*, bilobate in *scotti*, shortly and bluntly bidentate in *luteus*, long bidentate in *steinheili*. The presumed separation petiole not quadrate and with two long spines versus petiole quadrate and without spines, does not exist in fact; all major steps between them being bridged in already described species.

Similarly with the degree of definition of the promesonotal suture. It is quite clearly marked in *transvaalensis* (though fused), weakly defined in *bottegoi*, vestigial in *scotti* where it is indicated more by a change in sculpture pattern, almost invisible in *steinheili* where at certain angles the strong sulcate sculpture is very feebly indented along the former track of the suture; obliterated elsewhere. It should be noted that all species have an impression, notch or groove at each side of the dorsum where pronotum and mesonotum meet, which indicates the ends of the former track of the promesonotal suture, and which separates the marginations of the two segments.

Finally, the degree of impression of the metanotal groove varies considerably from species to species. The variation does not allow a split such as that proposed by Arnold and a number of species were incorrectly placed by him, as in *bottegoi* the metanotal groove is impressed where it is as shallow in *luteus* as it is in *transvaalensis*.

Thus the concept of a subgenus *Tranetera* collapses and the name is relegated to the synonymy. In point of fact *Terataner*, as presently constituted, forms a fairly compact genus, within which the following species-complexes can be discerned.

luteus-complex (*elegans*, *luteus*, *piceus*, *velatus*). Frontal carinae more or less straight, fading out posteriorly, not angled outwards towards the sides of the head. Sculpture fine. Hairs very sparse and scattered or absent on first gastral tergite. Dorsal (outer) surfaces of middle and hind tibiae without projecting hairs. West and Central Africa.

foreli-complex (*bottegoi*, *foreli*, *rufipes*, *scotti*, *steinheili*, *transvaalensis*, *xaltus*). Frontal carinae angled outwards posteriorly, running across the head either to the sides or towards the occipital corners as a crest, ridge or row of tubercles. Sculpture coarse. Hairs dense and very conspicuous on first gastral tergite. Dorsal (outer) surfaces of middle and hind tibiae with projecting hairs. East and South Africa, Madagascar, Seychelles.

alluaudi-complex (*alluaudi*). As *foreli*-complex but frontal carinae feeble, sometimes almost indistinguishable from the cephalic sculpture, not running transversely on the head posteriorly. Postpetiole with a single long median dorsal spine. Margins of pronotum expanded into a pair of broad laminae. Madagascar.

Terataner belongs to a group of genera which also includes the African genus *Atopomyrmex* André, the Oriental/Indo-Australian genus *Dilobocondyla* Santschi and the predominantly Australian genera *Dacryon* Forel, *Peronomyrmex* Viehmeyer, *Podomyrma* F. Smith and *Pseudopodomyrma* Crawley (Taylor, 1970). Possibly also the strange monotypic genus *Ireneopone* Donisthorpe of Mauritius belongs to this assemblage. As can be seen, the only other African genus noted is *Atopomyrmex*; the two are separated as follows in the worker.

<i>Terataner</i>	<i>Atopomyrmex</i>
Monomorphic	Polymorphic
Occipital corners tuberculate or denticulate.	Occipital corners evenly rounded.
Ventral surface of alitrunk simple and entire, without a broad deep pit between the hind coxae.	Ventral surface of alitrunk with a very conspicuous broad deep pit between the hind coxae.
Lower margin of metapleuron with a broad groove running forward from the orifice of the metapleural glands. (Figs 38, 39, 50-55).	Lower margin of metapleuron without such a groove, the margin rounded and folded in so that the hind coxa appears to rest on the bulla of the metapleural glands (Figs 3, 4).
Frontal carinae close together, long, usually approximately parallel, running back well beyond the level of the eyes (Figs 42-45).	Frontal carinae absent in smallest workers, lengthening as size increases, running back beyond the eyes only in large workers; when present always very broadly separated and distinctly divergent anteriorly (Figs 5-7).
Propodeum unarmed to bidentate.	Propodeum with a pair of long spines.

List of species

bottegoi (Emery)
elegans Bernard
luteus (Emery)
piceus Menozzi
transvaalensis Arnold
velatus sp. n.

Key to species (workers)

- 1 Dorsal (outer) surfaces of hind tibiae with projecting hairs. With the head in full-face view the frontal carinae posteriorly sharply angled outwards, forming a ridge or row of tubercles which runs towards the sides (Figs 42, 43) 2
- Dorsal (outer) surfaces of hind tibiae without projecting hairs. With the head in full-face view the frontal carinae fading out posteriorly in a straight line, not sharply angled outwards (Figs 44, 45) 3

- 2 Eyes more or less flat, not or only weakly breaking the outline of the sides of the head in full-face view (Fig. 43). Sides of pronotum in dorsal view strongly convergent posteriorly (Fig. 47). Black species; dorsal surfaces of alitrunk with abundant stout hairs. (Somali Republic, Kenya, Tanzania) *bottegoi* (p. 291)
- Eyes convex, conspicuously breaking the outline of the sides of the head in full-face view (Fig. 42). Sides of pronotum in dorsal view roughly parallel, not strongly convergent posteriorly (Fig. 46). Head and gaster black, alitrunk red; dorsal surfaces of alitrunk with sparse short hairs. (South Africa) *transvaalensis* (p. 294)
- 3 With the postpetiole in dorsal view the posterior arch of the dorsum very broad and broadly rounded (Fig. 41) 4
- With the postpetiole in dorsal view the posterior arch of the dorsum narrow and narrowly rounded (Fig. 40) 5
- 4 Yellow. Pronotal dorsum distinctly broader than long (Fig. 49). Pronotal width almost equalling to distinctly exceeding the combined lengths of pronotum and mesonotum in dorsal view. (Ghana, Cameroun) *luteus* (p. 293)
- Dark brown to black, the alitrunk usually reddish, lighter than the head and gaster. Pronotal dorsum about as long as broad (Fig. 48). Pronotal width less than the combined lengths of pronotum and mesonotum in dorsal view. (Guinea, Ghana, Nigeria) *elegans* (p. 292)
- 5 First gastral tergite without hairs. Pronotal dorsum reticulate-punctate, without strong longitudinal rugulae (Ghana, Nigeria, Cameroun, Equatorial Guinea) *piceus* (p. 293)
- First gastral tergite with strong hairs on basal half. Pronotal dorsum reticulate-punctate and with strong overlying longitudinal rugulae. (Ivory Coast, Ghana). *velatus* (p. 295)

Treatment by species

The six species known from the Ethiopian zoogeographical region are discussed below in alphabetical order.

Terataner bottegoi (Emery)

(Figs 39, 43, 47)

Atopomyrmex bottegoi Emery, 1896: 155, fig. Holotype worker, SOMALI REPUBLIC: Lugh (*V. Bottego*) (MCSN, Genoa) [examined].

Terataner bottegoi (Emery) Emery, 1912: 103.

WORKER. TL 4.8–6.0, HL 1.24–1.42, HW 1.12–1.34, CI 90–94, SL 0.76–0.90, SI 67–69, PW 0.90–1.12, AL 1.46–1.64 (5 measured).

Mandibles delicately longitudinally striate to almost smooth. Frontal carinae sharply developed as a pair of raised ridges which are set quite close together on the dorsum and which are almost parallel, only very slightly divergent and feebly sinuate along their lengths. Posteriorly each carina angles sharply outwards, running towards the sides of the head as a weak ridge or row of linked tubercles. The frontal carinae and their transverse posterior extensions form the borders of a weakly defined and shallowly impressed scrobal area on each side. Eyes flat to extremely feebly convex, not prominent, maximum diameter 0.26–0.30, about 0.22–0.24 × HW. Pronotum in dorsal view marginate anteriorly and laterally, the lateral marginations projecting and overhanging the sides. In dorsal view the pronotal corners sharply angulate to denticulate and the sides distinctly convergent posteriorly. Sides of pronotum without a sharp strong margin running between the anterodorsal and the anteroventral corners. Mesonotum marginate laterally; propodeum with sides separated from dorsum by a blunt angle. Promesonotal suture visible at the sides of the dorsum but usually absent centrally; however, in a few larger workers a faint track is visible arching across the dorsum. Metanotal groove impressed, the propodeal dorsum sloping downwards posteriorly. Propodeum armed with a pair of denticles, a pair of minute blunt tubercles, or unarmed. No two workers of the five seen have the same propodeal armament. Metapleural lobes large and rounded. Petiole node roughly triangular in profile, rising to a point dorsally. In anterior view the dorsum very shallowly impressed and the corners rounded, not projecting as teeth. Dorsum of head strongly longitudinally rugose between the frontal carinae, the rugae quite widely separated and the spaces between them filled with dense fine reticulate-punctulate ground-sculpture. Sides of head between frontal carina and eye with similar dense ground-sculpture. In the upper part of this scrobal area the punctulation is the only sculpture present, but in the lower half it is overlaid by a series of rugae which became stronger closer to the eye; none of these rugae are as strong as those on the dorsum. Sides of head below eye with regular strong, more or less parallel, longitudinal rugae.

Pronotal dorsum longitudinally rugose, the rugae becoming finer and less regular away from the midline but present right up to the lateral marginations. Mesonotum similarly sculptured. Propodeal dorsum with a few short rugae anteriorly but these fade out posteriorly leaving only the reticulate-punctate ground-sculpture. Sides of alitrunk with regular more or less parallel longitudinal rugae. Petiole and postpetiole with reticulate-punctulate ground-sculpture, the anterior face of the petiole node only with such sculpture but the posterior face of the node and the dorsum of the postpetiole also with coarse rugose to almost sulcate sculpture. First gastral tergite finely and superficially densely reticulate-punctulate, the base of the tergite also finely longitudinally costulate. All dorsal surfaces of head and body with numerous conspicuous stout hairs which are white to silvery in colour. Dorsal surfaces of middle and hind tibiae with standing hairs, but such hairs absent from leading edges of antennal scapes. Colour black, the appendages brown.

Together with *transvaalensis*, *bottegoi* forms the African mainland representation of the predominantly Malagasy *foreli*-complex of this genus. Characters useful in separating the two species are discussed under *transvaalensis*.

MATERIAL EXAMINED

Kenya: Diani Beach (*N. L. H. Krauss*); Simu Beach, Kwale (*E. S. Ross & R. E. Leech*). **Tanzania:** Mafia I. (*Vesey-Fitzgerald*).

Terataner elegans Bernard

(Figs 41, 45, 48)

Terataner elegans Bernard, 1952: 243. fig. 13A. Holotype female, GUINEA: Kéoulenta (*Lamotte*) (MNHN, Paris) [examined].

WORKER. TL 4.9–5.6, HL 1.18–1.40, HW 1.12–1.30, CI 92–97, SL 0.72–0.82, SI 58–65, PW 0.78–0.88, AL 1.50–1.76 (20 measured).

Mandibles weakly longitudinally rugulose to almost smooth, frequently with distinctive large pits close to the masticatory (apical) margin. Frontal carinae a pair of close-set straight, almost parallel ridges which fade out posteriorly between the level of the posterior margins of the eyes and the occiput. Antennal scrobes absent. Maximum diameter of eye 0.24–0.28, about 0.22–0.24 × HW. Pronotum in dorsal view marginate anteriorly and laterally, with strongly angulate or short-denticulate anterior corners. On sides of the pronotum margination runs from the anterodorsal to anteroventral angles. Mesonotum marginate laterally and propodeum also with lateral margination though here it is much less sharply defined than on the pronotum and in a few specimens is better described as bluntly angular. Lateral parts of promesonotal suture visible on dorsum but centrally it is usually completely effaced. Metanotal groove feebly indicated in profile by a shallow concavity or feeble indentation. Dorsum of pronotum about as long as broad, its width obviously less than the combined lengths of the pronotum and mesonotum. Propodeum unarmed. Petiole node low-triangular in profile, rising to a dorsal peak. In anterior view the dorsal margin of the node strongly emarginate medially, the portions on each side of the emargination appearing as a pair of stout tubercles or blunt teeth. Postpetiole in dorsal view flattened, in some the dorsum appearing shallowly longitudinally concave; the posterior margin of the postpetiolar dorsum broad and broadly rounded. Dorsum of head between frontal carinae with superficial but dense punctulate to granular ground-sculpture, and with a few very weak longitudinal rugulae which are commonly broken or interrupted. Sides of head above eyes with the same ground-sculpture and also with longitudinal rugulae which are usually somewhat stronger than those on the dorsum. Dorsal alitrunk finely and densely reticulate-punctulate and with feeble longitudinal rugulae, at least on the promesonotum. Postpetiole dorsally with a few stout conspicuous rugae. First gastral tergite shagreened to finely superficially punctulate, with fine costulae on the basal portion. Hairs very sparse on dorsal surfaces of head and body, present on mouthparts and gastral apex but otherwise the maximum complement seeming to be 3–4 pairs on the head along the lines of the frontal carinae, one pair on the pronotal corners, one pair on the propodeum, one pair on the posterior face of the petiole node and 1–2 pairs each on the postpetiole and first gastral tergite. These hairs appear to be lost easily by abrasion and completely hairless individuals are frequent. Scapes and tibiae without standing hairs of any description. Colour usually with head and gaster blackish brown to black, the alitrunk lighter brown or more usually reddish. Mandibles and clypeus usually lighter in colour than rest of head.

The four known species of the *luteus*-complex are confined to the forests of West and Central Africa. The complex is diagnosed by the short straight frontal carinae which fade out on the head behind the level of the eyes, fine sculpture, and sparse pilosity on the body; the tibiae lack

standing hairs. Of the species thus defined two, *elegans* and *luteus*, have a broad flattened postpetiole, the posterior dorsal margin of which is broad and very broadly, evenly rounded. The other two species, *piceus* and *velatus*, have the posterior arch of the postpetiole narrow and narrowly rounded in dorsal view, compare Figs 40 and 41.

T. elegans and *luteus* are very closely related, being separated mainly on colour (*luteus* is uniformly yellow), and on the dimensions of the pronotum as noted in the key. Apart from this the pronotum of *luteus* in dorsal view usually has the lateral margins more strongly convex than in *elegans* (Figs 48 and 49), though in smaller individuals this difference is often unapparent.

MATERIAL EXAMINED

Ghana: Tafo (*C. Campbell*); Tafo (*B. Bolton*); Kunso (*D. Cross*); Adeiso (*D. Leston*); Bunso (*D. Leston*); Sajimasi (*D. Leston*); Aburi (*P. Room*). **Nigeria:** Ife (*B. Taylor*).

Terataner luteus (Emery)

(Figs 38, 44, 49)

Atopomyrmex luteus Emery, 1899: 477. Syntype workers, CAMEROUN (*Conradt*) (MCSN, Genoa; MCZ, Cambridge) [examined].

Terataner luteus (Emery) Emery, 1912: 103.

WORKER. TL 5.0–5.8, HL 1.22–1.40, HW 1.16–1.32, CI 94–98, SL 0.74–0.80, SI 59–66, PW 0.86–1.04, AL 1.52–1.78 (15 measured).

Answering to the description of *elegans* and very closely related to it. *T. luteus* differs from *elegans* as follows.

<i>luteus</i>	<i>elegans</i>
Colour uniform dull yellow.	Colour blackish brown to black on head and gaster, alitrunk reddish or lighter brown.
Pronotum broader than long, the pronotal width about equalling or distinctly exceeding the combined lengths of the pro- and mesonotum in dorsal view.	Pronotum about as long as broad, the pronotal width less than the combined lengths of the pro- and mesonotum in dorsal view.
At least in larger specimens the sides of the pronotum in dorsal view distinctly convex (Fig. 49).	In all specimens the sides of the pronotum in dorsal view only very feebly convex (Fig. 48).
Ground-sculpture on dorsum of head very feeble, sometimes almost effaced.	Ground-sculpture on dorsum of head superficial but dense and distinct.

MATERIAL EXAMINED

Ghana: Kade (*D. Leston*); Bunso (*D. Leston*).

Terataner piceus Menozzi

(Fig. 40)

Terataner piceus Menozzi, 1942: 173. Holotype worker, EQUATORIAL GUINEA: Rio Benito, 1939–40 (*H. Eidmann*) (holotype not found in IE, Bologna; presumed lost).

WORKER. TL 4.6–5.5, HL 1.12–1.28, HW 1.06–1.20, CI 94–98, SL 0.64–0.70, SI 59–62, PW 0.75–0.84, AL 1.38–1.54 (9 measured).

Mandibles smooth with scattered large pits, those nearest the apical (masticatory) margin frequently elongate. Frontal carinae straight, close together and approximately parallel, fading out between the level of the posterior margins of the eyes and the occiput. Maximum diameter of eyes 0.26–0.30, about 0.25–0.27 × HW. Pronotum marginate laterally and more weakly so anteriorly, the pronotal angles bluntly denticulate and prominent. Sides of pronotum somewhat convergent posteriorly. Mesonotum marginate laterally, the propodeal dorsum separated from the sides by a blunt angle, not nearly so sharply marginate as the pronotum. Promesonotal suture absent from dorsum except laterally where it forms a break between the pronotal and mesonotal marginations. With the alitrunk in profile the metanotal area shallowly impressed. Propodeum unarmed or at most with a pair of minute low blunt tubercles where the sloping dorsum meets the declivity proper. Metapleural lobes large and rounded. Petiole node in profile appearing as a broad-based short triangular tooth, tapering to a point apically and slightly curved backwards. In anterior view the dorsum of the petiole quite broadly and deeply impressed, the portion on each side of the

impression projecting as a blunted tooth which is directed slightly outwards. Postpetiole in dorsal view with the arch of the posterodorsal surface narrow and narrowly rounded. Dorsum and sides of head above eyes covered with fine reticulate-punctulate ground-sculpture which is usually weaker between the frontal carinae than elsewhere. Superimposed on this are a few weak fine longitudinal rugulae between the frontal carinae and some stronger rugulae on the sides of the head above the eye. In this latter position cross-meshes are frequently developed between the longitudinal components, more strongly so in front of the level of the eye than behind it. Dorsal alitrunk finely and densely reticulate-punctulate, without trace of rugular sculpture on the promesonotum. Pedicel segments and gaster similarly but more lightly sculptured. Basigastral costulae very reduced, short and inconspicuous, restricted to the small area immediately behind the postpetiolar-gastral junction. Hairs on dorsal surfaces of body very sparse, present on mouthparts and gastral apex but otherwise the fullest complement seeming to be 3-4 pairs on head along the lines of the frontal carinae, 1 pair each on mesonotum and propodeum (but none on pronotum in any specimens seen), 1-2 pairs on petiole behind node, 2-3 pairs on postpetiole, none on first gastral tergite. Outer surfaces of middle and hind tibiae and antennal scapes without standing hairs. Colour uniform mid-brown to blackish brown.

Of the *luteus*-complex of species two, *piceus* and *velatus*, are diagnosed by the shape of the postpetiole which in dorsal view is narrow and narrowly rounded posteriorly, rather than being broad and broadly evenly rounded posteriorly as is the case in *elegans* and *luteus*, compare Figs 40 and 41. *T. piceus* is separated from *velatus* by its lack of rugular sculpture on the promesonotum and lack of hairs on the first gastral tergite.

MATERIAL EXAMINED

Ghana: Sajimasi (*D. Leston*); Aburi (*D. Leston*); Mampong (*P. Room*). **Nigeria:** Gambari (*B. Bolton*). **Cameroun:** Nkoemvon (*D. Jackson*).

Terataner transvaalensis Arnold

(Figs 42, 46)

Terataner (Tranetera) transvaalensis Arnold, 1952: 130, fig. Holotype worker, SOUTH AFRICA: e. Transvaal, Marieps (or Mariepskop), v.1951 (*J. C. Faure*) (NM, Bulawayo) [examined].

WORKER. TL 6.8, HL 1.60, HW 1.58, CI 98, SL 1.08, SI 68, PW 0.94, AL 2.02.

Mandibles longitudinally rugulose. Frontal carinae strongly developed as a pair of sharp raised ridges which are almost parallel throughout their length, only very feebly sinuate. Posteriorly each frontal carina angled sharply outwards and running towards the side of the head as a weak ridge. Antennal scrobes absent but the head with a narrow indentation below the frontal carinae. Eyes convex and conspicuous, maximum diameter 0.32, about 0.20 × HW. Pronotum in dorsal view marginate anteriorly and laterally, the anterior corners prominently angulate; these angles also forming the origin of a sharp margin running down the sides of the pronotum to the anteroventral angles. Sides of pronotum only very feebly sinuate in dorsal view, roughly parallel, not strongly convergent posteriorly. Mesonotum marginate laterally, propodeum not marginate. Promesonotal suture feeble medially on dorsum but its track visible; strongly defined laterally on the dorsum where it separates the pronotal and mesonotal marginations. With alitrunk in profile the metanotal region very shallowly concave only, not distinctly impressed. Propodeum rounded and unarmed, without trace of teeth. Metapleural lobes conspicuous, large and rounded. Petiole node broadly triangular in profile, rising to a peak dorsally. In anterior view the dorsum of the petiole indented medially, the dorsum on each side of the indentation rounded, not developed into teeth. Dorsum of head with 11 sharp longitudinal rugae between the frontal carinae at the level of the posterior margins of the eye. Sides of head between frontal carinae and eyes more strongly rugose than dorsum and sides below eyes more strongly rugose still, almost sulcate. Ground-sculpture on all surfaces of head a fine and very dense reticulate-punctulation. Dorsal alitrunk sculptured with very broad low strong longitudinal rugae, almost sulcate. On the pronotum these strong rugae are roughly parallel and are restricted to the central, transversely convex, portion and do not occur on the flatter more lateral areas close to the lateral marginations. On the mesonotum the rugae become weaker posteriorly and are distinctly divergent. On the propodeal dorsum the rugae are broader and even less well defined. Sides of alitrunk bluntly rugose, on the pronotum the rugae diagonal and running from the anteroventral to the posterodorsal angle. Elsewhere on the sides the rugae longitudinal, coarsest on the propodeum above the spiracle. Ground-sculpture of entire alitrunk a fine and very dense reticulate-punctulation. Anterior face of petiole node with dense punctulate ground-sculpture and a few rugular vestiges but posterior face deeply sulcate, the sulci regular and parallel. Postpetiole sulcate in dorsal view,

the sculpture divergent posteriorly and overlaid by punctulate ground-sculpture. First gastral tergite densely reticulate-punctulate everywhere and with strong longitudinal costulae or rugae on the basal quarter. All dorsal surfaces of head and body with short, quite stout hairs. These are quite numerous on head, pedicel segments and gaster but are decidedly sparser on the alitrunk, being obvious only on the pronotum where several pairs are present, but apparently represented by only a single pair each on the mesonotum and propodeum. Dorsal surfaces of femora and tibiae and also leading edges of antennal scapes with scattered stout standing hairs. Head and gaster blackish brown to black, alitrunk and appendages red.

T. transvaalensis, known only from the holotype worker, is one of the two African species referable to the predominantly Malagasy *foreli*-complex. The other species in Africa is *bottegoi*. The two are separated by the characters given in the key and by the fact that *bottegoi* tends to be somewhat smaller than *transvaalensis*. Also, in *transvaalensis* the rugose sculpture of the pronotal dorsum does not run to the lateral marginations, the lateral marginations of the pronotum do not overhang the sides of the pronotum, the metanotal area is not sharply impressed and the side of the head between the eye and frontal carina is more strongly rugose than the dorsum. In contrast the rugose sculpture of the pronotal dorsum runs to the lateral marginations in *bottegoi*, the lateral pronotal marginations overhang the sides, the metanotum is sharply impressed and the side of the head between eye and frontal carina is less strongly rugose than the dorsum of the head.

At present the ranges of the two are not known to overlap; *transvaalensis* is known only from Transvaal, South Africa, whilst *bottegoi* has been recorded from Somali Republic, Kenya and Tanzania.

Terataner velatus sp. n.

HOLOTYPE WORKER. TL 4.5, HL 1.14, HW 1.07, CI 94, SL 0.64, SI 60, PW 0.76, AL 1.40.

Mandibles smooth basally but in the apical halves with a number of large elongate pits which, where aligned, give the appearance of short impressions. Frontal carinae fine, close together, parallel, more or less straight, fading out on the dorsum between the level of the posterior margins of the eyes and the occiput. Maximum diameter of eyes 0.27, about 0.25 × HW. Pronotum marginate laterally and more weakly so anteriorly, the pronotal corners bluntly dentate and prominent. Sides of pronotum shallowly convex and somewhat convergent posteriorly. Mesonotum marginate laterally, the propodeal dorsum separated from the sides by a blunt angle, not at all as sharply marginate as the pronotum. Promesonotal suture absent on dorsum except laterally where it forms a break in the margination. Metanotal groove only very shallowly impressed in profile. Propodeum unarmed. Metapleural lobes large and rounded. Petiole node in profile appearing as a triangular tooth, broad-based but short, tapering to an acute point apically and very slightly curved backwards. In anterior view the dorsal surface of the node strongly emarginate in the middle, the portions on each side of the emargination projecting slightly outwards as a pair of blunt teeth. Postpetiole in dorsal view narrow and narrowly rounded posteriorly. Dorsum of head and sides of head above the eyes with a fine dense reticulate-punctulate ground-sculpture which is fainter between the frontal carinae than outside them. Overlying the ground-sculpture are a few fine longitudinal rugulae between the frontal carinae and a series of somewhat stronger longitudinal rugulae running above the eye. Dorsal alitrunk finely and densely reticulate-punctate everywhere. On the propodeal dorsum this is the only sculpture but the pronotum, and to a lesser extent the mesonotum, has fine but conspicuous fairly dense longitudinal rugulation. Petiole, postpetiole and first gastral tergite finely and densely reticulate-punctate everywhere. Basigastral costulae very reduced, the individual components short, fine and restricted to the area immediately behind the postpetiolar-gastral junction. Standing hairs sparse on dorsal surfaces of the body, consisting only of 4 pairs on the head following the lines of the frontal carinae, one pair each on the pronotum (at the corners), mesonotum and propodeum, 3 pairs each on the petiole and postpetiole, and 3 pairs on the first gastral tergite situated in the basal half towards the sides of the sclerite. Other than this hairs are present only on the mouthparts and gastral apex; standing hairs are absent on the scapes and tibiae. Colour uniform dark brown.

PARATYPE WORKERS. TL 4.1–4.4, HL 1.04–1.10, HW 0.98–1.06, CI 94–96, SL 0.60–0.64, SI 60–64, PW 0.70–0.74, AL 1.24–1.36 (5 measured). Maximum diameter of eye 0.24–0.26, about 0.24–0.25 × HW. As holotype but several paratypes with hairs variously lost by abrasion from the dorsal body surfaces. Colour varying from mid-brown to blackish brown.

Holotype worker, **Ghana**: Okumaning, 12.viii.1969, ant ecology sample K12 (*D. Leston*) (BMNH).

Paratypes. **Ghana**: 1 worker with same data as holotype but sample K11; 1 worker, Kade, ant ecology sample K96 (*D. Leston*); 2 workers, Enchi, 17.v.1969, ant ecology sample E 5–8 (*D. Leston*). **Ivory Coast**: 1 worker, Banco Forest near Abidjan, 10.i.1963, no. A30 (*W. L. Brown*). (BMNH; MCZ, Cambridge.)

T. velatus is closest related to *piceus* in the *luteus*-complex, the two species sharing the characteristic form of the postpetiole which in dorsal view is narrow and narrowly rounded posteriorly. The two are easily separated as *velatus* has longitudinal rugular sculpture on the pronotum which overlies the dense reticulate-punctulate ground-sculpture, whilst in *piceus* such rugulae are absent. Besides this *velatus* has hairs present on the basal half of the first gastral tergite where in *piceus* such hairs are lacking.

Synopsis of Malagasy region species

Terataner alluaudi (Emery)

(Fig. 50)

Atopomyrmex alluaudi Emery, 1895: 341, fig. 2. Syntype workers, MADAGASCAR: Diego-Suarez, iv–viii.1893 (*C. Alluaud*) (MCSN, Genoa; MCZ, Cambridge) [examined].

Terataner alluaudi (Emery) Emery, 1912: 103.

Terataner foreli (Emery)

(Fig. 55)

Atopomyrmex foreli Emery, 1900: 274, figs. Syntype workers, MADAGASCAR: Baia di Antongil, 1897–98 (*A. Mocquerys*) (MCSN, Genoa) [examined].

Terataner foreli (Emery) Emery, 1912: 103.

Terataner rufipes Emery

(Fig. 53)

Terataner rufipes Emery, 1912: 104. Holotype worker, MADAGASCAR: Fort Dauphin (*M. Sikora*) (MCSN, Genoa) [examined].

Terataner scotti (Forel)

(Fig. 51)

Atopomyrmex scotti Forel, 1912: 160. Syntype worker and males, SEYCHELLES: Praslin I. (worker), and Silhouette I. (males) (*H. Scott*) (BMNH) [examined].

Terataner scotti (Forel) Emery, 1912: 103.

Terataner steinheili (Forel)

(Fig. 54)

Atopomyrmex steinheili Forel, 1895: 485. Holotype worker, MADAGASCAR: 'Madagascar central' (*M. Sikora*) (MHN, Geneva) [examined].

Terataner steinheili (Forel) Emery, 1912: 103.

Terataner xaltus sp. n.

(Fig. 52)

HOLOTYPE WORKER. TL 8.0, HL 1.82, HW 1.78, CI 98, SL 1.16, SI 65, PW 1.50, AL 2.22.

Mandibles with 6 teeth; with strong rounded longitudinal rugular sculpture. Median portion of clypeus bounded by a carina on each side which runs to the anterior margin. Median clypeal carina present, running

to the clypeal notch. On each side of the median carina the clypeus with 2-3 weaker carinae which may be broken or discontinuous. Eyes large, maximum diameter 0.40, about $0.22 \times HW$, situated approximately at the midlengths of the sides and breaking the outline of the sides in full-face view. Frontal carinae sharply developed, roughly parallel and about 0.76 apart ($c. 0.43 \times HW$) at the level of the midlength of the eyes. Posteriorly the frontal carinae sharply divergent and running towards the occipital corners as a raised crest on each side. Lateral marginations of pronotum extended outwards as a semitranslucent lamella on each side, the maximum width of which is $c. 0.14$. On the left side of the holotype the lamella is continuous from the pronotal corner but on the right the corner forms a separate angle, separated from the lamella proper by an indentation. Pronotum (including the lamellae) much broader than long. Promesonotal suture absent on dorsum centrally, but its former track indicated by a feeble indentation running across the unbroken strong longitudinal sculpture. Lateral parts of promesonotal suture on the dorsal alitrunk, and its track down the sides of the alitrunk, represented by a conspicuous cleft filled with very dense off-white pubescence. Mesonotum not marginate but armed with a low broad tubercle on each side. Promesonotum convex both longitudinally and transversely. Metanotal groove impressed, narrow. Propodeum weakly and irregularly marginate laterally, armed with a pair of small denticles. Dorsum of propodeum rounding evenly into the short declivity; the dorsum between the denticles transversely shallowly concave. Metapleural lobes conspicuous, deep and broad. Peduncle of petiole thick, with a low and rounded anterior process ventrally. Petiole node in profile low and roughly triangular, tapering dorsally to a narrow peak which is inclined backwards from the vertical. In anterior view the dorsum of the petiole node emarginate and armed with a pair of low, broad triangular teeth. Postpetiole in profile rising to a sharp peak dorsally. In dorsal view this peak is seen to be the topmost point of a knife-edged transverse crest which falls away on each side, separating the anterior face of the postpetiole from the rest. Dorsum of head between the frontal carinae with eight roughly parallel, quite widely separated, strong longitudinal costae; the spaces between them with superficial granular ground-sculpture. Sides of head between frontal carinae and eye rugose, with granular ground-sculpture between the rugae and with a few cross-meshes above and in front of the eye. Sides of head below and behind eye strongly sulcate. Sides of pronotum strongly sulcate, the sulci inclined slightly backwards from the vertical. Remainder of sides of alitrunk longitudinally rugose except in the area below the propodeal margin where the rugae are irregular. Promesonotal dorsum strongly and regularly longitudinally sulcate. Propodeal dorsum with some longitudinal rugulae on the anterior half but behind this the surface merely superficially reticulate. Anterior faces of both petiole and postpetiole with fine superficial reticulation, the latter also with some low rugae which radiate from the petiolar junction. Posterior faces of both segments with coarse rugae. Basal third of first gastral tergite densely longitudinally costulate, the spaces between the costulae smooth or nearly so. Posteriorly, as the costulae fade out, a fine superficial reticulation or shagreening fades in, and this continues to the hind margin of the sclerite. All dorsal surfaces of head and body with numerous short white hairs. Femora and tibiae with numerous standing hairs. Black, the mandibles, antennae and legs dark brown.

Holotype worker, **Madagascar**: Forêt de Zombitsy, near Sakaraha, 650 m, 16.xii.1959 (no collector's name) (MCZ, Cambridge).

The shape of the postpetiole allies *xaltus rufipes*, but this latter is a much smaller species with simple pronotal margination and less regular pronotal sculpture. The following key will separate the known species of the Malagasy region.

Key to species (workers)

- | | | |
|---|--|-----------------|
| 1 | Postpetiole armed dorsally with a single median curved spine (Fig. 50). Petiole with a pair of long, usually back-curved, spines which are distinctly longer than the maximum diameter of the eye. (Madagascar) | <i>alluaudi</i> |
| - | Postpetiole unarmed dorsally, without a median spine (Figs 51-55). Petiole with a pair of lobes or short teeth which are distinctly shorter than the maximum diameter of the eye | 2 |
| 2 | Petiole node in profile produced into a very high thin plate-like prominence above (Fig. 51). In anterior view the petiole broadly bilobate dorsally. (Seychelles) | <i>scotti</i> |
| - | Petiole node in profile roughly triangular in shape, tapering dorsally. In anterior view the petiole emarginate to bidentate dorsally | 3 |
| 3 | Postpetiole in profile rising to a sharp point or peak dorsally; in dorsal view this peak seen to be the dorsalmost point of a sharp, knife-edged, transverse crest which slopes away on each side (Figs 52, 53) | 4 |
| - | Postpetiole in profile bluntly rounded dorsally; in dorsal view without a knife-edged transverse crest (Figs 54, 55) | 5 |

- 4 Lateral marginations of pronotum projecting into a broad semitranslucent lamina on each side (Fig. 52). Larger species, HW > 1.50, PW > 1.30. (Madagascar) *xaltus*
- Lateral marginations of pronotum merely a sharp angle, not projecting into broad laminae (Fig. 53). Smaller species, HW < 1.50, PW < 1.30. (Madagascar) *rufipes*
- 5 Posterior half of first gastral tergite densely reticulate. Lateral marginations of pronotum reduced, blunt and rounded, no sharper than the coarse sulci which make up the sculpture. Metanotal groove extremely deep, the anterior face of the propodeum concave so that the anterodorsal angle of the propodeum overhangs the base of the metanotal groove (Fig. 55). (Madagascar) *foreli*
- Posterior half of first gastral tergite smooth. Lateral marginations of pronotum sharp, very distinctive and much sharper than the pronotal sculpture. Metanotal groove present but shallow, unspecialized (Fig. 54). (Madagascar) *steinheili*

Acknowledgements

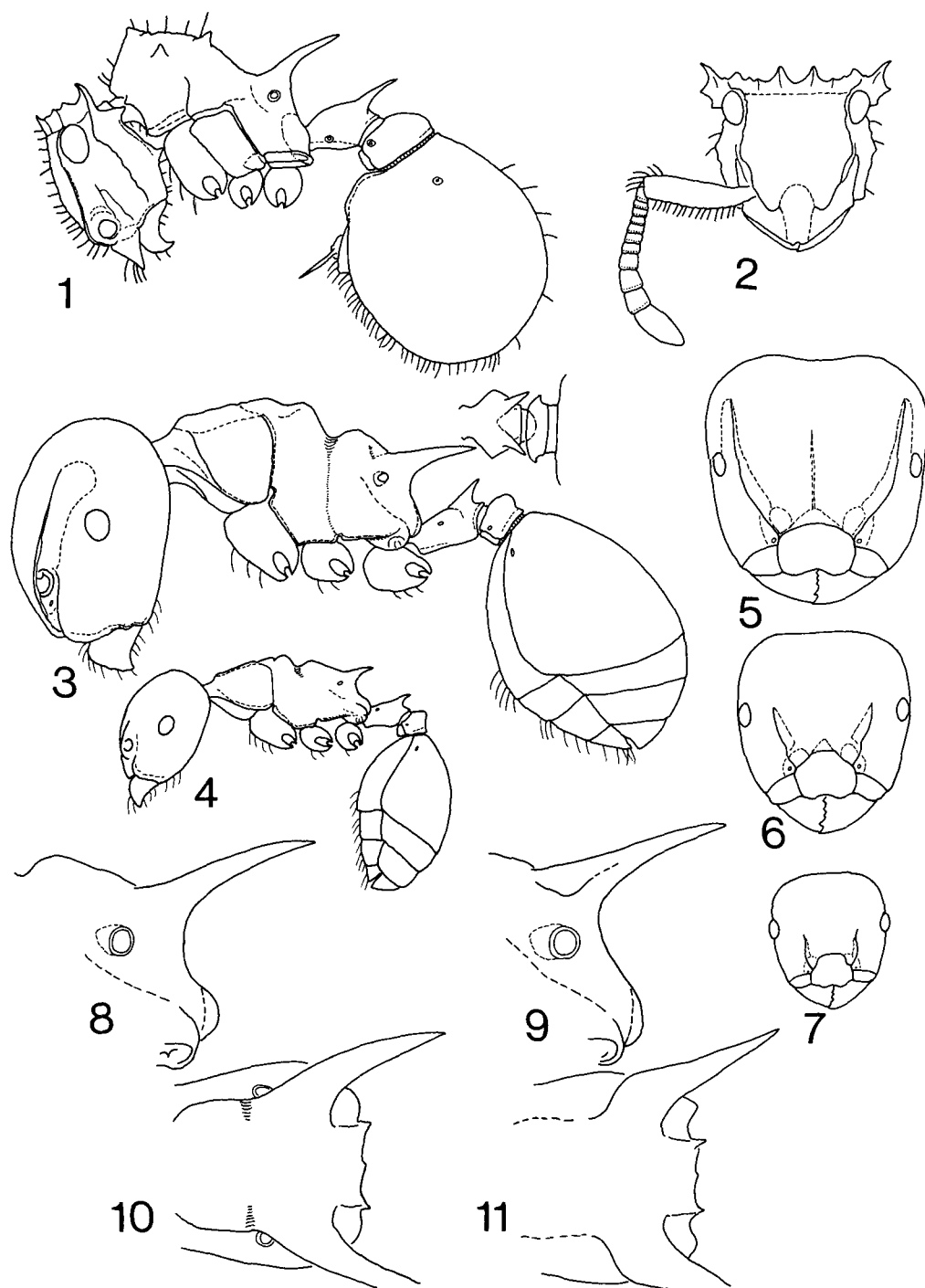
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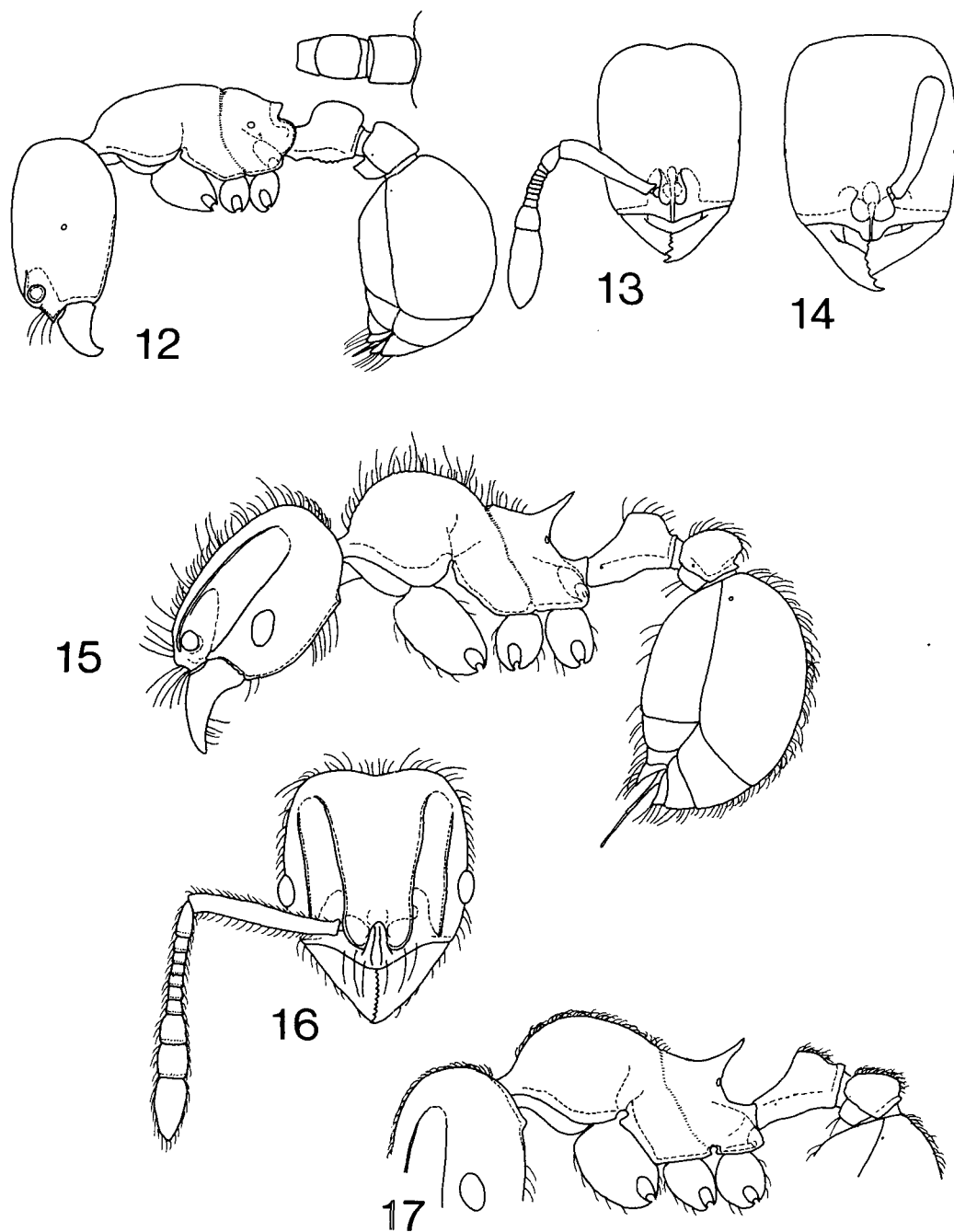
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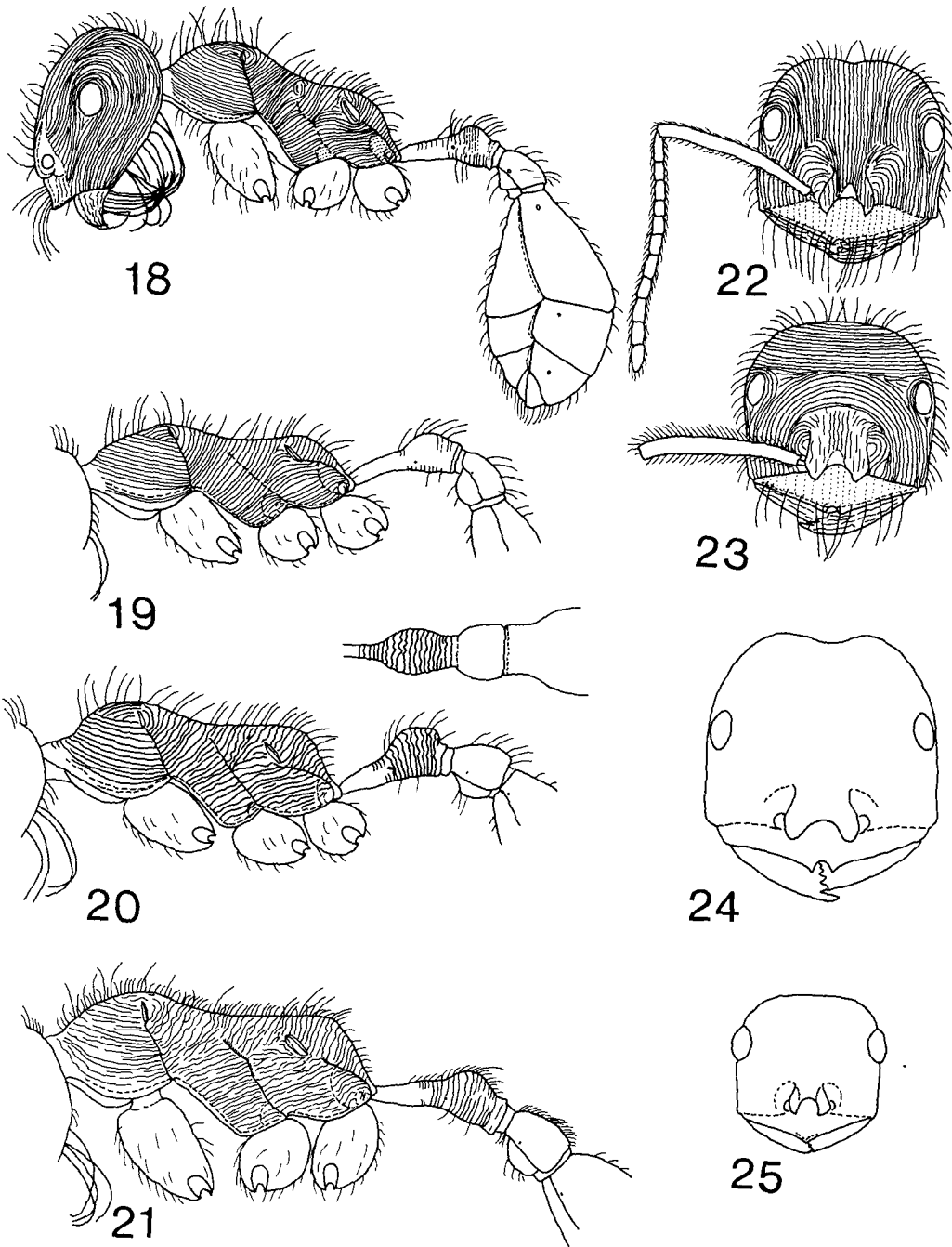
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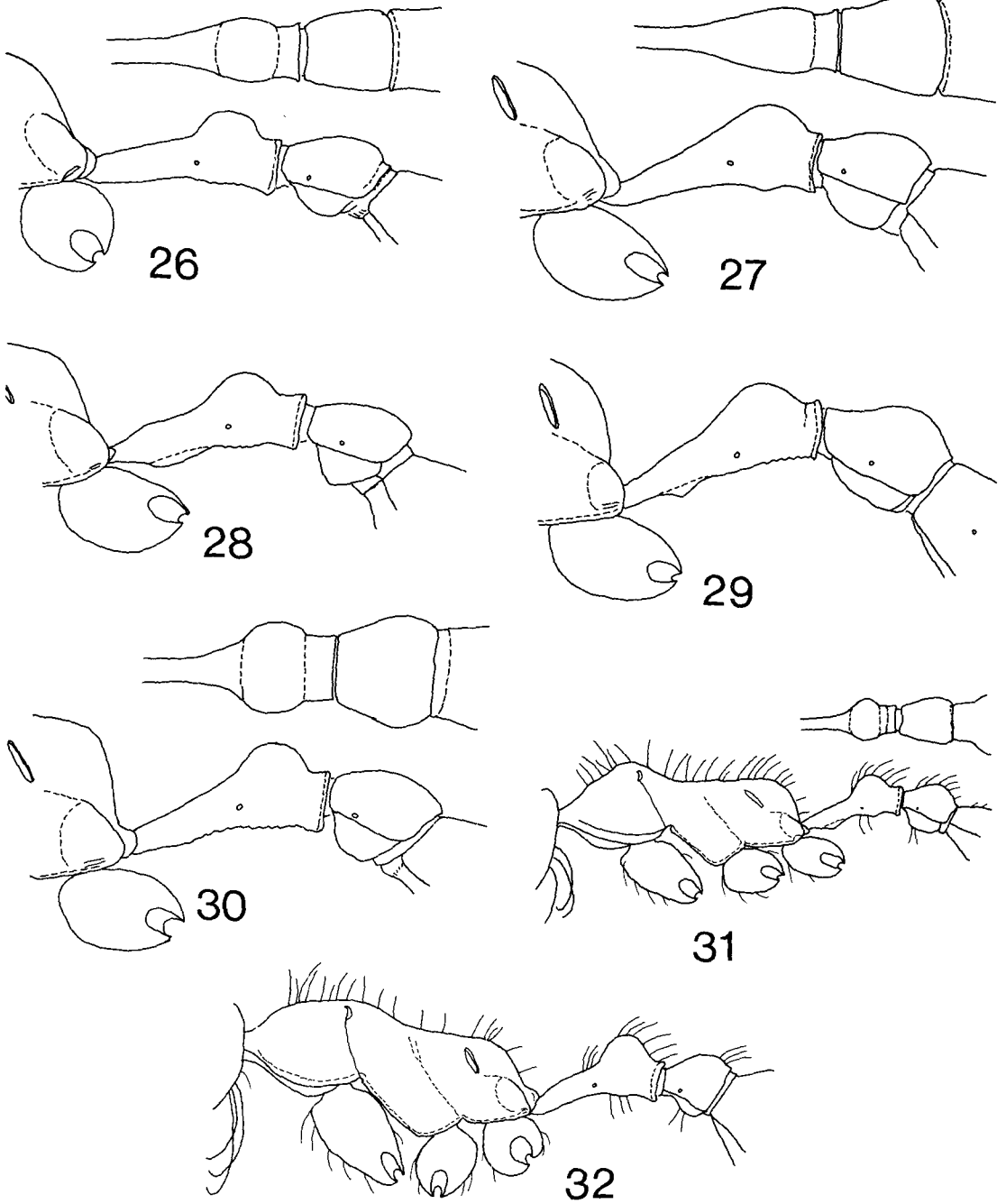
Figs 1–11 1, 2. *Ankylomyrma* worker. 1, profile of *coronacantha*, 2, head of *coronacantha*. 3–11. *Atopomyrmex* workers. 3, profile of large worker of *mocquerysi*, 4, profile of small worker of *mocquerysi*. 5–7, heads of *mocquerysi* workers: (5) large (HW 2.20), (6) medium (HW 1.90), (7) small (HW 1.30). 8, 9, propodeal profile of (8) *mocquerysi*, (9) *cryptoceroides*. 10, 11, propodeal dorsum of (10) *mocquerysi*, (11) *cryptoceroides*. Sculpture omitted.



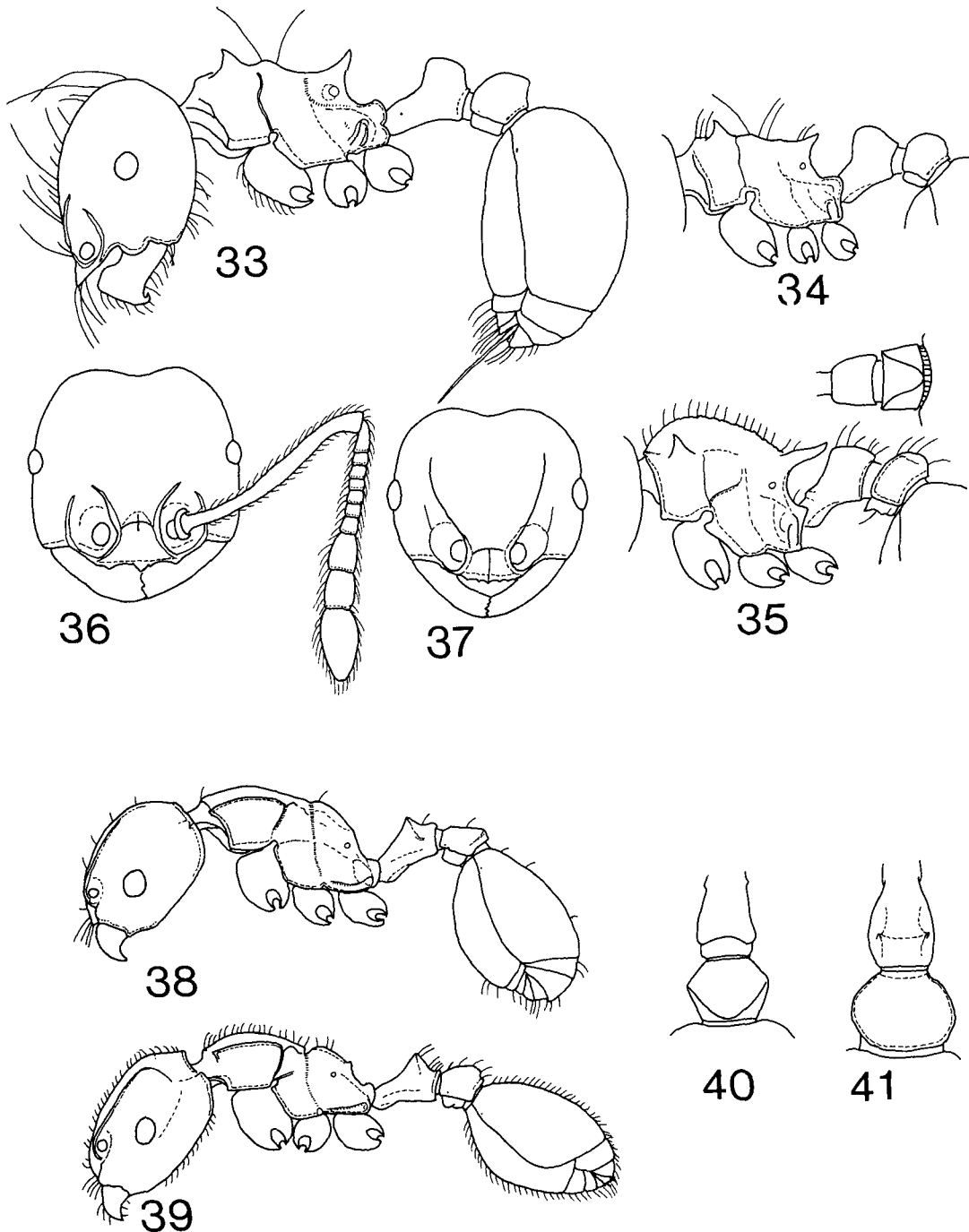
Figs 12–17 12–14. *Baracidris* workers. 12, profile of *meketra*. 13, 14 heads of (13) *meketra*, (14) *sitra*. 15–17 *Cyphoidris* workers. 15, profile of *spinosa*. 16, head of *spinosa*. 17, alitrunk and pedicel of *exalta*. Sculpture omitted.



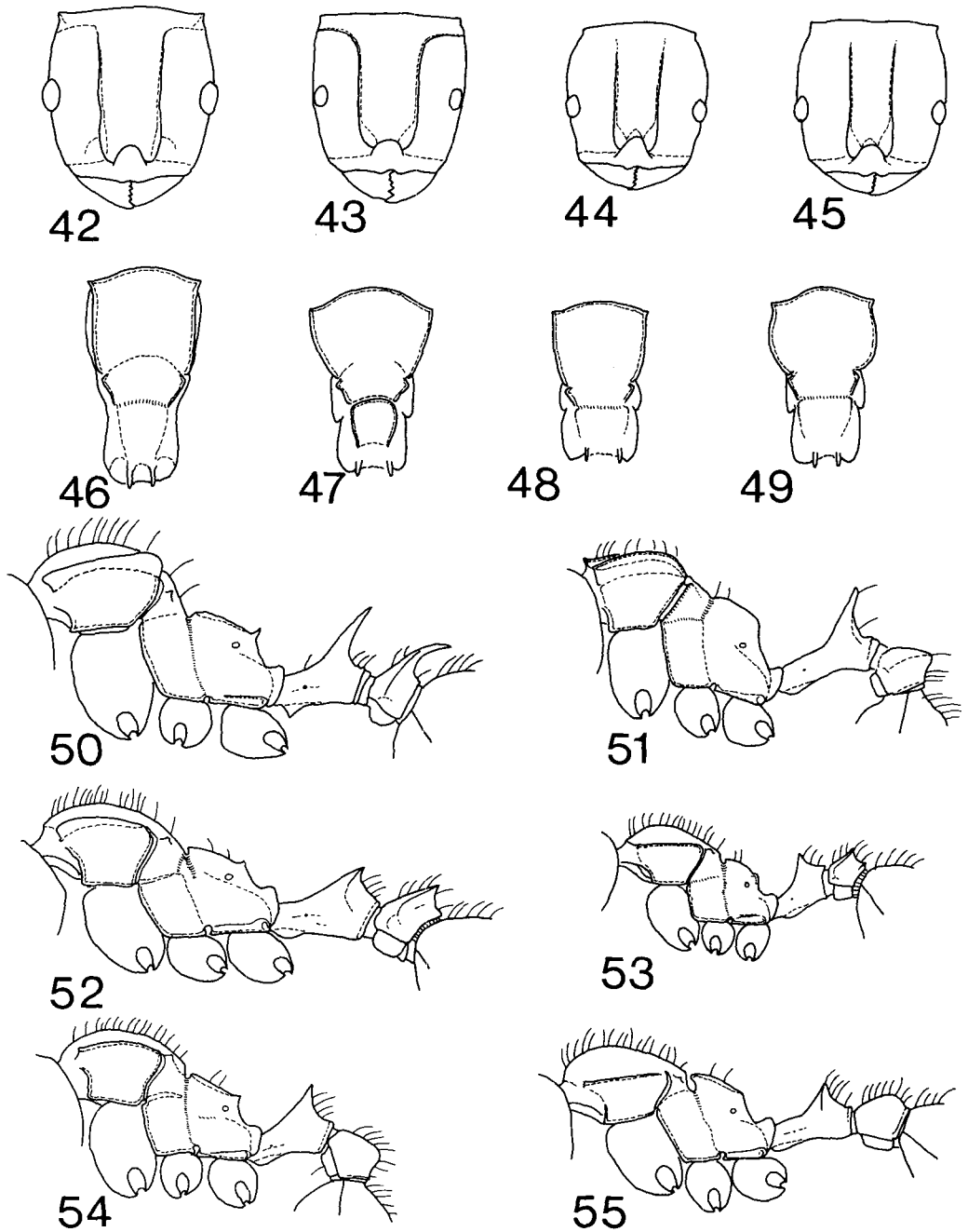
Figs 18–25 *Ocymyrmex* workers. 18, profile of *nitidulus*. 19–21, alitrunk and pedicel segments of (19) *celer*, (20) *sobek*, (21) *sphinx*. 22–25, head of (22) *nitidulus* worker, (23) *nitidulus* female, (24) *robecchii*, (25) *turneri*. Sculpture omitted in 24, 25.



Figs 26–32 *Ocymyrmex* workers. 26–30, pedicel segments of (26) *fortior*, (27) *phraxus*, (28) *flaviventris*, (29) *laticeps*, (30) *weitzckeri*. 31, 32, alitrunk and pedicel segments of (31) *shushan*, (32) *velox*. Sculpture omitted.



Figs 33–41 33–37. *Pristomyrmex* workers. 33, profile of *trogor*. 34, 35, alitrunk and pedicel segments of (34) *africanus*, (35) *cribrarius*. 36, 37, heads of (36) *trogor*, (37) *orbiceps*. 38–41. *Terataner* workers. 38, 39, profiles of (38) *luteus*, (39) *bottegoi*. 40, 41, pedicel in dorsal view of (40) *piceus*, (41) *elegans*. Sculpture omitted.



Figs 42–55 *Terataner* workers. 42–45, heads of (42) *transvaalensis*, (43) *bottegoi*, (44) *luteus*, (45) *elegans*. 46–49, dorsal alitrunk of (46) *transvaalensis*, (47) *bottegoi*, (48) *elegans*, (49) *luteus*. 50–55, alitrunk and pedicel of (50) *alluaudi*, (51) *scotti*, (52) *xaltus*, (53) *rufipes*, (54) *steinheili*, (55) *foreli*. Sculpture omitted.

Index

Synonyms are in *italics*.

- abdominalis* 269
africanus 284
alluaudi 296
ankhu 265
Ankylomyrma 247
arnoldi (*Atopomyrmex*) 251
arnoldi (*Ocymyrmex*) 269
Atopomyrmex 249
australis 251
- Baracidris* 252
barbatus 265
barbiger 265
beni 284
bottegoi 291
- carpenteri* 275
cavatodorsatus 266
celer 267
coronacantha 248
cribrarius 285
cryptoceroides 250
cursor 267
curvispina 250
Cyphoidris 256
- deplanatus* 250
Dodous 282
- elegans* 292
erigens 251
exalta 258
- flavescens* 265
flaviventris 268
foreli (*Ocymyrmex*) 269
foreli (*Terataner*) 296
fortior 269
fossulatus 285
- hirsutus* 271
Hylidris 282
- laevigatus* 286
laticeps 271
luteus 293
- mbomu* 284
meketra 255
melanoticus 250
micans 272
- mocquerysi* 251
monardi 273
myersi 284
- nigellus* 251
nitidulus 274
- obscura* 251
Ocymyrmex 260
Odontomyrmex 282
opaca 251
orbiceps 286
- parissa* 258
phraxus 274
picardi 275
piceus 293
primus 284
Pristomyrmex 282
- robecchii* 276
robustior 265
rufipes 296
- scotti* 296
shushan 277
sitra 256
sobek 277
sphinx 278
spinosa 257
steinheili 296
- Terataner* 288
Tranetera 288
transvaalensis 294
transversus 269
trogor 287
turneri 279
- usakosensis* 269
- velatus* 295
velox 280
- weitzeckeri* 280
weneri 259
wroughtoni 280
- xaltus* 296
- zekhem* 281

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