

ANNALS
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- 1.—*A Monograph of the Formicidae of South Africa.*—By GEORGE ARNOLD, M.Sc., A.R.C.S., F.E.S., Curator of the Rhodesian Museum, Bulawayo.

INTRODUCTION.

Up to the present time, no work has been published which deals with the Formicidae of South Africa in monographic form. The descriptions of nearly three hundred species are scattered over a large number of scientific journals, of which many are rare or otherwise difficult to obtain. The task of identifying the ants of this region is therefore rendered very arduous, if not altogether impossible, since each isolated description has to be searched for amongst numerous, and often very obscure publications, many of which are not to be found in the few scientific libraries of South Africa. It is therefore not to be supposed that the following pages contain a complete account of all the known South African species, since some may have escaped my notice, but it is hoped that they will serve as a basis of study for future workers.

The difficulty of obtaining such publications for reference has been surmounted in this instance largely through the kindness of friends and of officials of kindred institutions. Many descriptions of species which I have not been able to see, have been copied for

me in London by Miss M. Munro. Dr. Louis Péringuey has given me most generous aid in searching for references, and in lending me books from the library of the South African Museum, and also in submitting to my inspection the whole of the collections of ants in that institution. I have also received much valuable help from Dr. Hans Brauns, of Willowmore, who has lent me selections from his library and has collected for me many specimens which I could not otherwise have obtained. I am particularly indebted to Dr. A. Forel, who has identified nearly all the species which have been taken by my friends or by myself, and without whose generous assistance the difficulties in attempting this work could hardly have been overcome. Messrs. Cooper, Marley, Zealley, and Macgregor have also collected for me, and to them and to Father Kendal, S.J., of Bulawayo, who most kindly corrected translations from the Italian for me, I wish to tender my sincere thanks. I also wish to express my gratitude to the Royal Society of South Africa for a grant of £45 in aid of this work, whereby I was enabled to travel to Capetown and copy many references from the works in the library of the South African Museum, and to proceed subsequently to Willowmore and Durban for the purpose of collecting the ants of those regions.

The title, "South African," chosen for this work is admittedly rather indefinite, for in the geographical distribution of the ants, as in the case of nearly all the Aculeate Hymenoptera, no definite limits, such as Sclater's original South African Region, or its various modifications, can be adopted. Our present knowledge of the ants of Africa is not sufficient to enable us to draw any solid deductions from a survey of their distribution. The Sahara, however, forms a fairly strong boundary, separating off the North African (*i.e.* Mediterranean) forms from those of the Ethiopian Region, yet several species pass through it by the gap of the Nile Valley; there are also not a few species which occur all along the East Coast from Abyssinia downwards, and several species originally discovered in the equatorial regions of the Congo have been taken by myself in Southern Rhodesia.

It is therefore with a view to reducing the work to convenient proportions that I have decided to limit this monograph to the inclusion of those species which have been found in British South Africa, part of Portuguese East Africa, and German South-west Africa, but also including some species which, although recorded outside these limits, may yet be expected to be found in them in the future.

In the following pages I have copied the original descriptions of those species of which I have not been able to see specimens, such copies being indicated by inverted commas. For the generic descriptions and keys to genera, I have borrowed to a large extent from Prof. Emery's work on the Ponerinae in the "Genera Insectorum," an invaluable work which is indispensable to all students of the family.

Species represented in the Rhodesia Museum's collection are

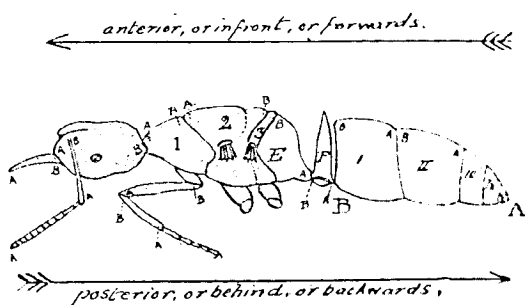


FIG. 1.

EUPONERA SENNAARENSIS, Mayr. ?.

1, 2, 3 = pro-, meso-, and meta-notum.

E = epinotum.

P = Petiole.

I, II, III, IV, V = 1st-5th segments of abdomen.

BA = base and apex of the whole gaster (abdomen).

A = apex } of the different parts and segments.

B = base }

Thorax and head shaded ; true abdominal segments un-shaded.

indicated by the initials R.M., in that of the South African Museum by S.A.M., and in my own collection by G.A.; such initials being placed after the descriptions of the species.

It is hardly necessary to give an introductory outline of the external anatomy of the Formicidae, since that information is easily obtained in various entomological textbooks.*

But it will be necessary, for the understanding of the following descriptions, to give a short explanation of certain features in the anatomy of these insects, and of some modifications in the terminology which I have thought desirable to adopt.

As is well known, the posterior portion of the "thorax" of the

* A very clear and full account may be seen in Wheeler's "Ants," Columbia Univ. Biol. Series, 1910.

Hymenoptera is not a true thoracic segment, but is composed of an abdominal segment which has shifted forwards during embryonic development. Hence arises what at first sight appears to be a needlessly confusing terminology of the different parts. Since the posterior portion of the thorax, variously termed the propodeum, epinotum, middle segment, metanotum, etc., is in reality the true 1st abdominal segment, the 1st joint of the petiole is therefore the true 2nd abdominal segment. For taxonomic purposes, and more particu-

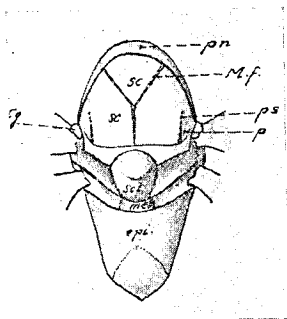


FIG. 2.

THORAX OF *PACHYCONDYLA KRÜGERI*,
Forel. ♂.

pn = pronotum.
sc = scutum of mesonotum.
M.f. = Mayrian furrows.
ps = parapsidal furrow.
p = parapsis.
scut = scutellum of mesonotum.
met = metanotum.
cp = epinotum.
tg = tegula.

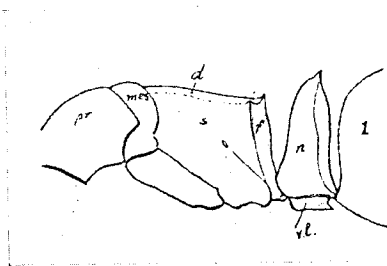


FIG. 3.

STREBLOGNATHUS AETHIOPICUS. ♀.

Seen obliquely from the side and above.

d = dorsum
s = side
f = face or declivity
n = node of petiole
vl = ventral lamella of petiole.
I = 1st abdominal segment.
mes = mesonotum.
pr = pronotum.

larly in dealing with the comparative dimensions of head, thorax, and abdomen, the epinotum is regarded as a part of the thorax, the petiole (whether of one or two joints), is treated of as a distinct region, and the 1st segment behind the petiole is described as the 1st abdominal segment. The latter is termed by some authors the post-petiole, and the segment following it is in that case called either the 1st abdominal segment or simply the 2nd segment. In this work, the segment following the petiole, whether the latter be of one or two joints, will always be treated as the 1st abdominal. A glance at Fig. 1, p. 3, will explain more clearly the terminology adopted.

Another important point which the reader should particularly note is that if we regard the epinotum as the basal segment of the abdomen, the thoracic and abdominal regions are contiguous at their bases, *i.e.* the metanotum on one side and the epinotum on the other. Hence the bases and apices of the separate segments of those two regions lie in opposite directions; it should therefore be distinctly remembered that when the base of the epinotum is referred to, that portion of it is indicated which adjoins the meso-metanotal part of the thorax. In the worker caste the metanotum is usually

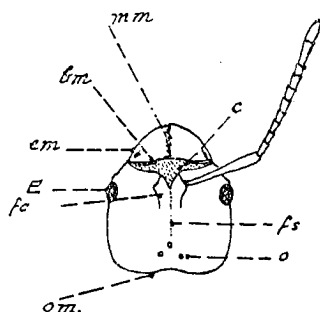


FIG. 4.

HEAD OF *EUPONERA SENNAARENSIS*. ♀.

mm = masticatory or terminal margin
of mandible.

bm = basal margin of mandible.

em = external margin of mandible.

c = clypeus (dotted).

fc = frontal carina.

fs = frontal sulcus.

E = (compound) Eye.

o = ocellus.

om = occipital margin of the head.

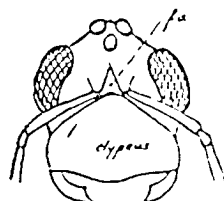


FIG. 5.

HEAD OF *OPHTHALMOPONE BIRTHOULI*. ♂.

Showing fa = frontal area.

small, and so completely fused with the mesonotum as not to be recognizable, so that the dorsal suture which separates the metanotal region from that of the epinotal is commonly called the meso-epinotal suture, although strictly speaking it should be called the meta-epinotal. In the male and female the metanotum is distinctly defined (see Figs. 1 and 2, pp. 3, 4). The epinotum is so closely attached to the thorax, in the worker, that its boundaries are not always easily distinguishable. For purposes of description it will be convenient to treat of it as composed of three parts, *viz.* the sides, the dorsum, and the declivity (see Fig. 3, p. 4). The declivity is the sloping part of the epinotum, adjoining at its apex the base of the petiole. The dorsum, when flat or concave, is

tolerably distinct from the sides, but is confluent with them when it is rounded or convex. Similarly the dorsum merges into the declivity when the slope of the latter is very gradual.

For the convenience of the student who wishes to consult the original descriptions of the Continental authors, the following glossary of synonyms is appended:—

Epistome = clypeus.

Arêtes frontales = frontal carinae.

Fosses antennaires = antennal sockets, or antennal hollows in the Odontomachini.

Metanotum, in the ♂ = epinotum.

Propodeum = epinotum.

Face basale, of epinotum or metanotum = dorsum of epinotum.

Post-petiole = first abdominal segment.

Sillons de Mayr = convergent Y-shaped grooves on the mesonotum in the male, or, Mayrian furrows.

FAMILY FORMICIDAE.

The family Formicidae is divided into five sub-families, viz. Ponerinae, Dorylinae, Myrmicinae, Dolichoderinae, and Camponotinae. Of these the first, with which we are now concerned, is the most primitive, and from which, it is generally agreed, the others have originated.

The Ponerinae flourish chiefly in the tropical regions of the globe, being poorly represented in the temperate zones; in South Africa they compose about 20 per cent. of the known ant fauna, a not inconsiderable portion.

The phenomenon of polymorphism which is so frequently observed in the Dorylinae, Myrmicinae, and Camponotinae is almost entirely absent in this sub-family. *Megaponera foetens* may possibly furnish an exception: in this ant the individuals are of two sizes, the smaller form, which differs considerably in appearance from the larger, having been described originally as a distinct species (*crassicornis*, Gerst.). It is, however, very probable that the larger form represents an ergatoid female, in which case this species is exceptional in having not one such female as is usually the rule when they occur, but as many or more females as there are true workers.*

* See note to the description of this species, p. 48.

In many species of the larger Ponerinae no winged females have ever been discovered, from which it may be assumed that the functions of the female are usurped by one or more of the workers. Where winged females occur, they are seldom much larger than the workers.

The larvae of the Formicidae, like those of all the Aculeate Hymenoptera, are legless grubs. The larva has a small head and thirteen segments. Three of these belong to the thorax, and the rest to the petiole plus the abdomen. The mouth-parts of the larva consist of a pair of mandibles, a pair of maxillae, and an unpaired labium. The spinning glands, with which the larva spins its cocoon, open on little papillae situated on the labium. Eyes are entirely absent. In some species the larvae are naked, but usually are provided with chitinous hairs which vary very considerably in their structure and arrangement according to the species. The hairs may be simple pointed setae, or plumose, furcate, serrate, or ramose. They prevent the larvae from lying in direct contact with the moist soil of the nest, and also help to hold the young ones together in packets, thereby enabling the nurses to transport large numbers from place to place with little trouble. In addition to the hairs, some larvae, especially of the Ponerinae, have tubercles on some or all of the segments. In *Ponera* some of the segments are provided with pairs of dorsal tubercles, secreting a glutinous substance which serves to attach the larva to the walls of the nest.

In the Dolichoderinae, Camponotinae, and some of the Myrmicinae, the larvae are fed with liquid food regurgitated by the workers. In the Dorylinae, Ponerinae, and some of the Myrmicinae on the other hand, the larvae are nearly always fed with pieces of solid food, which in the case of the two former families is nearly almost invariably animal matter (*Dorylus orientalis*, which feeds on the soft bark of plants, is a notable exception). Possibly *Ponera sennaarensis*, Mayr, is also an exception to the rule: this ant preys unceasingly on termites, but its nest very often contains considerable accumulations of grass seeds, which may perhaps be used as food.

The economic value of the Ponerinae in tropical countries can hardly be overestimated, for it may be safely asserted that at least 80 per cent. of their food consists of termites, and they thereby constitute one of the chief checks to these pests of the tropics.

Certain species are exceptional, such as *Plectroctena mandibularis*, which feeds chiefly on millipedes and beetles, and *Platygaster Arnoldi*, For., whose food consists entirely of small beetles, mostly Tenebrionidae.

The colonies are usually small in Ponerine ants, but may be very numerous in some species, such as *Paltothyreus tarsatus*, *Megaponera foetens*, *Euponera sennaarensis*, many species of *Leptogenys* and *Odontomachus haematoda*.

The habit of foraging in files has been observed in several species of Ponerinae in different parts of the world. In our region this habit is displayed by *Megaponera foetens*, and to a slight extent by *Paltothyreus tarsatus*. The former marches in double file, and the striking disparity in size between the two forms composing the colony has a very singular appearance. Their prey consists entirely of termites, and when a suitable hunting-ground containing these animals has been found, the columns break up and pour into every hole and crack which leads to the invaded galleries. The method then adopted is as follows: Each ant brings to the surface one or more termites, and then re-enters the galleries to bring up more victims. This is continued until each ant has retrieved about half a dozen termites, which, in a maimed condition, are left struggling feebly at the surface. The whole army reassembles again outside, and each marauder picks up as many termites as it can conveniently carry, usually 3 or 4. The columns are then re-formed and march home. Less order is shown by *P. tarsatus*, but I have often seen this ant carrying termites, in short single files composed of about a dozen workers.

According to my experience of the Ponerinae of Rhodesia, parasites and ant's-nest guests are remarkably scarce in the nests of these ants. I have never met with any of the larger Paussidae which are known or suspected to frequent their nests.* But in the colonies of nearly all the Ponerinae, and in a large number belonging to the other sub-families, a very common Thysanuran, of a slaty colour, is found in abundance, and also a white Isopod. I have also found in the nests of *Platythrea cribrinodis* a *Cossyphodes* (*Arnoldi*, Brauns) in small numbers.

Probably all the Ponerinae are able to make stridulatory sounds, which in the case of the smaller species may be of so acute a pitch as to be imperceptible to our ears. The stridulation is produced by transverse striae on the under and upper surfaces respectively of the 1st and 2nd abdominal segments. In larger species, such as *Paltothyreus tarsatus* and *Megaponera foetens*, the sound is plainly audible at a distance of several feet.

Other bionomic notes, when available, will be appended to the

* *Cerapterus natalensis* has been found in the galleries of *Platythrea cribrinodis* in Natal.—THE EDITOR.

descriptions of the species, but it must be admitted that we know very little of the life histories of the Ponerinae, and a considerable amount of work remains to be done before we can claim to have a comprehensive knowledge of their natural history.

In the following descriptions, the length is given for each species, from the apex of the closed mandibles to the apex of the abdomen. It is also convenient to treat of the short downy hairs as distinct from the longer, thicker, and more rigid ones. The former kind is termed the pubescence, the latter the pilosity. Occasionally the one merges into the other, in which case the whole hairy covering is treated as the pilosity.

Unless otherwise stated, the density and size of the punctures and other sculptural characters are understood to be visible with a lens magnifying from 20 to 25 diameters, or less.

The dimensions of the head (length compared to width), and the shape, are given exclusive of the mandibles.

Key to the Sub-Families of the Formicidae. Workers.

- (8). 1. Petiole one-jointed.
- (3). 2. A more or less distinct constriction between the 1st and 2nd abdominal segments; ♀ always with well-developed sting; pupa always enclosed in a cocoon *Ponerinae*.
- (2). 3. No constriction between 1st and 2nd abdominal segments.
- (7). 4. Anal aperture transverse.
- (6). 5. Eyes entirely absent; clypeus very small; sting present, sometimes vestigial; pupae naked or enclosed in a cocoon *Dorylinae*.
- (5). 6. Eyes always present; clypeus not very small; sting very small and atrophied *Dolichoderinae*.
- (4). 7. Anal aperture circular. Sting absent; pupae usually enclosed in cocoons. *Camponotinae*.
- (1). 8. Petiole two-jointed; sting present; pupae always naked . . . *Myrmecinae*.

In some ♀ *Dorylinae* the petiole is almost two-jointed, but the absence of eyes, and the small clypeus will distinguish them from the *Myrmecinae*.

SUB-FAMILY PONERINAE.

(Dalla Torre. Cat. Hymen., vol. 7, p. 13).

Characters.

Except in some males of the *Ponerini*, and in the *Odontomachini*, the 1st abdominal segment is marked off by a more or less distinct constriction from the 2nd segment.

Females and workers with well-developed sting.

Females and males. The anterior wings generally have 2 closed cubital cells.

Nymphs always enclosed in a cocoon.

Emery divides the Ponerinae into three sections, based on characters derived from the larvae and males, but of which there are no corresponding characters in the female and worker. As far as our present knowledge enables us to judge, these divisions appear to be sufficiently natural, and are as follows:—

I. PRODORYLINAE. Larva uniformly hirsute, without piligerous tubercles; ♂. Mandibles well developed; genital armature retractile, sub-genital valve widely excised; cerci absent.

II. PROPONERINAE. Larva as in I.; ♂. Mandibles well developed; genital armature usually non-retractile; sub-genital valve entire; cerci absent.

III. EUPONERINAE. Larva with piligerous tubercles; ♂. Mandibles more or less reduced; genital armature non-retractile; sub-genital valve always entire; cerci present.

The first section includes the following South African genera, *Cerapachys*, *Phyracaces*, and *Simopone*.

The second section includes *Platythyrea*, *Sysphincta*, and *Probolomyrmex*.

To the third section belong all the other South African Ponerinae.

The following dichotomic tables of the tribes, based on the characters of the ♀ and ♂, is derived from Emery's work ("Gen. Insectorum"). Unfortunately the males of many species are still unknown, and moreover, in quite a large number of species winged females have never been found, so that a key for these sexes (in many genera) cannot be provided. There is a tendency among the Ponerinae for the suppression of the winged ♀, which is replaced by ergatoid females differing but little from the workers except in size and pilosity.

Key to the Tribes of the Ponerinae, based on the Characters of the
♂ and ♀.

- (2). 1. Claws pectinate *Leptogenyini*, Forel.
- (1). 2. Claws simple or toothed.
- (4). 3. Mandibles articulated to the middle of the anterior margin of the head *Odontomachini*, Mayr.
- (3). 4. Mandibles articulated to the anterior angles of the head.
- (6). 5. At least one ocellus in the ♂; body elongate, pygidium armed at the sides with several stumpy spines *Cylindromyrmecini*, Emery.

- (5). 6. Usually no ocellus in the ♂; pygidium without spines at the sides.
- (10). 7. Insertion of the antennae not covered by the frontal carinae.
- (9). 8. Abdomen strongly reflexed ventrally, or, if not, the frontal carinae are fused together and to the clypeus *Proceratini*, Emery.
- (8). 9. Abdomen not reflexed ventrally; frontal carinae distinct from each other. Antennal sockets delimited laterally by carina. *Cerapachyini*, Forel.
- (7). 10. Insertion of the antennae at least partly covered by the frontal carinae.*
- (12). 11. Frontal carinae with a lateral lobe; antennae inserted close together. *Ponerini*, Forel.
- (11). 12. Frontal carinae with a lateral lobe, but antennae inserted widely apart; clypeus flat, and whole body covered with a very fine pruinose pubescence. *Platythyrcini*, Emery.

SECTION PRODORYLINAE, Emery.

TRIBE CERAPACHYINI, Forel.

Characters.

Frontal carinae nearly vertical in all the sexes, and not covering the insertion of the antennae. ♂ without ocelli; petiole narrowly articulated to the 1st abdominal segment.

Wings with only one closed cubital cell.

Including two South African genera, distinguished as follows:

- 1. Last antennal joint much larger than the preceding, forming a single-jointed club; petiole not margined *Cerapachys*, F. Smith.
- 2. Last antennal joint only slightly larger than the preceding, not forming a club; petiole with lateral margins sharply defined *Phyracacis*, Emery.

GENUS CERAPACHYS.

Smith, Journ. Proc. Linn. Soc. Zool., ii., p. 74, 1857.

Characters.

♂. Head emarginate posteriorly and the posterior angles prominent. Clypeus very short and fused with frontal carinae, which are short and close together; the latter do not cover the insertion of the antennae. The antennal socket (or more accurately, the space on the front of the head surrounding the socket) is limited laterally by a carina. Antennae with 9 to 12 joints, the terminal joint large and forming a club, and at least as long as the three preceding joints together.

* Except in *Ophthalmopone*, in which the insertion is almost bare.

Thorax without, or with indistinct sutures. Lateral margins of the petiole not sharply defined. The 1st abdominal segment sharply constricted off from the 2nd. The latter as long as the succeeding segments taken together.

♀. Winged and resembling the worker, or apterous and ergatoid.

♂. Antennae of 13 joints; anterior wings with only one complete (closed) cubital cell.

Key to the ♀ of *Cerapachys*.

- (4). 1. Eyes absent, small reddish yellow species.
- (3). 2. First abdominal segment wider than long, nearly as wide behind as the 2nd segment *Wroughtoni*, Forel, v. *rhodesiana*.
- (2). 3. 1st abdominal segment as long as wide, distinctly narrower than the 2nd segment *Wroughtoni*, Forel.
- (1). 4. Eyes present, black or brownish species.
- (6). 5. Puncturation of head, thorax, petiole, and 1st abdominal segment dense and very large; posterior dorsal margin of the petiole bisinuate.
Cooperi, Arnold.
- (5). 6. Puncturation small and not very dense; posterior dorsal margin of petiole straight.
- (8). 7. Body black and very shining, sparsely punctured, pubescence and pilosity scanty *cribrinodis*, Emery, v. *natalensis*, Forel.
- (7). 8. Body castaneous brown, not very shining, more closely punctured, pubescence and pilosity rather abundant *Peringueyi*, Emery.

C. CRIBRINODIS, Emery.

Ann. Soc. Ent. Belg., vol. 43, p. 463, ♀, 1899.

“♀. 3·7 to 4 mm. Blackish brown, shining; the front of the head, mandibles, antennae, tarsi, and apex of abdomen rusty red, last joint of antennae and tarsi ferruginous.

Head a little longer than wide, the sides rounded, as wide in front as behind and widely emarginate posteriorly; the posterior angles subacute. The eyes large and flat, inserted in about the middle of the sides of the head: the frontal carinae fused with the clypeus, forming on each side a projecting lobe, itself bilobed anteriorly. The antennae are therefore placed farther forwards than in other species of the genus; the frontal carinae are parallel in front, high and close together, but separated by a groove; posteriorly they are fused together and abruptly terminated by a depression continuous with the antennal sockets. The genal carinae are raised anteriorly into a prominence, below which is a depression sufficiently large to accommodate the scape when the latter is directed forwards.

Mandibles narrow, their apical margin very oblique, with four

small and obtuse teeth at the base, and a larger obtuse tooth in the middle of the basal margin.

Antennae 12-jointed, the scape reaches back to the posterior edge of the eyes. All the joints of the flagellum are broader than long, except the terminal joint which is as long as the four preceding taken together.

The thorax is parallel-sided, depressed dorsally but not marginate and without trace of sutures; the declivity of the epinotum finely marginate.

Head and thorax smooth, sparsely and finely punctured, a hair being inserted in each puncture. The puncturation of the petiole is much coarser, that of the 1st abdominal segment a little smaller, the rest of the abdomen finely punctured. The petiole is half as wide again as long, truncate anteriorly and posteriorly, round above and not marginate; below and in front there is a large rounded projection.

The 1st abdominal segment is as wide at its base as the posterior edge of the petiole, widening towards the apex; the 2nd segment is longer than the petiole, but the 2nd and following segments are together shorter than the petiole plus the 1st segment. The legs are hirsute.

Hab. Cameroons."

The type species does not occur in our region, but I have thought it best to reproduce the original description which applies in the main to the following variety.

Var. *NATALENSIS*, Forel.

Ann. Soc. Ent. Belg., vol. 54, p. 423, 1910.

♂. This is a little larger than the type, and has the petiole sparsely punctured.

Hab. Natal.

C. PERINGUEYI, Emery. (Plate I., fig. 1, 1a.)

Bull. Soc. Ent. Ital., vol. 18, p. 335, ♀, 1886.

♂. 4 mm. Castaneous brown, scape, apical joint of flagellum and legs ferruginous. In some specimens the head and abdomen darker, almost piceous. Shining; thorax, petiole and 1st abdominal segment largely and coarsely punctured, the punctures of the petiole being particularly large. Head and 2nd abdominal segment with smaller and more abundant punctures, the remaining abdominal segments finely and sparsely punctured; antennae finely and closely punctured. The whole body covered with rather long whitish recumbent hairs,

densest on the apical margins of the abdominal segments. Head longer than wide, convex above, moderately emarginate behind, posterior angles sub-acute, sides convex. Eyes rather large, situated a little in front of the middle of the sides of the head. Clypeus narrow and sloping inwards. Frontal carinae very narrow and raised, continued in front (along the margin of the clypeus), round to the antennal socket; above, the carinae are angularly bent near their middle, then converge and end abruptly. There is a semicircular carina on each cheek, externally.

The scape, strongly incrassate towards the apex, hardly reaches to the posterior margin of the eyes: 1st to 10th joints of the flagellum wider than long, apical joint much longer than wide, as long as the 6th-10th joints taken together.

Thorax slightly narrowed in the middle, submarginate anteriorly, with pronounced anterior lateral angles, all the sutures obliterated, the sides seen from above moderately convex; the thorax is as long as, or only very little longer than the petiole and 1st abdominal segment taken together. The declivity of the epinotum vertical and bounded by a feebly raised margin. Petiole wider than long, slightly narrower in front than behind, convex above, moderately so at the sides, vertically truncate in front and behind.

First abdominal segment wider behind than in front, one-fifth longer than the petiole, convex above and at the sides; the constriction between the 1st and 2nd abdominal segments deep and strong; 2nd segment one-quarter longer than the 1st, globose, and with the sides very convex. The ventral lamella of the petiole is produced anteriorly and is sharply truncate.

Hab. Cape. (G.A., S.A.M., R.M. colls.)

Var. *LATIUSCULA*, Emery.

Ann. Soc. Ent. France, vol. 63, p. 19, 1895.

♂. 4 mm. This differs from the type in its slightly larger size, and in having the petiole broader by one-quarter than it is long, the 1st abdominal segment is also a little broader. The puncturation is also slightly closer and larger.

Hab. Makapan.

C. COOPERI, n. sp.

♂. 3.3 mm. Piceous, clypeus and anterior part of the head a little lighter; mandibles, antennae, and legs yellowish red. The whole body, including the tibiae, femora, and antennae covered with long, yellowish, semi-recumbent hairs, the pilosity being more plentiful

and longer than in *Peringueyi* or *cribrinodis*. The whole body subnitidulous, the head above, thorax, petiole, and 1st abdominal segment closely and coarsely punctured. The punctures on the head are smaller and more regular than elsewhere; the cheeks below the eyes are smooth and impunctate. The puncturation of the thorax becomes coarser towards the posterior end. The punctures of the petiole and 1st abdominal segment are large and deep, but strongest on the petiole. The declivity of the epinotum, and the anterior and posterior faces of the petiole are smooth and shining. The 2nd abdominal segment is evenly but sparsely punctured, the punctures being smaller than those on the head; the margins of the remaining abdominal segments, the scape of the antenna and the legs sparsely punctured. The head is a little longer than wide, a little narrower in front than behind, with the sides moderately convex and the posterior margin straight. The eyes, situated in the middle of the sides of the head, are more convex than in *C. Peringueyi*. The mandibles are very finely denticulate on the masticatory margin. Antennae 12-jointed, the scape strongly incrassate towards the apex and not reaching back quite as far as the posterior margin of the eyes. The one-jointed club is more globose and comparatively larger than in our other species, and is as long as the 2-10 joints of the flagellum together; the latter are twice as wide as long, and the 1st joint is as wide as long. The angles terminating the genal carinae are more prominent, but otherwise the characters of the head are similar to those of *C. Peringueyi*. The thorax is flatter above than in that species, and much more distinctly wider behind than in front. The declivity of the epinotum is nearly vertical, strongly margined above, less strongly at the sides, the junction of the dorsal and lateral margins being produced into a small and inconspicuous angle on each side. The petiole is slightly wider behind than in front and moderately convex above from side to side; the sides are almost straight or only feebly convex, the anterior and posterior faces vertical, the anterior dorsal margin straight, the posterior margin above bisinuate so as to form a median and two lateral rounded angles. The first abdominal segment is nearly half as wide again as long, the 2nd segment as wide as long. Otherwise like *C. Peringueyi*.

♀. 4 mm. Similar to the ♂ except for the usual sexual differences. The pro-mesonotal suture is unusually angular, so that the mesonotum and scutellum together, seen from above, have the outline of a lozenge. The mesonotum is strongly but sparsely punctured, smooth, and shining between the punctures. The dorsum of the epinotum is

three times as wide as long. Tegulae ferruginous, wings pale yellowish, the nervures and stigma a little darker.

Umgeni, Durban. (C. B. Cooper.) The types in my collection. (S.A.M., R.M. coll.)

The strong puncturation, especially of the petiole and 1st abdominal segment, the longer and more prominent club, and the bisinuate posterior dorsal margin of the petiole suffice to distinguish this species from all the other members of the genus in South Africa.

C. WROUGHTONI, Forel.

Ann. Soc. Ent. Belg., vol. 54, p. 422, ♀, 1910.

" ♂. 2-2.3 mm. Mandibles smooth, punctured, narrow, and with terminal margin oblique. The insertion of each antenna lies in a depression bounded externally by a lateral carina concave inwards, internally by the frontal carina, and posteriorly by a transverse ridge which joins the lateral and frontal carinae. Head rectangular, one and a quarter times as long as wide, sides convex, as wide at the back as in front, and with a lateral raised margin on each side of the occiput. Eyes absent.

Scape thick, hardly reaching the middle of the head; 1st joint of the flagellum broader than long, 2nd-6th joints twice as broad as long, last joint slightly swollen and as long as the four preceding joints together.

Dorsum of thorax sub-depressed, faintly and obtusely marginate and about three times as long as wide. Pronotum and epinotum of about equal size; mesonotum shorter and narrower; declivity of the epinotum sub-vertical, smooth, and marginate at the sides and above. Petiole seen from above, almost square, corners rounded, as long as wide. First segment of abdomen also almost square, one and a half times as long and as wide as the petiole, and with apical margin straight. The articular portions between the 1st and 2nd segments form a stridulatory surface. The whole body and legs smooth and shining, largely and clearly punctured; of a reddish-yellow colour and covered with a yellowish, short and oblique pubescence."

Hab. Natal. (R. Wroughton.) (G.A., S.A.M.)

Var. *RHODESIANA*, Forel.

Deutsch. Ent. Zeitschr. Beiheft, p. 112, ♂, 1913.

2.8 mm. This differs from the type in its larger size, in the shape of the node which is wider than long (in the type as long as wide),

in the less developed carina above the base of the antennae, and in the much less distinct pro-mesonotal suture. The 1st segment of the abdomen is also much wider than long, whereas in the type it is as wide as long. The thorax is also a little shorter.

Hab. Bulawayo. (G.A. coll.)

GENUS PHYRACACES, Emery.

Rend. Accad. Sc. Bologna, p. 27, 1901.

Characters.

♂ and ♀. Antennae 12-jointed, apical joint not clubbed and not longer than the two preceding together. Petiole, and sometimes the 1st abdominal segment with distinctly defined lateral margins. Eyes in the ♂ large, otherwise resembling *Cerapachys*.

♂. Unknown.

This small genus, with the exception of two species from Madagascar and the two described below, is confined to the Australian region.

P. BRAUNSI, Emery.

Loc. cit.

“♂. 3.5 mm. Piceous; mouth, antennae, apex of abdomen a little lighter, shining, with numerous fine hairs which are most abundant on the abdomen. Pubescence on the legs obliquely exserted, scape with some long hairs; all the body finely punctured, more densely so on the abdomen.

Head with rounded sides and with the occipital margin almost straight, or arcuate; the eyes occupy a little less than one-half of the sides. The mandible, narrow at the base, gradually enlarges towards the masticatory margin which is obtusely dentelate on the buccal portion. The frontal carinae are raised and parallel, but dip down and converge abruptly posteriorly. The scape does not extend further back than the eye, is shorter than the half of the flagellum, and is incrassate towards its apex; the 2nd-6th joints of the flagellum are wider than long, the terminal joint being longer than the preceding but not wider.

Thorax short and stout; the declivity of the epinotum marginate. Petiole with sharp, lateral margins, seen from above, much wider than long, the anterior face fairly straight, the sides arcuate, and the

posterior margin deeply excavated below the lateral angles, which project backwards and are rounded.

The 1st abdominal segment is wider and longer than the petiole, but less than the following segment, and is rounded at the sides.

Hab. Willowmore, Cape Prov. (Brauns.)"

P. COOPERI, n. sp.

♂. 4.2-4.5 mm. Black, femora and mandibles piceous, tibiae, tarsi, and antennae dark ferruginous. Petiole, abdomen, and legs with a very sparse pale pubescence. Whole body with a scanty pilosity of long, whitish yellow oblique hairs, more abundant on the abdomen, shorter and denser on the legs. Whole body shining, head and thorax particularly so. The head is smooth and impunctate between the eyes and below them, rugoso-punctate between the frontal and genal carinae, and above, from the posterior margin of the eyes to the occipital margin, coarsely and irregularly punctate. The thorax is punctate-striate anteriorly and posteriorly, almost impunctate in the middle except at the lateral margins where there are a few large punctures. The petiole and 1st abdominal segment are closely and strongly punctured, the punctures are large, and on the petiole somewhat elongated. The 2nd abdominal segment is closely and rather finely punctured, the punctures being much smaller and more even than those of the 1st segment; 3rd-5th segments finely punctured but less densely than the 2nd segment.

Head a little longer than wide, narrower in front of the eyes than behind them, sides moderately convex, occipital margin concave, posterior angles sub-acute. Eyes convex, occupying a little more than one-quarter of the sides of the head, and situated somewhat dorsally just within the anterior half of the head. Frontal carinae considerably raised and parallel, convergent posteriorly and meeting at a point at a level with the anterior margin of the eyes. Seen from the side, the profile of the carinae is strongly convex in its anterior half, then shallowly concave for a quarter of its length and straight along its posterior quarter. The posterior margin of the clypeus is raised, and meets on each side a low genal carina which runs forward from the inner margin of each eye, and forms with it a distinct angle or tooth, just above the base of the mandibles. A shallow crenate groove surrounds the posterior two-thirds of the eye, and is continued below it to the base of the mandible. Antennae

12-jointed; the scape extends very slightly beyond the posterior margin of the eyes, it is strongly incrassate towards the apex, and is longer than half the flagellum, or as long as the 1st 9th joints together; the 2nd-9th joints of the flagellum wider than long, the apical joint not wider than, but about as long as the two preceding joints taken together. Mandibles triangular, masticatory margin concave and without teeth. Thorax without trace of sutures, twice as long as wide, widest at its posterior fourth, margined above, very distinctly so anteriorly and posteriorly, but less so at the sides. Seen in profile, the dorsum of the thorax is decidedly convex longitudinally, and the sides are vertical. The declivity is almost vertical and strongly margined all round. The petiole is sharply margined above, and three-quarters as wide again as long; the anterior face is vertical, the anterior dorsal margin almost straight, the sides are moderately convex, the posterior margin depressed, and the posterior lateral angles are raised and form a blunt triangular tooth on each side. The 1st abdominal segment is as wide as the petiole, a trifle wider than long, the sides parallel; the sides are somewhat angularly but obtusely delimited from the dorsum, but not marginate. The 2nd abdominal segment hardly longer, but one-quarter wider than the 1st. Posterior metatarsi longer than the tibiae.

Nesting under the roots of a tree. Umgeni, Durban. (C. B. Cooper.)

This species appears to differ from *P. Braunsi*, which is known to me only from the description, by its larger size, smaller eyes, longer scape, and much stronger puncturation.

Type in my collection. (R.M., S.A.M. and G.A. colls.)

TRIBE CYLINDROMYRMICINI, Emery.

Characters.

♂ and ♀. Frontal carinae elongate and projecting laterally so as to form a short scrobe into which the base of the scape can be inserted. Eyes large, at least one ocellus in the ♂. Body elongate. Pygidium furnished laterally with short stumpy spines.

♂. Antennae 13-jointed; scape short, 1st joint of flagellum very short, the following joints longer than wide.

This tribe includes two genera, *Cylindromyrmex*, Mayr, which is confined to South America, and *Simopone*, Forel, of which 5 species

are known, 3 being recorded from Madagascar and 2 from Africa, viz., *S. conradti*, Emery, from the Cameroons, and the new species described below.

GENUS SIMOPONE, Forel.

In Grandidier's Hist. Madagascar, vol. 20, p. 139, 1891.

Characters.

♂. Body more or less cylindrical; head parallel-sided. Antennae 11-jointed, scape very flattened and strongly incrassate towards the apex. Thoracic sutures usually indistinct. Petiole articulated to the 1st abdominal segment by a narrow surface. The constriction between the 1st and 2nd abdominal segments very wide and rather low down. Legs short; claws dentate or pectinate.

♀. Unknown.

♂. Clypeus very short; frontal carinae convergent behind and separated by a longitudinal sulcus. Mandibles triangular and edentate. Antennae 13-jointed, scape short and thick, 1st joint of flagellum very small. Mayrian furrows on the mesonotum strongly defined. Petiole nodiform; the constriction between the 1st and 2nd abdominal segments very strong. Anterior wings with two cubital cells, not completely closed.

SIMOPONE MARLEYI, n. sp.

♂. 7 mm. Reddish ochreous yellow, mandibles and flagellum a little darker, apical segment of abdomen except at its extreme base, and the articular surface between the 1st and 2nd abdominal segments, black. Posterior half of thorax, petiole, legs and scape very shining, the rest of the body moderately shining. Head, thorax, petiole and 1st-4th abdominal segments sparsely and shallowly punctured; the punctures are ill-defined and largest on the head, smallest on the abdomen. The legs, antennae and mandibles are sparsely and finely punctured. The anterior half of the head is microscopically longitudinally striate. The pubescence is sparse and consists of short recumbent golden hairs. It is more abundant on the 1st and 2nd segments of the abdomen, and very scanty on the head and thorax. The apical margins of the petiole and abdomen, and the sides of the apical segment bear some longer and thicker hairs; legs and antennae very sparsely pubescent.

Head slightly narrower in front than behind, almost one-third longer than wide, sides moderately convex, posterior margin feebly

arcuate, posterior angles rounded. Clypeus smooth and without carinae, sloping inwards, fused posteriorly in the middle with the frontal area; its posterior margin is raised, and bears on each side just below and external to the frontal carinae, a rounded, prominent tubercle which projects over the mandible when looked at from the side. The frontal carinae are flattened and produced into a rounded lobe in front, they diverge in front and behind and terminate at a point on a level with the anterior margins of the eyes. The latter are very large. The ocelli are very small; the space between them is fuscous. The mandibles are triangular, very convex dorsally, the external margin shallowly concave, the masticatory margin edentate. The scape of the antenna is strongly compressed dorso-ventrally, widest at the apex and almost triangular, or twice as long as the apical width; it just reaches back as far as the anterior margin of the eyes. The flagellum is 10-jointed, the 1st joint is about as long as wide, the 2nd-9th joints much wider than long, the apical joint longer than wide, and half as long again as the preceding.

The thorax is parallel-sided, its dorsum is flat longitudinally and feebly convex from side to side. The pro-mesonotal suture fairly distinct, the meso-epinotal ill-defined. The pronotum is distinctly margined anteriorly by a dark raised line; the declivity of the epinotum is similarly margined above and at the sides. The petiole is wider behind than in front and feebly convex above. The anterior face of the node is vertical and slightly concave; it is margined above by a fine but very distinct and dark raised line, which is continued along the sides inferiorly to the dorsal margin of the posterior face; the posterior angles are produced backwards, so that the posterior margin is arcuate. The 1st abdominal segment is at least one-third longer than the petiole, and as wide as long; it is separated from the 2nd segment by a wide and deep constriction; the 3rd and following segments are wider than long. The pygidium is produced at the apex into a bidentate projection. Behind this projection the pygidial area of the 5th segment is flattened, smooth and shining in the centre, rugoso-punctate at the sides and armed on each lateral margin with six short spines or teeth (see figs. 46, 46a, Plate V.). Legs short, posterior metatarsi as long as the tibiae and nearly as wide.

Three specimens were found by Mr. Marley in hollow stems of the castor-oil plant, Stella Bush, Durban. At first glance this species bears a deceptive resemblance to *Sima natalensis*, Smith. The type in my collection.

SECTION PROPONERINAE, Emery.

TRIBE PLATYTHYREINI, Emery.

Comprising only the following genus.

GENUS PLATYTHYREA, Roger.

Berlin Ent. Zeitschr., vol. 7, p. 172, 1863.

Characters.

♂. Whole body finely punctured, covered with a pruinose pubescence. Clypeus flat and indistinctly defined posteriorly; frontal area generally indistinct; frontal carinae widely separated, thick and dilated in front. Mandibles triangular, with the masticatory edge large, finely dentate or without teeth. Maxillary palps 6-jointed, labial palps 4-jointed. Antennae 12-jointed, eyes moderately large, no ocelli. The pro-mesothoracic suture slightly mobile, the rest of the thorax completely fused together. Petiole large but not squamiform, narrowly articulated to the 1st abdominal segment at about the centre of the latter, the abdominal constriction not very deep. Middle and posterior tibiae with two calcaria; claws unidentate.

♀. Winged; resembling the worker but slightly larger; eyes larger and ocelli present: pronotum large, mesonotum depressed.

♂. Clypeus more convex than in the ♀; frontal carinae not dilated in front; mandibles triangular. Antennae 13-jointed, scape slightly shorter than the 3rd joint. Eyes and ocelli very large.

Pronotum large, not covered by the mesonotum, the latter not very convex, and with Mayrian furrows indistinct. Wings with 2 cubital cells. Petiole as in the ♀. Pygidium rounded, cerci present.

Key to the ♀ ♀ of Platythyrea.

- (10). 1. Dorsum of mesonotum as high as, or higher than the epinotum; constriction between the 1st and 2nd abdominal segments moderate.
- (7). 2. Node of petiole with the posterior dorsal margin produced on each side into a more or less distinct tooth.
- (4). 3. Larger species, 14–16.5 mm. Whole body black .. *cribrinodis*, Gerst.
- (3). 4. Smaller species, less than 10 mm., legs and antennae red.
- (6). 5. Posterior dorsal margin of node with a median rounded tooth, longer than the lateral angles; puncturation feeble, 7 mm.
Mocquerysi, Emery, var. *matopoenis*, Arnold.
- (5). 6. Posterior dorsal margin of node without a median rounded tooth; puncturation moderately strong, 8.5–9.5 mm. .. *Schultzei*, Forel.
- (2). 7. Node of petiole without lateral dorsal teeth on the posterior margin.

- (8). 8. Larger species, 12-13 mm. Node at least twice as long as wide.
Arnoldi, Forel.
 (8). 9. Smaller species, 6.5 mm. Node not more than half as long again as wide.
Cooperi, Arnold.
 (1.) 10. Dorsum of the mesonotum on a lower level than that of the epinotum;
 constriction between the 1st and 2nd abdominal segments very strong.
 (12). 11. Node of petiole truncate posteriorly *lamellosa*, Roger.
 (11). 12. Node of petiole rounded posteriorly.
lamellosa, Roger, race *longinoda*, Forel, and var. *rhodesiana*, Forel.

P. CRIBRINODIS, Gerstaecker. (Plate I., fig. 4.)

Monatsb. Akad. Wiss. Berlin, 8, p. 504, 1858. Emery, Ann.
 Mus. Stor. Nat. Genoa, vol. 37, p. 154, ♂, 1896? Forel,
 Deutsch. Ent. Zeitschr. Beiheft, p. 208, ♂, 1913.

♀. 14-16.5 mm. Black and dull, calcaria and last two joints of the tarsi ferruginous. Whole body covered with an exceedingly fine pruinose pubescence, yellow and somewhat longer on the clypeus; apical abdominal segment clothed with short reddish-yellow hairs; apex of anterior tibiae and anterior tarsus beneath clothed with short golden hairs.

The head (excluding clypeus and anterior half of frontal carinae), thorax, node of petiole and 1st abdominal segment, punctured; the spaces between the punctures are microscopically rugulose, the punctures are fairly evenly distributed, round and shining, and the floor of each puncture is pitted with two or three minute points. The punctures are larger and closer on the posterior half of the head and on the node. 2nd to 5th abdominal segments rugulose but impunctate.

Head with posterior angles well defined, occipital margin straight, sides moderately convex. Eyes of medium size, situated at about the middle of the sides of the head. Mandibles triangular, slightly shining, and striato-punctate. Posterior margin of clypeus indistinct, but produced into a wide angle between the frontal carinae. The latter are broad in front and flat, much narrower and convergent behind. The scape reaches beyond the occipital margin. The flagellum is as long as the thorax, with the 2nd joint longer than the 3rd.

Pronotum wider than long, anterior margin arcuate and with prominent anterior angles. Pro-mesonotal suture well defined, meso-metanotal suture absent.

The epinotum has a short triangular and blunt tooth on each side above the declivity; the latter is very steep, excavated, and with the dorsal margin considerably raised, the lateral margins less so. Node

of petiole longer than wide, distinctly wider behind than in front, slightly convex, rounded above and truncate in front and behind; the posterior dorsal margin is bi-emarginate, so as to form a tooth on each side and a median obtuse angle. The ventral lamella of the petiole is produced anteriorly into a truncated lobe. First abdominal segment narrower at the base than at the apex, a little shorter and narrower than the 2nd segment. Abdominal constriction distinct.

♂. 13.5 mm. Black, pruinose pubescence as in the ♀. On the head, epinotum, and petiole the puncturation is much sparser than in the ♀; the 1st abdominal segment is sparsely and very shallowly punctured, so as to appear almost impunctate. Mesonotum strongly punctured in its basal half, scutellum feebly punctured. Head somewhat triangular, occipital margin straight, posterior angles rounded. Eyes very large and prominent; ocelli large but not raised. The frontal carinae reach far back, frontal area distinct. Clypeus convex, posterior margin very ill-defined. Mandibles large, sinuate externally, masticatory margin obtusely denticulate, the apex incurved. The antennae reach back as far as the posterior extremity of the thorax; the scape is slightly shorter than the 2nd joint of the filiform flagellum; the 1st joint of the latter is very short.

Pronotum exposed, one-third as long as the mesonotum, and with a short lateral fovea on each side of the apical margin; the parapsidal areas are marked off by a raised line. The declivity of the epinotum sub-concave and marginate, the dorsal lateral teeth very much reduced. The petiole is like that of the ♀ but is less distinctly truncate posteriorly, and the posterior dorsal margin is only sub-angular and not toothed on each side. The abdomen is as in the ♀. Pygidium with apex rounded. Wings smoky, especially round the stigma; nervures pale brown, stigma dark brown, legs slender.

Hab. Southern Rhodesia. (G.A., S.A.M., R.M. colls.)

Var. PUNCTATA, n. v.

This variety differs from the type in having the posterior region of the head, the pronotum and epinotum more densely punctured. The node of the petiole is as wide in front as behind, the posterior lateral teeth shorter and more obtuse, and the ventral lamella acute anteriorly, the apex of the projection not being truncate as in the type.

Hab. Victoria Falls. (G.A., S.A.M.)

P. SCHULTZEI, Forel.

Schultze, Zool. Anthrop. Reise Südafrika, vol. 4, p. 3, 1910.

"♂. 8.5-9.5 mm. Black, mandibles, frontal carinae, antennae and legs red. Mandibles moderately shining, exceedingly finely rugulose, punctured, and with the anterior margin sharp. Clypeus with anterior margin feebly and obtusely projecting, posterior margin prominent and distinct between the frontal carinae. The latter are strongly curved and convex exteriorly. Head trapezoid, slightly wider behind than in front, feebly concave posteriorly and a little longer than wide. The eyes are situated a little in front of the middle of the sides, moderately convex and occupying nearly one-quarter of the sides of the head. Scape flattened at the apex, and nearly reaching beyond the back of the head to the extent of its own width; 2nd joint of flagellum longer than the 1st and 3rd, 6th-10th joints slightly wider than long, the rest longer than wide.

Thorax constricted a little posteriorly, anterior angles obtuse. Pro-mesonotal suture distinct, with traces of sutures behind the meso- and the metanotum. Basal area of epinotum convex, somewhat longer than the declivity, which is terminated above by two flat, triangular teeth. Petiole longer than wide, slightly wider behind than in front, convex above, vertical in front and behind, the posterior margin convex in the middle and dentate laterally. Ventral lamella projecting longitudinally.

Abdomen feebly constricted, 2nd segment as long and as wide as the 1st.

The whole body, including the legs and antennae fairly densely reticulate-punctate and slightly shining; intermixed, are some rather coarse and shallow punctures, especially on the head. The coarse puncturation is absent on the clypeus, frontal carinae, legs, and abdomen, excepting the 1st segment. Finely and sparsely covered with yellow pubescence. Pygidium with short yellow hairs.

Hab. Hereroland, Windhoek, G.S.W. Africa. (Schultze.)
Lonely Mine, S. Rhodesia. (Dr. Swale.) (G.A., coll.)

P. LAMELLOSA, Roger.

Berlin Ent. Zeitschr., 4, p. 295, ♀, 1860.

"♀. 12.5 mm. Black, dull, and pruinose, antennae and legs brown-black, mandibles and tarsi red.

Head quadrangular, only slightly narrower behind than in front. Eyes moderately convex and situated at about the middle of the sides of the head. Frontal carinae broad and fused with the clypeus,

which is rounded anteriorly and flat. The scape projects beyond the back of the head, and is gradually thickened from the middle to the apex. The flagellum is 11-jointed, the 2nd joint is one-third longer than the 1st, the rest progressively shorter, except the last joint which is only slightly longer than the preceding. Mandibles short and triangular, curved in front and below, convex above, finely rugose and edentate. The whole body is finely rugulose, with a few coarse punctures.

Pronotum rounded at the sides, anterior angles obsolete, slightly arched dorsally and separated from the mesonotum by a deep suture. Meso- and metanotum fused. The declivity of the epinotum is steep, shallowly excavated, with two small obtuse teeth close together on the upper margin. The puncturation of the thorax is similar to that of the head, but somewhat more strongly punctured on the prothorax and the pleurae. Petiole seen from above cylindrical, longer than it is wide or deep, rounded in front, abruptly truncated behind and coarsely punctured all over. Ventral lamella anteriorly, with a tooth-like projection, truncated at its apex. The 1st abdominal segment anteriorly moderately truncate but without a distinct edge, broader than long, campaniform, constricted at its apex; 2nd segment wider than long, longer than the 1st, both segments finely punctured.

The legs are long; posterior tibiae with 2 calcaria, the outer pectinate. Metatarsi much shorter than the tibiae, and slightly shorter than the tarsi together. Anterior tarsi and metatarsi with thick golden pubescence beneath. A few erect hairs occur on the last abdominal segment."

Hab. Cape Province. (G.A., S.A.M. colls.)

Sub-sp. *LONGINODA*, Forel.

Mitt. Schweiz. Ent. Ges., vol. 9, p. 75, §, 1894.

"Like the type, but as far as I can judge from Roger's description without seeing the type, differing in the following characters. Mandibles with 3 to 4 teeth, separated from each other. Head rectangular, longer than wide. Mesonotum wider than long, very short, and separated from the metanotum by a plainly visible even if somewhat indistinct suture. The mesonotum is fairly flat and depressed, lying at a lower level than the pro- and mesonota. Declivity of the epinotum excavated, the margins sharply defined, above with two very stumpy rounded bosses (in place of teeth). Petiole cylindrical, more than twice as long as wide, hardly wider

behind than in front, roundly truncate in front and behind. Puncturation similar to that of *P. cribrinodis*.

Valdezia, Transvaal. (Rev. P. Berthoud.)"

Race *longinoda*. Var. RHODESIANA, Forel. (Plate I., fig. 3.)
Ann. Soc. Ent. Belg., vol. 57, iv. p. 110, ♂ ♂, 1913. Ibid., p. 347,
♀, 1913.

♀. 12-13 mm. This variety differs from *lamellosa*, in being more finely punctured, especially on the petiole; the latter is almost twice as long as wide, and is widest in its posterior half, whereas in the type it is hardly more than one-quarter as long again as wide, and is widest in the middle; the projection of the ventral lamella is smaller and more acute, not widely truncated at the apex as in the type; the two obtuse tubercles or teeth of the epinotum are also much less prominent in this variety. It differs from race *longinoda* by its stronger puncturation, its larger size, the slightly longer petiole, and the greater width of the head behind.

"♀. 14 mm. Almost identical with the ♂. Thorax nearly as wide as the head. Mesonotum and scutellum short. The teeth of the epinotum broader and more noticeable than in the ♂; otherwise identical, but the antennae, tarsi, and mandibles are distinctly reddish. Declated."

♂. 13.5 mm. Black, tarsi brown, extreme base of scape ferruginous. Pruinoso pubescence as in the ♀. Whole body finely rugulose and irregularly punctured with small shining punctures, most abundant on the head and thorax, sparser and much shallower on the abdomen. Head, including the mandibles, nearly half as long again as wide, widest across the eyes, posterior angles considerably rounded. Clypeus large and convex, posterior margin clearly defined. Mandibles large, triangular, shining and finely punctured; masticatory margin denticulate, with an elongate sub-apical tooth, apex incurved and moderately acute. Antennae reach back as far as the base of the 1st abdominal segment; the scape is very nearly as long as the 2nd joint of flagellum; the 1st joint of the latter is very short, not one-third as long as the scape; 2nd-10th joints sinuate externally, so that they are all much wider at the apex than at the base. Frontal carinae wide. Eyes large and convex, the ocelli situated on a raised area.

Pronotum exposed, sides slightly concave, anterior margin round; pro-mesonotal suture distinct. Mesonotum very convex in front, flatter at the base, and raised well above the level of the pronotum.

Mayrian furrows well defined, and with a short shallow groove between the fork. Scutellum triangular, very gibbous and seen from the side, much higher than the mesonotum. Epinotum as long as the meso- and metanotum together, the dorsum is sloping and moderately convex; the declivity is short and gradual, excavated dorso-ventrally, shining and bounded by a raised margin all round. Petiole long, two and a half times as long as wide, widest a little before the apex, the extreme base is angularly emarginate above, with the angles raised into two small flaps. Seen from the side, the petiole is convex above and concave below. The ventral lamella is produced into a small blunt angle at the extreme base. First abdominal segment almost triangular, the apical margin is quite four times as wide as the basal. 2nd abdominal segment is as long as the 1st, wider than long and moderately convex at the sides. Pygidium sub-acute. The apical third of the posterior wings, and two-thirds of the anterior wings externally, dark fuscous; stigma and nervures dark brown. Legs long and slender.

Hab. S. Rhodesia. The nest of this species is so distinctive that it cannot be mistaken for that of any of our other Ponerinae. The entrance is surmounted by a dome, from 6 to 8 inches high, by about 12 inches broad at the base. The dome is built up of very even-sized small pebbles, about 5 to 8 mm. in their largest diameter. The entrance is situated in the centre above, and this is generally the only entrance, very exceptionally there may be a smaller and less regular opening at the base of the mound. The type form appears to be replaced entirely throughout S. Rhodesia by this race. (G.A., S.A.M., R.M. colls.)

P. ARNOLDI, Forel.

Deutsch. Ent. Zeitschr. Beiheft, p. 206, ♀, 1913.

♀. 12-13 mm. Black, mandibles castaneous red. At first glance this species is not unlike *lamellosa*, especially var. *rhodesiana* of the race *longinoda*. It can, however, easily be distinguished from those three forms by the structure of the dorsum of the mesonotum, which is as high as the epinotum, and not on a lower level as in those forms. The 2nd segment of the abdomen is longer than wide, and is not wider than the 1st, whereas in *lamellosa* the 2nd segment is wider than the 1st, and distinctly wider than long, and the inter-segmental constriction is much more pronounced.

The apex of the abdomen clothed with rufous hairs, otherwise the pubescence and pilosity as in *lamellosa*, var. *rhodesiana*. As in the latter, the whole body is microscopically rugulose, but the

head is less closely punctured, and the pro- and mesonotum dorsally, and abdomen, are almost impunctate. The epinotum has some punctures, large and very shallow on the dorsum, but smaller and deeper at the sides; the sides of the petiole are rather strongly punctured. Mandibles shining and punctate-striate, masticatory margin concave, apex acute but not ending in a tooth. The eyes are larger and flatter and placed farther forwards than in *lamellosa-rhodesiana*, and the head is not very noticeably wider than the pronotum. The epinotum is not unlike that of *lamellosa*, but the dorsum is wider and flatter, and the declivity is distinctly and rather sharply margined laterally and above, the margin above ending on each side in a rounded angle, hardly large enough to be called a tooth. The dorsum of the thorax is slightly angularly marked off from the sides, *i.e.* sub-marginate. The declivity of the epinotum is less sloping than in *lamellosa*. The node of the petiole, seen from above, is twice as long as wide, slightly concave in the middle of the sides, rising from front to back, rounded in front and truncate behind; the posterior face is moderately concave and feebly margined all round; the ventral lamella is produced at the extreme base into a blunt triangular tooth.

Abdomen oblong, 1st segment inverted cup-shaped, slightly wider than long; 2nd segment longer than wide, longer but not wider than the 1st, the constriction between the two segments feeble. Legs not so long as in *lamellosa*.

Shiloh, S. Rhodesia. (S.A.M., R.M., G.A. colls.)

I have met with this species on only one occasion. The nest, situated on an open piece of ground, was surmounted by a mound with the entrance at the apex, as in *lamellosa*, *v. rhodesiana*, but unlike that species the mound of *Arnoldi* contains no large pebbles. The surface of the mound was covered with the elytra and carcasses of hundreds of beetles, mostly Tenebrionidae. Workers were seen carrying live beetles to the nest, the prey being held by its mandibles in a position above and parallel to the body of the ant. Since a careful examination of the rubbish-heap of this nest failed to show the remain of other insects, it is probable that this species feeds entirely on Coleoptera, differing in this respect from most of the other members of the genus, which in Rhodesia, at any rate, are eminently termitophagous.

P. COOPERI, n. sp.

♂. 6.5 mm. Brownish black, mandibles, anterior half of head and 3rd-5th abdominal segments brownish red, antennae, coxae, and legs

rust-red; apical margins of 1st and 2nd abdominal segments, and sometimes also the posterior half of thorax, slightly tinged with red. Covered all over with a dense, yellowish recumbent pubescence, less abundant, however, on the flagellum. Pilose hairs entirely absent. Exceedingly finely punctate-striate all over, with a few shallow punctures on the sides of the head above the eyes, the petiole and first two segments of the abdomen. The head much narrower across the clypeal region than elsewhere, looks apparently much longer than wide, it is, however only one-sixth longer than its greatest width, *i.e.* across the eyes. The sides of the head are almost straight, but the eyes project considerably beyond the level of the same; the posterior angles of the head are rounded, the posterior margin moderately arcuate. The eyes are large and situated at about the middle of the sides. The clypeus is approximately triangular, the posterior margin hardly distinguishable, the anterior margin straight. The frontal carinae are very wide, obtusely angular above the insertion of the antennae (behind which they are a little wider even than in front), nearly parallel, not convergent posteriorly, and extending back to about the level of the middle of the eyes. A shallow depression extends from the posterior margin of the clypeus to about the middle of the vertex. Mandibles triangular, finely rugulose, edentate, the extreme apex truncate. Scape not reaching the occipital margin, incrassate towards the apex; flagellum about one-third longer than the scape, 1st and 2nd joints subequal, a little longer than wide, 3rd-10th joints a little wider than long, apical joint not quite as long as the 9th and 10th joints together.

The dorsum of the thorax and epinotum is flat or only very feebly convex, and is angularly and obtusely delimited from the sides. Pronotum a little wider in front than behind, as long as wide, the anterior angles or shoulders almost obsolete. Pro-mesonotal suture distinct, the meso-epinotal indicated by a slight depression; the mesonotum is nearly as long as the pronotum, but a trifle narrower. The declivity of the epinotum is almost vertical, angularly emarginate above (\wedge -shaped), and distinctly concave; the lateral margins of the declivity rather tumid, forming at the junction with the dorsum a wide and rounded angle at each side. Node of petiole one-third longer than wide, nearly as wide as the epinotum, the sides almost straight, higher and wider behind than in front, the anterior face very rounded, the posterior face vertical and feebly margined. Ventral lamella of the petiole produced at the extreme base into a rounded projection. Abdomen elongate and narrow,

about as long as the thorax, the sides feebly convex. 1st and 2nd segments distinctly longer than wide, 2nd segment longer than the 1st. Legs rather short, anterior femora thick and broad, posterior coxae not toothed.

♂. 6.5 mm. Rust-red, antennae and tarsi yellowish red, eyes black. Puncturation and pubescence as in the ♀, but the puncturation is a little finer, and the pubescence shorter and less dense.

Head, excluding mandibles, as long as it is wide across the eyes. The latter very large, the internal margins sinuate, occupying more than three-quarters of the sides of the head. Mandibles large and shaped as in the ♀. Clypeus similar to that of the ♀, but the posterior margin is more distinctly defined. The frontal area is an elongate triangle, indistinctly defined but continued into the median depression of the vertex, which ends at the anterior ocellus. The ocelli not very large and not situated on a raised area. The frontal carinae are widely divergent behind. Antennae filiform, extending back as far as the 1st abdominal segment; scape short, not longer than the distance separating the two posterior ocelli; 1st joint of flagellum less than half as long as the scape, 2nd joint as long as the third. Pronotum rounded in front and at the sides, at least three times as wide as long. Mesonotum rather flat posteriorly, moderately convex in front and at the sides, not rising very much above the level of the pronotum. Mayrian furrows and parapsidal sutures very distinct. Scutellum a little wider than long, not gibbous. Dorsum of the epinotum much wider at the base than at the apex, where it forms a distinct angle with the declivity. The latter is distinctly margined all round, nearly quadrangular, not vertical as in the ♀, but sloping very obliquely. The node of the petiole is similar to that of the ♀, but is not so high, nor truncated behind, the dorsal profile forming a continuous curve rising from front to back. The abdomen as in the ♀; the pygidium ends in a short curved spine. Legs longer and thinner than in the ♀. Wings smoky, nervures pale brown, stigma black.

Types ♀ and ♂ in the Durban Museum.

Stella Bush, Durban. (C. B. Cooper.)

This species differs from the allied forms, *frontalis*, *modesta*, *tenuis*, Emery, etc., by the entire absence of teeth on the posterior dorsal margin of the node, and by the widely separated frontal carinae. (R.M., S.A.M., G.A. colls.)

P. MOCQUERYSI, Emery.

Bull. Ent. Soc. Ital., vol. 31 p. 270, ♀ ♀, 1900.

Var. MATOPOENSIS, n. v.

♀ 7-7.5 mm. Black, mandibles, clypeus, antennae, legs and apex of the abdomen more or less ferruginous. Pubescence pruinose and rather thin, pilosity absent except on the last segment of the abdomen. Microscopically rugulose, sparsely and shallowly punctured on the head, meso- and epinotum, petiole and first two segments of the abdomen. The pronotum and apical segments of the abdomen with very sparse and minute punctures; the punctures on the sides of the head and on the epinotum are larger and deeper than on the rest of the body. Head sub-quadrate, as long as wide, sides feebly convex, posterior margin almost straight, posterior angles rounded. The anterior margin of the clypeus feebly arcuate, posterior margin indistinct. Mandibles dull, finely punctuate-striate, triangular, external margin convex or very slightly sinuate, masticatory margin finely denticulate. Frontal carinae broad, narrower and slightly convergent behind. Eyes large, their posterior margins lying in front of the middle of the sides of the head. Scape of the antenna reaches back a little beyond the occipital margin; 1st-5th joints very little longer than wide, 6th-10th joints about as long as wide, apical joint half as long again as wide. The pronotum is a little wider than the rest of the thorax, and narrower behind, the sides of the rest of the thorax nearly parallel. Pro-mesonotal suture distinct. The declivity of the epinotum is very steep but not vertical, concave and distinctly margined, the margin above ending on each side in a broad, rounded and stumpy tooth. Node of petiole half as long again as wide, a little longer than high, convex from side to side, a trifle wider behind than in front, anterior face nearly vertical but considerably rounded above, posterior face vertical and produced dorsally into three obtuse teeth, the median tooth being wider and longer than the lateral teeth. Ventral lamella very slightly produced. Abdomen oblong, 1st segment very little longer than wide, 2nd segment longer than the 1st, and one-fifth longer than wide. Legs rather short, posterior coxae armed on the inner margin with a blunt tooth.

Matopo Hills, S. Rhodesia. Type in my collection.

This variety appears to differ from the type form of Madagascar only by the longer node of the petiole.

TRIBE PROCERATIINI, Emery.

Characters.

♂. Frontal carinae do not cover the articulations of the antennae, they are close together and are sometimes even fused into a single vertical lamella which is fused to the clypeus. Mandibles triangular; antennae 9 to 12 joints; eyes small or wanting. Thorax usually without dorsal sutures; petiole nodiform or squamiform; 1st abdominal segment large, separated by a constriction from the 2nd segment which is large and forms the greater part of the abdomen. Tibiae with only one spur; claws simple.

♀. Winged; eyes and ocelli well developed, otherwise resembling the ♂.

♂. Clypeus and frontal carinae much the same as in the ♀; antennae 13-jointed; wings with only one closed cubital cell.

This tribe contains five genera, two of which are represented in South Africa.

1. Clypeus very short, but not projecting in a roof-shaped mass above the mouth; body not filiform, apical segments of abdomen incurved under the 2nd segment and reflected, so that the apex points forwards *Sysphincta*, Roger.
2. Clypeus fused with the frontal carinae and the cheeks, and projecting in a roof-like manner above the mouth; body filiform; apical segments of abdomen straight, not incurved and reflected *Probolomyrmex*, Mayr.

GENUS PROBOLOMYRMEX, Mayr.

Ann. K.K.N.H. Museum, Vienna, vol. 16, p. 2, 1901.

Characters.

♂. Body filiform, head long and narrow. The clypeus is fused with the frontal carinae and the cheeks, forming a projecting ledge over the mouth, in front of the antennae; the frontal carinae, fused in front, are separate behind. The mandibles are hidden by the clypeal projection, and are elongate-triangular and dentate. Antennae 12-jointed; scape long, flagellum claviform but not forming a club of a definite number of joints. Eyes wanting. Thorax without sutures, the declivity of the epinotum surrounded by a raised edge. Node of the petiole compressed, higher behind than in front, longer than wide; ventral lamella produced into a vertical projection, pointing backwards. Abdomen elongate, not reflexed ventrally; a slight constriction between the 1st and 2nd segments.

♀ and ♂. Unknown.

P. FILIFORMIS, Mayr. (Plate I., fig. 2, 2a.)

Loc. cit.

♂. 3 mm. Head nearly twice as long as wide, posterior angles feebly rounded. The anterior portion of the head is produced into a roof-like projection or ledge which reaches as far as or a little beyond the apex of the closed mandibles. This projection is formed by the clypeus and the anterior portion of the fused frontal carinae and all that part of the face which lies between a point a little behind the antennal sockets, and the anterior margin of the clypeus. Viewed from the side, the antennae are seen to be inserted on this ledge half-way between its anterior and posterior limits, and therefore lie above the middle point of the mandibles when the latter are closed. The frontal carinae which arise a little in front of the antennal sockets, leaving them uncovered, are curved inwards, fused together for half their length, diverge again posteriorly and reach to a point about as far back as the base of the mandibles. The fused portion of the carinae forms a rounded and raised crest, lying between the insertion of the antennae. The latter are 12-jointed; the scape, somewhat flattened, reaches back two-thirds of the head; the flagellum is gradually thickened towards the apex. The last joint is twice as long as the two preceding, and all the joints except the 1st and 3rd, are noticeably wider than long, the 1st joint is two-thirds as long again as it is wide, the 3rd joint is about as long as wide, and the 2nd joint is very small and nearly twice as wide as long.

The colour is a rich burnt sienna, with the antennae, legs, and apex of abdomen lighter, or ferruginous yellow. The whole body is dull and microscopically and densely punctulate, intermixed with larger and shallower punctures on the 1st and 2nd abdominal segments and the back of the head. The general puncturation is only observable with a magnification of 60 diameters, and the larger punctures are barely recognizable under a magnification of even 20 diameters.

Other characters as for the genus.

Port Elizabeth. (Brauns.) 1 ♂ in my collection presented by Dr. Brauns.

GENUS SYSPHINCTA, Roger.

(*Sysphingta*), Berlin Ent. Zeitschr., vol. 7, p. 175, 1863.

Characters.

♂ and ♀. The anterior margin of the clypeus is produced into a point (not in *S. Arnoldi*). Flagellum very slightly, if at all,

incrassate towards the apex. Eyes very small, situated in the middle of the sides of the head. Petiole nodiform.

♂. Clypeus produced anteriorly in an obtuse point; frontal carinae separated by a sulcus. Scape longer than one-third of the flagellum. Epinotum truncate. Petiole not so high as in the ♀. 2nd segment of abdomen only feebly incurved. Wings with one cubital and one discoidal cell.

S. ARNOLDI, Forel.

Deutsch. Ent. Zeitschr. Beiheft, p. 210, ♀, 1913.

♀. 3 mm. Reddish yellow, the margins of the frontal carinae and the epinotal teeth piceous. Covered all over with a very dense yellowish-white semi-erect pubescence longer on the abdomen than elsewhere, very short on the flagellum; a few short pilose hairs on the front of the head, long pale hairs on the ventral surface and sides of the abdomen. Whole body, excluding the legs and flagellum, dull, very minutely, shallowly and irregularly rugose, 2nd abdominal segment and legs slightly shining. Head globose, very little longer than wide, sides moderately convex. Eyes very minute, placed slightly behind the middle of the sides and consisting apparently of only a single facet. Clypeus very short and fused with the frontal carinae; the latter are linear, convergent in front, divergent behind. Mandibles coarsely punctured, with about 4 blunt teeth on the masticatory margin. Scape strongly incrassate towards the apex, reaching back not quite as far as the occipital margin; flagellum 11-jointed, nearly half as long again as the scape, the terminal joints do not form a club, 1st joint a little longer than wide, last joint as long as the three preceding taken together, all the other joints wider than long. Thorax about one-fifth longer than the head, widest in front, but not so wide as the head, narrowing gradually to the epinotum, very convex from side to side and rounded in front. The dorsum of the epinotum is depressed towards the apex which carries a minute blackish tooth on each side; the declivity is short and vertical. The dorsum is faintly, and the declivity distinctly margined laterally by a raised dark line, confluent with the epinotal teeth. Node of petiole not squamiform, but thick and sub-globose, wider than long, convex at the sides and above, vertical in front and behind; ventral lamella very strongly produced, excised below posteriorly so as to form a sharp tooth pointing backwards. Seen from above, the abdomen is oblong, the 1st segment as long as wide and not much, if at all wider at the apical margin than at the base,

2nd segment longer than wide, and one-third longer than the 1st segment. Seen from the side, the 1st segment is much deeper at the apical margin than at the base, the extreme base below is produced into a strong obtuse tooth pointing forwards; the 2nd segment is very convex above and posteriorly and covers the remaining segments, which are incurved and reflected, so that the apex of the abdomen points forwards. Seen from above, the apical segments are completely hidden from view by the 2nd segment.

Bulawayo. 1 taken under a stone, and 1 taken in the nest of *Platythyrea cribrinodis*, Gerst. (G.A., coll.)

As I have adopted the scheme of classification for the genera given by Emery in the "Genera Insectorum," I have retained this species under the genus *Sysphincta*. Dr. Forel in his description refers it to the genus *Proceratium*, and points out that this and other species share some of the characters of both genera, so that he considers it necessary now to sink *Sysphincta* to a sub-genus of *Proceratium*.

SECTION EUPONERINAE, Emery.

TRIBE PONERINI, Forel.

Characters.

♂ and ♀. Mandibles articulated near the anterior angles of the head; frontal carinae convergent posteriorly and nearly always produced into a lateral lobe anteriorly, which covers the insertion of the antennae. A more or less marked constriction between the 1st and 2nd abdominal segments. Claws simple or dentate.

♂. Claws simple or dentate.

Key to the ♂ and ♀.

- (2). 1. Middle pair of tibiae with two simple calcaria; posterior tibiae with two calcaria, the inner large and pectinate *Centromyrmex*, Mayr.
- (1). 2. Tibiae not so formed.
- (14). 3. Middle and posterior tibiae with two well-developed calcaria, the inner the larger, and pectinate.
- (5). 4. Node of the petiole compressed above and forming a sharp edge, with a slight notch behind which is in front of a terminal blunt tooth; clypeus produced into a blunt tooth in the middle of each side; very large species *Streblognathus*, Mayr.
- (4). 5. Petiole not compressed above.
- (7). 6. Clypeus with a median raised portion; the latter is deeply excavated in the middle and projects beyond the anterior margin of the head; 1st

- abdominal segment produced ventrally at its junction with the petiole into a blunt, compressed tooth *Paltothyreus*, Mayr.
- (6). 7. Clypeus otherwise formed.
- (9). 8. Eyes situated behind the middle of the head; claws with a minute sharp tooth close to the base. Head narrow, excluding mandibles, at least one and a third times as long as wide across the eyes *Ophthalmopone*, Forel.
- (8). 9. Eyes situated at about the middle or a little in front of the middle of the head.
- (11). 10. Claws with a single blunt tooth a little distance from the base.
Megaponera, Mayr.
- (10). 11. Claws simple.
- (13). 12. Meso-metanotal suture obsolete in the ♀, medium-sized species, 10-14 mm. *Pachycondyla*, Smith.
- (12). 13. Meso-metanotal suture more or less distinct, small species, mostly less than 10 mm. *Euponera*, Forel.
- (3). 14. Middle and posterior tibiae with only one well-developed calcar, which is also pectinate; the other is rudimentary or absent.
- (16). 15. Sculpture fine; at least the abdomen is pubescent, outer calcar absent; small species, less than 10 mm. *Ponera*, Latr.
- (15). 16. Abdomen not pubescent; whole body very shining, evenly and largely punctured; medium-sized or very large species . . . *Plectroctena*, Smith.

Key to the ♂♂.

- (2). 1. Middle tibiae with two very small calcaria, posterior tibiae with one large pectinate calcar *Centromyrmez*, Mayr.
- (1). 2. Tibiae not so formed.
- (14). 3. Middle and posterior tibiae with two calcaria, the inner pectinate.
- (7). 4. Scape not considerably shorter than the 2nd joint of the flagellum.
- (6). 5. Scape a little longer than the 2nd joint of the flagellum; frontal carinae rudimentary *Megaponera*, Mayr.
- (5). 6. Scape a little shorter than the 2nd joint of the flagellum; frontal carinae distinct *Ophthalmopone*, Forel.
- (4). 7. Scape considerably shorter than the 2nd joint of the flagellum.
- (9). 8. Pygidium prolonged into a curved spine; clypeus truncate or feebly produced *Pachycondyla*, Smith, *Euponera*, Forel (pars).
- (8). 9. Pygidium blunt or pointed, but not produced into a spine.
- (13). 10. Ventral lamella of petiole not furnished with an acute spine pointing backwards.
- (12). 11. First abdominal ventral segment produced at its extreme base into a sharp tooth pointing backwards; large species, 15 mm. at least.
Paltothyreus, Mayr.
- (11). 12. First abdominal ventral segment simple, small species.
Euponera, Forel (pars).
- (10). 13. Ventral lamella of petiole produced posteriorly into an acute spine pointing backwards *Streblognathus*, Mayr.
- (3). 14. Middle and posterior tibiae with a single calcar.
- (16). 15. Pygidium pointed or produced into a spine; scutellum depressed or moderately convex; integument finely punctured, small species.
Ponera, Latreille.
- (15). 16. Pygidium obtuse; scutellum prominent; integument coarsely punctured, large species. *Plectroctena*, Smith.

GENUS CENTROMYRMEX, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 16, p. 894, 1866.

Spalacomyrmez, Emery, Ann. Mus. Stor. Genova, vol. 27, p. 489, 1889.*Characters.*

♀. Clypeus projecting far backwards between the frontal carinae; the latter expanded in front, not close together, and with a long sulcus between them.

The scape of the antennae is rather flattened, the flagellum incrassate towards the apex. Eyes absent.

Mandibles long, the masticatory margin unusually so, with fine denticulations or without teeth.

Pro-mesonotal suture distinct, meso-epinotal suture obsolete.

Pronotum sharply marginate in front, the part below the margin almost vertical. The dorsum of the epinotum is contracted at its base so as to form a median saddle-shaped ridge, and is raised into a hump towards the apex above the declivity.

Node of petiole somewhat conical, with a fine sharp spine beneath. Abdomen ovate.

Legs very short and stout, the femora and tibiae broad and flat. Posterior tibiae with two calcaria, the inner pectinate, the outer simple; middle tibiae with two simple calcaria.

♀. Similar to the ♀ but winged, slightly larger, with medium-sized eyes placed nearly in the middle of the sides of the head; small ocelli present, situated close to the occiput.

♂. Head rounded, the clypeus very convex. Mandibles short, triangular and edentate. Thorax rather short, the mesonotum with Mayrian furrows. Epinotum very convex. Node of petiole emarginate above. Abdominal constriction feeble. Pygidium not pointed. Wings short, not reaching the end of the abdomen. Calcaria of middle tibiae simple and small; posterior tibiae with two calcaria, the inner pectinate.

C. CONSTANCIAE, n. sp. (Plate II., figs. 14, 14a, 14b, 14c.)

♀. 5-5.3 mm. Dark reddish yellow, posterior half of head, anterior portion of pronotum, mesonotum, and epinotum above, the basal half of the abdominal segments, apices of the joints of the flagellum, except the apical, and the anterior tarsi, castaneous.

There is no pubescence, and the whole body is very smooth and shining. Sides and posterior part of the head with very distinct small punctures; scape and frontal carinae and the central portion

of the clypeus with a few small punctures; mandibles very finely and sparsely punctured; depressed area below the antennal sockets very finely striate. Pronotum above rugulose; mesonotum with about 15 large punctures on each side, the central longitudinal area impunctate. The pleurae, femora, tibiae, and abdominal segments very sparsely and finely punctured.

The pilosity consists of yellow hairs arising from the punctures, rather short on the thorax and vertex of head, longer on the abdomen and node of petiole. There is a long hair on each side of the middle of the clypeus.

Head seen from the side, nearly flat above, truncate behind and in front. Seen from above, the head is wider behind than in front, the posterior angles very rounded.

Mandibles very convex longitudinally, more than two-thirds the length of the head, and with the masticatory margin almost smooth. Clypeus transversely impressed behind the straight anterior margin, raised in the middle (the raised portion forming a vertical and sub-quadrangle area, shining and punctured), produced backwards between the frontal carinae as far as the beginning of the frontal sulcus, which is long and deep and ends abruptly in the middle of the vertex. The frontal carinae much widened anteriorly but not lobed.

Scape about as long as the mandibles, considerably flattened dorso-ventrally; flagellum 11-jointed, not quite so long as the head and mandibles together, 1st joint nearly as long as the 2nd, 3rd and 4th together, 2nd joint very short, 2nd to 8th joints wider than long, apical joint as long as the two preceding together. Eyes and ocelli absent.

Pronotum with a raised margin anteriorly, the region between the latter and the neck, vertical. Seen from above, the pronotum has a crescentic outline, obtusely pointed in the middle in front. Mesonotum twice as long as the pronotum, with a raised margin in front, and at the sides anteriorly. The dorsum of the epinotum is depressed and saddle-shaped anteriorly and raised into a hump posteriorly, but the declivity also enters partly into the formation of the latter. The petiole is elongate, with a minute lateral tooth on each side of the extreme base; the node is slightly excavated and sub-vertical in front, very convex above and at the sides, vertical behind. The ventral lamella is produced at its anterior third into a short, sharp spine, pointing forwards. The node does not rise higher than the epinotum.

Abdomen ovate, the 1st segment sub-truncate in front, and one a half times as long as the 2nd; the constriction between these two

segments is feebly indicated dorsally. Sting very long, three-quarters the length of the abdomen.

Coxae, especially of the 1st pair of legs, very large. Anterior femora and tibiae flattened and wide. The intermediate tibiae short, only half as long as the femora; the posterior tibiae also short, but a little longer than the intermediate. The 2nd, 3rd, and 4th joints of all the tarsi wider than long; the apical angles of all the tarsal joints produced into stout, blunt spines; the posterior metatarsi with three or four stout spines, the intermediate tibiae with two rows of spines on their external margins.

♀. 7 mm. Similar to the ♂ but much darker, the 1st abdominal segment dark reddish brown, the apical margin lighter; the 2nd-4th segments piceous, the 5th ferruginous in the middle, piceous at the sides. The margin of the pronotum is much more prominent than in the ♂, the mesonotum is flatter, raised more above the pronotum and is vertically truncate in front. The scutellum is distinct, black, shining, and impunctate, and separated from the mesonotum by a shallow sulcus. The metanotum is very short; epinotum not forming a hump as in the ♂, the dorsum short, the declivity steep, rounded above and at the sides.

Eyes and ocelli present; the former moderately large, their distance from the base of the mandibles being about two-thirds of their own length; the ocelli are set far back, close to the occipital margin. The legs are proportionately more slender than in the ♂. Winged (de-alated in the single specimen in my possession).

Bulawayo, Bembesi, under large stones. The genus is termitophilous, but this species does not appear to be so, since it was not found in or near the nests of termites. The species cannot be mistaken for any other Ponerine ant of our region, on account of the striking fossorial structure of the legs, and the marginate pronotum. This species is apparently closely related to *C. sellaris*, Mayr, from the Cameroons, although not having had an example of the latter for inspection, it is not easy to compare the two species, since Mayr's description of *sellaris* is based mainly on a comparison between it and *C. Feae*, Emery, an Indian species. Judging, however, by the descriptions of these two species, *Constanciae* has the following characters to distinguish it from *sellaris*. The colour is much darker; the striae below the antennal sockets do not extend back to the posterior angles of the head, hardly passing beyond the middle line of the head; the limits of the declivity above (seen from behind) are distinctly marked off from the humped shaped portion of the dorsum of the epinotum. The declivity is also distinctly

convex from above to below, and from side to side, not flat in the middle and below as in *sellaris*. (S.A.M., R.M., G.A., coll.)

GENUS STREBLOGNATHUS, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 12, p. 716, 1862.

The genus includes only a single species.

S. AETHIOPICUS, Smith. (Plate I., fig. 5.)

Cat. Hymen. Brit. Museum, vol. 6, p. 91, ♀, 1858. Emery, Ann. Soc. Ent. Belg., vol. 43, p. 468, ♂, 1899.

♀. 18–22 mm. Black, mandibles piceous, anterior tarsi beneath with dense golden hairs. Head and thorax dull, petiole and abdomen shining. A very short pale pubescence on the whole body, dense on the head and thorax, exceedingly scanty elsewhere. The pilosity consists of short thick hairs, dense on the head, scape and legs, scanty on the rest of the body. The head is very finely reticulate-punctate, the thorax finely striate, the abdomen smooth and shining, with a few fine punctures; 3rd–5th segments a little more strongly and closely punctured, and with longer hairs.

Head, excluding mandibles, almost rectangular, with the posterior angles rounded; considerably wider than the thorax.

Clypeus somewhat projecting, and sharply truncate inwardly in front, so that a deep depression lies between it and the labrum; it is raised roof-shaped in the middle, the declivity on each side ending at about half the distance from the external angles; on each side anteriorly it is produced into a blunt tooth which lies about half-way between its centre and the base of the mandible. Frontal area elongate and sharply defined, produced backwards almost two-thirds the length of the frontal carinae. The latter are short, dilated in front, and project over the insertion of the antennae. Mandibles two-thirds the length of the head, oblongo-triangular, coarsely punctured on the masticatory margin, which is oblique and longer than the basal. Antennae long, the scape reaching back to the middle of the mesonotum, scape and flagellum together reaching a little beyond the middle of the 1st abdominal segment; flagellum filiform, the 1st joint two-thirds the length of the 2nd. Eyes more dorsal than lateral, moderately large and situated in about the middle of the length of the head.

Pro-mesonotal suture distinct, the meso-metanotal suture less so. Mesonotum raised higher than the pronotum; the metanotum and

epinotum narrow and compressed. The dorsum of the epinotum flat, with slightly raised lateral margins which end just before the apex in two short teeth which are continuous with the sharply raised lateral margins of the declivity (see Fig. 3, p. 4). Petiole convex anteriorly, sharply truncate and slightly concave posteriorly, compressed laterally so as to form an acute dorsal ridge which ends posteriorly in a curved point, with a small notch at its base. The posterior apex of the petiole lies considerably higher than the thorax. Ventral lamella produced along nearly its whole length into a blade-like expansion which is truncate in front and semicircularly emarginate behind.

Abdomen pear-shaped; 1st segment nearly as long as the 2nd, the latter as long as the remaining segments together. The apical segment is microscopically rugulose and with a sparse but coarse piligerous puncturation.

The legs are long, the posterior metatarsi as long as the tibiae.

♀. Unknown.

♂. 18 mm. Testaceous, scutellum and last two abdominal segments darker. Head, between the eyes and ocelli and posteriorly, black and shining. Wings pale fuscous, nervures and stigma piceous. Head strongly transverse. Eyes and ocelli very large, the former occupying almost the whole of the sides of the head.

Clypeus trapezoid, arcuately emarginate in front, and separated from the frontal area behind by a suture. The frontal area is large and projects back in an acute angle between the antennal sockets. Frontal carinae rudimentary. Antennae filiform and very long, reaching back to the apex of the 4th abdominal segment; the scape very short, about as long as the long diameter of the ocellus.

The mesonotum is dull and finely punctured, rounded, and with a shallow furrow on each side which extends from the posterior margin to a point beyond the anterior edge of the tegulae. A feeble ridge in the centre extends from the pro-mesonotal suture to about the middle of the mesonotum. Scutellum raised above the level of the rest of the notum; it is sloping in front and behind, somewhat compressed laterally and separated from the mesonotum by a deep and clathrate suture.

Epinotum with a faint median sulcus at its extreme base; the declivity is not steep, but forms a continuous curve with the dorsum and its lateral margins are defined by rather feeble ridges which converge towards the base and almost meet below the median sulcus. The declivity smooth and shining below, the rest of the

epinotum duller and feebly punctured. Node of the petiole longer than wide, convex in front, truncate behind and obtusely pointed above. The ventral lamella in the middle is produced into a sharp spine, pointing backwards.

Abdomen smooth and shining, apical dorsal segment slightly carinate and ending in a short, sub-acute point.

The whole body covered with a fine, pale pubescence. Pilosity absent except on the ventral surface of the abdomen, which is clothed with long pale hairs. Willowmore. (Brauns.) (S.A.M., R.M., G.A., coll.)

GENUS *PALTOTHYREUS*, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 12, p. 735, 1862.

Formica (pars), Fabricius.

Pachycondyla (pars), Smith. Cat. Hymen. Brit. Mus., vol. 6, p. 105, 1858.

Characters.

♂. Clypeus with the central portion raised, roundly truncate in front and projecting beyond the rest of the clypeus. This raised portion is deeply excavated in the middle, shining, and with two or three longitudinal striae; the sides of the raised part are also striate. Frontal carinae triangularly dilated in front, slightly divergent behind; the frontal area, fused with the clypeus, reaches backwards as far as the ends of the frontal carinae, beyond which lies a short, shining depression.

Mandibles elongate and triangular; the masticatory margin is long and furnished with numerous small teeth. Flagellum of antennae filiform; scape arcuate and somewhat flattened at the apex, longer by one-third than the head (excluding the mandibles). Eyes moderately large and situated in front of the middle of the sides of the head. Pro-mesonotal suture distinct, meso-epinotal suppressed dorsally. Thorax widest in front, gradually thinning towards the base. Node of petiole high and rounded; ventral lamella produced into a broad, triangular tooth. First abdominal segment, at its junction below with the petiole, produced into a blunt tooth; the segment is vertical in front, and the basal margin above has distinct but obtuse lateral angles. Abdominal constriction feeble. Claws with a small tooth between the base and the middle.

♀. Winged, larger than the ♂; thorax depressed, with the pronotum largely visible.

♂. Clypeus triangular, with a small conical protuberance on the anterior margin. Frontal carinae very short and feebly developed. Ocelli small. Head not wider than the pronotum at its widest. Antennae filiform and long, reaching back to the apical margin of the 2nd abdominal segment; scape a little longer than the distance between the two posterior ocelli. Pronotum moderately long and plainly visible from above. Mesonotum with a central depression extending from the base to a little beyond the middle, and with traces of lateral grooves. Node of the petiole similar to that of the ♀, but not so high and with the lamellar tooth less acute. The basal, ventral tooth of the 1st abdominal segment is larger than in the ♀. Abdominal constriction feeble. Pygidium pointed, but not spined.

P. TARSATUS, Fabr. (Plate I., figs. 6, 10.)

Suppl. Ent. Syst., p. 280, 1798. (*Formica tarsata.*) Mayr, Verh. Zool. Bot. Ges. Wien, vol. 16, p. 894, ♂, 1866. Forel, Grandidier Hist. Madag., vol. 20, p. 136, ♀, 1891. Smith, Cat. Hymen. Brit. Mus., vol. 6, p. 92, ♂, 1858. (*Ponera spiniventris.*) Ibid., p. 105, ♀. (*Pachycondyla simillima.*)

♀. 17–20 mm. Black, masticatory margins of mandibles, lobes of frontal carinae and tarsi reddish black. Head, thorax, legs and antennae with a fine, inconspicuous yellow pubescence, and sparsely and irregularly beset with longer yellow hairs. Pilosity and pubescence of abdomen scantier, apical segment with yellowish-red bristles. Mandibles with a row of large punctures along the masticatory margin, elsewhere with a few shallow punctures.

Head evenly and finely striate, the striae running diagonally from the centre outwards. Pronotum with larger striae running arcuately from front to base. Meso- and epinotum transversely and rather obliquely striate, the striae finer than on the pronotum. Mesopleurae finely punctate. Dorsum of epinotum long, the declivity short and gradual. Node of petiole above with a few almost obsolete striae. Abdomen shining, 1st and 2nd segments with a few irregular punctures on the dorsum near the base, their apices more closely punctured. Third and 4th segments evenly and fairly closely punctured; apical segment microscopically rugulose at the base, shining and impunctate at the apex. Anterior tarsi densely clothed beneath with golden, bristly hairs.

♀ 23 mm., including the mandibles; similar to the ♀ except for the usual sexual differences. Pronotum more than twice as wide as long; mesonotum wider than long, one-quarter longer than the

pronotum. Node of petiole a little wider and thicker above than in the ♀. Wings brownish yellow, nervures and stigma brown. Alar expanse 29 mm.

♂, 14 mm. Black; wings fuscous, nervures brown, stigma piceous. Head and thorax with a close yellow pubescence, especially on the epinotum and posterior face of the node, and a fairly abundant pilosity of yellowish hairs. Abdomen with a pale inconspicuous pubescence, less abundant on the 3rd and following segments; ventral segments with long, pale hairs.

Head and thorax moderately shining, irregularly and shallowly punctured; the base of the mesonotum punctate-striate; the scutellum finely punctured. Abdomen very shining and with a bluish reflection, all the segments very finely and sparsely punctured. The 1st segment has on each side of the apical margin a transversely elongate, and almost obsolete, angle or hump. Pygidium very smooth and shining, with a few fine punctures. Other characters as for the genus.

This species is widely but locally distributed. Generally the ♂♂ go about singly, but occasionally forage in short columns, in single file. The food is varied, but consists largely of termites. The nests have several entrances, which are sometimes surrounded by large heaps of finely divided earth. The species has a most powerful and offensive smell, which appears to me to resemble that of the juice in a foul tobacco pipe.

Bulawayo, Victoria Falls, Bembesi and Matoppos, Rhodesia; Willowmore. (Brauns.) Zululand. (Marley.) (S.A.M., R.M., G.A. coll.)

Var. *DELAGOENSIS*, Emery.

Ann. Soc. Ent. Belg., vol. 43, p. 468, ♂, 1899.

This differs from the type in having the median longitudinal raised line of the clypeus extending further back, and in the less distinctly striated mandibles.

Delagoa Bay. (S.A.M. coll.)

These characters are variable in Rhodesian specimens, in which as a rule the mandibles are only very faintly striate, and it appears to me doubtful whether the above form is worthy of even varietal distinction. If it is, the Rhodesian examples ought perhaps to be referred to it. In a specimen from West Africa in my possession the mandibles are almost smooth, and the clypeus projects back only a short distance between the frontal carinae, but the striation of the head is much stronger than in the Rhodesian examples.

GENUS MEGAPONERA, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 12, p. 734, 1862. Emery,
Megaloponera, Ann. Mus. Stor. Nat. Genoa, vol. 9, p. 368,
 1877.

Ponera (pars), Guérin, Gerstaecker, Roger.
Formica, Fabricius, Latreille.

Characters.

♂. Clypeus rounded anteriorly, with the anterior border and middle portion raised, the latter convexly so, and produced backwards angularly between the frontal carinae. The latter are slightly lobed in front, convergent in their middle portion and diverge before ending at about the level of the eyes. Mandibles triangular, the masticatory margin beset with alternating large and small teeth. Eyes a little in front of the middle of the sides of the head. Pronotum long, twice as long as the mesonotum; the latter margined all round by a tolerably distinct suture. Node of petiole large, trapezoid in horizontal cross-section; the ventral lamella is produced into a blunt tooth, pointing backwards. Abdominal constriction obsolete. Claws with a short tooth near the base.

♀. (See footnote, p. 48.)

♂. Clypeus gibbous, anterior margin rounded, posterior margin not projecting between the frontal carinae, which are short and indistinct. Mandibles very short and edentate. The antennal sockets are further apart from each other than they are from the sides of the head. Antennae moderately long, scape long, being longer than the longest joint (2nd) of the flagellum; the latter filiform. Eyes slightly sinuate on their inner margins, and occupying less than half the sides of the head. The posterior dorsal margin of the head is produced into a rim or collar. Mesonotum prominent and twice as long as the pronotum. Abdominal constriction feeble. Pygidium not spined. Claws with 3 or 4 minute teeth near the base.

M. FOETENS, Fabr. (Plate I., figs. 7, 8, 8a, and text-fig. 6.)
 (*Formica*), Ent. Syst., vol. 2, p. 354, ♀, 1793.

(*Megaloponera*), Mayr, Sjöstedt. Zool. Exp. Kilimandjaro, Formicidae, p. 9, ♂, 1907.

(*Ponera crassicornis*), Gerstaecker, Sitzungsab. Akad. Wiss. Berlin, p. 262, ♀ mi., 1858.

♂ major. 15 mm. Black, covered with a fine, yellow pruinose

pubescence, and with golden-red hairs on the inner margin of the mandibles, the clypeus and apical abdominal segment. The latter is ferruginous at the apex. The apex of last joint of flagellum, the spines of the tarsi, and the calcaria also ferruginous. The apices of the dorsal segments of the abdomen dark ferruginous.

Mandibles very strongly curved, the convexity being dorsal, two-thirds as long as the head from clypeus to occiput, and shallowly and sparsely punctured. A carina extends on the cheek from the anterior margin of the eye to the clypeus.

Head, pro- and mesonotum and abdomen moderately shining, and the whole body impunctate. The pronotum has a longitudinal central impressed line anteriorly. The dorsum of the epinotum is flat, with a faint longitudinal impression centrally, and widens towards the brow of the declivity, which bears on each side a blunt prominence (hardly a tooth); the declivity is somewhat excavated and vertical. Mesopleurae, epinotum, and node of petiole duller than the rest of the body.

Antennae reach back as far as the base of the 1st abdominal segment; scape as long as the head from the clypeus to the occiput, thickened and flattened towards the apex; 2nd joint of the flagellum longest, but not quite twice as long as the first.

♀ minor, 9–11 mm. = *M. crassicornis*, Gerst.

It differs from the ♀ major in being considerably smaller and less pubescent. The abdomen, the vertex of the head, the pro- and mesonotum are much more shining than in the larger form. It also differs by the thicker and shorter scape, which is widest in the middle, and by the node of the petiole, which is less acute dorsally.

Nevertheless small examples are met with which are just as pubescent and dull as the larger sort.

♂. 12 mm. Black, the apical margins of all the abdominal segments widely ferruginous. The dorsum of the epinotum is short, not longer than the pronotum, and only slightly indented at the apex centrally. Wings short and narrow, fuscous, with the apical half darker, the nervures light brown, the stigma, costa, and whole of the marginal cell dark brown. Third, 4th, and 5th ventral segments of the abdomen with dense golden fimbriae. For the rest the characters of the genus.

Formerly the small workers were separated as a distinct species, *crassicornis* Gerst., but the two forms are found together in the same nest, and the distinction cannot therefore be maintained. It is a common ant in Rhodesia, and lives almost exclusively on termites,

which are carried off by means of carefully arranged raids in which the ants march in double file. This is the species which is popularly called the "Matabele" ant, and like its cousin *Paltothyreus*, it is also endowed with a very offensive odour. They stridulate very loudly when disturbed, and their sting is exceedingly painful. The entrance to the nest consists of one or more simple holes, without any mounds of earth around them.* (S.A.M., R.M., G.A., coll.)

* Since the above descriptions were written, I have had the good fortune to witness the singular spectacle of a migration of this species, and to obtain thereby a specimen of the real queen of this ant. As I intend to give a fuller account elsewhere of the manner in which the migration was carried out, it will suffice here to remark that the old and new nests were situated about 60 feet apart, and that the journey was accomplished by the colony in stages, in the following manner. At about 15 feet from the old nest the first camp was formed and a halt made, until all the eggs, larvae, and pupae were collected together, and until most of the stragglers had come in. Similar halting-places or temporary camps were formed every 15 feet or so. I saw the queen in the first camp, but failed to seize her with my forceps; the same thing occurred when she was seen once again in the second camp, and it was only in the third camp that I managed to capture her, not an easy task when the viciousness of the ♂ ♀ is taken into account.

In the Introduction to this work (p. 6) I pointed out that if Emery's suggestion be correct that the larger worker-like form is the ergatoid ♀, the species would be peculiar in having normally more queens than workers in the nest. The discovery of the true, although ergatoid, queen, disposes of this anomaly, and at the same time indicates the remarkable fact that the workers of this Ponerine ant are dimorphic. I append herewith a description of the queen, from which it will be seen that although similar in general appearance to the ♂ major, it differs from it radically in important particulars, notably in the shape of the epinotum and petiole.

♀. 18.5 mm.; length of abdomen, 9 mm. (in the ♂ major, 4.5-5 mm.); width of abdomen, 4 mm. (in the ♂ major, 2.3 mm.). The pubescence is a little more abundant and longer than in the ♂ major, but the pilosity of the body is much more abundant, especially on the sides of the pronotum, the mandibles and the margins of the abdominal segments. The fine sculpturation is similar to that of the ♂ major, but the mandibles are more coarsely punctured, and the head, thorax, petiole, and abdomen have some scattered, shallow, and fairly large punctures, from which arise the pilose hairs, almost entirely wanting in the ♂ major.

The head, pro- and mesonotum as in the ♂ major, but the meso-epinotal suture is much deeper and wider. The dorsum of the epinotum is not longer than the pronotum (much longer in the ♂ major). Seen from the side, it is not horizontal as in that caste, but convex longitudinally from the base to the apex, and convex from side to side, not sub-margined as in the ♂ ♀. A longitudinal and very distinct median groove runs from the base almost to the brow of the declivity; this groove is but faintly indicated in the ♂ major. The declivity is similar to that of the ♂ major, but not so steep, and the lateral tubercles above are flatter or less dentiform. The node of the petiole is not sub-cubic as in the ♂ ♀, but almost squamiform and slanting forwardly, so that the anterior and posterior faces are not vertical or almost so, as in the ♂ ♀, but obliquely sloping. The anterior face is strongly concave, and the posterior face is only a little less so. Seen from the side,

GENUS OPTHALMOPONE, Forel.

Ann. Soc. Ent. Belg. Vol. 34, C.R. p. 113, 1890.

Pachycondyla (pars), Emery, Bull. Soc. Ent. Ital., vol. 18, p. 360, 1886.

Characters.

♂. Clypeus rounded in front, moderately convex, produced backwards angularly between the frontal carinae; the latter are short, close together and narrow, sometimes lobed anteriorly. Mandibles triangular, long, and beset with alternating long and short teeth. Eyes large, placed behind or in the middle of the sides of the head. Pronotum much longer than the mesonotum; the latter is circumscribed by a distinct sulcus. Node of petiole thick, truncate behind, and with the ventral lamella produced into a more or less sharp point. Constriction between the 1st and 2nd abdominal segments very slight. Claws simple.

♀. Unknown.

♂. Head longer than the pronotum; clypeus gibbous and projecting beyond the base of the mandibles; frontal carinae distinct, divergent behind. Mandibles moderately long and pointed. Antennae about as long as the head and thorax together; scape shorter than the 2nd joint of the flagellum. Pronotum largely exposed, at

the node is four and a half times higher than long (about two and a half times in the ♀ major). Seen from above, the node is three and a quarter times as wide as long (about as wide as long in the ♀ major); the node above is longer, *i.e.* thicker in the middle than at the sides; it is also convex from side to side, but more acute dorsally than in the ♀ ♀. The anterior face of the 1st abdominal segment is not perpendicular as in the ♀ ♀, but slopes forwards. The abdomen is much larger than in the ♀ major, and all the segments are much wider than long. The teeth of the mandibles are larger and more acute. Other characters as in the ♀ major.

Bulawayo.

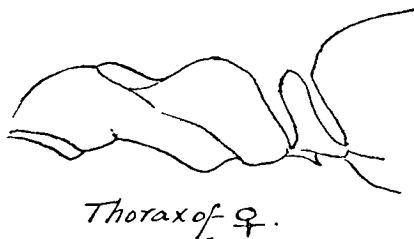


FIG. 6.

MEGAPONERA FOETENS, Fabr.

its widest only slightly, if at all, wider than the head across the eyes. Node of petiole thick, lamellar projection beneath arcuately emarginate, with a posterior tooth pointing backwards.

There are two South African species, distinguished as follows:

- (2). 1. ♀. Head, excluding mandibles, only slightly longer than wide across the eyes.
 ♂. Frontal area very shining and indistinctly defined; mandibles narrow and obliquely truncate at the apex; 6th ventral segment furnished on each side with a flat and spatulate appendage .. *hottentota*, Emery.
- (1). 2. ♀. Head, excluding mandibles, one and two-thirds as long as wide across the eyes.
 ♂. Frontal area dull and distinctly defined; mandibles broad and acute at the apex; 6th ventral segment simple *Berthoudi*, Forel.

O. BERTHOUDI, Forel. (Plate II., figs. 11, 13.)

Ann. Soc. Ent. Belg., vol. 34, C.R. p. 112, ♀, 1890. Mitt. Schweiz.
 Ent. Ges., vol. 6, p. 76, ♂, 1894.

♀. 12 mm. Black, masticatory margin of mandibles, extreme base of scape and 2nd-5th joints of all the tarsi dark red, calcaria reddish yellow. The whole body microscopically rugulose and covered with a very close and fine dull golden pubescence; the inner margin of the mandibles, the clypeus and last two segments of abdomen with a few golden bristles, more abundant on the last segment. Clypeus broadly angular in the middle and with three small grooves on each side of the middle area behind the anterior margin, the innermost the longest. Head very long, parallel-sided and rounded behind. The mandibles strongly convex longitudinally; seen from the side, as long as from the apex of the cheek to the posterior margin of the eyes. The latter are large and situated behind the middle of the sides of the head.

The clypeus produced posteriorly between the frontal carinae, beyond which is a narrow, shining depression. The frontal carinae, divergent in front and behind, only just reach a point level with the anterior margin of the eyes. Antennae reach backwards as far as the base of the 1st abdominal segment; scape slightly thickened towards the apex, and as long as the head, excluding the mandibles.

Pronotum two and a third times as long as the mesonotum. Epi-notum laterally compressed, with a shallow but distinct longitudinal groove in the middle, stretching from the base of the dorsum to the brow of the declivity. The latter is very steep, and seen from

behind is angular at the sides and bluntly so above, the lower and central portion of its face slightly gibbous. Node of petiole not so high as the 1st abdominal segment, rounded in front, truncate in front and behind, and with a well-defined posterior dorsal margin which is bisinuate in the middle and feebly angled at the corners. The ventral lamella ends in a sharp tooth pointing backwards, and does not extend beyond the middle of the petiole. Abdomen somewhat conical and widest at the base. 1st and 2nd segments sub-equal in length, constriction obsolete. Legs long and thin.

♂. 11 mm. Black, 3rd and following joints of flagellum ferruginous yellow, lighter towards the apex; 1st joint of flagellum, base and apex of scape, the last joint, and apices of all the joints of the tarsi, dark rusty red. Wings fuscous, darker towards the apex, nervures pale brown, stigma piceous. The whole body microscopically rugulose and covered with a greyish pruinose pubescence similar to that of the *Platythyreini*. Base of head, the thorax and abdomen with large but shallow, piligerous punctures, sparse on the head and thorax, closer on the petiole and abdomen. The hairs are longer on the prothorax, epinotum, node of petiole and abdomen, shorter elsewhere, and of a fulvous colour.

Head narrowest at the base, the portion which extends from the base to a line joining the anterior margin of the eyes having the shape of an inverted triangle. Mandibles broad and acute at the apex; clypeus large, slightly acuminate in the middle in front, rounded at the sides and gibbous at the base. Antennae filiform, 1st joint of flagellum very short, the rest diminishing in length towards the apex. Frontal carinae broad and reaching to a point beyond the middle of the eyes. The latter are very large and placed in front of the middle of the sides of the head; ocelli not very large. Posterior margin of the head reflexed above and at the sides, forming a slight collar similar to that of the ♂ of *M. foetens*. Pronotum widely exposed, two-thirds as long as the mesonotum. Promesonotal suture distinct; mesonotum separated from the scutellum by a deep and wide sulcus; there is also a narrow lateral groove on each side reaching to a level beyond the anterior margin of the tegulae. The scutellum is sub-conic and finely striated at the sides. The base of the epinotum and the brow of the declivity rugose; the declivity is oblique. The tooth of the ventral lamella of the petiole is thinner and more acute than in the ♀. Pygidium narrow, shining, and ending in a short spine. Abdomen of a similar shape to that of the ♀, the hairs on the 3rd and following segments very long

and bright fulvous. 3rd to 5th ventral segments with long golden hairs on their apical margins.

This species is an exceedingly fast ant which occasionally may be seen foraging in very irregular columns. It is common in the neighbourhood of Bulawayo, and nests under stones or in deserted termite mounds.

(S.A.M., R.M., G.A. colls.)

O. HOTTENTOTA, Emery. (Plate II., fig. 12.)

Bull. Soc. Ent. Ital., vol. 18, p. 360, ♀, 1886.

♀. 10-11 mm. Black; very similar to *Berthoudi*, but differs in the following features. The pubescence is denser and of a more fulvous tint. The head is shorter and not so parallel-sided, the eyes are placed farther forwards and the mandibles are broader and not so long. The epinotum is less compressed laterally and broader on top, and not so long or so flat; it is compressed near the base and then rises in a slight hump and is continued in a gradual curve to the brow of the declivity. The latter, seen from above, has a much less angular outline than in *Berthoudi*. Seen from above, the node of the petiole is much narrower in front than in *Berthoudi*, and is only slightly emarginate in the middle posteriorly, and also not bisinuate nor obtusely angled laterally. The tooth of the ventral lamella is shorter and more acute.

♂. 11-12 mm. Black. Mandibles obtuse and obliquely truncate at the apex; posterior margin of the head not reflexed so as to form a collar. Frontal area shining and indistinctly defined. The head is more transverse than in *Berthoudi*, since the base of the head is much wider than in that species. Antennae, mandibles, tarsi and apical third of all the femora, ferruginous.

It is easily distinguished from *Berthoudi* by the following characters. Head, thorax and base of abdominal segments with golden, not pruinose, pubescence. Piligerous punctures entirely absent, the whole body shining, especially the abdomen and node of petiole. The latter is more sharply truncate posteriorly and feebly sinuate in the middle. The ventral segments are more densely fimbriated and the 6th ventral segment is produced on each side into a long, flat and spatulate appendage, densely fimbriated at the apex. Wings wider and longer than in *Berthoudi*.

Willowmore. (Brauns.) Cape Province generally, and Sebakwe, Mashonaland. I have not met with it in Matabeleland.

(S.A.M., R.M., G.A. colls.)

GENUS PACHYCONDYLA, Smith.

Pachycondyla (pars), Cat. Hymen. Brit. Mus., vol. 6, p. 105, 1858.

Characters.

♂ and ♀. Clypeus rounded in front, or obtusely pointed, prolonged backwards angularly between the frontal carinae. Mandibles sub-triangular, dentate. Eyes situated in the anterior third of the sides of the head. Cheeks not carinated. Pro-mesonotal suture distinct; meso-epinotal suture obsolete above. Petiole generally with a thick, squarish node. Abdominal constriction usually distinct. Claws simple.

♂. Head more or less transverse. Clypeus rounded and gibbous in the middle, or broadly carinate. Ocelli large; eyes very large, occupying nearly the whole of the sides of the head. Frontal carinae very feebly developed or obsolete. Antennae long, scape shorter than the 2nd joint of the flagellum. Pronotum largely exposed dorsally. Mesonotum usually with two lateral grooves and Mayrian furrows. Node of petiole compressed laterally and smaller than in the ♀. Ventral lamella with a small tooth. Abdominal constriction distinct. Pygidium prolonged into a sharp spine. Claws simple. Wings very broad, the greatest width being only a little less than half the length.

The genus comprises three sub-genera, viz. *Pachycondyla*, *Ectomomyrmex* and *Bothroponera*. Of these the first is confined to America, and the 2nd is mainly Asiatic. The following characters distinguish *Bothroponera* and *Ectomomyrmex*.

1. Dorsal surface of the head marked off from the cheeks and the posterior occipital region by a tumid angular margin; the mesothoracic episternum divided from the sternum in the ♀ by a strong suture *Ectomomyrmex*, Mayr.
2. Dorsal surface of the head not marked off from the rest by a margin; mesothoracic episternum fused with the sternum, in the ♀. *Bothroponera*, Mayr.

SUB-GENUS ECTOMOMYRMEX, Mayr.

Tidjschr. v. Entom. vol. 10, p. 830, 1867.

P. (ECTOMOMYRMEX) BRUNOI, Forel.

Deutsch. Ent. Zeitschr. Beiheft, p. 205, 8, 1913.

♂. 4-4.6 mm. Black, apical segments of abdomen lighter. Legs, frontal carinae and antennae dark yellowish red, the apical halves of the 2nd-10th joints of the flagellum darker, coxae and trochanters

brown, mandibles ferruginous. Legs, antennae, and body covered with a pale yellowish and rather long pubescence; mandibles, clypeus, and apical margins of abdominal segments with long pale, semi-erect hairs. Head dull, very finely and closely punctured. Thorax slightly shining, evenly but less closely punctured than the head. Abdomen shining, 1st segment finely and distinctly, 2nd segment faintly punctured.

Head, excluding the mandibles, a little longer than wide, sides convex, occipital margin straight, posterior angles rounded but distinct. The angulation of the surface of the head, between the dorsal and genal regions, characteristic of the genus, is so feeble in this species as to be hardly noticeable.

Clypeus shining and very short, anterior margin moderately convex, raised in the middle to form a shining carina which is fused with the frontal carinae. Mandibles triangular, shining, sparsely punctured, furnished with about 7-8 teeth. Scape reaching back as far as the occipital margin, flattened and incrassate towards the apex; flagellum strongly incrassate towards the apex, the last 4 joints forming a club; 1st joint longer than wide, 2nd-10th joints wider than long. Eyes consisting of about 6 ill-defined facets, very small and flat, situated in the anterior fifth of the sides of the head. Frontal carinae wide, their external margins very convex. Pronotum not quite so wide as the head, wider than long, rather flat above and at the sides, rounded in front and with the anterior angles rounded but fairly distinct. Pro-mesonotal suture strong, meso-epinotal suture feeble. Mesonotum ovoid, wider than long, hardly two-thirds as long as the pronotum. Dorsum of epinotum very narrow, widening towards the apex; declivity rather abrupt and nearly vertical, smooth and shining. The upper surface of the node, seen from above, is in the shape of a wide-based triangle, the apex very rounded; seen from the side, the node is convex above from side to side, the anterior face slopes backwards and is concave from below to above, the posterior face vertical and concave from side to side. Ventral lamella of petiole produced and widely truncate at the apex. Abdomen elliptical, 1st segment with the anterior face sloping forwards, wider at the apex than at the base, as wide as long; 2nd segment a little longer than the 1st, the constriction between the two segments moderate. Anterior femora and tibiae stout.

♂ (hitherto undescribed). 4.2 mm. Black, scape and 1st joint of flagellum, trochanters, apices of femora and tibiae, extreme bases of tibiae and all the tarsi pale brownish yellow. Head and thorax very shallowly punctured, abdomen impunctate. Whole body

shining, clothed with a long adpressed pale pubescence, closer on the head and legs, very dense on the antennae and scantier on the thorax and abdomen; abdomen sparsely pilose with semi-erect long pale hairs, the rest of the body with a very scanty blackish pilosity. Head wider than long, excluding the clypeus nearly twice as wide as long. Clypeus raised roof-shaped towards the middle line, anterior margin straight and depressed; seen directly from above, the clypeus projects considerably in front of the line of the mouth. Frontal carinae flat and nearly obsolete. Mandibles atrophied to two triangular flaps at the sides of the mouth. Eyes large, not very prominent, their internal margins moderately concave. Ocelli large, on a slightly raised area. Antennae long and filiform, reaching back as far as the base of the 2nd abdominal segment; scape shorter than the distance separating the two posterior ocelli, 1st joint of flagellum a little shorter than the scape, 2nd joint three times as long as the 1st, last joint nearly as long as the two preceding together.

Pronotum exposed, not quite so wide as the head. Mesonotum a little longer than wide, with the parapsidal sutures and anterior Mayrian furrows sharply defined. Scutellum moderately gibbous, less than one-third the length of the mesonotum, from which it is separated by a deep crenate suture. Dorsum of epinotum wider than long, sloping gradually into the declivity. Node of petiole like that of the ♂, but narrower and more parallel-sided. First segment of abdomen convex in front and at the sides, 2nd segment a little longer than the 1st, and wider than long. Pygidium produced into a long spine. Wings hyaline, nervures and stigma pale yellow.

Bulawayo, under stones, in small colonies of less than a dozen individuals. (S.A.M., R.M., G.A. colls.)

SUB-GENUS BOTHROPONERA, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 12, p. 717, 1862.

Key to the ♂ & ♀ of Pachycondyla. (Sub-Genus *Bothropонера*, Mayr.)

- (10). 1. Head, thorax, and basal segments of abdomen coarsely punctured.
- (5). 2. Mandibles striated.
- (4). 3. Node of petiole widely emarginate posteriorly *cariosa*, Emery.
- (3). 4. Node of petiole sharply truncate posteriorly *caternosa*, Roger.
- (2). 5. Mandibles not striated.
- (7). 6. Node of petiole widely emarginate posteriorly, a golden pubescence on the whole body *granosa*, Roger.

First abdominal segment nearly twice as wide as the node of petiole, and with a small truncate projection below at the extreme base. Abdominal constriction well marked. Second segment slightly wider than the 1st, but not longer. Anterior tarsi with thick golden-brown hairs beneath.

Transvaal.

Var. RHODESIANA, Forel.

Ann. Soc. Ent. Belg., vol. 57, p. 109, 1913.

This differs from the type in its larger size, 13 mm. ♂, and more abundant pilosity. The node of the petiole is not so smooth, and is, like the abdomen, duller.

♂ (hitherto undescribed). 10 mm. Head black; mandibles, clypeus, antennae, legs, and last abdominal segment occasionally reddish yellow. Thorax dark castaneous brown, pronotum somewhat lighter. Epinotum, petiole, and abdominal segments reddish brown, the apical margins of the latter testaceous yellow.

Head transverse; clypeus produced and raised in the middle anteriorly. The frontal carinae are very short and indistinct. Eyes very large and reniform. Antennae filiform, reaching back as far as middle of 2nd abdominal segment. Pronotum only slightly exposed dorsally. Mesonotum with a central impressed line, broken in the middle; the Mayrian furrows distinct, the lateral ones less so. A crenate sulcus separates the mesonotum from the rather gibbous scutellum. Epinotum rounded, the declivity with a raised central line. Node of petiole sloping in front, rounded above and with a faint median impression, vertical behind and longer than wide. Seen from above, the petiole has a minute tooth on each side at the extreme base, and a slightly larger tooth beyond the latter. The ventral lamella is produced into a very short obtuse angle. First abdominal segment beneath with a truncate process at the extreme base similar to that of the ♀. Abdominal constriction distinct. Legs long and slender. Wings hyaline, nervures yellow, stigma dirty yellow. Body rather shining and covered with a silky grey pubescence. There is a sparse pilosity on the margins of the last three abdominal segments. Head and thorax very finely, closely, and shallowly punctured; base of epinotum a little more coarsely and rugosely punctured. Abdomen impunctate.

This variety is common round Bulawayo. The nest is generally placed under a stone, with several entrances which are surrounded by loose earth; the male is very common at light.

(S.A.M., R.M., G.A.)

P. LAEVISSIMA, n. sp. (Plate II., figs. 15, 15a.)

♂. 12 mm. Black; antennae, mandibles, outer angles of frontal carinae, and articulations of the legs piceous red; extreme margins of abdominal segments pale. The whole body is very shining, punctured all over with very fine, sparse punctures, from which arise the pubescent hairs. Intermixed are other larger punctures which are very shallow and scanty on the 1st abdominal segment, deeper, larger and more abundant on the node of the petiole and on the head, and very sparse on the thorax. The pubescence on the body is very scanty and inconspicuous, but less so on the apical segments of the abdomen. Pilosity of the body meagre, consisting of a few short hairs; pale and denser on the legs.

Head quadrate, sides slightly convex, posterior margin straight, very convex above, posterior angles rounded. Mandibles triangular, moderately shining and very finely striate, sparsely and strongly punctured, the punctures larger and elongated along the masticatory margin. The latter carries 7 teeth, and is but little shorter than the basal margin. Clypeus striato-rugose, angularly produced in the middle, sub-carinate, and with a row of deep punctures along the anterior margin. The frontal carinae are very broad in front, and excepting their extreme lateral margins which are smooth and shining, are more closely punctured than the rest of the head. Eyes rather small, situated a little in front of the middle of the sides of the head. Antennae extend back as far as the apex of the epinotum; scape incrassate towards the apex, the flagellum only slightly so. First joint of flagellum two-thirds as long as the 2nd, the latter hardly longer than the 3rd.

Pro-mesonotal suture distinct, meso-epinotal suture obsolete. Pronotum convex above, rounded in front and at the sides, a little wider than long. Mesonotum as long as the pronotum. Dorsum of epinotum merges into the declivity by a very gradual curve. The declivity is very oblique and feebly margined laterally. (The profile of the thorax is a segment of a circle and more convex than *P. cavernosa*, Roger.) Node of petiole trapezoid, wider behind than in front, wider than long, rounded above, vertically truncate in front and behind, and nearly as high as 1st abdominal segment. The sides of the 1st and 2nd abdominal segments very convex, the constriction between them strong. The 1st segment is narrower at the base than at the apex, as long as the 2nd segment but not quite so wide. Legs moderately long.

Saldanha Bay, Cape Prov., Type in my collection.

(S.A.M., R.M., G.A. colls.)

P. soror, Emery.

Ann. Soc. Ent. Belg., vol. 43, p. 472, ♂ ♀, 1899.

♂. 7-8.5 mm. Black; mandibles and legs dark chestnut-red. Scape, flagellum, and clypeus red-brown, the last joint of flagellum dark red at the apex. Calcaria, and the long hairs on the thorax and abdomen, orange. A fine golden-grey pubescence all over, as in *P. Krügeri*. Occipital margin of head straight, the corners rounded, the sides slightly convex. Clypeus raised and sub-carinate in the centre, rounded in front, the raised area shining. Frontal carinae wide in front, narrow behind and divergent. Mandibles smooth and shining, with a few large, deep punctures, chiefly on the inner margin. First joint of flagellum a little longer than the 2nd, 3rd to 6th joints as long as broad, 7th to 10th slightly broader than long, apical joint flattened and nearly twice as long as the penultimate. Head and thorax finely and closely punctured, node of petiole more coarsely punctured, 1st and 2nd abdominal segments finely but very distinctly punctured. There are large, shining, piligerous punctures on the body, proportionately larger than in *Krügeri*. The epinotum has the declivity widest in the middle, lozenge-shaped, slightly shining and distinctly margined at the sides. Proportionately the node of the petiole is wider than in *Krügeri*, and is also flatter on top, otherwise similar. The abdominal constriction is not so marked as in that species. In size and general appearance this species is deceptively like *Euponera caffraria*, from which it can be distinguished on closer inspection by the thick node of the petiole, which in *caffraria* is squamiform.

This is a rather rare species in the neighbourhood of Bulawayo. It usually nests under stones, and has a very strong smell of cockroaches. The colonies do not usually comprise more than two dozen individuals. (S.A.M., R.M., G.A. coll.)

P. cariosa, Emery.

Ann. Soc. Ent. France, vol. 63, p. 20, ♂, 1895.

“ ♂. 11 mm. Black; mandibles, flagellum, articular portions of the legs and tarsi rufescent, margins of the abdominal segments and the anus narrowly testaceous; very coarsely punctured and also longitudinally striate, with a dense flavous pubescence. Clypeus carinate and produced in the middle, mandibles striate and punctured, node of petiole sub-trapezoid, widely emarginate behind. . . . The petiole is wider behind than in front, depressed in the middle of the posterior margin so as to make it appear widely emarginate. The

insect is dull, more so than in *pumicosa*, which is due to the spaces between the large punctures being also closely punctured, or almost striated in parts; . . . the pubescence is longer and more recumbent than in *strigulosa*; the last two abdominal segments are not striated. The mandibles are finely striated and punctured. Delagoa Bay."

P. CAVERNOSA, Roger.

Berlin Ent. Zeitschr., vol. 4, p. 288, ♀, 1860.

"♀. 13 mm. Brownish black; antennae, mandibles, and legs red, slightly shining, covered with very short reddish-yellow pubescence. The whole body is densely punctate with coarse and somewhat confluent punctures. The punctures of the 2nd abdominal segment are sparser, shallower, and smaller, giving this segment a rather smooth appearance. The head is wider than the thorax, quadrangular, rounded in front and behind, and also very feebly emarginate behind. The eyes are situated in front of the middle of the sides of the head. The frontal carinae are thick, lobate, horizontal, and divided by a deep central line. The 12-jointed antennae are inserted in a deep depression at some distance from the anterior margin of the head, as well as from each other; the scape is sparsely clothed with erect hairs and reaches back as far as the occiput; the 2nd and 3rd joints of the flagellum of equal length, and a little longer than the 1st; the apical joint as long as the two preceding together. Clypeus arched in the middle, feebly carinate and slightly impressed transversely along the anterior margin. The mandibles are triangular, not much elongated, finely and longitudinally striate or rugulose, more coarsely on the inner margin, which has 6 to 7 blunt teeth. The prothorax is wider than the rest of the thorax, rounded at the sides, narrow and lower in front and separated from the mesothorax by a depressed line; the rest of the thorax without sutures, compressed laterally and feebly convex towards the base, the declivity of the epinotum abruptly truncate. The sides of the thorax not rugose. The node of the petiole is as wide as the epinotum but narrower than the 1st abdominal segment, higher than long, perpendicular behind, rounded in front and strongly so above; ventral lamella with a small tooth. The 1st abdominal segment is perpendicular in front, rounded above, wider than long, rounded at the sides and constricted behind. The 2nd abdominal segment is wider than long, with a fine median longitudinal line. All the tibiae with pectinate calcaria. The tibiae, metatarsi and tarsi almost of equal length. The front legs have the metatarsi shorter than the

tibiae, and like the latter at their apices, are densely clothed with golden hairs. Claws simple. Cape."

P. STRIGULOSA, Emery.

Ann. Soc. Ent. France, vol. 63, p. 19, ♀, 1895.

"♀. 10 mm. Black; mandibles, antennae, and tarsi piceous, margins of abdominal segments and anus smooth and testaceous; closely punctured with very coarse punctures and very finely longitudinally striate, dull, scarcely pubescent, and with a pilosity of short golden hairs. Clypeus carinate and produced in the middle, coarsely punctured but not striate; node of petiole truncate posteriorly. Kimberley."

"Closely allied to *pumicosa*, which it resembles in the shape of the body, unstriated mandibles and puncturation intermixed with fine striae; the latter, however, are more numerous and stronger, giving this species a duller appearance. The abdomen is wholly dull, even the apical segments. In *pumicosa* the last three segments are shining, the antepenultimate less strongly striated than the preceding, and the following segments only punctured."

P. GRANOSA, Roger. (Plate II., fig. 16.)

Berlin Ent. Zeitschr., vol. 4, p. 290, ♀, 1860.

"♀. Black, apex of abdomen and tarsi rufescent, moderately shining, pilosity very short, pubescence golden yellow, punctured all over, node of petiole sub-emarginate posteriorly. 14 mm."

"This species is very similar to *cavernosa*, but differs from it in the following characters: the whole body is covered with a very fine recumbent yellow or yellowish-red pubescence, which gives the body when seen from the side a yellow silky tinge. The sculpture of the head is not so coarse as in *cavernosa*, the punctures are farther apart and are not confluent; the punctures are also shallower. The space between the punctures is finely striate. The apex of the frontal carinae is smooth, shining, and of a reddish colour; the mandibles are dark red, shining, not striated but punctured with rather coarse and fine punctures intermixed. The head is somewhat longer than in *cavernosa*. The clypeus is sharply carinate. The punctures of the thorax are large and shallow, the interspace rugulose. The node of the petiole is slightly rounded in front, the posterior face is vertical but the dorsal margin of same widely emarginate, flat above, narrower in front than behind; below, the ventral lamella is produced into a tooth pointing backwards. The 1st abdominal segment, seen

from above, is almost quadrangular and with the sides only slightly convex, a little wider than long, and like the node strongly but not closely punctured, more strongly so than the thorax. The 2nd segment is more feebly punctured than the 1st, the rest only indistinctly. The apical margins of the abdominal segments are reddish. The claws are small and simple."

P. PUMICOSA, Roger.

Berlin Ent. Zeitschr., vol. 4, p. 290, ♀, 1860. Forel, Rev. Suisse Zool., vol. 9, p. 244, ♂, 1901.

♀. 12-13 mm. Black; mandibles, flagellum, apex and base of scape, the legs, and apex of abdomen dark castaneous red. A thin golden pubescence all over; a golden-brown pilosity on the node of the petiole and on the abdomen. The sides of the head, thorax, node, and 1st abdominal segment strongly and deeply punctured. The punctures on the node and 1st segment are very large and rather confluent, making the sculpturation almost rugose. The vertex of the head somewhat finely punctured. Second abdominal segment with shallower punctures than the 1st segment,* 3rd and 4th very finely punctured, pygidium impunctate. The spaces between the punctures on the first three segments striate, very finely so on the 3rd segment. Sides of head slightly convex, rounded at the corners in front and behind, hardly emarginate posteriorly. Clypeus feebly produced and carinate in the middle, the carina obtuse at the apex. Frontal carinae wide in front, smooth and moderately shining, as in *granosa*. Mandibles triangular, shining and punctured. Eyes nearer the middle of the sides of the head than in *granosa*. The scape of the antenna hardly reaches back as far as the occiput; flagellum more clavate than in *granosa*, 7th to 10th joints wider than long. Promesonotal suture distinct; declivity of epinotum shining, and less steep than in *granosa*. Node of petiole narrower in front than behind, rounded in front and above, sub-trapezoid, posterior face vertical and slightly concave. Ventral lamella angularly produced, but not toothed. Otherwise similar to *granosa*.

♂. 9.5 mm. Testaceous yellow; head brown; mesonotum and scutellum brown with yellowish patches. The eyes occupy the whole of the sides of the head. Ocelli large and placed on a raised area. Wings pale yellowish, with nervures and stigma also pale. Sub-opaque, very finely punctured and pubescent."

Cape Prov. (Brauns, Drege.) Natal. (Haviland.)

* Roger says, "As coarsely punctured as the 1st segment"; the punctures are as large, but certainly not so deep, when seen from above.

Race BERTHOUDI, Forel.

Rev. Suisse Zool., vol. 9, p. 344, ♂, 1901. Ann. Soc. Ent. Belg.,
vol. 57, p. 109, 1913.

This form has been sunk to the rank of a race by Forel, but I can find only the following differences, which appear to me to be worthy of only varietal rank. The node is slightly narrower posteriorly than in the type, the puncturation of the head is a little larger and the 1st abdominal segment a little wider. I append the following description of the ♂, since that of the type is so meagre.

♂. 10 mm. Legs, pleurae, epinotum, node, abdomen, and antennae bright ochreous yellow; head dirty yellow below the antennal sockets, brown above. Thorax yellow-brown. Clypeus slightly raised in the middle. Frontal carinae obsolete. The eyes occupy the whole of the sides of the head; the ocelli large, and situated on a raised area. Antennae filiform, reaching back almost to the apex of the 1st abdominal segment. Prothorax very little exposed. Pro-mesonotal and meso-metanotal sutures distinct. The scutellum gibbous with the sides strongly striated. Mesonotum very shallowly punctured. Epinotum punctured at the sides, very shining and smooth above. Node of petiole narrow and parallel-sided, rounded above and in front, and less so behind. Lamellar tooth distinct but small. Constriction between the 1st and 2nd abdominal segments distinct. Abdomen impunctate. The whole body clothed with a dense, downy and pale pubescence.

Willowmore, Cape Prov. (Brauns.) Valdezia, Transvaal. (Berthoud.) (S.A.M., R.M., G.A. coll.)

GENUS EUPONERA, Forel.

Grandidier's Hist. Madagascar, vol. 20, p. 126, 1891.

Ponera (pars), Smith, Roger, Mayr, etc.

Formica (pars), Fabricius.

Characters.

♀. Mandibles sub-triangular, the masticatory margin dentate and forming a distinct angle with the basal margin. Eyes placed on or in front of the anterior third of the head, sometimes absent or considerably atrophied. Meso-epinotal suture distinct, otherwise like *Pachycondyla*.

♀. Always winged.

♂. As in the sub-genera.

The genus is divided into four sub-genera as follows:—

Key to the ♂ ♀ of the Sub-Genera of Euponera.

- (2). 1. Mandibles elongate, the masticatory margin long, with numerous teeth; 1st joint of flagellum usually shorter or of the same length as the following, rarely longer *Mesoponera*, Emery.
- (1). 2. Mandibles rather short, with few teeth; 1st joint of flagellum much longer than the 2nd.
- (4). 3. Length 9-10 mm.; mandibles with 8 teeth; Madagasean species.
Euponera, Forel.
- (3). 4. Insect much smaller.
- (6). 5. Mesonotum gibbous; surrounded by a deep suture; 1st joint of tarsi of the middle pair of legs not bristly on the dorsal surface. *Brachypnora*, Emery.
- (5). 6. Mesonotum depressed, the surrounding suture not deep; tarsi of the middle pair of legs short, and bristly on the dorsal surface.
Trachymesopus, Emery.

SUB-GENUS MESOPONERA, Emery.

Ann. Soc. Ent. Belg., vol. 45, p. 43, 1901.

Characters.

♂. Clypeus rounded, rarely pointed on the anterior margin. Mandibles elongate, with numerous teeth. Maxillary palpi 4-jointed. 1st joint of flagellum shorter or of the same length as the 2nd, rarely longer. Thorax generally elongate; mesonotum more or less oval and surrounded by a suture; dorsum of epinotum in the elongate species equal in length to the pro- and mesonotum together. Legs, and especially the tarsi of the middle pair, long and slender, the tarsi rarely bristly.

♀. As in the ♂.

♂., Emery remarks ("Genera Insectorum") that he knows of no character sufficient to distinguish the ♂ ♂ of this sub-genus from those of *Pachycondyla*.

Key to the ♂ ♀ of Mesoponera.

- (6). 1. Large species, more than 6 mm. long.
- (3). 2. Insect 9 mm. long, whole body dull *cafraria*, Smith.
- (2). 3. Longer than 9 mm., at least the greater part of the body shining.
- (5). 4. 10-5 mm. long, head duller than the thorax and abdomen, fovea on the mandibles shallow and transverse *Peringueyi*, Emery.
- (4). 5. 11-13 mm. long, head not duller than the thorax and abdomen, fovea on the mandibles deep, sharply defined and oblique *Harilandi*, Forel.
- (1). 6. Small species, less than 6 mm. long.
- (8). 7. Colour black or nearly so *fossigera*, Mayr.
- (7). 8. Colour brown or yellowish brown . . . *Elizae*, Forel, var. *rotundata*, Emery.

E. (MESOPONERA) CAFFRARIA, Smith. (Plate II., fig. 17, 17*a*, and Plate III., fig. 22.)

Cat. Hymen. Brit. Mus., vol. 6, p. 91, ♀, 1858. Mayr, Ann. Nat. Mus. Wien, vol. 10, p. 124, ♀, 1895.

♂. 9 mm. Black and dull; mandibles castaneous red; flagellum, tarsi, and last abdominal segment dorsally, brown. The whole body covered with an excessively fine and short pubescence, which is, however, dense enough to give the surface, viewed obliquely, a greyish-yellow tinge. Head, thorax, and apical half of all the abdominal segments microscopically punctured, the basal invaginable portion of the latter shining and impunctate. A scanty pilosity of short, thin, pale hairs on the head and thorax, and longer on the abdomen, particularly the last three segments. Clypeus raised in the middle, with a central shining line, hardly produced backwards between the frontal carinae. Mandibles smooth, with a few large punctures on the inner margin. Frontal carinae only slightly widened anteriorly, the impressed line between rather faint. Scape of antenna hardly reaching the occiput; flagellum feebly incrassate towards the apex. Eyes small, their long diameter not exceeding two-thirds the length of the apical joint of flagellum. Sides of head convex, anterior and posterior corners rounded, the former widely so; posterior margin feebly arcuate. Head wider than thorax. Pronotum convex in front and at the sides; dorsum of epinotum flat, narrowest at the base, where it is less than half as wide as the mesonotum; declivity shining and steep, lateral margins tumid. Node of petiole squamiform; seen from above, triangular; thickest at the base, much wider above than below, rounded above; posterior face perpendicular and shining. Ventral lamella with an obtuse projection. Abdomen oblongo-ovate, 1st and 2nd segments of about equal length, the constriction between them feeble. The 1st segment ventrally, has a slight median projection at its junction with the petiole.

♀. 10.5 mm. Mesonotum and scutellum together, seen from above, more than twice as long as the pronotum. Dorsum of epinotum short, not so long as scutellum. Wings smoky, nervures and stigma brown. Otherwise like the ♂.

♂. 8 mm. Black and dull; tibiae and tarsi yellow-brown, the margins of the abdominal segments impressed, shining and testaceous brown. Head, thorax, petiole and abdomen, except the apical segment, closely, finely and reticulately punctured; the sides of the posterior portion of the mesonotum deeply excavated, shining

and striated. Head about one-third wider, across the eyes, than it is long. Clypeus raised and carinate in the middle. Frontal carinae distinct but very short. Antennae long and filiform, reaching back as far as apical margin of 3rd abdominal segment, scape very short, barely twice as long as the 1st joint of flagellum; 2nd joint three and a half times as long as the scape. Eyes not very large, occupying but little more than the anterior half of the sides of the head; ocelli small, situated on a slightly raised area. Pro-mesonotal suture distinct; the gibbous scutellum is separated from the mesonotum by a crenate impression. Pronotum exposed, seen from above only two-thirds as long as scutellum; dorsum of epinotum as long as the scutellum, the declivity oblique and not abrupt. Node of petiole similar to that of the ♀, but smaller and more convex posteriorly; ventral lamella not produced. The abdomen widens towards the apex; 1st segment not so wide as the 2nd and 3rd, the latter almost twice as wide as long; constriction between the 1st and 2nd feeble. Apical segment shining and nearly impunctate; pygidium ending in a short spine. Legs thin and slender; tarsi of middle and hind legs as long as the tibiae. Wings slightly smoky, nervures pale brown, stigma dark brown.

S. Rhodesia, common; Willowmore. (Brauns.) Natal. (Cooper and Marley.)

(S.A.M., R.M., G.A. colls.)

E. (MESOPONERA) PERINGUEYI, Emery. (Plate II., fig. 19.)

Ann. Soc. Ent. Belg., vol. 43, p. 474, ♀, 1899.

♀. 10.5 mm. Black; antennae, tibiae, and tarsi piceous brown, mandibles ferruginous brown. Shining, especially the abdomen and pronotum. Clypeus and sides of pronotum very finely rugulose, pleurae finely striate, all the rest of the body finely and evenly punctured. The punctures are very dense on the head and epinotum. Mandibles shining, with irregular and coarse punctures and a shallow, lateral and transverse fovea near the base. A fine grey pubescence on the whole body, inconspicuous and rather irregular; pilosity absent. Head very similar to that of *E. sennaarensis*, Mayr, but the frontal carinae are more divergent behind, and reach to the level of the posterior margin of the eyes. The latter are relatively smaller and more convex. The clypeus is obtusely carinate in the middle, smooth and shining. Mandibles with 12-14 alternating large and small teeth. Antennae long, reaching back as far as base of 1st abdominal segment; flagellum very slightly incrassate towards the

apex. Sides of head moderately convex, posterior angles rounded. Pronotum wider than long, the dorsal region distinctly, and rather angularly delimited from the sides. Mesonotum ovoid, narrower at the base. Pro-mesonotal suture well defined, meso-epinotal suture a little less distinct. Dorsum of epinotum narrow, very little longer than the mesonotum; declivity triangular, with a faint median longitudinal impression. Node of petiole rounded above, convex from side to side in front, and flat behind. Seen in profile, vertically truncate in front, steeply sloping behind, and with sharply defined lateral margin separating the anterior and posterior faces. Ventral lamella triangularly produced along its whole length. The basal face of the 1st abdominal segment is vertically truncate, forming a distinct, though obtuse, angle with the dorsal surface. Below, at its junction with the petiole, the segment is produced into a strong tooth. Second abdominal segment slightly wider and longer than the 1st, the constriction between the two segments feeble. Seen from in front or behind the node of the petiole is wider above than below, and of an ovoid shape. Legs comparatively long. Claws with a small tooth near the base.

Nord Hoek and Saldanha Bay, Cape Prov. (Péringuey.) (S.A.M. and G.A. colls.)

E. HAVILANDI, Forel. (Plate I., fig. 9.)

(*Megaponera*, sub-genus *Hagensia*), Rev. Suisse Zool., vol. 9, p. 333, ♂, 1901.

(*Euponera sulcigera*), Mayr, Verh. Zool. Bot. Ges. Wien, vol. 54, p. 593, ♀, 1904.

♂. 11–12 mm. Black, mandibles more or less castaneous red, legs and antennae brownish black. The whole body sub-opaque, the posterior face of the node of the petiole shining, finely pubescent, closely and very finely punctured all over, except the posterior face of the node which is less densely punctured, and the declivity of the epinotum which is reticulate-punctate or very finely rugulose. A few long hairs on the mandibles and apex of the abdomen. Head very little longer than wide, with the posterior angles considerably rounded, the sides moderately convex. Clypeus very convex in the middle, hardly carinate. Frontal area lanceolate, the depression or sulcus behind it moderately long. Eyes within the anterior half of the head, and separated from the base of the mandibles by a distance a little longer than their own long diameter. Mandibles shining, finely striate near the base, sparsely and coarsely punctured near the apex, with 13–15 irregular teeth, and a deep oblique fovea

near the base, much more sharply defined than in *Peringueyi*. Scape of antenna cylindrical and reaching back beyond the occipital margin; 2nd joint of flagellum longer than the 1st, all the joints long and cylindrical. Pronotum as long as wide, its dorsum convex, sub-quadrangular, and margined behind and at the sides by a raised line (more pronounced than in *Peringueyi*), which terminates before the anterior margin. Pro-meso, and meso-metanotal sutures well defined, the latter more strongly so than in *Peringueyi*. Dorsum of epinotum more compressed and much narrower than in *Peringueyi*, the declivity is triangular but narrower, and its sides are more sharply marginate than in that species. The declivity above, at its junction with the dorsum, has a longitudinal depression, which is bounded on each side by the lateral margins. Node and abdomen as in *Peringueyi*, but the abdomen is longer and narrower in proportion, and the constriction between the 1st and 2nd segments is entirely absent; the 1st segment below, at its junction with the petiole is also produced into a strong tooth, as in *Peringueyi*, but the ventral lamella of the petiole is larger and less blunt at the apex than in that species. Legs long and slender, with two calcaria to the middle and hind legs, and the claws of the tarsi with a small tooth near the middle.

♂ (hitherto undescribed). 12 mm. Black, legs brownish black with the tarsi paler, mandibles ferruginous. Head and thorax very finely punctured, but more densely so than in the ♀; the mesonotum is almost reticulate-punctate, the epinotum shallowly rugulose, the petiole impunctate, 1st abdominal segment very sparsely and finely punctured, the remaining segments microscopically punctate. The whole body pubescent as in the ♀, but the pubescence on the thorax is very sparse. Head dull, thorax sub-nitidulous, abdomen very shining. Head wider across the eyes than it is long, considerably contracted in front of the eyes. The latter large, occupying about one-third of the sides of the head, the internal margins feebly sinuate. Ocelli large, situate on a raised area. Clypeus very convex from side to side and rather long (as long as the scape), the anterior margin almost straight. Mandibles oblong, very small, hardly meeting together when closed, edentate. Frontal carinae obsolete. Antennae very long, reaching back almost to the apex of the abdomen, scape half as long as the 3rd joint of the flagellum; the 1st joint of the latter is very short, being less than half as long as the scape, the 2nd joint a little longer than the 3rd, all the joints except the 1st long and cylindrical. Pronotum only slightly exposed, mesonotum as long as wide, raised, round in front and convex from side

to side, concave posteriorly, and on each side with a slight depression internal to the parapsidal sutures, which are well defined. A raised central line runs back from the anterior margin of the mesonotum for about one-third of its length. A deep crenate sulcus separates the mesonotum from the scutellum; the latter is gibbous, somewhat triangular and with the sides striate. Metanotum short, with a small tubercle in the centre. The dorsum of epinotum, as long as the mesonotum, merges gradually into the declivity; the latter has on each side a small boss above, but its lateral limits are feebly defined. Petiole long, three times as long as wide, slightly raised into a node at its middle third; at its extreme base, furnished with a minute recurved tooth at each side, and a little posterior to these, there is a distinct lateral tubercle. Abdomen lanceolate, 1st segment distinctly longer than wide and very narrow at the base, 2nd segment also longer than wide and about as long as the 1st, the other segments wider than long. Pygidium produced into a sharp curved spine. Apex of abdomen piceous. Legs very long and slender, with two calcaria to the middle and hind tibiae; claws furnished with a small tooth, nearer to the apex than in the ♂. Wings smoky, stigma dark brown, a closed radial cell present, as in *E. caffraria* and *sennaarensis*. Alar expanse 20 mm.

1 ♂ taken with the workers by the Rev. R. Godfrey at King William's Town, type in S.A. Museum.

Natal. (Haviland, Wroughton.) Grahamstown. (Hewitt.)

The ♀♀ from King William's Town are slightly larger than the original specimens from Natal (13 mm.), but have the mandibles without any striae and a much more strongly defined and deeper fovea. They are also much more finely punctured and shining, not sub-opaque as in the Natal form, and the punctures are quite discrete and not reticulate. I am deterred from raising this form to varietal rank by an examination of a ♀ from Vredefort, in the S.A.M. collection, in which the puncturation is somewhat intermediate between the two described above, but in which there is also a very deep fovea on the mandible.

The characters in the male sex alone make it clear that the species is an *Euponera*. Moreover, in the worker the similarities to the ♀ of *E. Peringueyi*, Emery, are very marked. An examination which I was able to make of the two specimens in Dr. H. Brauns' collection, named by Mayr as *Euponera sulcigera*, made it certain that Mayr's species is the same as the one now described. Mayr's name must therefore be sunk as a synonym, and at the same time Forel's sub-genus must also be deleted. Should the characters of the ♂ of

E. Peringueyi Emery, at present unknown, prove to be similar to that of *Havilandi*, it might be desirable in the future to re-erect *Hagensia* as a sub-genus of *Euponera*, or even to make it a separate genus of the Ponerini. (S.A.M., R.M., G.A. colls.)

E. (MESOPONERA) ELIZAE, Forel, var. *ROTUNDATA*, Emery.
Ann. Soc. Ent. France, vol. 63, p. 20, ♀, 1895. Forel, Ann. Soc.
Ent. Belg., vol. 57, p. 108, ♀, 1913.

The above variety alone has been found within our limits. It differs from the type from Madagascar in having the metanotum (epinotum) shorter, with a more rounded profile, and not in the least angular.

♀. 4.5 mm. Colour rather variable, castaneous brown or piceous brown, with the posterior half of the head, the margins of the pronotum, the sides of the epinotum and the apical margins of the 1st and 2nd abdominal segments much paler; 3rd-5th segments ferruginous. Antennae, mandibles, legs, and clypeus ferruginous yellow. Covered all over with a fine and dense yellowish pubescence. The flavous pilosity is very short and scanty on the head, thorax, and first two abdominal segments, longer and more abundant on the clypeus and apical abdominal segments. Head and thorax shining, the abdomen much more so. Head very shallowly and finely punctured, the rest of the body impunctate or nearly so, the mesopleurae very smooth and shining. Head longer than wide, almost parallel-sided, the posterior corners gently rounded. Clypeus raised sub-angularly in the middle, the anterior margin bearing in the centre a minute spine, plainly visible under a magnification of 30 diameters. Frontal carinae very narrow in the middle, diverging posteriorly.

Mandibles elongate and rather narrow; the masticatory margin with about 12 alternately large and small teeth, the apical tooth very acuminate. The scape extends back nearly as far as the occiput; 6th-8th joints of flagellum as broad as long. Eyes small and flat, situated within the anterior fourth of the head. Promesonotal suture distinct. Pronotum twice as long as the mesonotum, rounded in front, the sides somewhat flattened. Dorsum of epinotum short, about the same length as the mesonotum, very narrow at the base and widening towards the declivity. The latter is very smooth and shining, with the sides tumid, and a little longer than wide. Node of petiole, seen from above and in front, narrower than in *E. fossigera*, and only very little wider above than below,

rounded above, slightly convex anteriorly, and steeply sloping posteriorly. The ventral lamella prolonged into a large triangular tooth, pointing backwards.

Anterior portion of 1st abdominal segment flattened and sloping inwards. Abdomen more oblong and parallel-sided than in *E. fossigera*; 1st and 2nd segments of about equal length, and very little wider than long, the constriction between them feeble.

♀ (hitherto undescribed). 5.5–6 mm. Like the ♂, differing only in the following characters.

The colour is darker. The eyes are larger, and separated from the base of the mandibles by a little less than their own length. The ocelli are small. Pronotum, seen from above, half as long as the mesonotum. Pro-mesonotal suture distinct. The mesonotum is separated from the scutellum by a deep and wide groove. Dorsum of epinotum very short or almost obsolete. The epinotum is not compressed laterally as in the ♂, but is rather broad, with the sides slightly convex.

This species is not uncommon near Bulawayo. The nest is always placed under stones or logs, and seldom contains more than half a dozen workers. The latter avoid the light and are never seen at work in the open. (S.A.M., R.M., G.A. colls.)

Var. REDBANKENSIS, Forel.

Loc. cit., p. 109, ♂.

A little smaller than the type, the head a little broader, and the puncturation a little less dense. (G.A. coll.)

E. (MESOPONERA) FOSSIGERA, Mayr. (Plate II., fig. 20.)

Ann. K.K. Nat. Mus. Wien, vol. 16, p. 3, ♂, 1901.

♂. 5 mm. Black and moderately shining, thorax a little brighter. Mandibles, antennae, and legs ferruginous brown, 3rd and 4th abdominal segments yellowish brown, 5th segment dirty yellow. The whole body is covered with a fine, grey pubescence, and with some scattered longer hairs on the head and apical portion of the abdomen. Closely and very finely punctured all over. Clypeus raised towards the middle but not carinate, with a longitudinal median and shining line, and the anterior margin acuminate in the centre. Mandibles elongately triangular, covered with a moderate, yellow pilosity and furnished with rather small teeth; near the basal margin, externally, lies a small and shallow fovea. Frontal carinae narrowed in the middle of their length and divergent posteriorly. Eyes situated far

forwards and low down on the sides of the head, oval, and not longer than the 8th joint of the flagellum. Scape of antenna reaching back almost as far as the occiput; flagellum more clavate than in *sennaarensis*, 3rd and 4th joints a trifle wider than long, the 2nd and 5th-10th joints as long as wide, the apical joint twice as long as the preceding. Head very little longer than wide, the sides parallel, the posterior angles widely rounded. Pro-mesonotal suture distinct. Dorsum of epinotum narrow, twice as long as wide at the base and rounded at the sides; declivity oblique, its lateral margins distinct. Node of petiole wider above than below, the dorsal edge considerably rounded, much more so than in *sennaarensis*, convex in front, flat and vertical behind. First and 2nd abdominal segments sub-equal, wider than long; the constriction between them feeble.

Port Elizabeth. (Brauns.)

(G.A. coll.)

SUB-GENUS BRACHYPONERA, Emery.

Ann. Soc. Ent. Belg., vol. 45, p. 43, 1901.

Characters.

♂. Clypeus rounded in front and convex. Mandibles short and broad, with small crowded teeth. Maxillary palpi 3-jointed. First joint of flagellum much shorter than the 2nd. Eyes flattened, placed close to the anterior margin of the head. Thorax rather short; mesonotum gibbous, surrounded by a deep suture; dorsum of epinotum narrow at the base; declivity sometimes excavated so as to lodge the anterior face of the node. Node of petiole high and broad, squamiform and much thinned above. First joint of the tarsi of middle legs not furnished with stiff hairs or bristles on the upper surface.

♀. Similar to the ♂, excepting the usual sexual differences, but considerably larger.

♂. Larger than the ♀, not much smaller than the ♀. Antennae in our sole species short. Petiole squamiform and high. Abdomen not elongate, ovoid; constriction between 1st and 2nd segments feeble. Pygidium pointed or produced into a short spine.

E. (BRACHYPONERA) SENNAARENIS, Mayr. (Plate II., fig. 21.)

Verh. Zool. Bot. Ges. Wien, vol. 12, p. 721, ♀, 1862.

♀. 5-6 mm. Black; antennae, all the tibiae and tarsi, the emora at the base and apex, ferruginous. Mandibles castaneous,

the margins black. Covered all over with a fine and close pubescence. The pilosity on the head and thorax very scanty, apical abdominal segment and clypeus with some longer yellowish-red hairs. Mandibles with short yellow hairs, very minutely striate and coarsely punctured, the apical tooth large. Head, thorax, and abdomen very finely and closely punctured. Head wider than the thorax, the sides convex, the posterior margin widely and rather deeply emarginate; including the mandibles the head is as long as the thorax. Clypeus raised but not projecting in the middle, excavated at the sides between the anterior margin and the antennal sockets. Frontal carinae nearly as wide in front as they are long. Antennae reach back as far as the petiole, flagellum gradually incrassate towards the apex, 1st joint slightly longer than the 2nd. Eyes moderately large, separated from the base of the mandibles by about their own length.

Pronotum, seen from above, one-third longer than the mesonotum, excluding the scutellum. Epinotum compressed at the base, widening and raised towards the declivity; the latter oblique but not descending abruptly from the dorsum. Petiole, seen from above, convex in front, with the posterior face concave in its lower half, vertical and shining, the upper half sloping slightly forwards. The anterior and posterior surfaces meet at the sides and above in a rather sharp edge. Ventral lamella produced into a blunt tooth pointing backwards. The abdomen is more shining than the rest of the body. Constriction between the 1st and 2nd segments almost obsolete. The 1st and 2nd segments sub-equal. Legs slender.

♀. 8-9 mm. Black; mandibles castaneous with the margins black. Antennae and all the tibiae and tarsi more or less ferruginous; femora dark reddish brown. Puncturation, pubescence, and pilosity as in the ♂. Head very little wider than the thorax and as long as the same, excluding the epinotum.

Pronotum as long as the scutellum. Epinotum wide, the dorsum very short or about two-thirds the length of the scutellum; the declivity very steep, rounded above, the lateral margins slightly prominent. Wings pale yellowish, nervures and stigma dark yellow. Otherwise like the ♂.

♂. 6-6.5 mm. Black; all the tarsi and last four joints of the flagellum brownish yellow; scape and basal portion of the flagellum brown; femora and tibiae at the extreme base and apex ferruginous. Pubescence similar to that of the ♀; a few long hairs on the scutellum, epinotum, and node. Mesonotum finely punctured laterally at the base; scutellum with very faint rugosity, the rest of

the body impunctate. Head and thorax shining, the abdomen more so, especially the pale apical margins of the segments.

Head square, not so wide as the prothorax, rounded posteriorly and feebly convex at the sides. Eyes rather prominent, occupying a little less than half the sides of the head. Clypeus rounded, the anterior margin depressed. Frontal carinae very short. Antennae filiform, reaching back as far as the petiole; scape two and one-third times as long as the 1st joint, and a little shorter than the 2nd joint of the flagellum.

Pronotum moderately exposed. Mesonotum with well-developed Mayrian furrows, and short, narrow, parapsidal sutures; separated from the very gibbous scutellum by a deep crenate impression. Epinotum as wide as the mesonotum behind the tegulae, sloping in a continuous curve from base to apex, so that there is no distinct dorsum. Petiole squamiform, very thin above, vertically truncate in front and behind, and seen from the front, apparently circular; seen under a high magnification, it is in reality of an angular outline and has a slight dorsal emargination. Ventral lamella produced into a large tooth, pointing backwards. Abdomen pyriform, in its widest part wider than the thorax. All the segments much wider than long. Pygidium angular but not spined. Legs slender. Wings hyaline, nervures and stigma pale yellow.

This is the commonest Ponerine ant around Bulawayo. A crateriform mound of fine earth generally surrounds the entrance to the nest, which is as often situated in the open as it is under stones. The economic value of this little species can hardly be over-estimated, since it is exceedingly plentiful and preys unceasingly on termites. It is, however, omnivorous, since it will eagerly collect bread-crumbs, insects of all sorts, and seeds of grass. Heaps of the latter are often found in the nests. (S.A.M., R.M., G.A. colls.)

SUB-GENUS TRACHYMESOPUS, Emery.

Genera Insectorum, Ponerinae, p. 84, 1911.

Characters.

♂ and ♀. Anterior margin of clypeus rounded or produced into a blunt and short point. Mandibles sub-triangular, with a distinct angle between the basal and masticatory margins; the latter usually furnished with only a few teeth. Maxillary palpi 4-jointed. First joint of flagellum distinctly longer and generally thicker than the following joint. Eye close to the anterior margin of the head. Mesonotum depressed, the surrounding suture not very deep. Tarsi

of the middle pair of legs short; the 1st joint of the tarsus with stout hairs or bristles on the dorsal surface.

♂. Abdomen with a distinct constriction between the 1st and 2nd segments. Pygidium produced into a sharp point.

E. (TRACHYMESOPUS) WROUGHTONI, Forel. (Plate II., fig. 18.)

Rev. Suisse Zool., vol. 9, p. 341, ♀ ♂, 1901.

♀. 5.5-5.3 mm. Head, thorax above excepting the mesonotum, petiole and dorsal portion of 1st and 2nd abdominal segments, dark brown. Mesonotum and ventral surface of abdomen reddish brown. Third, 4th, and 5th abdominal segments rusty yellow. The sides of the head castaneous. Antennae, mandibles, margins of pronotum, meso- and metapleurae and legs more or less ferruginous, the tarsi paler. Clothed all over with a fine golden pubescence. The pilosity consists of fairly long flavous hairs, evenly distributed. Head and thorax dull, abdomen slightly shining, declivity of epinotum and both faces of the petiole very shining.

Scape, head, and thorax very finely, closely and shallowly punctured. Abdomen exceedingly finely punctured. Neck of pronotum transversely rugulose. Head, excluding the mandibles, nearly quadrate or slightly longer than wide, sides moderately convex, posterior angles rounded, posterior margin shallowly emarginate. Clypeus short, sub-truncate anteriorly, raised and carinate in the middle. Mandibles finely striated, with a few coarse punctures on the masticatory margin, a long groove on the external margin, and an elongate fovea near the basal margin; the masticatory margin furnished with about 9 blunt teeth. Frontal carinae extend a little beyond the level of the posterior margin of the eyes. The latter small and flat, situated within the anterior third of the head, and separated from the anterior margin by a distance equal to their own length. Scape of antennae reaches back almost to the occiput; flagellum one-third longer than the scape; 3rd to 10th joints wider than long.

Pronotum rounded, with a distinct neck, and one and a half times as long as the mesonotum. The latter wider than long. Dorsum of epinotum round above; one and two-thirds as long as the mesonotum. The declivity rather steep, the margins slightly raised, especially above. Node of petiole in front convex from side to side, slightly concave dorso-ventrally, and concave behind. The summit a little flattened, the anterior and posterior faces do not meet laterally in such a sharp edge as in *sennaarensis*. The

constriction between the 1st and 2nd abdominal segments much stronger than in that species. Second segment a little longer than the 1st. Legs rather stout, and shorter than in *sennaarensis*.

"♂. 7-8 mm. Black; tarsi reddish brown; maxillary palpi 5-jointed. Mandibles rudimentary, without teeth. Antennae filiform; scape scarcely longer than broad; 1st joint of flagellum broader than long, 2nd joint very long and cylindrical. Head rounded, convex behind.

Pronotum exposed; scutellum gibbous. Dorsum of epinotum fairly long, distinct from the declivity. Node of petiole thick, subconical. First segment of abdomen small and short, the constriction between it and the following segment very strong, the other segments only feebly constricted. Sub-genital plate elongate and entire, pygidium produced into a long point. Wings brown. Sculpture and pilosity as in the ♀, but the mesonotum and scutellum are dull, with longitudinal striae."

Natal. (Wroughton.) Knysna. (Brauns.)
(G.A. coll.)

Var. *CRUDELIS*, Forel.

Loc cit.

"♀. 6-7 mm. Head larger, almost square, at least as wide as long, less contracted in front. The sides of the mesonotum have a dentiform angle on the anterior margin (less marked in the type). Dorsum of epinotum wider and shorter. Pilosity a little more abundant. Colour varies from a reddish testaceous yellow to a slightly reddish brown.

♂. Identical with the type form and of the same size."

Natal. (Haviland.)

GENUS *PONERA*, Latreille. (Emery, emend.)

Hist. Nat. Crust. Insect., vol. 13, p. 257, 1805. Emery, Ann. Soc. Ent. Belg., vol. 45, p. 41, 1901.

Characters.

♀. Head sub-elongate, sides slightly convex, wider behind than in front. Anterior margin of clypeus arcuate, or prolonged into a rounded lobe. Mandibles broad and triangular, with small teeth; maxillary palpi one- or two-jointed. Antennae clavate, with 5-jointed club, or only incrassate. Eyes small or absent. Mesoepinotal suture usually distinct. Node of petiole squamiform or thick.

♀. Very similar to the ♂, and winged. The eyes larger, and ocelli are present. The node of the petiole is generally higher and thinner than in the ♂.

♂. In some species the ♂ is ergatoid; in the ordinary winged form the scape is nearly always shorter than the 2nd joint of the flagellum. Mesonotum gibbous, overhanging the pronotum. Pygidium generally aculeate. The eyes and ocelli large. Node of petiole similar to that of the ♀.

The following key to the ♀♀ of the genus is admittedly imperfect, but may be better, I hope, than none at all. Our various species of *Ponera* are so small and so much alike that it is not easy to pick out differences between them which can be seized at a glance, so that, unreliable as colour differences often are, I have nevertheless preferred to use them here rather than base the key on subtle distinctions requiring a minute inspection with the aid of a high-power lens. As I have not seen a specimen of *P. coarctata*, race *boerorum*, Forel, and since that author's description is very meagre, it is not possible to include it in the key.

Key to the ♀♀ of Ponera.

- (2). 1. Black species *Dideroti*, Forel.
- (1). 2. Yellowish or reddish species.
- (4). 3. Larger, 3.7 mm. long, colour pale chestnut red, head finely but clearly punctured *speci*, Forel.
- (3). 4. Smaller, not more than 3 mm. long, puncturation of the head less obvious.
- (8). 5. Head, excluding mandibles, clearly at least one-quarter longer than wide.
- (7). 6. Head one and a quarter times as long as wide; 2nd abdominal segment wider than long *Gleadouri*, Forel.
- (6). 7. Head one and a half times as long as wide; 2nd abdominal segment longer than wide *Ragusae*, Em., r. *Bulawayensis*, Forel.
- (5). 8. Head, excluding mandibles, not obviously longer than wide, certainly less than one and a quarter times as long as wide.
- (10). 9. Dorsal surface of the node distinctly thicker in the middle than at the sides, or greatest thickness equals one-third of the width.
ergatandria, Forel, r. *cognata*, Sant-shi.
- (9). 10. Dorsal surface of node very little thicker in the middle than at the sides, or greatest thickness equals one-fifth of the width *dulcis*, Forel.

P. SPEI, Forel.

Ann. Soc. Ent. Belg., vol. 54, p. 423, ♀, 1910.

♀. 3.7 mm. Head, thorax, and node dark yellowish red, legs dirty yellow, abdomen rusty red, apex paler; the whole body

shining. Head finely and closely punctured, 1st and 2nd abdominal segments a little more coarsely punctured, thorax nearly impunctate. Covered all over with a fine and close grey pubescence, and with a few scattered and rather short pilose hairs on the thorax and abdomen. Head, excluding the mandibles, rectangular, and one-fifth longer than wide; the posterior angles widely rounded, the sides slightly convex, the posterior margin concave. Eyes very small, composed of four facets, situated in the anterior fourth of the head. Clypeus raised gradually towards the middle, the anterior half minutely sub-carinate on each side of the median line, and the anterior margin feebly bisinuate in the centre. Frontal carinae convergent posteriorly and very small. Mandibles smooth, shining and sparsely punctured; teeth very small. The scape reaches back as far as the occiput, flagellum one and a half times as long as the scape, incrassate towards the apex, 2nd-10th joints broader than long. Pro-mesonotal suture distinct, meso-epinotal much less so. Pronotum one-third wider and longer than the mesonotum. Pro- and mesonotum convex. Dorsum of epinotum convex transversely and widening towards the apex, where it joins the declivity in a gradual curve; declivity with the lateral margins slightly raised. Node of petiole twice as wide as long, rounded above and at the sides, vertically truncate behind and obliquely truncate in front. Ventral lamella of petiole produced into an obtuse point. Abdominal constriction moderate; abdomen a little longer than the thorax; 1st segment narrower in front than behind.

Natal. (Wroughton.) Algoa Bay. (Brauns.)
(G.A. coll.)

P. DIDEROTI, Forel.

Deutsch. Ent. Zeitschr. Beiheft, p. 203, ♀ ♀ ♂, 1913.

♂. 3 mm. Black, legs, antennae, and mandibles dark yellow. Pilose hairs absent except on the clypeus, covered scantily all over with a short pale pubescence. Microscopically punctured, sparsely and shallowly on the thorax and first two abdominal segments, more densely on the head and sides of epinotum. Head a little longer than wide, sides and posterior margin almost straight or only very feebly convex, posterior angles rounded. Clypeus raised in the middle but not carinate, anterior margin convex. Frontal carinae small, moderately angulated laterally in front. Eyes small, situated low down and far forwards, separated from the base of the mandibles by a distance equal to their own diameter. The scape

reaches back as far as the occipital margin, 1st joint of flagellum nearly twice as long as wide, as long as the two following joints taken together, 2nd joint not much wider than long, 3rd-10th joints decidedly wider than long, terminal joint as long as the two preceding together. Mandibles shining, sparsely punctured, masticatory margin with about 4 or 5 small teeth, the apical tooth well developed. Thoracic sutures well defined. Pronotum almost as long as wide, anterior margin convex, much narrower in front than behind. Mesonotum two-thirds as long as the pronotum; dorsum of epinotum flat, and as long as the declivity, the latter not very oblique, its sides slightly margined. Node of petiole convex from side to side in front, narrow above, vertical behind, and nearly so in front, quite twice as wide as long; ventral lamella produced into a convex projection at the base. 1st abdominal segment a little shorter than the 2nd, wider than long, the face of the 1st segment in front vertical, intersegmental constriction feeble.

♀. 3.7 mm. Eyes larger than in the ♂. Pronotum twice as wide as long; mesonotum two-thirds as long as the pronotum, dorsum of epinotum half as long as the pronotum, the declivity less oblique than in the ♂, and with the brow of the declivity obtusely emarginate. First and 2nd abdominal segments a trifle wider than long, 2nd segment a little longer than the 1st. Wings with a yellowish tinge, nervures very pale. Other characters as in the ♂.

♂. 3.6 mm. Black, legs, antennae, and apical segment of abdomen light brown. Clothed with a very sparse pale pubescence. Whole body shining. Head, thorax, and petiole very shallowly and finely punctured. The points of insertion of the pubescent hairs on the abdomen are so shallow that they can hardly be called punctures. Head sub-quadrate, excluding the clypeus, a little wider than long. The clypeus projects rather far forwards and is gibbous, the anterior margin obtusely angular in the middle. Mandibles truncated at the apex, the apices not meeting. Eyes very large, situated within the front half of the head. Ocelli small, placed on a very slightly raised area. Frontal carinae feebly developed, with a deep impressed line between them which reaches back as far as the anterior ocellus. Antennae filiform or only slightly thickened towards the apex; scape twice as long as the 1st joint of the flagellum, but not longer than the distance separating the two posterior ocelli. The antennae reach back as far as the brow of the epinotum. Pronotum short and exposed; mesonotum about one-third wider than long, anterior margin round, parapsidal furrows well defined, separated by a deep suture from the scutellum. The latter is

moderately gibbous, and half as long as the mesonotum. Dorsum of epinotum as wide as long, and as long as scutellum and metanotum together, the declivity very smooth and shining. Node of petiole like that of the ♀, but not so thick. Abdomen ovate, 1st segment as long as the 2nd, all the segments much wider than long.

Knysna. (Dr. H. Brauns.) (S.A.M., R.M., G.A. colls.)

P. RAGUSAE, Emery, race BULAWAYENSIS, Forel.

Emery, *Il Natural Sicil.*, 1895. Emery, *Mem. Accad. Sc. Bologna* (5), vol. v., pp. 292, 297, 1895. Forel, *Deutsch. Ent. Zeitschr. Beiheft*, p. 203, §, 1913.

♂. 2.4–2.8 mm. Reddish yellow. Antennae and body covered with a whitish pubescence, somewhat sparse on the head and thorax. Head and thorax dull, microscopically punctured. Head a little wider behind than in front, half as long again as wide, sides feebly convex or almost parallel-sided, posterior margin moderately concave, posterior angles rounded. Eyes absent. Mandibles triangular, masticatory margin with about 6 or 7 small teeth. Clypeus short, anterior margin obtusely angular in the middle. Frontal carinae broad and flat. Scape of antenna widened towards the apex, not reaching back as far as the occipital margin; the whole antenna reaches back as far as the base of the epinotum; flagellum clavate, 1st joint a little longer than wide, and as long as the three following joints taken together, 2nd–10th joints wider than long, last joint a little longer than the two preceding joints together and twice as long as wide. Thorax rather flat dorsally; pro-mesonotal suture distinct, meso-metanotal obsolete. Pronotum as wide as long, but narrower than the head, anterior margin and sides convex. Meso- and epinotum narrower than, and, taken together, one-quarter longer than the pronotum; declivity of the epinotum oblique, smooth and shining. Node of petiole seen from above sub-quadrate, the sides slightly convex, narrower in front than behind, a little wider than long, and not including the ventral lamella, only a trifle higher than thick; seen in profile, convex above from side to side, anterior and posterior faces vertically truncate; ventral lamella produced into a long keel, slightly nicked in the middle. Abdomen elongate, as long as thorax and petiole together. First segment as long as, or a little longer than wide, 2nd segment one-quarter longer than wide and longer than the 1st; the anterior face of the latter is vertically truncate, the brow rounded.

Bulawayo. (G.A. coll.)

P. ERGATANDRIA, Forel, race COGNATA, Santschi.

Forel, Trans. Ent. Soc. London, p. 365, 1893. Santschi, Ann. Soc. Ent. Belg., vol. 56, p. 153, 1912.

♂. 3 mm. Castaneous brown, head darker than the rest of the body, legs, antennae, clypeus, and mandibles brownish yellow. Clothed with a pale pubescence, very short on the head, and with pale pilose hairs on the 3rd-5th abdominal segments. Head very minutely and rather closely punctured, thorax less densely and much more shallowly punctured, a few large punctures on the mandibles, the rest of the body impunctate; the whole body nitidulous. Head, excluding the mandibles, nearly one-quarter longer than wide, sides moderately convex, posterior angles rounded, posterior margin feebly concave. The scape does not reach back to the posterior margin; the flagellum strongly incrassate towards the apex, the last 4 joints forming a club; 1st joint of flagellum as long as the three following joints taken together, 2nd-10th joints wider than long, apical joint as long as wide, and as long as the two preceding joints together. Clypeus not so short as in *Ragusae* or *dulcis*, raised in the centre and impressed transversely above the anterior margin, which is slightly produced. Frontal carinae short and converging posteriorly, separated by a faint impressed line reaching to the middle of the head. Mandibles triangular, shining, with about 6 small unequal-sized teeth on the masticatory margin, the apex ending in a sharp strong tooth. Eyes small, situated within the anterior fourth of the head. Pronotum only a little narrower than the head, one-third wider than long, very convex in front and at the sides. Mesonotum nearly round, as long as the pronotum, and a little wider than long. The profile of the dorsum of the thorax is almost straight, and the thoracic sutures quite distinct. Dorsum of the epinotum as long as the mesonotum, a little wider at the apex than at the base; the declivity is not so oblique as in *Ragusae* or *dulcis*. The node of the petiole is much thicker above than in those species, nearly twice as wide as long, and with the anterior and posterior faces vertical. Seen from above, the margins of the dorsal surface of the node are convex in front, straight behind and feebly convex at the sides. Abdomen elongate, as long as the thorax and petiole together; 1st and 2nd segments subequal, the constriction between them not very marked. Sting exerted.

Found in some numbers round the almost dried bones of a buried snake in which small white Poduridae abounded, and on which the ants were seen to prey.

Bulawayo. (S.A.M., R.M., G.A. colls.)

P. DULCIS, Forel.

Ann. Mus. Nat. Hung., vol. 5, p. 2, ♀, 1907.

♀. 2·7–3 mm. Brownish yellow, mandibles, antennae, and legs ochreous, abdomen yellowish brown. Thorax very shining, abdomen and head moderately so; head, scapes, and first two segments of abdomen microscopically punctured, elsewhere impunctate. A short pale sparse pubescence on the limbs and body, a little denser on the abdomen; the clypeus and apical abdominal segments with a few long pale pilose hairs. Head one-fifth longer than wide, slightly narrower in front than behind, sides convex, posterior margin almost straight, posterior angles rounded but distinct. Eyes small and black, situated within the anterior fifth of the sides of the head. Mandibles shining, triangular and with a few shallow punctures along the masticatory margin, which is feebly denticulate. Frontal carinae short, separated by a shallow impressed line which reaches back a little beyond the middle of the head. Clypeus short and similar to that of *P. Ragusae*. The antennae reach back as far as the brow of the declivity, the scape reaching a little beyond the occipital margin. Scape moderately, flagellum more strongly incrassate towards the apex. First joint of flagellum longer than wide, as long as the three following segments taken together; 2nd–10th joints wider than long, apical joint longer than wide, and a little longer than the two preceding segments together. Thorax narrower than the head. Pronotum a little wider than long, the sides and anterior margin convex, the dorsal surface rather flat. Pro-mesonotal and meso-epinotal sutures sharply defined. Mesonotum half as long as the pronotum, nearly round, and elevated slightly above the level of the latter. Dorsum of epinotum narrow, as long as the pronotum and sloping towards the brow of the declivity; the latter is oblique. Node of petiole squamiform; seen from in front it is semicircular above, and wider above the middle line than below it. The anterior face is almost vertical or with only a slight slope from below backwards, and is also feebly convex from side to side. The posterior face is vertical and concave dorso-ventrally. First segment of abdomen as long as the 2nd, both segments almost as long as wide. Intersegmental constriction feeble.

♀. (Hitherto undescribed.) 3·6 mm. Whole body reddish yellow, mandibles and anterior region of the head castaneous. Eyes black, very large, occupying more than one-quarter of the sides of the head. Pronotum nearly twice as wide as long, and very convex

in front. Mesonotum wider in front than behind, as wide as long, and twice as long as the pronotum. Scutellum ovoid transversely, one-third as long as the mesonotum. Dorsum of epinotum rather short, twice as wide as long, the declivity much less oblique than in the ♂: seen from in front, the brow of the declivity is feebly but distinctly concave from side to side. The node of the petiole is thinner above than in the ♂. Abdomen elongate, very nearly as long as head and thorax together. Deälated. Other characters as in the ♂.

Under stones, Bulawayo. (S.A.M., G.A. colls.)

P. GLEADOWI, Forel, race *AETHIOPICA*, Forel.

Type: Mem. Acc. Bolog. 5, p. 60, ♀, 1887. Race: Rev. Ent. Caen, vol. 26, p. 132, ♀, 1907.

♀. 2.5 mm. Head, thorax, and legs reddish yellow, the head somewhat redder; abdomen brown-yellow, the 1st and 2nd segments dark brown with the basal margins paler. This species is very similar to *spei*, from which it is clearly distinguished by the following characters.

Head much longer proportionately than in that species, one and a quarter times as long as wide. Eyes very minute; flagellum more incrassate. The clypeus has a bisinuate anterior margin as in *spei*, but is convex from side to side, and rather abruptly raised in the middle so as to form a sub-carinate hump below the frontal carinae. The epinotum is proportionately wider than in *spei*, and the declivity is not sub-margined laterally. The abdomen is impunctate.

Willowmore, Cape Prov. (Brauns.)

(G.A. coll.)

P. COARCTATA, Latreille, race *BOERORUM*, Forel.

Type: Bull. Soc. Philom. Paris, vol. 3, p. 65, ♀ ♀, 1802. Race: Rev. Suisse Zool., vol. 9, p. 339, ♀, 1901.

“♀. 2.4-2.8 mm. Yellow, slightly reddish, head more or less dark brown, thorax brownish red or yellow. Legs, mandibles, antennae, and abdomen always paler. Meso-metanotal suture very deep. The scape does not quite reach the occiput. Node of petiole very much as in the type form; the clypeus is shorter and the mandibles longer.

Natal, 1,600 metres above sea-level. (Haviland.)”

I have copied Forel's rather meagre description omitting only

some comparisons made between this race and some extra-ethiopian species.

GENUS PLECTROCTENA, Smith

Cat. Hymen. Brit. Mus., vol. 6, p. 101, 1858.

Characters.

♂. Clypeus very narrow, anterior margin straight, except above the base of the mandibles where it is shallowly emarginate; labrum very large. Mandibles long and narrow, with a deep sulcus from base to apex on the upper inner side; one large tooth below the middle, and a small and very obtuse one between that and the apex; the latter is obtuse. Frontal carinae large, slightly convergent behind, overhanging and apparently fused with the clypeus in front. Antennae incrassate gradually towards the apex. Eyes small, placed far forwards close to the base of the mandibles. Head much wider than the thorax. Thorax large, pro-mesonotal suture wide and deep, meso-epinotal suture slight or obsolete. Declivity of epinotum with the lateral margins raised into strong ridges. Constriction between the 1st and 2nd abdominal segments strong. Node of petiole thick, longer than broad. Inner calcar of middle and hind legs well developed, outer calcar absent.

♀. A winged ♀ is not known in *mandibularis*; in *subterranea*, Arnold, and *minor*, Emery, winged ♀♀ occur which are very similar to the ♂.

♂. Clypeus triangular; frontal carinae well developed but short and considerably raised. Antennae long, reaching back as far as the base of the 2nd abdominal segment; scape less than half the length of the 2nd joint of the flagellum, 1st joint of the latter very short, only one-third the length of the scape. Eyes moderately large, occupying less than half the sides of the head; ocelli not situated on a raised area. Pronotum exposed; Mayrian furrows on the mesonotum strongly marked; scutellum raised, pyramidal and grooved longitudinally. Declivity of epinotum with raised lateral ridges as in the ♂. Node of petiole higher than long. Abdominal constriction distinct. Pygidium bluntly pointed.

P. SUBTERRANEA, n. sp. (Plate III., figs. 23, 23a.)

♂. 7.5 mm. Castaneous red; all the joints of the flagellum, except the apical, reddish brown. Except in size, puncturation, colour, and dimensions of the eyes, this species is very similar to *mandibularis*. Pubescence entirely wanting except on the legs and

flagellum which bear a scanty microscopic pubescence. Pilosity also absent, except on the last two segments of the abdomen, the clypeus, mandibles and margins of the apical abdominal segments, which bear a few long golden hairs. The whole body very shining and polished, finely, evenly and sparsely punctured. The depressed areas behind the antennal sockets finely striate.

The head is parallel-sided, and nearly one-fifth longer than it is wide; in *mandibularis* the head is as long as wide and the sides are slightly convex. The scape of the antennae is only a little longer than half the head; the flagellum is as long as the head, all the joints except the apical wider than long, the apical joint as long as the three preceding together. The eyes are exceedingly small, less than 0.1 mm., slightly sunk below the surface, and composed of about 24 ill-defined facets. They are separated from the anterior margin of the head by a distance less than their own length. Mandibles as in *mandibularis*. Pro-mesonotal suture distinct, mesoepinotal entirely obsolete. Pronotum without a median longitudinal impression. The lateral margins of the declivity of the epinotum are raised into much stronger ridges than in *mandibularis*; the ridges are abruptly truncate above. Seen in profile, the thorax is much flatter dorsally than in *mandibularis*. The node of the petiole is not much narrower in front than behind, and the angular projection of the ventral lamella is truncate at the apex, otherwise like *mandibularis*. The 2nd abdominal segment is less globose, and the legs are stouter and shorter proportionately than in that species. The 1st and 2nd abdominal segments are distinctly longer than wide.

♀. 10 mm. Similar to the ♂ but winged, and with well-developed eyes, 0.3 mm. long, and three small ocelli. The colour of the head and thorax is darker than in the ♂. The mesonotum is a little wider than long, and two and a half times as long as the pronotum. The parapsidal sutures are deep and well defined only on the posterior half of the mesonotum. All the transverse thoracic sutures distinctly defined. The scutellum is half as long as the mesonotum. Dorsum of epinotum as long as the scutellum, with a feeble median impression at the extreme base. The projection of the ventral lamella of the petiole blunt, but not truncate at the apex as in the ♂. Other characters as in the ♂.

The single specimen of this sex was found alive and debilitated under a stone. Of the ♂ I have two specimens, one considerably damaged. The latter was taken dead on the rubbish-heap belonging to a nest of *Tetramorium Blochmanni*, Forel, r. *continentis*, Forel, and the other in a similar situation, and also dead, from the nest of

Pachycondyla Krügeri. From the very small size of the eyes in the ♀ sex, I am inclined to think that this ant leads an almost entirely subterranean existence. The presence of the dead ♀ ♀ on the rubbish-heaps of other ants is doubtless due to accidental intrusions into the galleries of the latter.

Bulawayo, 1 ♂, 1 ♀. Shiloh, S. Rhodesia, 1 ♂.
(S.A.M., R.M., G.A. colls.)

P. MANDIBULARIS, Smith.

Cat. Hymen. Brit. Mus., vol. 6, p. 101, ♂ ♂, 1858.

Var. MAJOR, Forel (= ergatoid ♀).

Mittl. Schweiz. Ent. Ges., vol. 9, p. 11, 1894.

♂. 14.5–16.5 mm. Black; flagellum, mandibles, outer angles of frontal carinae and tarsi piceous; apices of all the femora and tibiae castaneous; 2nd–5th abdominal segments at their extreme apical margins pale brown. Legs with a sparse and coarse golden pubescence, antennae with a close and finer pubescence. Anterior margin of clypeus and masticatory margin of mandibles with a few long golden-brown hairs. The margins of the abdominal segments, except the 1st, with a few short golden hairs. The rest of the body without pilosity or pubescence. Head, mandibles, scape and abdomen very shining. Head evenly and sharply punctured, the punctures being larger at the sides. Abdomen sparsely, evenly and finely punctured. Thorax duller than the head or abdomen, more closely and strongly punctured, the space between the punctures very finely striate. Node shining and as coarsely punctured as the thorax. Head, excluding mandibles, almost square, posterior angles rounded, posterior margin arcuately emarginate. The antennae reach back as far as the middle of the epinotum. Pronotum as long as the mesonotum, slightly flattened above, rounded at the sides and in front, with a central longitudinal impression broken in the middle. The scutellar region is slightly indicated by a shallow impression at the sides and behind. Dorsum of epinotum nearly as long as the mesonotum and with a feeble median longitudinal groove; declivity shining and microscopically punctured, the lateral margins raised into somewhat tumid ridges. Node of petiole convex from side to side in front, and above, the sides moderately convex, vertically truncate behind and nearly so in front, posterior angles fairly sharp but slightly rounded. Ventral lamella produced anteriorly into a wide angle.

First abdominal segment campaniform, 2nd segment longer than the 1st. Legs rather slender; anterior tarsi beneath clothed with dense, golden bristles. Sting short and blunt. For the rest, the characters of the genus.

♀. 20 mm. The large form which I regard as an ergatoid ♀, differs from the ♂ chiefly in size, but the head and abdomen are proportionately wider and longer. The longitudinal impression on the pronotum is shallower, while that of the dorsum of the epinotum is deeper and wider.

In a nest of three dozen or so individuals, not more than two or three of these large forms are to be found, and usually only one.

♂. 14.5 mm. Black; 3rd segment of abdomen piceous, last three segments ferruginous. A golden-grey pubescence on the whole body, excepting the last four abdominal segments. The margins of all the abdominal segments except the 1st carry a few golden hairs; elsewhere there is no pilosity. Head moderately shining, closely, finely and shallowly punctured, a little more coarsely in front and at the sides. Pronotum reticulate-punctate, the posterior margin transversely striate. Mesonotum rugosely punctate anteriorly, laterally sparsely and shallowly punctured, the space between the punctures rugulose. Scutellum and metanotum with very large reticulate punctures; epinotum rugose, coarsely at the sides, finely so above. Node of petiole shining above, closely punctured and dull at the sides. Abdomen microscopically rugulose, shallowly and very sparsely punctured, the punctures somewhat larger and more abundant on the 1st and 2nd segments.

Head wider than long, sides convex, occipital margin reflexed and forming a small collar. Clypeus widely emarginate; frontal carinae short, raised above the antennal sockets; frontal sulcus extends back as far as the anterior ocellus. Antennae filiform, reaching back as far as middle of 1st abdominal segment. Mandibles short, edentate and blunt at apex. Prothorax produced neck-like in front. Mesonotum with well-developed Mayrian furrows and an elongate median triangular area in front, which is shining and impunctate. Scutellum pyramidal, with a large longitudinal sulcus, and separated from the mesonotum by a coarsely crenate impression. Metanotum with a short central carina. Declivity of epinotum deeply excavated, transversely rugose; the lateral margins ridged as in the ♀. Node of petiole sub-globose seen from above; seen from the side the dorsal portion is convex, the posterior face vertical, the anterior face almost so; ventral lamella produced at the extreme base into a triangular tooth pointing downwards. Seen from above the

shape of the node is distinctive, the base being emarginate with small lateral angles, behind which on each side lies a flattened projection. The node of the petiole is only half as wide as the 1st abdominal segment. The latter is nearly as long as wide, sub-campaniform, and separated from the 2nd segment by a well-marked constriction. The 2nd segment is two-thirds wider than long, the sides slightly convex. Abdomen as long as thorax and petiole together. Pygidium narrowly truncate. Legs slender. Wings sub-hyaline, somewhat darker towards the apex, stigma brown, nervures pale brown; 2 sub-marginal cells, radial cell lanceolate.

This species is fairly generally distributed. Specimens from Willowmore and Grahamstown are rather small, but otherwise agree with the type. They are intermediate in size and puncturation between the type form and the smallest form which I have received from Durban. The entrances to the nest are generally indicated by large heaps of earth. The chambers are placed deep below the surface, seldom less than 2 feet, and the number of individuals seldom exceeds 50. It is a sluggish and timid ant, the workers foraging singly. The food includes termites, but consists chiefly of millipedes and beetles.

(S.A.M., R.M., and G.A. colls.)

Var. *STRIGOSA*, Emery.

Ann. Soc. Ent. Belg., vol. 43, p. 469, ♂, 1899.

This differs from the type form in having the dorsal surface of the head, thorax and 1st segment of abdomen finely and regularly striate, longitudinally so on the head and thorax, transversely on the petiole, concentrically on the 1st abdominal segment and slightly so on the 2nd. The petiole is a little shorter than in the type form. Natal.

TRIBE LEPTOGENYINI, Forel.

Characters.

♂ and ♀. Mandibles articulated near the anterior angles of the head; abdominal constriction between the 1st and 2nd segments feeble. Claws pectinate.

♂. Claws pectinate.

GENUS LEPTOGENYS, Roger (Forel).

Berlin Ent. Zeitschr., vol. 5, p. 12, 1861 (*s. stricto*); Jahrb. Hamburg Wiss. Anst., vol. 10, p. 6, 1893 (*s. latiore*).

Characters.

♀. Clypeus usually carinate, and produced in the middle anteriorly as a lobe or small platform. Mandibles linear or triangular with the masticatory margin dentate, or narrow and edentate. Antennae generally filiform. Meso-epinotal suture usually distinct.

♀. It is probable that all the ♀ ♀ of this genus are ergatoid.

♂. Claws pectinate, thereby differing from the ♂ ♂ of all other Ponerinae. Scape short. Mensonotum with well-defined Mayrian furrows.

This genus is divided into 4 sub-genera, of which the two following alone are represented in our region.

1. Mandibles very elongate, crossing each other only slightly and enclosing a large space between them and the clypeus; linear and acute, or ending in two small teeth placed close together *Leptogenys*, Roger.
2. Mandibles triangular, dentate, or narrow and with a terminal tooth; in the latter case they are much shorter than in *Leptogenys*, and do not enclose a large space in front of the clypeus *Lobopelta*, Mayr.

SUB-GENUS LEPTOGENYS, Roger.

Berlin Ent. Zeitschr. vol. 5, p. 12, 1861.

Key to the ♀ ♀ of Leptogenys, s. str.

- (2). 1. Body entirely dull, covered with a pruinose pubescence . . *marillosa*, Smith.
- (1). 2. Body without any pruinose pubescence.
- (8). 3. Whole body shining.
- (7). 4. Node of petiole seen in profile, quadrant-shaped, seen from above much wider behind than in front.
- (6). 5. Head wider at the anterior margin than it is across the eyes. 10-11 mm. *Stuhlmanni*, Mayr.
- (5). 6. Head not wider at the anterior margin than it is across the eyes, 9.5 mm. *Schurabi*, Forel.
- (4). 7. Node of petiole seen in profile, not quadrant-shaped, seen from above only a little wider behind than in front, 4.7 mm. *Ferrarii*, Forel.
- (3). 8. Body dull, except the posterior portion of the abdomen, 5.5 mm. *cribrata*, Emery.

L. MAXILLOSA, Smith. (Plate III., fig. 24.)

Cat. Hymen. Brit. Mus., vol. 6, p. 93, ♀ ♂, 1858.

♀. 6-6.5 mm., excluding the mandibles. Black; antennae, mandibles (except the extreme base which is piceous), femora, tibiae

and apical segment of abdomen reddish brown; the coxae piceous, the tarsi dark red. The whole body covered with an exceedingly fine pruinose pubescence, similar to that of the *Platythyreini*; there are a few long hairs on the clypeus, and the apical segment of the abdomen is densely clothed with moderately long golden hairs. Head, scape of antenna, thorax, femora, tibiae, petiole, 1st and 2nd abdominal segments microscopically rugulose, and excepting the antennae and legs closely punctured with small, shallow punctures; the 3rd and 4th abdominal segments very finely punctured. Head trapezoid, wider in front than behind, posterior margin slightly emarginate, posterior angles very round. The eyes occupy a little more than one-quarter of the sides of the head, and are placed far forwards and separated from the base of the mandibles by less than their own length. Clypeus shining and coarsely punctured, the anterior margin membranous and translucent, with a feebly crenate depression just in front of the membranous area; the median portion very slightly raised, not carinate, projecting backwards between the frontal carinae. The latter are narrow, not divergent behind, separated along their posterior half by a narrow sulcus which is continued back to about the level of the middle of the eyes. Antennae reach back as far as the base of 1st abdominal segment, the scape reaches back as far as the middle of the pronotum. Mandibles very long, linear, acute at the apex, finely striate and shining. Pronotum about as long as wide, rounded in front, sides moderately convex. Pro-mesonotal suture distinct. Mesonotum hardly more than half as wide as the pronotum, and considerably less than half as long. Dorsum of epinotum widening towards the declivity and as long as the pro- and mesonotum together; declivity shallowly excavated, the lateral margins raised. Node of petiole sub-quadrate, very slightly wider than long, rounded above, vertical in front and behind; ventral lamella bluntly produced at the extreme base. Abdomen elongate, 1st segment as high as, and one-third wider than the node, spinously produced below at the base; 1st and 2nd segments sub-equal, their apical margins narrowly ferruginous.

"♂. $2\frac{3}{4}$ lines. Black and slightly shining, finely punctured; eyes and ocelli very large, the latter glassy bright and very prominent; the legs and antennae fusco-ferruginous; the antennae towards their apex, the articulations of the legs, the tarsi and tip of abdomen ferruginous; wings fusco-hyaline; abdomen and node of peduncle as in the female (= worker)."

I have not seen any ♂♂ of this species, and have therefore copied Smith's very scanty description. It is not a common species; the

colony is rather large as a rule, comprising as many as four or five dozen individuals.

(S.A.M., R.M., G.A. colls.)

L. CRIBRATA, Emery.

Ann. Soc. Ent. France, vol. 63, p. 20, ♂, 1895.

"♂. 5-5.5 mm. Picceous; clypeus, antennae, legs and apical segment of abdomen rufescent, dull, abdomen posteriorly and below shining, very densely and finely punctulate all over, with a scanty pubescence and fine pilosity; mandibles linear, acuminate; node of petiole thick, convex above, truncate in front and behind.

Vryburg, Bechuanaland."

"This species is remarkable chiefly by its sculpture; the whole body is finely and closely punctured, the head being entirely dull; the thorax and abdomen are slightly shining, especially the posterior portion and ventral surface of the latter; the legs and antennae are also punctulate and almost dull. The sides and posterior portion of the head are plentifully punctured, the thorax with larger punctures; the punctures become gradually smaller on the petiole and abdomen, being simply piligerous points on the posterior segments. The head is nearly square or slightly narrower behind than in front, the eyes large, situated in front of the middle of the sides of the head and separated from the base of the mandibles by less than the length of their own diameter. The clypeus is widely lobate, round and with a membranous margin. Mandibles narrow, linear, arcuate near the base, then straight and again curved near the apex, which is acute. Thorax relatively stout, the epinotum as long as the pro- and mesonotum together; the meso-epinotal suture deep; the declivity of the epinotum has the same sculpture as the rest of the thorax, and the lateral margins are raised. Petiole seen from the side, nearly as wide as high, sharply truncate and smooth behind, convex and rugose above and in front; seen from above, hardly wider than long, and slightly narrower in front than behind."

L. STUHLMANNI, Mayr.

Jahrb. Hamburg Wiss. Anst., vol. 10, 2, p. 6, ♂, 1893. Forel, Rev. Ent., p. 131, ♂, 1908.

"♂. 10-10.6 mm. Black or brownish black, the scape brown, the mandibles, flagellum, and apex of abdomen lighter, the legs reddish brown or lighter. The whole body is covered with an erect

pilosity; pubescence wanting except on the flagellum and tarsi. Mandibles nearly smooth, with here and there some indistinct longitudinal striae and pilose punctures, moderately long, narrow, with a distinct and very oblique masticatory margin at the apex, which ends in a curved pointed tooth. When the mandibles are closed there is a large space between them and the clypeus. The head is smooth, with sparse and shallow pilose punctures, somewhat stronger on the sides of the head; the latter is of a reversed trapeze shape, being much wider in front than behind, and also wider there than across the eyes. Clypeus short, sharply carinate, with striae on each side of the carina which extend back a short distance between the antennal sockets and the base of the mandibles; the carina is produced in front to form a short and rather indistinct projection or snout, which is almost wider than long. On each side of the projection the anterior margin of the clypeus is curved slightly S-shaped. The eyes are nearer the base of the mandibles than the posterior angles of the head. The lower margin of the mouth is without a small tooth. All the joints of the flagellum longer than wide, the 2nd joint nearly twice as long as the 1st. The pronotum is more or less coarsely but shallowly strigose, with a few large shallow punctures at the side; the mesonotum, which is similarly sculptured, is as long as wide, fairly round, and slopes backwards in such a way that the pro- and mesonotum together form a curve, moderately bowed from front to back. The thorax is not deeply constricted between the meso- and epinotum. The latter is long, about as long as the pro- and mesonotum together, and its dorsum rises gradually backwards and then falls rather abruptly towards the rounded boundary between it and the declivity; the dorsum is irregularly rugose, the declivity coarsely and transversely striate; the sides of the meso- and epithorax are obliquely striate.

The node of the petiole is finely wrinkled and sparsely punctured; it is longer than wide, much wider and higher behind than in front, the posterior face vertical, flat and transversely striate. The abdomen is almost smooth, barely constricted between the 1st and 2nd segments. Legs long and thin, the claws distinctly pectinate. Quillmane."

Durban.

The male of the type form is not known, but since the male sex usually varies but little in sub-species and varieties, it may be of some assistance to the student to be able to refer to the description by Forel of the race *erythraea*, Emery, which is herewith appended.

"*Stuhlmanni*, race *erythraea*, Emery.

♂. 9.5 mm. Mandibles very wide at the base, attenuating abruptly to the apex, and curved inwardly. Clypeus broad and carinate, with a short and rounded lobe anteriorly. Head one and a half times longer than wide, narrowed behind the eyes and raised collar-like at the articular margin. The pronotum extends considerably in front of the mesonotum (*i.e.*, not depressed below the latter). Mesonotum with two deep convergent furrows; it is feebly convex in front and behind. Seen from the side, the node of the petiole forms almost an equilateral triangle, obtuse and rounded above. Sculpture, pilosity and colour as in the ♀, but the head is smoother and the metanotum (epinotum) more hairy. Wings with a slight rusty tinge. Bourka, South Africa."

I have met with this species only in Natal, where it appears to feed exclusively on woodlice; the entrance to the nest can be plainly distinguished by the accumulation of the remains of their prey, bleached a dead white, scattered around it. The nest is not indicated by any mound or other accumulation of earth; but in the neighbourhood of Durban at least, it is very frequently found in, or immediately adjacent to the nests of *Myrmecaria eumenoides*, Gerst. I am inclined to think that this *Leptogenys* dispossesses the latter species of a part of their large nest, rather than take the trouble of excavating one for itself. It also has a very noticeable smell, resembling essence of pears. (S.A.M., R.M., G.A. colls.)

L. SCHWABI, Forel.

Deutsch. Ent. Zeitschr. Beiheft, p. 208, ♀, 1913.

♀. 9.6 mm. Very similar to *Stuhlmanni*. Black, mandibles, flagellum, extreme base and apex of scape, the tarsi and apex of abdomen more or less ferruginous, the clypeus, tibiae and femora piceous. Whole body very smooth and shining, sparsely covered with long yellowish or golden hairs, which arise from very small punctures. Puncturation otherwise wanting. Pubescence entirely absent. The mesonotum is transversely and shallowly strigose above, obliquely so at the sides; the epinotum is also transversely strigose above, but more strongly so than the mesonotum, especially over the brow of the declivity. The sides of the epinotum obliquely striated.

Head a little longer than it is wide in front, much wider in front than behind, but at the anterior margin it is not wider than across the eyes. The latter large, situated a little in front of the middle of the sides. Clypeus like that of *Stuhlmanni*, but the apex not pro-

duced so much in the middle. Mandibles long, longer than the head, shining, sparsely punctured, the apical portion a little wider than the rest, and concavely excised so as to form a distinct tooth at the apex. Antennae long, reaching back as far as the base of the 2nd abdominal segment, the scape reaching back as far as the posterior margin of the mesonotum; 2nd joint of the flagellum nearly twice as long as the 1st, all the joints cylindrical and much longer than wide. Thorax similar to that of *Stuhlmanni*, but the pronotum is smooth, and the epinotum more strongly strigose. The rest of the characters similar to those of *Stuhlmanni*. In both these species the node of the petiole seen from the side is approximately quadrant-shaped, the curvature being anterior and dorsal.

Bulawayo.

This species is crepuscular or nocturnal, and preys on termites. I have never seen it about during daylight.

(S.A.M., R.M., G.A. colls.)

L. FERRARI, Forel.

Deutsch. Ent. Zeitschr. Beiheft, p. 209, ♂, 1913.

♂. 4.7 mm. Brownish black, mandibles, clypeus, antennae, legs and apex of abdomen ochreous red. Very similar to *Lobopelta nitida* and *castanea*, but owing to the structure of the mandibles, this species is a true *Leptogenys*, s. str. Legs and body covered with short, yellow, semi-erect hairs, longer on the petiole and abdomen. Smooth and shining. Head very finely and somewhat sparsely punctured. Thorax with large and shallow irregular punctures; at the sides and on the node these punctures are very elongated, almost forming short grooves. The declivity of the epinotum strongly and transversely striate.

Head longer than wide, a little wider in front than behind, the sides and posterior margin moderately convex. Clypeus with a sharp median carina, which, seen from the side, projects at the apex distinctly beyond the level of the mouth. Mandibles smooth, shining, sparsely punctured, shorter than the head, curved feebly from the base to the apex, a little broader near the apex, with a very short but distinct masticatory margin. Eyes moderately large, situated just in front of the middle of the sides of the head. Scape not extending much beyond the occipital margin, about two-thirds as long as the flagellum; 7th-9th joints as wide as long, the rest longer than wide, 1st joint as long as the 2nd.

Pronotum convex in front and above, wider than the rest of the

thorax and wider than long; mesonotum wider than long. Pro-meso, and meso-epinotal sutures well defined; epinotum as long as the pro- and mesonotum together, widening a little towards its apex, convex from side to side above; the declivity rather short, very steep but not vertical. Node of petiole sub-quadrate, a little wider behind than in front, and a little wider behind than it is long, anterior and posterior faces vertical, but the former rounded at the brow; the dorsal profile of the node slopes down from behind to the front. First abdominal segment as long as the 2nd, both segments a little wider than long; intersegmental constriction weak.

Bulawayo. (G.A. coll.)

SUB-GENUS LOBOPELTA, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 12, p. 733, 1862.

Characters.

♀. Mandibles triangular and dentate, or narrow and with an apical tooth; in the latter case the mandibles are much shorter than in *Leptogenys* and do not enclose a large space in front of the clypeus. Clypeus usually with a pointed or carinate lobe, or with a tooth on each side of the middle.

♀. Ergatoid.

♂. Not distinguishable from that of *Leptogenys*.

Key to the ♂ & ♀ of Sub-genus Lobopelta.

- (10). 1. Black species.
- (9). 2. Node of petiole as long as, or only slightly longer than wide.
- (4). 3. Impunctate or nearly so; dorsum of epinotum very smooth. *nitida*, Smith.
- (3). 4. Punctuation distinct; dorsum of epinotum more or less strigose.
- (6). 5. Pronotum distinctly punctured *Peringueyi*, Forel.
- (5). 6. Pronotum not punctured, but rugose.
- (8). 7. Node of petiole a little wider than long; 8th-10th joints of flagellum wider than long *Arnoldi*, Forel.
- (7). 8. Node of petiole longer than wide; 8th-10th joints of flagellum longer than wide *Harilandi*, Forel.
- (2). 9. Node of petiole two and one-third times as long as it is wide posteriorly. *attenuata*, Smith.
- (1). 10. Reddish yellow or castaneous species.
- (12). 11. Larger species, 4-4.5 mm.; scape of antenna impunctate. *nitida*, Smith.
- (11). 12. Smaller species, less than 4 mm.; scape of antenna finely but distinctly punctured.
- (14). 13. Head almost quadrate, only slightly longer than wide . . *parva*, Forel.
- (13). 14. Head distinctly longer than wide *castanea*, Mayr.

L. (LOBOPELTA) HAVILANDI, Forel.

Rev. Suisse Zool., vol. 9, p. 332, ♀, 1901.

"♀. 6.5 mm. Mandibles narrow, slightly broader towards the apex, the apical margin forming a cutting, edentate edge, concave, curving into the inner margin, smooth and punctured. Head sub-rectangular, hardly longer than wide, wider in front than behind, with posterior margin and angles rounded; the posterior margin is confluent with the straight articular margin. Eyes large and flat and situated a little in front of the middle of the sides. Lobe of clypeus triangular, short, obtuse and rounded at its median point, margined in front along its whole length by a whitish edge. The scape reaches beyond the occiput by about one-quarter of its own length. Thoracic sutures distinct. Dorsum of epinotum as long as the pro- and mesonotum together. A narrow but deep sulcus between the meso- and epinotum. Node of petiole sub-cubic, slightly longer than wide, wider behind, posterior face vertically truncate and at least one and a half times as high as the anterior face, which is also truncate. Abdomen elongate, constriction between 1st and 2nd segments distinct. The 1st segment is not wider, perhaps even narrower than the 2nd. Head densely and strongly punctured, almost dull, except the clypeus which is longitudinally striate. Thorax and node fairly dull, very irregularly and rather coarsely rugose, finely reticulate between the rugosities. Abdomen smooth, with a few coarse irregular punctures, especially on the apical margin of the 1st segment. Legs and scapes finely punctured. Anterior and posterior faces of the node and anterior face of the 1st abdominal segment smooth and shining. Pilosity erect, yellow and fairly dense all over, somewhat oblique, longer on the abdomen, short and scanty on the legs. Pubescence scanty on the body, abundant on the legs. Black; mandibles, antennae, legs and apex of abdomen reddish brown. Natal. (Haviland.)"

L. (LOBOPELTA) PERINGUEYI, Forel.

(*L. Havilandi*, race *Peringueyi*), Deutsch. Ent. Zeitschr. Beiheft, p. 210, ♀, 1913.

Similar in general features to *L. Havilandi*, but smaller and with entirely different sculpturation and differently shaped head and mandibles. Dr. Forel treats it as a race of *Havilandi*, but in view of the marked differences, I have adopted the suggestion made in his description that it should perhaps be treated as a distinct species.

♀. 6 mm. Black, mandibles, legs, flagellum and apex of

abdomen brown, tarsi and joints of legs brownish red. Very sparsely pilose and pubescent, the pilose hairs yellowish and very short. Whole body moderately shining, clearly but not densely punctured, the punctures being sharply defined but not deep; the sides of the meso- and epinotum obliquely punctate-striate.

Head a little longer than wide, as wide behind as in front (in *Havilandi* it is much narrower behind than in front), posterior angles considerably rounded, sides and posterior margin moderately convex. Clypeus strongly carinate in the middle, more so than in *Havilandi*, and more acute at the apex. Mandibles smooth, with a few coarse punctures, widening towards the apex, which has a masticatory margin not so distinct as in *Havilandi*, ending in a small tooth below. The eyes are smaller than in *Havilandi* and are placed within the anterior half of the head. The scape extends back beyond the occipital margin, but is not so long as in *Havilandi*; the 1st joint of the flagellum is very little longer than the 1st or 3rd (nearly twice as long as the 1st in *Havilandi*). The thorax is more constricted in the middle, and the pro- and mesonotum and the dorsum of the epinotum are more convex. The node of the petiole as long as wide behind, more convex above and not so sharply truncate in front and behind, and not quite so long as in *Havilandi*. It is also less sharply margined behind than in that species.

Table Mountain. (Dr. L. Péringuey.) (S.A.M., G.A. colls.)

L. (LOBOPELTA) ATTENUATA, Smith.

Cat. Hymen. Brit. Mus., vol. 6, p. 91, ♀, 1858.

♀. 8 mm. Black; mandibles, scape, apical segment of abdomen and tarsi yellowish brown; flagellum and extreme base of scape dark yellow; apical margins of 1st and 2nd abdominal segments, the whole of the 3rd and 4th segments, all the coxae and the petiole piceous red. The sides of the head and the pleurae have in some lights a bluish reflection. A scanty and short greyish pilosity on the body and legs; flagellum and tarsi pubescent. Impunctate. Head wider in front than behind, longer by nearly one-third than it is wide, sides convex, posterior margin strongly emarginate, posterior angles acute. Clypeus broadly triangular, with a sharp and narrow median carina; anterior margin slightly produced and pointed in the middle, finely and longitudinally striate. Frontal carinae very short and narrow; frontal sulcus narrow, deep, and extending back to about the level of the anterior margin of the eyes. The latter are large, convex, and situated a little in front of the middle of the sides. Antennae long; scape extends beyond the occiput by one-third of

abdomen brown, tarsi and joints of legs brownish red. Very sparsely pilose and pubescent, the pilose hairs yellowish and very short. Whole body moderately shining, clearly but not densely punctured, the punctures being sharply defined but not deep; the sides of the meso- and epinotum obliquely punctate-striate.

Head a little longer than wide, as wide behind as in front (in *Havilandi* it is much narrower behind than in front), posterior angles considerably rounded, sides and posterior margin moderately convex. Clypeus strongly carinate in the middle, more so than in *Havilandi*, and more acute at the apex. Mandibles smooth, with a few coarse punctures, widening towards the apex, which has a masticatory margin not so distinct as in *Havilandi*, ending in a small tooth below. The eyes are smaller than in *Havilandi* and are placed within the anterior half of the head. The scape extends back beyond the occipital margin, but is not so long as in *Havilandi*; the 1st joint of the flagellum is very little longer than the 1st or 3rd (nearly twice as long as the 1st in *Havilandi*). The thorax is more constricted in the middle, and the pro- and mesonotum and the dorsum of the epinotum are more convex. The node of the petiole as long as wide behind, more convex above and not so sharply truncate in front and behind, and not quite so long as in *Havilandi*. It is also less sharply margined behind than in that species.

Table Mountain. (Dr. L. Péringuey.) (S.A.M., G.A. colls.)

L. (LOBOPELTA) ATTENUATA, Smith.

Cat. Hymen. Brit. Mus., vol. 6, p. 91, ♀, 1858.

♀. 8 mm. Black; mandibles, scape, apical segment of abdomen and tarsi yellowish brown; flagellum and extreme base of scape dark yellow; apical margins of 1st and 2nd abdominal segments, the whole of the 3rd and 4th segments, all the coxae and the petiole piceous red. The sides of the head and the pleurae have in some lights a bluish reflection. A scanty and short greyish pilosity on the body and legs; flagellum and tarsi pubescent. Impunctate. Head wider in front than behind, longer by nearly one-third than it is wide, sides convex, posterior margin strongly emarginate, posterior angles acute. Clypeus broadly triangular, with a sharp and narrow median carina; anterior margin slightly produced and pointed in the middle, finely and longitudinally striate. Frontal carinae very short and narrow; frontal sulcus narrow, deep, and extending back to about the level of the anterior margin of the eyes. The latter are large, convex, and situated a little in front of the middle of the sides. Antennae long; scape extends beyond the occiput by one-third of

its own length; flagellum filiform, all the joints much longer than wide, 2nd joint two-thirds longer than the 1st. Mandibles shallowly punctured and shining, slightly widening from the middle to the apex, masticatory margin edentate and rather long. Pronotum slightly longer than wide, rounded above, in front and at the sides. Mesonotum rectangular, flat, longer than wide; pro-mesonotal and meso-epinotal sutures distinct. Dorsum of epinotum almost as long as pro- and mesonotum together, very narrow at the base, widening towards the brow of the declivity; the latter is very short and has a small angular projection above on each side. Node of petiole seen from above, two and a third times as long as wide, widest behind and strongly compressed laterally; seen from the side the node is almost triangular, the posterior margin vertically truncate, the dorsal profile from the base to the upper margin of the posterior face convex. The posterior face is smooth and shining. Ventral lamella angularly produced at the extreme base. The constriction between the 1st and 2nd abdominal segments is not deep. First segment campaniform, with a sharp angular projection at its base below, at the junction with the petiole. Fourth and apical segments strongly compressed laterally. Legs long and slender.

Algoa Bay. (Brauns.) Durban.

♂. 7 mm. (hitherto undescribed). Colour and pubescence as in the ♀, with the antennae entirely ferruginous. Whole body shining, head with a few small punctures between the eyes and antennal sockets, prothorax smooth and impunctate, mesonotum with a few large shallow punctures, epinotum transversely striate. Head a little longer than it is wide across the eyes. The latter large, occupying more than half the sides of the head and separated from the base of the mandibles by a distance equal to the length of the 1st joint of the flagellum. Antennae filiform, reaching back as far as the base of the 3rd abdominal segment; scape three and a quarter times as long as the 1st joint, 2nd joint of flagellum one and a half times as long as the scape. Clypeus long, sub-carinate medially, the anterior margin produced into a pronounced beak in the middle. Mandibles ochreous, oblong, rounded at the apex and edentate. Pronotum exposed, quite twice as wide as long; mesonotum a quarter longer than wide, the Mayrian furrows wide and well defined. Epinotum as long as the mesonotum, longer than wide, widest at the base and narrowing towards the apex, and three times as long as the declivity. The latter is oblique, margined above and at the sides, the margins produced at each side above into short blunt angles. Node of the petiole as in the ♀, but a trifle wider at

the base above. The constriction between the 1st and 2nd abdominal segments quite as distinct as in the ♀. Legs long and slender. Wings fuscous, stigma, and nervures yellowish brown.

Durban. (C. B. Cooper.) (S.A.M., R.M., G.A. colls.)

L. (LOBOPELTA) ARNOLDI, Forel. (Plate III., figs. 27, 27a, 28.)

Ann. Soc. Ent. Belg., vol. 57, p. 110, ♂ ♂, 1913.

♂. 6.3 mm. Black; extreme apex of abdomen piceous, mandibles, flagellum, base of scape, basal half of tibiae, and tarsi reddish brown. Head shining, thorax and petiole slightly dull, abdomen very shining and impunctate. Head closely and finely punctured, especially at the sides, very finely striate in front between the clypeus and the eyes. Median dorsal portion of pro- and mesonotum shining and impunctate, the sides of the same, the pleurae, epinotum and the node very finely rugulose and dull. The declivity of the epinotum strongly and transversely rugose. Legs and antennae with an inconspicuous and sparse pubescence. The whole insect covered with long, oblique yellowish hairs, which are denser and longer on the clypeus and abdomen. Head a little longer than wide; including the mandibles, somewhat oval. Clypeus triangular, carinate in the middle, the anterior margin narrowly membranous. Frontal carinae narrow. Mandibles shining and sparsely punctured; they are wider towards the apex than at the base, convex above from base to apex and also on the external margin; the masticatory margin is crenate, joining the inner margin in a gradual curve, the apex acuminate. Eyes large, convex, and situated at the middle of the sides of the head. The antennae reach back as far as the base of the abdomen, the scape is rather flattened dorso-ventrally, the flagellum slightly incrassate towards the apex, 8th to 10th joints wider than long. Thoracic sutures distinct; pronotum as long as wide, mesonotum quadrate, margined all round by a distinct sulcus. Dorsum of epinotum not quite as long as the pro- and mesonotum together, wider at the apex than at the base; declivity rather abrupt, triangular in outline and with strong transverse striae. Node of petiole sub-cubic, very slightly wider than long, rounded above and at the sides, vertically truncate behind and in front, and wider behind than in front. First abdominal segment convex at the sides, shorter than the 2nd segment, the constriction between the two distinct. Apical segment slightly compressed laterally. First segment produced at the base ventrally into a blunt tooth.

♀. Ergatoid (hitherto undescribed). 9 mm. Abdomen, 4 mm. long, 1st segment 1.5 mm. wide. This differs from the ♂ by its

size and the proportionately longer abdomen. It is also a duller insect, which is due to the denser pilosity, especially on the abdomen which has a short pubescence intermixed with the pilosity. The mesonotum is also larger and longer than in the ♀.

♂. 8-8.5 mm. Black; apex and base of scape pale ferruginous, flagellum ochreous, the last five joints fuscous above; tarsi reddish yellow, and all the tibiae and femora ferruginous at the base and apex. Head almost impunctate, anteriorly slightly rugulose. Thorax and petiole very finely rugulose, the epinotum reticulate. Abdomen shining and impunctate. A fine grey pubescence on the whole body, longer and sparser on the abdomen, more abundant on the sides of the thorax, very inconspicuous elsewhere. Head, thorax, and sides of petiole dull, disc of metanotum, apex of node and the whole abdomen shining. Head lozenge-shaped, widest behind the eyes, narrow in front and more so behind. Clypeus gibbous in the middle, anterior margin convex. Frontal carinae obsolete. Mandibles considerably atrophied, represented by a spatulate yellow appendage, hardly larger than one of the ocelli. Eyes large, oval, situated at about the middle of the sides of the head; ocelli well developed, not situated on a raised area. Scape short, not extending beyond the posterior margin of the eyes, widest at the apex, twice as long as wide. First joint of flagellum as wide as long, 2nd joint one and a third times as long as the scape, all the joints flattened dorso-ventrally, especially the last five joints which are spirally curved. Pronotum exposed, the anterior free margin reflexed. Pro-mesonotal suture well defined. Mesonotum rounded at the sides, depressed above, separated from the scutellum by a distinct but narrow sulcus; mesonotum including the scutellum, almost three times as long as the pronotum. Epinotum as long as the mesonotum, the dorsum continuous with the declivity in a gradual curve; the declivity transversely striated. Node of petiole as long as wide, thicker above than below, obtusely and obliquely truncate in front and behind, sides convex. The node is less than half as wide as the 1st abdominal segment. Abdomen elongate, 1st segment convex in front and at the sides, 2nd segment slightly wider than the 1st, and one-third longer. Pygidium rounded at the apex. Abdominal constriction distinct. Wings slightly smoky, nervures fuscous, stigma brown. Legs thin and slender.

I have taken this species on only one occasion. The nest, situated in sandy ground, contained several hundreds of ♀♀ and ♂♂ and one ergatoid ♀.

Plumtree, S. Rhodesia. (S.A.M., R.M., G.A. colls.)

L. (LOBOPELTA) NITIDA, Smith.

Cat. Hymen. Brit. Mus., vol. 6, p. 92, ♀, 1858.

♀. 4-4.3 mm. Ferruginous, the legs and apical margins of the abdominal segments, and the whole of the last three segments lighter; the 2nd abdominal segment and vertex of the head castaneous red; or entirely black with flagellum ferruginous. A scanty pubescence on the legs and antennae; a sparse pilosity on the body and legs, more abundant on the last segment of the abdomen. The whole body very shining and impunctate. Head oblong, about one-quarter longer than wide, sides very slightly convex, posterior margin straight, posterior angles rounded. Clypeus carinate in the middle, the carina ending in a sharp point; produced backwards in an acute angle between the frontal carinae. The latter are very narrow behind the antennal sockets. Mandibles shining and coarsely punctured, slightly wider towards the apex, which ends in a sharp tooth, the masticatory margin concave and moderately large. Eyes small, situated within the anterior third of the head. Scape of antenna extends back as far as the middle of the pronotum, flagellum slightly incrassate towards the apex, 1st and 2nd joints sub-equal, 8th-10th joints as long as wide. Pronotum rounded above, in front and at the sides, convex in profile, twice as long as the mesonotum; pro-mesonotal suture feeble, meso-epinotal well defined. Epinotum as long as pro- and mesonotum together. Dorsum of epinotum flat, narrower at the base, declivity gradual and rather short. Node of petiole higher than the epinotum; seen from above almost triangular, with the anterior face very rounded, the sides very slightly convex; truncated in front and behind, and strongly convex above. Abdomen elongate, 1st and 2nd segments sub-equal, 1st segment rounded at the base, nearly twice as wide as the node of the petiole, the constriction between the 1st and 2nd segments fairly deep. Legs long and slender.

Ladismith, Cape Prov. (light variety). (Brauns.) Estcourt, Natal, (Wroughton.) (S.A.M., R.M., G.A. colls.)

L. (LOBOPELTA) CASTANEA, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 12, p. 734, ♀, 1862.

♀. 3.6 mm. Very similar to the pale variety of *nitida* in colour and general appearance, but lighter and narrower. It may be distinguished from that species by the following characters.

The scape of the antenna is considerably flattened, and distinctly but finely punctured, and the flagellum is much thicker. The eyes

are proportionately larger. The posterior angles of the head are not so round, thereby making the head look longer and more rectangular than in *nitida*. The 3rd-5th abdominal segments are narrower, being rather strongly compressed laterally.

Algoa Bay. (Brauns.) (S.A.M., G.A. colls.)

L. (LOBOPELTA) PARVA, Forel.

Rev. Suisse Zool., vol. 9, p. 332, ♀ ♂, 1901.

"♀. 3.3-3.4 mm. Related to *castanea*, but the head is square, hardly longer than wide, the scapes not extending beyond the occiput, the flagellum with the 2-10 joints transverse, a little wider than long and the last joint moderately thick and long; the eyes are very small and flat, with a dozen atrophied facets; the node of the petiole is much more squamiform, wider than long. Mandibles narrow, smooth and shining, punctured, nearly as narrow at the apex as at the base, the terminal margin concave. The lobe of the clypeus forms a narrow beak, pointed and sharply carinate. Dorsum of thorax horizontal, without sutures. Declivity of epinotum oblique, but quite distinct from the dorsum. Legs shorter than in *castanea*. Otherwise in colour, sculpture and pilosity resembling *castanea*, which however is much narrower and differently shaped.

"♂. 3.5 mm. Mandibles very short, not reaching together in the middle. Scape hardly shorter than the 2nd joint of the flagellum, the 1st joint of which is globose. Head sub-circular, a little longer than wide. Eyes small. Thorax as wide as the head; mesonotum with two convergent sulci. Wings sub-hyaline, nervures and stigma very distinct. Dark brownish yellow, antennae brown.

Natal. (Haviland.)"

TRIBE ODONTOMACHINI, Mayr.

Characters.

♀ and ♂. The head has an irregular hexagonal outline; this is due to the inflection of the sides, at about the level of the eyes, so as to form two oblique minor sides anteriorly. Mandibles inserted near the middle of the anterior margin of the head, parallel, pointing forwards and furnished with two or three teeth. When quite open, the mandibles lie parallel with the anterior margin of the head, and can be shut by an instantaneous movement which in some species is done with such force as to produce a very distinct clicking noise.

Owing to the insertion of the mandibles being so closely approximated, the clypeus which lies between their bases and the frontal carinae is very narrow and short. Abdominal constriction absent in *Odontomachus*, and in some species of *Anochetus*. Claws simple.

♂. Abdomen similar to that of the ♀, but in *Odontomachus* there is a slight constriction. Claws simple, hardly dentate.

Key to the Genera of Odontomachini.

1. ♀ and ♂. Antennal hollows confluent posteriorly: ♂ pygidium spined.
Odontomachus, Latreille.
2. ♀ and ♂. Antennal hollows not confluent posteriorly; ♂ pygidium not spined.
Anochetus, Mayr.

GENUS ANOCHETUS, Mayr.

Europ. Formiciden, p. 53, 1861.

Characters.

♀. Antennal hollows not confluent; no large depressions on the sides of the head. The shape of the mandibles is very variable. Node of petiole squamiform, or bidentate and nodose, conical or terminating in a spine.

♀. Similar to the ♀, winged, in some species ergatoid.

♂. Mandibles and antennae as in *Odontomachus*; node of petiole more or less pointed or emarginate. Abdominal constriction absent. Pygidium not spined.

Key to the ♀ of Anochetus.

- (6). 1. Node of petiole squamiform or nearly so, almost linear dorsally.
- (3). 2. Pro- and mesonotum strongly rugose *Bequaerti*, Forel.
- (2). 3. Pro- and mesonotum not rugose.
- (5). 4. Pro- and mesonotum strongly punctured; dorsum of node, seen from in front, very convex from side to side *talpa*, Forel.
- (4). 5. Pro- and mesonotum very feebly and sparsely punctured; dorsum of node almost horizontal *punctaticeps*, Mayr.
- (1). 6. Node of petiole thick, dorsal surface not linear *Levaillantii*, Emery.

A. BEQUARTI, Forel.

Rev. Zool. Africaine, vol. 2, p. 309, ♀, 1913.

♀. 5.3-5.5 mm. Head dark ochreous red, thorax brownish black, abdomen black, legs and antennae dirty yellow. A very fine and scanty pubescence on the head, antennae, and legs. Body, but not the legs, with scattered yellowish hairs, longer and stouter on the abdomen. Head sub-opaque, densely and finely striated from

end to end, except the occipital surface, the cheeks and antennal hollows which are smooth and shining. Thorax dull, closely reticulate-punctate, intermixed with some larger rugae, which are more or less longitudinal on the pronotum, and transverse on the mesonotum; abdomen and petiole smooth and shining, legs finely and closely punctured. Head a trifle longer than wide, widest across the eyes, widely excised behind, occipital portion not contracted; the sides in front of and behind the eyes moderately concave. The antennal hollows are wide and bounded anteriorly and externally by a broad rounded ridge. Clypeus smooth and shining, extending back between the frontal carinae in a narrow elongate triangle; anteriorly the clypeus is bilobed and concave dorso-ventrally. Mandibles a little more than half as long as the head, internal margins unarmed, ending in three teeth, the sub-apical shortest and arising from the apical. Eyes large. The scape is widest near the middle, and extends back a little beyond the occipital margin; the flagellum moderately thickened towards the apex. The pronotum is as long as wide, widest in the middle and twice as wide behind as in front. Mesonotum short, wider than long. Pro-meso- and meso-metanotal sutures well defined. Epinotum as long as pro- and mesonotum together, with two distinct broad teeth at the apex of the dorsum; declivity vertical, convex and more finely sculptured than the dorsum. The node of the petiole is squamiform, higher than wide, vertical behind and in front; ventral lamella produced into a large oblong piece pointing forwards. The upper surface of the node is almost linear and slightly excised in the middle (this can be seen more clearly if it is viewed from the front). First and 2nd segments of the abdomen sub-equal, with no distinct constriction between them.

♀ (hitherto undescribed). 6 mm. Very similar to the worker, except the usual sexual differences. The pronotum is wider than in the ♂ and wider than long; the mesonotum is nearly as long as the pronotum, wider than long, finely and longitudinally striate; the scutellum is small. Dorsum of epinotum shorter than in the ♂. Wings pale brownish yellow, stigma and nervures pale brown. Other characters as in the ♂.

♂ (hitherto undescribed). 6.5 mm. Moderately shining. Pale brownish yellow, head dark brown, scutellum and base of epinotum pale brown, mesonotum with a Y-shaped brownish area. Covered with a rather dense pilosity, composed of short stiff dark hairs on the mesonotum, of longer and paler hairs elsewhere. Legs and antennae clothed with a dense pubescence, somewhat erect on the

antennae. Head and thorax shallowly and irregularly rugoso-punctate, epinotum shallowly and transversely striate, abdomen with very minute piligerous punctures. Head much wider than long. Eyes very large, occupying three-quarters of the sides of the head, ocelli large and situated on a raised area. Clypeus flat at the sides, convex in the middle, anterior margin feebly convex. Mandibles small and atrophied. Scape short, twice as long as the 1st joint of the flagellum, half as long as the 2nd, flagellum filiform. The antennae are long, reaching back almost to the apex of the abdomen. Pronotum covered by the mesonotum. The latter is very convex from front to back, and as long as wide; Mayrian furrows and parapsidal sutures moderately clear. The scutellum small and not much raised. Epinotum and petiole similar to that of the ♀, but the teeth of the epinotum less pronounced. Abdomen elongate, 1st segment longer than the 2nd; pygidium sub-acute, not spined; cerci present. Legs long and slender. Wings larger than in the ♀ and of a lighter colour. The projection of the ventral lamella is triangular.

Bulawayo. (S.A.M., R.M., G.A. colls.)

A. PUNCTATICEPS, Mayr. (Plate III., fig. 26).

Annalen K.K.N.H. Museums, Wien, vol. 16, p. 4, ♀, 1901.

"♀. 3.7-3.8 mm. Moderately shining, more or less reddish yellow. A long erect and sparse pilosity on the abdomen; the moderately short pubescence is somewhat erect, thickest on the antennae and legs, less abundant on the mandibles, head, and abdomen, scanty on the thorax. The mandibles are about half as long as the head, with piligerous punctures, narrower at the base than at the apex, the lower inner margin (*i.e.* when the mandibles are directed forwards), is feebly and finely denticulate; the angle corresponding to the anterior end of the upper and lower inner margins, is strongly rounded off; the apex of the mandible ends in two medium-sized teeth, directed inwards, the lower one bearing a smaller tooth at its base; the outer margin of the mandibles between the 1st and 2nd fourths of its whole length, is distinctly although feebly concave, beyond that the margin is slightly convex. The head is shaped like that of *Ghiliani*, Spin., but the posterior margin is less emarginate; it is fairly abundantly punctured with rather smooth shining interspaces; from each puncture proceeds a short hair; the sides of the head behind the eyes, are very smooth, very shining and sparsely punctured. The smooth triangular clypeus is wider than

long and is raised over the base of each mandible into a small hump, between these humps it is not emarginate. The scape reaches back nearly to the occiput, the 2nd-7th joints of the flagellum as long as, or hardly so long as broad. The antennal hollows are fairly deep, moderately wide and as long as wide; they are not limited externally by the eyes, since their external margin is separated from them by a distance almost equal to the diameter of the eye itself. The eyes are small. The continuation of the antennal hollows becomes indistinct on the vertex before reaching the narrowed portion of the head. . . . The thorax is smooth, with a few piligerous punctures. The mesonotum is wider than long. The epinotum has two small, broad, and very obtuse teeth; the transversely convex dorsum is evenly merged into the sides, as is also the smooth and very shining, steep declivity. Both the transverse suture of the thorax are distinct. The node of the petiole is higher than broad, rounded above. Abdominal constriction moderate.

Port Elizabeth. (Brauns.)”

A. TALPA, Forel.

Rev. Suisse Zool., vol. 9, p. 351, ♂, 1901.

“♂. 3.5-3.9 mm. Closely related to *myops*, Emery, from which it differs by its less shortened head and by its longer and thinner mandibles. The very small eyes have only 4 or 5 facets. The mandibles, as long as half the head, have the internal margin simple, ending in an obtuse angle, and with 3 teeth at the apex, the median tooth springing from the lower one. The head is a little longer than wide, moderately excavated posteriorly, slightly depressed, and without a fronto-occipital groove, and with the posterior lateral fossettes very feeble and shallow. Clypeus emarginate and bilobed. Frontal sinus very short. The scapes almost reach back to the occiput. Mesonotum transverse; the two thoracic sutures strongly impressed; dorsum of thorax barely convex. Dorsum of epinotum longer than the declivity; the latter with two large obtuse teeth or tubercles above. Node of petiole fairly high, narrow and rounded above. Abdomen truncate and projecting slightly forwards in front. Abdominal constriction feeble. Head smooth, shining and evenly punctured with strong and numerous punctures. There are some very short striae on the frontal carinae. Dorsum of epinotum reticulate and sub-opaque. All the rest shining, sparsely and finely punctured. Erect pilosity almost wanting, except at the apex of the abdomen. Pubescence very distinct, fairly long, yellow,

sparse, and covering the whole body, but very scanty on the vertex and front of the head. Slightly reddish, yellow. Natal. (Haviland.)"

A. LEVAILLANTI, Emery. (Plate III., figs. 25, 25a, 25b.)

Ann. Soc. Ent. France, vol. 63, p. 21, ♀, 1895.

♀. 5.2-6 mm., excluding the mandibles. Head, antennae, mandibles, thorax, petiole and legs a rich dark red; 1st abdominal segment castaneous red, the rest piceous or black. Whole body, antennae and legs covered with a fine and rather long pubescence, evenly distributed but not dense, a few long hairs on the apex of abdomen. Head and thorax finely striate. On the head the striae radiate from the frontal carinae diagonally to the sides. The striae on the pronotum are longitudinal, on the mesonotum and epinotum transverse; the striae on the latter are less regular. The 1st abdominal segment is very shallowly and evenly punctured, the interspaces microscopically rugulose. The 2nd segment with very shallow punctures. Second-5th abdominal segments slightly shining, the rest of the body dull. Head deeply emarginate posteriorly, the portion in front of the eyes about three-quarters as long as the region behind. Posterior angles of the head very round. Between the posterior angles and the eyes, the sides of the head are slightly concave, very convex round the eyes, and moderately so between the eyes and the base of the mandibles. The sides of the head are hollowed out between the posterior angles and the eyes; the antennal hollows are rather wide, smooth and shining. Clypeus produced triangularly backwards between the frontal carinae, and raised into a little hump above the base of each mandible. The sides of the head between the eyes and the mandibles smooth, shining, slightly and obliquely excavated. Mandibles two-thirds as long as the head, widening towards the apex; the latter is incurved at right angles to the basal portion and bifid, forming two sharp teeth, the lower one with a smaller tooth at its base. The inner margin of the mandible is very finely denticulate, a deep notch separating it from the incurved apical portion. Eyes rather large, margined all round by a shining, narrow groove. Scape of antenna reaches back to the occiput, flagellum filiform, slightly incrassate towards the apex, all the joints longer than wide. Pronotum much narrower than the head, a little wider than long, rounded at the sides and above. Promesonotal suture distinct, mesoepinotal nearly obsolete above. Epinotum shorter than the pro- and mesonotum together. Dorsum of epinotum wider at the apex than at the base; the declivity is

almost vertical, transversely striated, and has the lateral margins raised. The node of the petiole is higher than the epinotum, vertical in front and behind, rounded above, the sides convex. Seen from above, it is a little wider than long, concave, and angulate on each side of the base. The ventral lamella is produced into a large truncated projection pointing forwards. First abdominal segment campaniform, as long as the 2nd segment, the constriction between them strong. The dorsum of the epinotum at the apex is more or less impressed in the middle, and the apex of the declivity has an obtuse median carina.

♀ 6.7 mm., excluding the mandibles. Similar to the ♂, but larger and winged. The head is less deeply emarginate posteriorly; the meso- and metanotum longitudinally striate; the mesonotum is widest in front, wider than long, and as long as the pronotum. Dorsum of epinotum short, not longer than the pronotum. The abdominal segments are wider than in the ♂. For the rest, as in the ♂.

S. Rhodesia. (S.A.M., R.M., G.A. colls.)

GENUS ODONTOMACHUS, Latreille.

Hist. Nat. Crust. Insect., vol. 13, p. 257, 1805.

Characters.

♂. Antennal hollows confluent behind the frontal carinae, and separated by two raised, rounded ridges from the deep and oblique post-ocular hollows. The upper tooth of the mandible is generally blunt, the apical and sub-apical usually acute. The internal margin of the mandible more or less strongly denticulate. Node of petiole spined above, the spine pointing backwards.

♀. Winged, with larger eyes, and with ocelli.

♂. Mandibles very small. Antennae very long, scape very short; Its joint of flagellum wider than long. Node of petiole pointed above but not spined. Abdominal constriction moderately distinct. Pygidium spined.

O. HAEMATODA, Linn.

Syst. Nat. (Ed. 10), vol. 1, p. 582, ♀, 1758.

De Geer (*Formica maxillosa*), Mem. Hist. Ins., vol. 3, p. 601, ♀, 1773. F. Smith, Cat. Hymen. Brit. Mus., vol. 6, p. 76, ♂, 1858.?

♂. 9.5 mm., excluding the mandibles. Head and mandibles dark castaneous brown, thorax and petiole more or less castaneous,

abdomen black, legs and antennae brown, the tarsi and articulations lighter. Head, antennae and legs with a very fine, dense silky pubescence; on the thorax the pubescence is much sparser, and on the abdomen it is longer but very scanty. Pilosity slight; a few long hairs on the pronotum, the lower surface of the mandibles and the apex of abdomen. The head is very evenly and finely striate, the striae diagonal. The pronotum has stronger and concentric striae; the mesonotum is transversely, and the epinotum semicircularly striate, the striae being stronger on the epinotum than on the thorax. Mesopleurae smooth. Abdomen smooth and shining. The anterior portion of the head in front of the eyes is much less than half as long as the portion behind the eyes. Posterior margin of the head very slightly emarginate. Between the postocular hollow and the posterior angle of the head, there is a shallow and ovoid depression. The antennal hollows are wide, deep, smooth and shining in front of the eyes, dull and shallow behind them. A deep furrow reaches from the occiput to the confluence of the antennal hollows. Clypeus narrow, raised on each side above the base of the mandibles. The latter are half as long as the head, shining and shallowly punctured, with the teeth all blunt, and the inner margin feebly serrated. Scape and flagellum very slender and filiform. The thorax is much narrower than the head. Pronotum narrowed in front, convex above and at the sides, and wider than long; anterior half of mesonotum slightly raised and submarginate. Epinotum about as long as pro- and mesonotum together. The declivity is very steep, but rounded above and merges gradually into the dorsum. Abdomen pyriform; 1st segment twice as long as the 2nd. Legs slender.

♀. 10.5 mm., excluding the mandibles. Similar to the ♂, but winged. The pronotum is shorter than the mesonotum, which is longitudinally striate. The abdomen is wider than in the ♂. Wings brownish yellow, nervures and stigma pale brown.

“♂. 6.7-7 mm., the characters of the genus. Tegulae raised, thick at the base, acuminate at the apex. Moderately thickly pubescent. Clypeus smooth and shining. The other parts of the head, and also the thorax unevenly wrinkled. The pilosity similar to that of the ♀. Petiole and abdomen shining, and very feebly sculptured. Colour totally yellowish brown, somewhat testaceous; legs and antennae a little lighter colour.”

Bulawayo. S. Rhodesia. (R.M., S.A.M., G.A. colls.)

SUB-FAMILY DORYLINAE.

The members of this sub-family are commonly known as Driver or Legionary Ants. The males, which are winged and provided with eyes, are frequently taken at lights; on the other hand, the workers are blind, with the exception of some species of *Eciton*, in which there is a pair of single-faceted eyes, and the females (excepting one species of *Eciton*) are both blind and wingless. The members of the genus *Dorylus* are almost entirely subterranean in their mode of life, rarely coming to the surface except in dull, cloudy weather. The species of the sub-genus *Anomma*, which live in the more tropical and forested regions of Africa, and to which the term Driver Ants was originally applied, and the *Ecitini* of South America, are, however, usually seen above the surface, although, should the rays of the sun prove too powerful, they will construct temporarily tunnels with particles of earth held together by their saliva. The species of *Aenictus* are not so shy of the light, and may be seen foraging about even in bright sunlight.

It is probable that all, or at least the majority, of the species are carnivorous, although *D. orientalis* has been shown by Green to feed also on tubers and the bark of trees. Hitherto, as far as I am aware, none of these ants has been known to tend other insects, such as Aphids, Coccids, and Membracids, for the sake of their sweet secretions; but Mr. R. Jack, Government Entomologist for S. Rhodesia, has recently informed me that a species of *Dorylus* (of which he kindly sent me examples, = *D. fulvus*, race *rhodesiae*, Forel) was found by him in large numbers, and apparently tending Membracid larvae which were feeding on the roots of maize.

As far as is known, the members of this sub-family do not as a rule make permanent nests. This course is determined by their exceedingly predatory habits, which compel the adoption of a migratory form of life together with the formation of temporary nests in localities which are sufficiently productive of animal life to detain them for any length of time. Ranging far and wide in search of prey, which consists of any animal they are strong enough to overpower, these ants must sooner or later exhaust the areas round their nests, and are forced to remove the latter to new and more productive hunting-grounds. Space does not permit of a lengthy description of the migrations and other habits of the *Dorylinae* in this paper, and the reader should consult the writings of Bates, Belt, Smeathman, and others who have dealt with the subject in some detail.

Some very remarkable myremecophilous insects have been found

marching with the migratory columns of the Driver Ants,* but as far as I am aware, the queens of the ants themselves have never been so found, although the males have been obtained occasionally under such circumstances.

The three castes in this sub-family are so entirely different from one another, that they were for a very long time classed under different genera, and even under different families. The queens are, moreover, excessively rare and known only in a few species, and the males have been taken but rarely in company with their workers, so that the resulting confusion in the classification of the group has been and continues to be very great.

There is a great general similarity amongst the workers of the genus *Dorylus*, which becomes even closer within the limits of each sub-genus. In the male sex, for lack of more patent distinctions, the chief diagnostic characters are based on the structure of the genitalia; but even there a beginner may very well have difficulties in appreciating the subtle distinctions which separate the different species. In fresh specimens the genitalia can be extracted very easily, by squeezing the abdomen near the apex until they are slightly extruded, when, with a pair of forceps, they may be more fully drawn out.

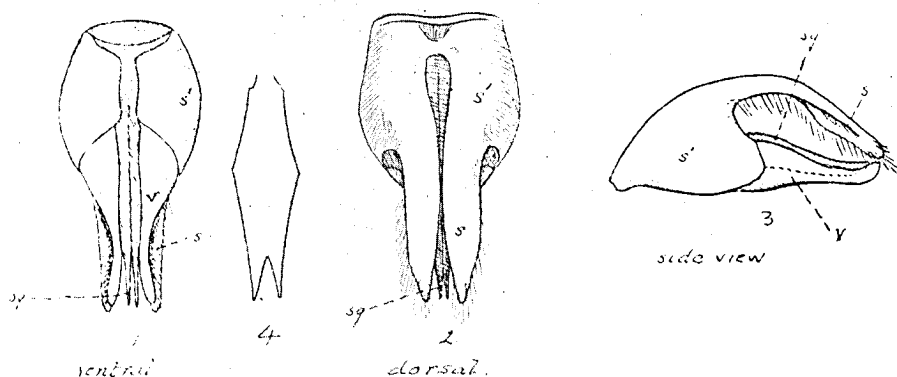
The queens of the *Doryli* are excessively rare, having been described for only seven out of thirty-two known species. It is probable that the total number of specimens of that sex in collections barely exceeds a dozen. Unless the collector is so fortunate as to discover the site of a nest of these insects he is hardly likely ever to see a female specimen alive. Dr. Péringuey informs me that one of the two females of *Dorylus helvulus* in the collections of the South African Museum was obtained by him by placing a raw leg of mutton in a manure heap in which he had previously noticed numerous workers of the species (probably searching for the beetle larvae in the heap). On examining the meat a little later the queen, together with many workers, was found in it.

The female of *Rhogmus fimbriatus* in the collection of Dr. H. Brauns, of Willowmore, Cape Province, was found by Mr. G. A. K. Marshall at Salisbury, S. Rhodesia. Mr. Marshall had his attention drawn to a hole out of which numerous males of the ant had been seen to emerge, and by digging carefully and by following the track of the larger tunnels over a considerable distance he was

* See "Ants and their Guests," by Father P. Wasmann, S.J., translated and published in the Smithsonian Report, 1912, p. 455.

rewarded by finding the nest, which contained the queen and many males, workers and worker-larvae.

The males doubtless find their way to the females by means of their olfactory senses, and possibly the workers make wide tunnels opening to the exterior at certain seasons so as to enable the males from other colonies to obtain access more easily to the virgin queens hidden under the soil. Yet one must suppose, to judge by the very large numbers of males which are produced, that the object of cross-fertilization is not easily accomplished.

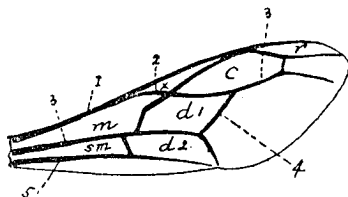


GENITAL ARMATURE OF *Dorylus fulvus*, RACE *badius*.

Outer paramera { s' basal portion of stipes.
 s stipes.
 v volsella.

Inner paramera or sagittae = sg .

Fig. 4: subgenital plate; this, when extended, lies in a ventral position to the genital armature.



ANTERIOR WING OF *Dorylus fulvus*, RACE *badius*.

Cells: r =radial, c =cubital or submarginal, d^1 =discoidal, d^2 =2nd discoidal, m =median or upper basal, sm =submedian or lower basal, x =costal.

Nervures: 1=costal, 2=subcostal, 3=cubital or median, 4=recurrent, 5=anal.

Key to the Tribes of the Dorylinae.

- A. ♂ ♀. Pygidium tridentate, with a median impression; maxillary and labial palpi 2-jointed; cheeks without a longitudinal carina; 1st abdominal segment not separated from the 2nd by a constriction.
 ♀. Cloaca open, leaving the sting uncovered; hypopygium forked and extending considerably beyond the pygidium; thorax unsegmented.
 ♂. Stigma of anterior wing very elongate and narrow; radial cell open and elongate, one closed cubital cell; genital armature retractile. . . *Dorylini*, Forel.
- B. ♂ ♀. Pygidium simple; maxillary palpi 2- or 3-jointed, labial palpi 2-jointed; cheeks longitudinally carinate; a constriction usually separates the 1st and 2nd abdominal segments, almost making the petiole 2-jointed.
 ♀. Cloaca covered by the pygidium; hypopygium not considerably extended.
 ♂. Stigma of wing very narrow; radial cell elongate, one or two closed cubital cells; genital armature retractile *Ecitini*, Forel.
- C. ♂. Pygidium simple; maxillary and labial palpi 1-jointed; cheeks not carinate; petiole 2-jointed.
 ♀. Cloaca open, leaving the sting uncovered; hypopygium lobed and extending beyond the pygidium; thorax with a suture behind the anterior pair of legs, which is effaced on the dorsum.
 ♂. Anterior wings without stigma or nervures. Genital armature extended, not retractile *Leptanillini*, Emery.

The *Dorylini* is the only tribe represented in South Africa; it is totally absent from America. The *Ecitini*, excepting *Aenictus* and *Aenictogeton*, are confined to America, chiefly South America; and the *Leptanillini* have so far been found only in North Africa, Singapore, Corsica, and Sardinia. The Tribe *Dorylini* comprises a single genus *Dorylus*, Fabr., and is divided into six sub-genera.

GENUS DORYLUS, Fabr.

Ent. Syst., vol. 2, p. 194, 1793.

Characters.

♂ ♀. Owing to the extreme polymorphism exhibited in this genus no distinct line of demarcation can be drawn between the ♂ and the ♀. The ♂ occurs in all sizes, the largest being regarded as ♀. Three chief types may, however, be distinguished, but connected by intermediate forms. (In the descriptions of the species only these three chief types will be dealt with *in extenso*.)

1. Very large individuals or soldiers.

In these the head is enormous, and wider or not less wide in front than behind; the mandibles have fewer teeth than in the ♂; the clypeus is not very protuberant; the antennal joints are of the normal number, 9 to 12 according to the species.

2. Medium-sized individuals or large workers.

Head smaller, but not narrower in front than behind; clypeus more protuberant; antennal joints of the normal number.

3. Very small or pigmy workers.

Head narrower in front than behind; clypeus strongly protuberant; antennal joints reduced in number, but not less than 7.

All three forms are totally devoid of eyes. The frontal carinae are near together and vertical; pro-mesontal suture distinct, mesoepinotal obsolete. Epinotum without spines. Petiole nodiform. Pygidium impressed and ending in three points. Posterior tibiae with a pectinate calcar.

♀. Apterous; without eyes or ocelli. Head with the occipital portion gibbous and divided by a median groove. Clypeus as in the ♂. Frontal carinae not close together. Mandibles narrow and edentate. Antennae with 11 joints, or 12 in sub-genus *Dichthadia*. Thorax segmented, mesonotum not differentiated into scutum and scutellum. Petiole broad, its posterior angles more or less produced into blunt points. First abdominal segment shorter than the 2nd. Cloaca open; the hypopygium extends beyond the pygidium.

♂. Antennae 13-jointed, scape one-quarter or one-third as long as the flagellum. Mandibles edentate; clypeus short and prolonged between the frontal carinae, which are short and divergent. The scutum of the mesonotum overhangs the pronotum. All the femora flattened, the tibiae short. Eyes and ocelli very large.

Petiole nodiform or saucer-shaped, the concavity directed behind.

Genital armature totally retractile; lacinia absent, sub-genital plate deeply cleft.

The *Dorylini* are found in Africa, Asia, and the Malay Archipelago. They do not occur in Madagascar.

Key to the Sub-Genera.

♂ ♂ or ♀♀.

- (2). 1. Antennae 12-jointed in the ♀, and in the large and medium-sized ♂.
Dichthadia, Gerst.
- (1). 2. Antennae with less than 12 joints.
- (10). 3. Antennae 10- or 11-jointed.
- (7). 4. Pygidium with a semi-circular impression, the margins of which are sharp (see Plate IV., fig. 38a). Antennae 11-jointed.
- (0). 5. Antennae short and thick, all the joints of the flagellum except the last, much wider than long *Dorylus*, Fabr. (s. str.)
- (5). 6. Antennae elongate, at least some of the joints of the flagellum longer than wide *Anomma*, Shuckard.
- (4). 7. The impressed area of the pygidium without sharp margins (see Plate IV., fig. 31a).
- (9). 8. Sub-apical tooth of mandible simple; antennae 11-jointed. ♂ max. 13 mm. long *Typhlopone*, Westwood.

- (8). 9. Sub-apical tooth of mandibles double, or truncate. ♂ max. 8 mm. long.
Rhogmus, Shuckard.
 (3). 10. Antennae 9-jointed *Alaopone*, Emery.

♀ ♀.

- (2). 1. Antennae 12-jointed *Dichthadia*, Gerst.
 (1). 2. Antennae 11-jointed.
 (4). 3. Hypopygium in the form of a cleft plate, narrowed behind.
Dorylus, *Anomma*, and *Rhogmus*.
 (3). 4. Hypopygium wide, forming two lobes, divergent behind.
Alaopone, Emery.

♂ ♂.

- (2). 1. Mandibles wide at the base and prolonged into a point, with the inner margin deeply excised *Dichthadia*, Gerst.
 (1). 2. Mandibles otherwise formed.
 (6). 3. Petiole wider than long, the posterior face concavely excavated.
 (5). 4. Mandibles less than 4 times as long as wide *Dorylus*, Fabr.
 (4). 5. Mandibles more than 4 times as long as wide. *Anomma*, Shuckard.
 (3). 6. Petiole nearly square, or round.
 (8). 7. Mandibles about three times longer than wide . . . *Typhlopone*, Westw.
 (7). 8. Mandibles much shorter.
 (10). 9. Wings with a 2nd recurrent nervure *Rhogmus*, Shuckard.
 (6). 10. Wings without a 2nd recurrent nervure *Alaopone*, Emery.

The sub-genus *Dichthadia* is confined to Burma and the Malay Archipelago. *Dorylus*, *Anomma*, and *Rhogmus* are entirely African; *Alaopone* and *Typhlopone* are almost entirely confined to Africa, but have one species each in the Asiatic region.

In the South African region, *Anomma* is apparently absent, although it might be expected to occur on the East Coast from Beira to Delagoa Bay.

SUB-GENUS DORYLUS, Fabr. (*sensu stricto*).

Ent. Syst., vol. 2, p. 194, 1793. Emery, Zool. Jahrb. Syst., vol. 8, p. 701, 1895.

Key to the ♂ ♂ and ♀ ♀ of the Sub-Genus *Dorylus*.

- (2). 1. Sides of the head distinctly convergent posteriorly; puncturation of the vertex of the head rather sparse and shallow, the sides of the head in the smallest ♂ quite smooth *braunsi*, Emery.
 (1). 2. Sides of the head not distinctly convergent posteriorly.
 (4). 3. Sides of the head almost parallel in the ♀; puncturation of the vertex stronger and more abundant *helveticus*, Linn.
 (3). 4. Sides of the head less parallel in the ♀, the head being slightly narrower behind than in front; puncturation of the vertex sparser and feeblar.
 (6). 5. Petiole not much wider behind than in front; maximum length 11 mm.
affinis, Shuckard.
 (5). 6. Petiole wider posteriorly; maximum length 8.5 mm. . . *brevipennis*, Emery.
 ♂ unknown *furcatus*, Gerst.

Key to the ♂♂ of the Sub-Genus *Dorylus*.

- (4). 1. Scape about as long as the first 6 or 7 joints of the flagellum, and shorter than half the flagellum.
 (3). 2. Mesonotum wider (5 mm.); lateral margins of the stipites, seen from above, sinuate, narrowed at about the middle *helvolus*, Linn.
 (2). 3. Mesonotum narrower (4 mm.); lateral margins of the stipites not sinuate, but forming an even convexity from base to apex *affinis*, Shuckard.
 (1). 4. Scape shorter than the first 5 joints of the flagellum; mandibles decidedly small *brevipennis*, Emery.
 ♂ unknown *furcatus*, Gerst.
 ♂ unknown *braunsi*, Emery.

D. *HELVOLUS*, Linn. (Plate IV., figs. 33, 33a, 33b, 34, 34a).

Mus. Ludov. Ulrich., p. 412, ♂ 1764. Syst. Nat. ed. 12, vol. 1, 968 (*Mutilla*) ♀, 1767. Emery, Bull. Soc. Ent. Ital., vol. 19, p. 350, ♀ ♀ ♂, 1887. Trimen, Proc. Ent. Soc., London, p. 24, ♀, 1880.

♂ or ♀ maxima. 8 mm. Castaneous, mandibles and anterior portion of head and apical segments of abdomen, darker. Legs very scantily pubescent, flagellum moderately pubescent, a few long hairs on the petiole and abdominal segments. Whole body, except the posterior face of the node and the flagellum, very shining, evenly and distinctly punctured. The punctures are larger and deeper on the head and thorax, shallower and smaller on the petiole and abdomen. The petiole is reticulate-punctate on its posterior face; from each puncture arises a pale, microscopic hair.

Head at least one-quarter longer than it is wide, parallel-sided, posterior angles rounded but very prominent, owing to the deep and almost angular occipital emargination. Mandibles scarcely longer than half the width of the head, very blunt at the apex, and with a blunt tooth near the middle of the internal margin. Clypeus almost linear, except in the middle, where it is slightly and triangularly extended between the frontal carinae, and produced into a small platform on the anterior margin. The frontal carinae short and narrow, free and raised at the sides into a lobe which ends posteriorly in a sharp spine. Scape of antenna incrassate and flattened towards the apex, about two-thirds as long as the flagellum; the latter 10-jointed, all the joints except the last wider than long. The scape and flagellum together are about three-quarters the length of the head.

Pronotum rounded in front, narrower behind than in front. Pro-mesonotal suture well defined; meso- and epinotum rather flattened

above, declivity of the epinotum vertical and very short. Node of petiole quadrate-globose, slightly wider behind than in front, the ventral lamella produced in a wide angle. First abdominal segment narrow at the base, 2nd and 3rd segments sub-equal, and a little longer than the 1st, 4th segment a little shorter than the preceding, 5th segment widely and semicircularly excavated apically, the dorsal boundary of the excavation forming a sharp edge, ending on each side inferiorly in a short tooth.

♂ minor. 5-6 mm. This differs from the ♂ max. in the following characters. The colour is slightly lighter, and the head is a little narrower behind than in front, and is only arcuately emarginate behind. The apex of the mandible is not blunt, but ends in two sharp teeth, the lower tooth being the larger; the tooth on the inner margin is also acute. The pubescent hairs on the body are longer.

♂ minima. 1.7-2 mm. Colour pale dirty yellow. Flagellum 9-jointed. Pilosity and pubescence stronger than in the ♂ minor. Mandibles without a tooth on the internal margin, and with the upper apical tooth almost obsolete, making the mandible an elongate triangle.

♂. 25 mm. long. Thorax 8 mm. long, 4.5 mm. wide; head 1.5 mm. long, 4.3 mm. wide; abdomen 13.5 mm. long. Head reddish brown, mandibles, antennae, and legs ferruginous; thorax, petiole, and abdomen dark brownish yellow, the pronotum and petiole with a rather castaneous tint. The whole body, except the legs, mandibles, and antennae covered with a close and fine yellow pubescence. Head, thorax, coxae and petiole with long, silky, and pale yellow hairs. The apical abdominal segment has similar hairs, but shorter. Head behind the eyes rather shining, the rest of the head, and the body, impunctate and dull, all the legs smooth and shining. Head much wider than long, a very little wider than the thorax. Front of the head somewhat raised in the middle, leaving a broad but shallow depression on each side, reaching to the eyes. Frontal carinae obsolete. Eyes moderately large; ocelli on a raised area, the vertex concave between the posterior ocelli. The scape extends back as far as the anterior ocellus, flagellum two and a half times as long as the scape; 1st and 2nd joints not longer than wide, the rest longer than wide; the 2nd joint is pubescent and dull below. The mandibles are flattened, widest at the base, thinning after the basal third, the apex rounded. When the thorax is looked at from above, the pronotum is not visible, as it lies entirely below the mesonotum; the latter is half as long again as wide, the parapsidal sutures distinct; the scutellum

is one-third as long as the mesonotum; the epinotum is rounded, its dorsum shorter than the scutellum. The node of the petiole is wider behind than in front, rounded above and at the sides, the ventral lamella densely fimbriated and produced into a triangle, blunt at the apex. First to 5th abdominal segments wider than long, each segment a trifle longer than the preceding, 6th segment longer than wide, wider at the base and narrowing towards the rounded apex. Genital armature castaneous and very shining. Seen from below, the external margins of the volsella are shallowly concave from base to near the apex, and fringed with long hairs; stipites strongly convex above. Wings slightly yellowish brown, nervures brown.

♀. Two specimens of this sex, belonging to the South African Museum, have been examined. One is preserved dry, the other in spirit. The former appears to have retained the natural proportions more truly than the other, and the following description is based on the dry specimen, except where the other is specifically mentioned.

Length, from apex of opened mandibles to apex of hypopygium, 39 mm.; length of head, from anterior margin of clypeus to the occipital margin, 3.7 mm. dry specimen, 3.8 mm. spirit specimen; length of thorax 5 mm.; width of thorax, 4.5 mm. dry specimen, 5 mm. spirit specimen; length of abdomen from base of 1st segment to apex of pygidium, 25.2 mm.

The colour is much lighter in the spirit specimen, in which also the thorax is not much darker than the abdomen. In the dry specimen the abdomen is pale castaneous or a pale burnt-sienna, the head and thorax dark castaneous red, mandibles piceous in their inner margins, the hypopygium piceous on the external margins. The sides of the hypopygium rather dull, the rest of the insect very smooth and shining, and sparsely punctured with very small punctures. The punctures on the head and pronotum are a little larger than elsewhere; the sides of the pronotum posteriorly closely punctured, sub-opaque. Head one and three-fifths as wide as long, as wide in front as behind, sides convex, posterior margin moderately and angularly emarginate, posterior angles rounded but prominent. The dorsum of the head, seen from the side, is slightly flattened, the median groove arising from the occipital margin is almost obsolete above; there are three very small depressions above, marking the position of the atrophied ocelli. Clypeus depressed above the anterior margin, which is straight; frontal carinae short, raised in front, divergent behind, between them lies a round depres-

sion continuous with the posterior margin of the clypeus. Mandibles curved strongly inwards, half as long as the head, narrowing towards the apex, which is acute; the inner margin is feebly convex in the middle, and concave on each side of that point. Antennae 11-jointed, scape as long as the flagellum less the apical joint; the latter is longer than wide, and as long as the two preceding joints together; the 1st joint as wide as long, the rest wider than long. Pronotum wider than long, about as wide as the head between the posterior angles, the sides convex, the anterior portion somewhat produced to form a neck, the pro-mesonotal suture well defined. Mesonotum as long as wide, separated from the epinotum by a metanotal region which is one-sixth as long as the mesonotum. The impression between the meso- and metanotum is deeper and more distinct at the sides. The lateral margin of the thorax, between the meta- and epinotum is distinctly excised. The epinotum is nearly twice as wide as long, on each side posteriorly just above the very short declivous portion there is a pronounced angle; the margin between these angles is roundly produced in the middle. Seen from above, the anterior margin of the petiole is shallowly concave in the middle. The petiole widens behind, and the posterior angles are produced backwards and somewhat outwards into sub-acute teeth; the posterior margin is convex. The petiole is rather flattened above, and twice as wide (across the base of the teeth) as it is long.

The 1st-4th abdominal segments are wider at the apical margin than at the base, and considerably wider than long. The 5th segment is widest at the base and narrows towards the apical margin, which ends in two short sub-acute teeth, separated by a semicircular excision.

The hypopygium is bifurcate along its apical third, the excision between the branches of the fork being narrow and wider at the base. At the base of the hypopygium the external margins are curved upwards on each side so as to form a flap, which is prolonged on its upper margin into a compressed tooth-like process, rounded at the apex and directed backwards. Internal to the flaps, and at about two-thirds of the distance from the external margins, there is on each side a longitudinal raised ridge, which ends abruptly a little before the base of the apical forks.

The apical joint of all the tarsi is wanting in both specimens.

This species has been recorded from the larger part of the South African region. In S. Rhodesia it is common, and more frequently met with than any other species of the genus. (S.A.M., R.M., G.A. colls.)

D. BRAUNSI, Emery.

Zool. Jahrb. Syst., vol. 8, p. 718, ♀, 1895.

This species is exceedingly similar to *helvolus*, differing from it chiefly in the shape of the head, which in the ♀♀ and larger ♂♂ is distinctly wider in front than behind, the sides converging posteriorly, so that the occipital margin is rendered shorter. The puncturation of the vertex is also shallower and sparser in all the ♂♂, but in specimens determined as *Braunsi* for me by Dr. Forel, I do not find that the smallest workers (2.8 mm.) have the sides of the head entirely smooth as described by Prof. Emery. The ♀♀ do not exceed 8 mm. in length. The colour, especially of the larger forms, is slightly darker than in *helvolus*; otherwise similar to that species.

Bulawayo. (R.M., G.A. colls.)

D. AFFINIS, Shuckard. (Plate IV., fig. 35.)

Ann. Nat. Hist., vol. 5, p. 316, ♂, 1840.

Mayr (*Typhlopone oraniensis*, var. *brevinodosa*), Verh. Zool. Bot. Ges. Wien, vol. 12, p. 737, ♀, 1862. Emery, Mem. Accad. Sc. Bologna, Ser. 5, vol. 9, p. 421; ♀, 1901.

The ♂♂ of this species are very similar to those of *helvolus* and *brevipennis*; *helvolus* is more strongly and closely punctured on the head, and does not reach to such a large size in ♀♀ or ♂♂ maxima. From *brevipennis*, the workers of this species can be distinguished only with difficulty, the main distinction being the shape of the petiole, as given in the key above. ♀♀ or ♂♂ maxima. 10–11 mm. Head, from 3.3 mm. long × 2.6 mm. wide, to 3.7 mm. long × 2.8 mm. wide. The colour is like that of *helvolus*; the abdomen is lighter than the thorax. Head shining, mandibles finely reticulate and sparsely punctured; dorsum of the pro- and mesonotum smooth, epinotum reticulate and dull, the opacity being due to a microscopic rugulosity. The puncturation on the thorax is shallower and less abundant than on the head. The petiole is duller than the thorax, and the puncturation feebler and less regular. The abdomen is shining, shallowly and sparsely punctured. All the punctures bear short hairs, intermixed with which on the abdomen are some longer semi-erect hairs. There are a few pilose hairs on the ventral surface of the abdomen, the clypeus, mandibles and pygidium; the hairs on

the legs are comparatively longer and more abundant than in *helvolus*.

The head is sub-rectangular, the posterior margin deeply excised, the sides more or less feebly bisinuate. The mandible is acute at the apex, with a pre-apical tooth at about the middle of the inner margin, and a rudiment of a sub-apical tooth. The frontal carinae are a little separated in front, but converge abruptly above the antennal sockets, and each ends in a sharp spine pointing obliquely backwards.

The petiole is wider than long, widest posteriorly; it is comparatively larger than in *helvolus*. The tooth-like projections of the pygidium are not quite so prominent, otherwise similar to *helvolus*.

♂ minor. 8.5.5 mm. Head, 2.6 mm. long \times 2 mm. wide, to 1.7 mm. long \times 1.4 mm. wide. The posterior margin of the head is less deeply excised, the sub-apical tooth of the mandibles larger, nearly equal to the pre-apical. The puncturation is finer, and the pubescence a little more distinct, and the colour lighter than in the ♀.

♂ minima. 3.5 mm. or less. In these the anterior margin of the clypeus is more projecting, the frontal carinae are closer together and less acute posteriorly, or in examples 3 mm. long, with the spinous processes entirely obsolete. Antennae with 7-8 joints, all the joints of the flagellum, except the 1st and last, much wider than long. The whole body is shining, and the colour dirty ochreous.

♂. 22.2 mm. This is exceedingly like that of *helvolus*, differing practically only in the following characters.

It is a little smaller than *helvolus*, and the mesonotum is rather narrower; according to Emery, the mesonotum is also more densely clothed with both long and short hairs, but this character is perhaps rather difficult to appreciate. The strongest distinction lies in the shape of the stipites, seen from above. In this species the stipites narrow gradually from base to apex, so that the lateral outline forms a continuous curve; in *helvolus* the stipites are narrowed in the middle and widen out again beyond it, so that the profile is sinuate.

♀ unknown. I am not aware of this species having been recorded so far, from the region dealt with in this work, but have included it as it may perhaps be found in the future within the more northern parts of S. Rhodesia. It is a more northern species, but has been recorded from the southern Belgian Congo.

(G.A. coll.)

D. BREVIPENNIS, Emery.

Zool. Jahrb. Syst., vol. 8, p. 721, ♂, 1895. Mem. Accad. Sc. Bologna (5), vol. 9, p. 424, ♀, 1901.

"♂. A small species, of a somewhat stumpy build. Particularly noticeable on the head are the small and but slightly projecting eyes, which are separated from the base of the mandibles by a distance about equal to the thickness of the scape. The mandibles are plainly smaller than in *affinis*. The antennae are long, the scape shorter than the first 5 joints of the flagellum, or about as long as one-third of the latter. Thorax stout, petiole as in *affinis*. There are some erect hairs on the pronotum; on the mesonotum and scutellum only a long, adpressed pubescence, which is hardly glossy and does not conceal the chitin. Colour brownish yellow, head excepting the mandibles dark brown; on the mesonotum in front there is a short median band of darker colour, and also two lateral bands which do not reach the anterior margin; the femora and petiole brown; the margins of the abdominal segments brownish. Wings noticeably short, glassy and with brown nervures; the transverse nervure joins the middle of the root of the cubital. The genital organs are constructed much as in *affinis*, but the outer parameres seen from above are markedly broad, not excised at all laterally. Length, 20-21 mm.; head and thorax, 8 mm.; width of thorax, 4 mm.; anterior wings, 12.5 mm."

♀ 8.5 mm. This worker is deceptively like that of *affinis*, differing only in its smaller size in the major forms, and in having the petiole shorter and wider behind than in that species.

The type species has not been recorded from this region, but I quote the description for the purpose of making clear the comparisons in the account of the following variety, which was originally found at Salisbury, S. Rhodesia.

Var. MARSHALLI, Emery.

Mem. Accad. Sc. Bologna (5), vol. 9, p. 425, ♀ ♂, 1901.

♂. 19 mm. Width of thorax 4 mm. This differs from the type in having a stouter and darker thorax, castaneous brown, and the nearly black head; the sides of the thorax are lighter; the longitudinal lateral fascia and the spots on the anterior part of the mesonotum less clearly defined, on account of the darker ground-colour.

♀ max. 8.5 mm. Head, 2.8 mm. long × 2.3 mm. wide. The colour is a little darker than the type species, and the puncturation

of the petiole, which is less shining, is more abundant. Otherwise like the type.

Race ZIMMERMANNI, Santschi.

Rev. Suisse Zool., vol. 18, p. 738, ♀, ♂, ♂, 1910.

♀ 8 mm. Colour, puncturation and general characters exceedingly similar to those of *helvolus*. The sides of the head are, however, slightly sinuate; the teeth of the mandibles more acute, and the petiole a very little wider. The ventral lamella of the petiole is produced behind into a sharp spine, pointing downwards (the lamella is truncate in *helvolus* ♀).

♂ media, 6-3.4 mm. These do not appear to me to present any appreciable differences sufficient to distinguish them from workers of *helvolus* of the same size; the ventral lamella is not spinously produced as in the ♀. Of the smallest ♂ ♂ (2 mm.) described by Santschi, I have seen no examples; they have 8-jointed antennae. My specimens have been named for me by Dr. Forel, but I must confess that to me they appear so exceedingly similar to *helvolus*, as to be almost indistinguishable, except in the character of the ventral lamella in the ♀.

♂ 19-20 mm. Yellowish brown. Head, mandibles, and femora brown-black. There are two short brownish bands on the middle of the mesonotum anteriorly. Laterally, a band twice as long as the preceding covers the parapsidal sutures. There is also a long band on the posterior margins of the abdominal segments. The petiole is entirely yellowish brown except the portion articulating with the abdomen, which is blackish brown. Antennae and legs dark reddish brown. Pilosity rusty on and below the head, rather sparse on the front of the pronotum, more abundant on the epinotum and petiole. The rest of the body is covered with a fairly dense pubescence, fairly long on the thorax, but shorter on the abdomen. The head is small, as in *moestus*, but a little wider. The eyes are dull and small, with distinct facets. The distance between the lateral ocelli much shorter than that separating them from the eyes. Mandibles wider than in the type, the outer edge less emarginate, straighter. The scape is as long as the first 6 joints of the flagellum taken together; 2nd joint of flagellum pubescent beneath, hardly longer than half the succeeding joint. Length of thorax, 7 mm.; width in the middle, 4 mm. Length of the front wing, 14.5 mm. Petiole narrower than in *affinis*, wider than in *moestus*. Abdomen 3.8 mm. wide, cylindrical. Genital armature brownish, 5 mm. long by 3 mm. wide. The extremity of the stipites is narrower than in

the type and rather densely fringed. The volsella is a little longer; otherwise like the type. Madingou, French Congo."

Hillside, Bulawayo, ♂ ♂ only. (R.M., G.A. colls.)

D. FURCATUS, Gerstaecker.

Stettin Ent. Zeitschr., vol. 33, p. 267, ♀, 1872. Emery, Bull. Soc. Ent. Ital., vol. 19, p. 349, ♀, 1887.

"♀. 34 mm. Abdomen, 26 mm. Colour light rusty red, . . . smooth and shining. Antennae with 10-jointed flagellum. Head quadrate but rounded, the median dorsal groove is deepest behind, and very shallow on the vertex. The frontal carinae almost reach to the anterior margin of the clypeus, which lies between them in the shape of a small triangle. On the anterior portion of the vertex, the median groove forms an oval, well-defined and strongly punctured pit [*i.e.* the depressed area between the frontal carinae.—G. A.]. The posterior corners of the head are obtusely triangular and produced backwards. The upper surface of the head is finely but distinctly punctured, more sparsely so behind than in front, the latter region being slightly dull owing to an exceedingly fine sub-puncturation. . . . The prothorax is wider at the shoulders than at the posterior margin. . . . The mesothorax is flattened, very shallowly impressed in the middle in front, punctured like the prothorax, but more strongly than the head, nevertheless distinctly shining. The metathorax is also depressed, with a transverse groove on the compressed anterior portion, and the posterior part is slightly swollen on each side; the segment is more finely and sparsely punctured than the pro- or mesothorax. The femora and tibiae are punctured; the last three joints of the tarsi wanting in all the legs. First abdominal segment wider than long, trapezoid, 3rd–6th segments longer and wide and parallel-sided. Hypopygium two and a half times longer than wide, with a transverse furrow-shaped impression along three-fifths of its length on each side; narrowed posteriorly and forked in the middle of the posterior margin by a deep oval excision, the two arms of the fork long and obtusely triangular, and flat. The surface of the hypopygium, excepting its base, is finely punctured, between the lateral furrows and the median excision fairly densely punctured. The 5th dorsal segment is longer than the 4th, but ends before the fork of the hypopygium, its posterior margin on each side wide and flat, in the middle narrow and deeply emarginate, so as to form on each side of the emargination a triangular and projecting point. At the base of

the hypopygium, and on each side of the genital orifice, is a raised lamella which is vertically truncate posteriorly. The outer margins of the hypopygium at its base are also raised and curved, so as to form a shorter and more obtuse lappet on each side. Cape."

I have copied the author's description, excluding only those remarks in which comparison is made with the Indian *D. laevigatus* (*glaberrimum*). The above description of *furcatus* was published as far back as 1872, and as far as I am aware no species of *Dorylus* with unattached ♂ ♂, to which this ♀ might be ascribed, is known from the Cape even now. Without having seen the original specimen it is not possible to form any definite conclusion, yet a comparison made between the above description and a *helvolus* ♀, in the collection of the South African Museum (described p. 118, ante), suggests to my mind a strong probability that Gerstaecker's species is only an individual aberration of *helvolus*, or at the most only a variety of that species.

SUB-GENUS TYPHLOPONE, Westwood.

Introduction Class, Insects, vol. 2, p. 219, 1840. Emery, Zool. Jahrb. Syst., vol. 8, p. 701, 1895.

D. (TYPHLOPONE) FULVUS, Westwood.

Loc. cit. ♂. Emery, *loc. cit.* ♂. Shuckard (*D. juvenculus*), Ann. Nat. Hist., vol. 5, p. 319, ♂.

The type species appears to be confined to the northern portion of Africa, and is replaced in equatorial and S.E. tropical Africa by the following race, which has not been recorded to my knowledge from temperate South Africa.

The sub-genus includes only this species and *D. labiatus* of the Indian region.

Race *BADIUS*, Gerstaecker. (Plate IV., figs. 31, 31a, 32, 32a, 32b.) Monatsber. Akad. Wiss., Berlin, p. 261, ♀, 1858. Ditto, Peter's Reise, n. Mossamb. Zool., vol. 5, p. 499, ♂, 1862.

♂ or ♀ maxima. 13 mm. Head 3.2 mm. long × 2.8 mm. wide. Mandibles piceous brown, scape of antenna, head and thorax dark castaneous red, but getting gradually lighter from the head to the petiole; abdomen dark brownish yellow, or ochreous with a slight reddish tinge; legs ferruginous; flagellum dark brown above, lighter underneath. Head, thorax and abdomen very shining, except the

anterior third of the head, the vertical anterior face of the pronotum, the mesopleura, the petiole and the epinotum, which are duller, owing to a rugulosity of the surface which is almost microscopic on the head, but somewhat stronger on the other parts. Head sparsely punctured, with small, discrete and shallow punctures; scape of antenna more coarsely punctured. Pro- and mesonotum sparsely, but much more coarsely punctured than the head. Epinotum and petiole very shallowly and more closely punctured, the punctures being smaller than on the pronotum. Abdomen finely and sparsely punctured. A short, yellow pubescent hair is inserted in each puncture, those on the head being very fine.

Head very slightly narrowed posteriorly, the sides are almost parallel, posterior margin shallowly arcuate. Mandibles sub-nitidulous, striato-punctate, the apex sub-acute, the pre-apical tooth small and blunt, the sub-apical very obtuse or represented only by a swelling on the margin. The frontal carinae are considerably raised, divergent and vertical in front, and project distinctly over the very short clypeus; they are angularly bent just above the antennal sockets, so that their posterior half is horizontal. Between them posteriorly is a very smooth and shining oval area, which is continued into a moderately deep groove with rounded margins which becomes very faint on the vertex, and again deepens towards the occipital margin. The frontal carinae are not spinously produced backwards as in *helvolus* and *affinis*. Antennae 11-jointed; the scape is strongly incrassate towards the apex, and not longer than the first 7 joints of the flagellum. The 1st joint of the flagellum very short and about as long as wide, all the other joints except the apical much wider than long; all the joints closely punctured and densely pubescent beneath. Prothorax narrowed and depressed anteriorly to form a short neck; it is widest behind this part and narrows towards the mesonotum, from which it is separated by a distinct and angular suture. The mesonotum widens posteriorly, where it is two-thirds wider than long. The epinotum is widest at its base (on each side of which lies a prominent stigmatic orifice), and narrows but slightly towards the short and vertical declivity; the brow of the latter is considerably rounded above and at the corners. The dorsum of the epinotum has a longitudinal median impression. Seen from the side, the dorsum of the whole thorax is flat and rather distinctly delimited from the sides, which are vertical or nearly so. The node of the petiole is almost sub-quadrate, or a little wider behind than in front, as long as, or only very little longer than wide, all the angles strongly rounded; the ventral lamella is produced into a triangular

projection. The abdomen widens gradually towards the apical margin of the 3rd segment, all the segments wider than long. The pygidial area of the 5th segment is dull and only shallowly impressed, forming a more or less oval fovea, not semicircular or bounded by a sharp raised margin, as in the sub-genus *Dorylus*. By this character, and also by the longer petiole and the frontal carinae without spines, all the workers of this species can be distinguished at a glance from those of the sub-genus *Dorylus*.

♀ minor. 8-3 mm. In these the colour is much lighter, or more or less reddish yellow. Antennae 11-jointed as in the maxima. Proportionately the head is wider in front than in the ♀ maxima. The puncturation is finer and the pubescence is more apparent. In the smaller forms the frontal carinae project further forwards and are more convergent posteriorly, or even meet to form a single lamina. The median impression on the head is much shallower and shorter, or almost obsolete. The mandibles are more shining, with three teeth more acute and distinctly defined.

♀ minima. It is probable that there are some of this class, and measuring less than the smallest of the minor class. I do not, however, possess any smaller than 3 mm., nor do I know of any workers of a smaller size of this race having been described by any author.

♂. 33 mm. Thorax 10.2 mm. long \times 5.8 mm. wide; petiole 2.8 mm. long \times 4 mm. wide; length of front wing, 22 mm. Head in front and above, dark brown, occipital surface of the head, antennae, mandibles and all the legs ferruginous or castaneous red. Thorax, petiole, and abdomen pale yellowish red, the 6th dorsal segment and the margins of all the abdominal segments darker. The thorax is somewhat more yellowish than the abdomen. The anterior part of the head between the anterior ocellus and the clypeus clothed with long, curved, silky yellow hairs; a tuft of similar hairs on the clypeus and the base of the mandibles. The front of the head is densely clothed with a short brownish-yellow pubescence, the posterior portion, behind the eyes and ocelli, glabrous. The thorax and petiole with a rather long, very dense, decumbent, yellowish or golden pubescence; the pubescence of the abdomen is much finer, and has a silky sheen, the margins of all the segments with longer hairs, and the 6th segment densely clothed with long silky hairs. The metanotum is sparsely clothed with short stiff hairs; the brow of the epinotum, the posterior dorsal margin of the petiole, and the space between the ventral lamella and the 1st abdominal segment and all the coxae fringed with long golden hairs. The whole body is sub-opaque and microscopically rugulose, except the

occipital part of the head, the 6th dorsal abdominal segment, and the legs, which are smooth and shining.

The head is much wider than long; seen in profile, rather biconvex. The anterior margin of the clypeus is obtusely angulated; from the posterior margin to the anterior ocellus there is a narrow impressed line, between which and the inner margins of the eyes the surface of the head is feebly convex on each side. Seen from the front, the dorsal profile of the head is very convex, the convexity being broken by a slight depression between the two posterior ocelli. The latter are very convex, prominent and large. The scape narrows towards its apex, and when directed upwards the apex just reaches the level of the top of the head; it is as long as the first 7 joints of the flagellum. The latter is 12-jointed, all the joints, except the first, longer than wide. The first joint is glabrous and shining below, the remaining joints pubescent and very finely punctured all over. The whole thorax is somewhat globose, and its dorsum raised much above the level of that of the head and abdomen. Seen from above only a narrow portion of the pronotum is visible, but at the sides it can be seen as a large triangular piece between the mesonotum and the mesopleuron. The mesonotum is convex in front and at the sides, slightly flattened posteriorly, and about one-fifth longer than wide; anteriorly and on each side of the middle there is a well-defined impressed line, which ends abruptly at about the anterior 4th of the mesonotum. The parapsidal sutures are distinct. The scutellum is flat in front, convex behind and at the sides, and has a wide median groove on its posterior half. The metanotum is very short; seen from the side very convex. The epinotum at the brow of the declivity is nearly four times as wide as long. The petiole is moderately convex above and at the sides, and one-third wider than long. The ventral lamella is produced into a blunt angular projection, truncated behind and in front. Abdomen cylindrical, all the segments decidedly wider than long. The 6th segment is narrowed towards the apex, which is rounded. The stipites, seen from above, are slightly divergent at their apices, and densely fringed with golden hairs; the volsellae are long, and reach almost to the apex of the stipites. All the femora are compressed and flattened from front to back, and much wider at the base than at the apex. Wings with a slightly yellowish tinge, the nervures dark brown.

The ♂♂ of this species are exceedingly common at light during the rainy season in South Rhodesia; the ♀♀, however, do not appear to be so frequently met with as *helvolus*.

♀ unknown. (G.A., R.M., S.A.M. colls.)

Race RHODESIAE, Forel.

Ann. Soc. Ent. Belg., vol. 57, p. 111; ♀, 1913.

The largest ♂, 8.5 mm., of this race is smaller than that of the type, and the smallest examples, 3 mm., hitherto found, are probably not the minimum size.

This race differs from the type and from *badius* by its lighter, or more straw-yellow colour. The head is shorter and more feebly emarginate posteriorly, and hardly more than one-sixth longer than wide. The node is as wide as long.

Hab. Bulawayo. (S.A.M., R.M., G.A. colls.)

SUB-GENUS RHOGMUS, Shuckard.

Ann. Nat. Hist., vol. 5, p. 323, 1840. Emery, Zool. Jahrb. Syst., vol. 8, p. 702, 1895.

D. (SUB-G. RHOGMUS) FIMBRIATUS, Shuckard.

(Plate IV., figs. 36, 36a.)

Ann. Nat. Hist., vol. 5, p. 325, ♂, 1840. Emery, Zool. Jahrb. Syst., vol. 8, p. 736, ♀, 1895. Brauns, Zeitschr. f. Hymen. u. Dipt., vol. 3, p. 294, ♀, 1903.

This species is the only representative of the sub-genus in South Africa. The variation in the worker caste is more complicated than in the other species of the genus, owing to the fact that there is not a gradual differentiation between the largest and the smallest forms. There are practically four groups, having either 11, or 10, or 9, or 7-8 jointed antennae, each group having its maxima and minima forms, with the shape of the head varying according to the size of the insect.

The forms with 11-jointed antennae vary in length from 8 to 3.5 mm.

"	10	"	"	3.1 to 2.7 mm.
"	9	"	"	3 to 2.6 mm.
"	7-8	"	"	2.2 to 1.7 mm.

The ♀ ♀ of this species may be distinguished from either *helvolus* or *affinis* by the absence of the spiniform posterior projections of the frontal carinae, and also, in the largest examples, by the denser puncturation and the dull thorax, which is finely but distinctly rugulose. From *fulvus*, race *badius*, which this species resembles in the indistinct pygidial impression, it may be distinguished in the larger forms by the dull thorax, and in the smaller by the much stronger puncturation.

♂ maxima. 8 mm. Head, flagellum and thorax castaneous red, the head a little darker than the thorax, and the petiole lighter, abdomen, legs, and scape reddish yellow. The anterior third of head is finely punctured, microscopically rugulose and dull, the rest of the head above and at the sides is closely and strongly punctured, the space between the punctures smooth and shining. The frontal carinae are finely rugoso-punctate, the mandibles sparsely punctured, smooth and shining. The pro- and mesonotum with larger but shallower punctures than on the head, the epinotum very faintly punctured; the whole thorax is transversely rugulose and sub-opaque, the rugulosity on the epinotum being stronger, so that that segment is entirely dull. The petiole is very finely rugoso-punctate and dull. The scape of the antenna, the abdomen and the legs shining, finely and sparsely punctured. The pubescence is very short and scanty on the abdomen, and almost entirely absent on the head and thorax; there are a few long hairs on the clypeus and pygidium, and two or three on each side of the posterior angles of the node. The head is as long as wide, widest in front, narrowing only slightly towards the posterior angles, the posterior margin shallowly emarginate. The posterior margin of the pronotum is arcuate, not angularly emarginate as in *badius*. The node of the petiole is one and a quarter times wider than longer. The median impressed line is shallow in front of the head and on the vertex, moderately deep posteriorly. The sub-apical tooth of the mandible truncate. Antennae 11-jointed.

♂. Antennae 11-jointed, 5-3.5 mm. These differ from the maxima by having the head proportionately shorter, and wider anteriorly. The colour is also lighter; the anterior third of the head is less dull, and the thorax is more shining; the pubescence of the head and thorax more distinct.

♂. Antennae 10-jointed, 3.1-2.7 mm. The head is only a little less wide than in the smallest of the forms with 11-jointed antennae. The puncturation is, relatively to the size of the body, much coarser.

♂. Antennae 9-jointed, 3-2.6 mm. In the smaller of these the head resembles the preceding group; in the larger on the contrary, the head is narrower in front than behind, its sides are distinctly convex, and the clypeus projects further forwards.

♂. 8- or 7-jointed, 2.2-1.7 mm. In the larger of these, the projection of the clypeus is even more pronounced, but the head is only very slightly narrowed in front; on the other hand, in the smaller forms, the head is very plainly narrower in front than

behind, and the clypeus projects considerably forwards, the puncturation and pubescence is also more pronounced.

♀. 50 mm. Head 4 mm. long \times 5 mm. wide; thorax 6.5 mm. long; abdomen 30 mm. long; free portion of hypopygium 7 mm. long. Head, thorax, petiole and dorsal surface of abdomen ferruginous, ventral surface of abdomen and legs, ferruginous-flavous, hypopygium castaneous; node and 1st abdominal segment somewhat darker. Head a little wider than the posterior margin of the petiole, much wider than the thorax, wider than long. Sides of the head sinuate in the middle, occipital margin widely but shallowly emarginate. A deep median groove extending from the posterior angle of the clypeus to the occiput, divides the dorsum of the head into two halves. The anterior face of the head, above the antennal sockets, moderately excavated. Clypeus flat, with a slight emargination in the middle of the anterior margin, angularly produced behind between the frontal carinae. The latter are tumid and not distinct. The antennae do not reach the occipital margin; the scape as long as the flagellum. The latter 10-jointed, the 1st joint slightly longer than broad, the 2nd-9th joints wider than long, the apical twice as long as wide. Mandibles about three-fifths as long as the head, curved inwards, the inner edge bounded by a raised line, the apex acuminate. Dorsum of thorax rather flattened, the sides of the pronotum rounded, of the meso- and metanota sloping inwardly. Epinotum a little wider than the pronotum, the declivity obsolete. The petiole is roughly semicircular, the anterior margin sinuate, the lateral angles considerably rounded; anteriorly there is a slight median impression above; the posterior margin is convex, except laterally behind the posterior angles, where there is a concavity on each side. The posterior angles of the node are prominent, the apices obtuse. First-3rd abdominal segments sub-equal in length, 4th and 5th sub-equal, both slightly longer than the 3rd, all the segments wider than long. The hypopygium differs very considerably from that of *helvolus*. The median apical incision is indeed so deep that, when seen from above, the organ may be described as consisting of a short basal portion, carrying two lateral projections which curve downwards and slightly inwards, and are rapidly narrowed towards their apices. The upper surface of these projections are longitudinally hollowed out, the external edge of the excavations so formed being less sharp than the internal. The left-hand fork or projection has at its base a smaller excavation, which is only feebly indicated in the right-hand fork. All the legs have 5 joints to the tarsi, these are shorter than the tibiae.

The head is dull, microscopically punctulate, with a few larger punctures interspersed. The thorax is sub-nitidulous, moderately and finely punctured, also with a few larger punctures interspersed. The petiole is punctured and shining. The abdomen is very shining, the dorsal surface very sparsely and finely punctulate. The hypopygium is more or less rugulose and dull, the projections somewhat shining externally.

The above description is drawn from the specimen in the collection of Dr. H. Brauns, Willowmore. This specimen was taken from the nest by Mr. G. A. K. Marshall at Salisbury, S. Rhodesia.

"♂. 37 mm.; alar expanse, 46 mm. Rufo-testaceous, very pilose upon the face, the thorax above and beneath, the coxae, also the petiole below, the margins of the terminal segments above and of the two last beneath, which are densely fringed. The head black upon the vertex and behind; face convex, sulcated in front of the anterior ocellus; the ocelli large, disposed in an equilateral triangle on the vertex; with about the diameter of one intervening between the anterior ocellus and the posterior pair; antennae slender, setaceous, the scape one-fourth the length of the organ; mandibles broad, nearly triangular, very slightly curved, the inner edge acute. Thorax gibbous in front and at the scutellum; prothorax very distinct, and metathorax slightly produced and rounded posteriorly; wings sub-hyaline, their nervures robust and brown, the radial lost in a large dilated dark patch at the commencement of the marginal cell; the cubital slightly undulated, the first recurrent inserted just beyond the middle of the first sub-marginal cell (cubital), and the 2nd recurrent half-way between the first and the termination of the cell, and diverging obliquely towards the edge of the wing; legs castaneous, the femora elongate, ovate, compressed, their outline slightly rounded above and below. Abdomen opaque, clavate, the petiole transverse and quadrate convex, fringed at its apex, and very pilose beneath, where it is slightly longitudinally carinated, not so wide as the 2nd segment [*i.e.* 1st abd. segment, mihi, G.A.] which viewed above is nearly quadrate, the remainder all transverse; of these the penultimate and terminal are the largest, the latter deeply emarginate in the middle, fimbriated along the edge, as are also the two last ventral segments, the terminal of which is semicircular, and the penultimate nearly quadrate."

As I have had only a considerably damaged specimen before my eyes, I have preferred to copy Shuckard's original description. The ♂ of this species is easily distinguished from all our other

species by the very globose thorax, which, with the petiole, is densely clothed with long, golden, erect hairs, and by the shape of the abdomen, in which the apical segments are much wider than the 1st-3rd, and by the dense dark golden fimbria of the last two segments.

(R.M., G.A. colls.)

SUB-GENUS ALAOPONE, Emery.

Ann. Mus. Stor. Nat. Gen., vol. 16, p. 274, 1881. Zool. Jahrb. Syst., vol. 8, p. 702, 1895.

There are but three species of this sub-genus recorded from the South African region, all known only in the male sex.

D. (Sub-G. ALAOPONE) *ATTENATUS*, Shuckard.

"♂. 22 mm. Alar expanse 31.5 mm.

Pale reddish, testaceous, opaque, sub-pubescent, slender; head black, except the mandibles, which, as well as the scape of the antennae, are pitchy, the latter barely one-fifth the length of the organ, which is filiform and elongate; ocelli posed in a triangle at the vertex, moderately large, with about the space of the diameter of one ocellus between the posterior and the anterior, in front of which the face (which is convex) is sulcated; mandibles broad and very slightly curved, their inner edge acute, with an obtuse angulation at the base within. Thorax gibbous in front and at the scutellum, the latter transverse with a longitudinal impression in the centre; metathorax produced slightly and rounded posteriorly; wings obscure, their nervures reddish brown, the cubital slightly waved, the recurrent straight and inserted at less than two-thirds the length of the 1st marginal cell; legs castaneous, the femora elongate ovate, their outline rounded both above and below. Abdomen obscure, the petiole quadrate, gibbous, the ventral portion very slightly obtusely portioned, the remaining segments transverse, the sexual organ protruding at the apex of the terminal segment and fringed. *Gambia?*"

I have not met with this species in S. Rhodesia. It has been recorded from Capetown (teste Emery), German S.W. Africa, and Bechuanaland. (Schultze.)

Var. *ACUMINATA*, Emery.

Ann. Soc. Ent. Belg., vol. 43, p. 462, ♂, 1899.

"♂. This differs from that which I consider as the type, by the form of the stipes in the genital armature. The two pieces of the

pair are near together and parallel in the new variety, whereas they are clearly divergent behind in the type. Moreover, each is obliquely truncated, so that the medial angle of its posterior extremity is acute and pointed. Otherwise like the type, but a little smaller. Orange Free State."

D. (Sub-G. ALAOPONE) *DIADEMA*, Gerstaecker.

Monatsb. Akad. Wiss. Berlin, p. 261, ♂, 1858. Forel, Ann. S. E. Belg., vol. 43, p. 309, ♂, 1899.

Gerstaecker's description of the species is so short as to be useless; a more complete one has been made by Forel, which is as follows.

"♂. 20-20.3 mm. The compound eyes are nearly smooth, the facets not forming separate convexities. Width of the head with the eyes, 3.3 mm.; length of the head without the mandibles, 1.9 mm.; maximum width of the thorax, 3 mm.; maximum width of the abdomen, 3 mm.; width of the petiole 2.1 mm., length 2 mm.; length of anterior wing 15.5 mm. .

Elongated like *juvenculus* (= *fulvus*). Mandibles thick, short, bevelled at the apex, smooth and shining. Labrum entire, as in *helvolus* and *nigricans* (bilobed in *juvenculus*). Mutual distance of the posterior ocelli a little greater than their distance from the compound eyes. The ocelli are not very large, much smaller than the interval which separates the posterior ones from each other. The frons gibbous, the frontal sinus of the usual shape, and extending from the frontal area to the anterior ocellus, without forming a deep impressed line such as is seen in *juvenculus*. The clypeus also is not sunken as in that species. Thorax fairly strongly narrowed behind, more so than in *juvenculus*. Petiole cubic and rounded, a little widened posteriorly, where it is wider than it is long, but the width in front is hardly equal to its length. Abdomen narrow and elongate, but slightly curved, as in *juvenculus*. The femora are widely dilated and flattened up to the tibial articulation, which is barely narrowed and not in the least rounded or thickened, as is the case in the other species. The femora are also shorter, being but a trifle longer than the coxae. The scape is barely longer than the first 4 joints of the flagellum.

The head is closely punctured and dull, except the frontal area, which is smooth and shining; the space between the punctures does not appear quite smooth. The thorax, petiole and abdomen are abundantly punctured and sub-nitidulous, the thorax is more shining than the petiole and abdomen. On the latter the punctures are fairly close, but without forming reticulations. The last abdominal

segment is smooth and shining, without deep punctures. A yellowish and slightly erect pubescence is present all over, except on the head, where it is sparser, and on the legs and mandibles, where it is absent. On the abdomen it hides the puncturation to a certain extent. There is a yellow and rather woolly pilosity abundant on the coxae, base of the femora, clypeus, metanotum, petiole and extremity of the abdomen, and ventral surface of the thorax, very sparse or wanting elsewhere. Scapes, tibiae and mandibles smooth, shining and glabrous, except for a small row of little hairs on the edge of the tibiae. The colour is pale testaceous yellow. Head, mandibles, tarsi and a narrow border at the apical margins of all the abdominal segments, rusty red. A transverse brown streak on the vertex. Wings feebly tinged with brown, especially the radial cell which is dark brown. Described from the type."

D. (Sub-G. ALAOPONE) MONTANUS, Santschi, var. BONDROITI, Santschi. (Type) Rev. Suisse Zool., vol. 18, p. 750, ♂, 1910. (Variety) Ann. Soc. Ent. Belg., vol. 56, p. 162, ♂, 1912.

"♂. 22.5 mm. Width of head, 3.8 mm.; width of thorax 4 mm.; width of abdomen 3.8-4 mm. Length of front wing, 20 mm. Light testaceous yellow; margins of abdominal segments narrowly reddish yellow. Head brownish black, slightly reddish in front. Mandibles and legs ferruginous. Wings slightly tinged with brown, stigma and nervures brown. Head finely punctured, dull; frontal area, mandibles, scape and first 2 joints of the flagellum, legs and last segment of abdomen smooth and shining. Abdomen and the thorax dull, as finely punctured as the head, but less densely, thorax slightly shining. A yellow and woolly pilosity is plentiful on the coxae, base of femora, sternum, the sides, the ventral surface of the petiole and last abdominal segment. On the dorsum of the thorax and petiole there is a more erect and silky pilosity, fine and fairly long. The pubescence is downy, short and dense on the head, denser on the abdomen, and less so on the thorax. Head slightly convex above, the frons prominent. The frontal sulcus extends to the anterior ocellus. The lateral ocelli separated farther from each other than from the eyes; the latter shining, with indistinct facets. Frontal area wide and short. Clypeus feebly lobed in the middle. Mandibles short, as wide as half their length, the internal margin as strongly excised as in *diadema*, with the apex bevelled off. There is a wide and shallow impression near their external angles. Petiole cubic, slightly rounded, a little narrower in front, wider than long. Abdomen almost cylindrical. The stipites of the

genital armature are roundly truncate at the apex, the external margins in their lower half are slightly concave. The volsellae are large and extend beyond the stipites. The internal paramera (sagittae) form two wide lamellae as in *diadema*, from which and from *attenuatus* it may be distinguished by the genital armature. (Type Killimandjaro.) Variety, Transvaal."

I have combined the two descriptions, since the variety differs from the type practically only in the larger head and mandibles, with the former more pilose, and in the stipites, which in the type are smaller and straight on the external margins.

TRIBE ECITINI, Forel.

With only one genus in the South African region.

GENUS AENICTUS, Shuckard.

Ann. Nat. Hist., vol. 5, p. 266, 1840. Smith, Journal Linn. Soc., Lond., vol. 2, p. 79 (*Typhlatta*), 1857. E. André, 2me Suppl. aux Fourmis, p. 2, 1885. Emery, Bull. Soc. Ent. Ital., vol. 33, p. 43, 1901.

Characters.

♂ Monomorphic, or varying only in size (except *E. mariae*, Em.), and that within narrow limits. Clypeus in the form of a narrow band above the mouth. Frontal carinae vertical, close together, and curved round the antennal sockets. Mandibles dentate. Eyes absent. Antennae 10-jointed, the terminal joint not noticeably thicker than the rest. Thoracic sutures feeble, or obsolete. Epinotum unarmed. Tibiae with one rudimentary calcar. Abdomen short, more or less oval.

♀. (Known only in one species, *abeillei*, André, from North Africa.) Clypeus, frontal carinae and antennae as in the ♂. Eyes absent. Mandibles narrow, edentate and acuminate. Thoracic sutures absent. Petiole 1-jointed and nodiform. First abdominal segment campaniform, not constricted from the following segment so as to form the 2nd joint of a 2-jointed petiole as in the ♂. Abdomen elongate, cylindrical and pointed at the apex. Hypopygium projecting slightly beyond the pygidium. Middle and hind tibiae without calcaria.

♂. Clypeus very short, insinuated between the frontal carinae. The latter short. Mandibles acuminate and edentate. Eyes and ocelli well developed, sometimes very large. Antennae 13-jointed, scape thick, flagellum thinning towards the apex. Mesonotum

gibbous, overhanging the pronotum; scutellum gibbous; epinotum short. Legs slender, tibiae usually with a rudimentary calcar. Petiole 1-jointed, transverse, flattened or excavated above. Abdomen cylindrical or clavate. Genital armature entirely retractile. Stipes large, covering laterally the volsella; lacinia very small. Sub-genital plate forked, the branches linear, parallel and distant. Unlike the species of the sub-genus *Dorylus*, the workers of this genus do not so persistently avoid the light, and may be seen moving about in the open, usually in files, even in the bright sunshine. They are also far more nimble than those insects. Probably many species live an entirely subterranean existence, but all the species which are known to me from Rhodesia have been taken above the surface of the ground.

Key to the ♂ & ♀ of the Genus *Aenictus*.

- (4). 1. Third and 4th joints of the flagellum, or at least the 3rd, distinctly longer than wide.
- (3). 2. Head distinctly wider in front than behind; dorsum of epinotum evenly and strongly reticulate-punctate *eugeniae*, Emery.
- (2). 3. Head not wider in front than behind, widest in the middle; dorsum of epinotum unevenly and shallowly reticulate-punctate *rotundatus*, Mayr.
- (1). 4. Third and 4th joints of the flagellum as wide as, or wider than long.
- (6). 5. Head wider in front than behind in the ♀ major, parallel-sided in the ♂ minor *mariae*, Emery.
- (5). 6. Head not wider in front than behind, workers monomorphic
steindachneri, Mayr.

Without having seen the species, it is not possible for me to include *rixator*, Forel, in the above Key. It appears to differ from the ♂ minor of *mariae*, Emery, only in having 3 instead of 4 teeth to the mandibles.

A. RIXATOR, Forel.

In Emery, Bull. Soc. Ent. Ital., vol. 33, p. 48, ♀, 1901.

"♀. 1.9 mm. Mandibles narrow, their margins nearly parallel, shining, feebly striate and armed with 3 teeth. Frontal carinae short, fused together posteriorly. Head rectangular, as wide behind as in front, feebly emarginate behind, and one-fifth longer than wide. The scape hardly reaches back to the posterior two-fifths of the head, thickened along the apical two-thirds. Third to 6th joints of the flagellum wider than long. Meso-metanotal suture forming a distinct impression, but not constricted. Dorsum of epinotum convex in the middle, the declivity triangular, margined by a distinct ridge. Nodes of the petiole longer than wide, the 1st joint longer and a little wider than the 2nd, having below and right

in front a very short tooth, directed obliquely backwards. Very smooth and shining, including the petiole. Metathorax and sides of mesothorax fairly shining and reticulate. Piligerous punctures distinct but scanty. The pilosity is fine, yellowish, rather short and sparse, and nearly everywhere oblique. Of a dirty yellow colour, hardly brownish; head and thorax rusty yellow or yellowish red.

Natal. (Wroughton.)"

A. ROTUNDATUS, Mayr. (Plate IV., fig. 37.)

Ann. K.K.N.H. Mus. Wien, vol. 16, p. 1, ♀, 1901.

♀. 2.3-3.8 mm. Reddish ochre, the basal segment of the abdomen above in some specimens, a little paler. Smooth, very shining and with a few small punctures on the head, pronotum and abdomen; mesonotum, epinotum and petiole shallowly and rather unevenly reticulate-punctate and dull, but with a slight gloss on the dorsal surfaces. Fine pubescent hairs absent, except on the flagellum. There is a long, yellowish and rather sparse pilosity on the petiole and abdomen, and also, but less regular and scantier, on the head, scape and thorax. Head, excluding the mandibles, very little longer than wide in the larger examples, and about one-sixth longer than wide in the smaller, as wide behind as in front, widest in the middle, convex above and at the sides, very feebly emarginate posteriorly. The frontal carinae are fused together posteriorly, anteriorly they curve round above the very short clypeus, so as to form a semicircular rim round the antennal sockets. The mandibles are elongate triangular, narrowed at the base, dull, finely punctate-striate except along the masticatory margin, which is smooth and shining, and furnished with about 8 or 9 small teeth, and a large sharp apical tooth. The scapes of the antennae reach back as far as the posterior four-fifths of the head; 1st-3rd joints of the flagellum longer than wide, 4th, 5th, and 6th as wide as long, 7th a trifle wider than long, 8th longer than wide, apical joint two and a third times longer than wide. Pro- and mesonotum together rather convex longitudinally; laterally the thorax is moderately compressed, dorsally depressed between the meso- and epinotum. The dorsum of the epinotum is widest in the middle, and one and three-quarter times as long as wide; it slopes downwards from the middle to the declivity. The latter is vertical, very short, one-third the length of the dorsum, and feebly margined all round. The 1st joint of the petiole is one-quarter longer than wide, very convex above, but slightly so at the sides; the 2nd joint, seen from above, is narrower in front than behind, and as wide posteriorly as it is long.

The ventral lamella of the 1st joint is produced anteriorly into an angular projection pointing downwards, the 2nd joint is produced below and anteriorly into a blunt projection directed forwards. The 1st abdominal segment as long as, or a little longer than wide, and as long as the remaining segments taken together. Legs long, the 1st joint of the hind tarsi as long as the tibia.

Bulawayo. Port Elizabeth. (Brauns.)

(S.A.M., R.M., G.A. colls.)

A. STEINDACHNERI, Mayr.

Ann. K.K.N.H. Mus. Wien, vol. 16, p. 2, ♀, 1901.

"This species differs from *rotundatus* in the following particulars.

♀. The sides of the epinotum and also of the metasternum plentifully clothed with a backwardly directed pubescence, whereas in *rotundatus* the epinotum has no pubescence and the sides of the metasternum only a scattered pubescence.* The 3rd-7th joints of the flagellum not longer than wide. The mesonotum, the dorsum of the epinotum and the 2nd joint of the petiole, smooth and shining, with a few piligerous punctures. The epinotum like that of *rotundatus*, but the boundary between the dorsum and the declivity is placed rather higher up, and the declivity is bounded by a raised margin only at the sides (in a larger ♀ before me, a curved raised margin above is distinctly present).

Reddersburg, Orange Free State. (Brauns.)"

A. EUGENIAE, Emery. (Plate IV., fig. 38.)

Ann. Soc. Ent. France, vol. 63, p. 48, ♀, 1895.

♀. 3.7-4 mm. Larger and much darker than *rotundatus*, and varying less in size than that species. The colour is a bright castaneous red, lighter on the abdomen. The legs are yellowish red, the sides of the thorax below, and the mandibles, brownish red. This species closely resembles *rotundatus*, differing from it only in the following characters. The pilosity is less abundant, but more regularly distributed and longer. The head is distinctly wider in front than behind. The masticatory margin of the mandible is smooth and edentate, or, in some specimens with traces of three minute teeth behind the apical tooth, which is blunter than in *rotundatus*. The antennae are rather longer, the scape almost reaching back to the occipital margin, and all the joints of the flagellum are distinctly longer than wide. The thorax is rather

* The specimens of *rotundatus* in my collection, determined for me by Dr. Forel, have no pubescence on the metasternum, only a few long hairs.—G. A.

narrower, and less compressed between the meso- and epinotum. The latter is strongly reticulate-punctate, as are also the sides of the mesonotum, the whole of the 1st joint of the petiole, and the sides of the 2nd. The puncturation is decidedly larger and more distinct than in *rotundatus*. The posterior corners of the pronotum also show a slight puncturation. The dorsal surface of the 2nd joint of the petiole is nearly smooth and rather shining. The limits of the dorsum and the declivity of the epinotum are clearly defined, as the brow forms a sharp overhanging edge, so that the declivity also appears somewhat concave. The 1st node of the petiole is a little narrower, more parallel-sided and less convex above than in *rotundatus*. Legs longer and more slender, the 1st tarsal joint of the hind legs as long as the tibiae.

Bothaville, Orange Free State. (Brauns.) Makapan. (Simon.) Bulawayo.

This species was taken on one occasion near Bulawayo in large numbers, marching in single file and carrying larvae from under one large stone to another. Amongst these workers there was found a monstrosity. This specimen has but one joint to the petiole, which is fused on the whole of its anterior surface to the epinotum, which consequently shows no declivity, and is moreover very lop-sided.

(S.A.M., R.M., G.A. colls.)

A. MARIAE, Emery.

Ann. Soc. Ent. France, vol. 63, p. 48, ♀ minor, 1895.

♀. This species varies in size between wider limits than either *rotundatus* or *eugeniae*, varying from 2 to 3 mm. The smaller forms also differ from the larger in the shape of the head, so that it is hardly correct to say that the workers of this species are monomorphic. In the ♀ major the colour is reddish ochre, or similar to *rotundatus*, in the ♀ minor it is paler or straw-yellow, excepting the anterior margin of the head and the margins of the mandibles, which are dark. The pilosity is similar to that of the preceding forms, but scantier. In the ♀ minor the whole body is smooth and shining; in the ♀ major the sides of the mesonotum, and the epinotum, excepting a small smooth area in the middle of the dorsum, are dull and very finely punctured.

The head is nearly parallel-sided in the ♀ minor, moderately convex in the ♀ major; it is a little longer than wide, and shallowly emarginate posteriorly. The mandibles are shining, fairly strongly punctured, with 4 small but distinct teeth on the masticatory margin and a strong apical tooth. The antennae are much shorter rela-

tively than in the other species; the scape does not reach back beyond the middle point of the head; the 1st and 2nd joints of the flagellum are a little longer than wide, the 3rd-8th joints wider than long. The thorax is relatively shorter and wider than in the other species, and is hardly contracted or depressed between the meso- and epinotum. The dorsum of epinotum is fairly distinctly delimited from the declivity in the ♂ major, but in the ♂ minor the declivity has a rounded brow and merges gradually into the dorsum. The petiole is not notably different from that of *rotundatus*. The 1st segment of the abdomen is one-third longer than the remaining segments taken together. The legs are shorter and stouter than in *rotundatus* or *eugeniae*. The 1st tarsal joint of the hind legs only three-fifths the length of the tibia.

Bulawayo; not common. Makapan. (Simon.)

(S.A.M., R.M., G.A. colls.)

Var. *NATALENSIS*, Forel.

In Emery, Bull. Soc. Ent. Ital., vol. 33, p. 49, ♂, 1901.

"♂. 2-2.8 mm. Differs from the type by the colour of the head and thorax, which is brownish yellow and even rusty brown in the larger individuals. In the latter and ♀ media, the thorax is shallowly compressed, hardly so at all in the ♀ minima. Quite distinct from *A. rixator* by the triangular mandibles and the declivity of the epinotum, which is not marginate. The ventral lamella of the 1st joint of the petiole is obtuse, thick, pointing downwards and very distinct. The pilosity is longer.

Natal. (Haviland.)"

A. INCONSPICUUS, Westwood.

Trans. Ent. Soc. London, vol. 4, p. 237, ♂, 1817.

"♂. This insect disagrees in one or two slight respects from Mr. Shuckard's character of *Aenictus*, . . . of these characters the most striking are the slightly opaque whitish wings, with the veins and stigma almost concolorous with the membrane of the wing; the antennae gradually attenuated from the 4th or 5th joint, and the very clavate femora to all the legs. . . . *Nigro cinereus, pubescens, antennis rufo-piceis, apicibus sensim acuminatis, articulo basali nigro; mandibulis longis, acutis, piceo-rufis basi nigris; alis fere translucidis, venis stigmatæque fere inconspicuis; pedibus perbrevibus, femoribus clavatis, pedunculo abdominis transverso, antice parum angustiori; disco haud canaliculato. Long. corp. lin. 4; expans. alar. lin. 6½.*

Habitat in Africa australe. Drege. (In Mus. W. W. Saunders.)"

Smith gives a rather clumsy illustration of this species in Cat. Hymen. Brit. Mus., vol. 7, plate 2, fig. 15a, which is of very little assistance in completing Westwood's very insufficient description. As far as one may judge by the description and the figure referred to, this insect bears a great resemblance to the species described below as *tuberculatus*, n. sp. I am inclined to suspect that the pale colouration of the nervures and stigma is due to immaturity.

A. TUBERCULATUS, n. sp.

♂. 9 mm. Allied to *buttgenbachi*, Forel. Dark ochreous; pronotum except the margins, mesonotum except the portion bordering the median and lateral sulci, scutellum except the extreme posterior portion, dark brown; epinotum, petiole and abdominal segments above, especially the first two, slightly browned; mandibles and antennae ochreous; head black. Scape, basal segments of flagellum, mandibles, front of the head, and the legs, with long pale pilose hairs, which are shortest on the head; the rest of the body without pilosity, but covered with a close adpressed and yellowish pubescence. Head behind the eyes very smooth, shining and impunctate, the rest of the body closely punctured with small shallow punctures; legs shining and sparsely punctured. Head two and a quarter times wider than long; seen from above, it has the shape of a reversed triangle, with the eyes on each side of the base (which is straight), and the apex (*i.e.* the occipital region) broadly rounded. Front of the head below the eyes shallowly concave. The post-orbital dorsal surface is feebly convex, almost flat. The eyes are hemispherical, not large, less than half the length of the sides of the head. The ocelli are not raised, placed forwards just above the vertical face of the head; the distance between the anterior ocellus and the line joining the posterior ocelli, less than its own diameter. Mandibles very long, as long as the distance between the inner margins of the eyes, narrowing towards the apex, which is acute; a slight angle, hardly large enough to be called a tooth, separates the basal from the inner and concave margin. Scape half as long as the mandibles, two and a half times longer than its apical width; flagellum thinning towards its apex, nearly four times longer than the scape, all the joints longer than wide. Pronotum very slightly exposed; mesonotum rounded in front, somewhat flattened behind and above, in the middle, the parapsidal sutures and a median longitudinal sulcus well defined. The scutellum is very round posteriorly. Seen from the side, the face of the epinotum is vertical, slightly concave below.

The petiole is almost three times as wide as long; the lateral margins are considerably raised, so that the dorsal surface of the petiole is strongly concave transversely; it has also a median longitudinal impression. The sides of the petiole are moderately convex. The stipites are broadly truncate and rounded apically, their ventral margins are concave along the apical half; the internal paramera are rounded at the apex, and at about one-third of their length from the apex there is on each side above a flattened and rather spatulate tubercle, directed outwards and slightly backwards; below these, on the ventral margins of the paramera, and nearer the apex, there is a minute, acute triangular tooth on each side. The sub-genital plate is bifurcate, with the arms directed outwards at the apex and fimbriated for about half their length. The femora are round and thin at the base, strongly clavate apically. Wings clear, but slightly browned along the outer margins of the anterior pair, the nervures and stigma black; the wings are long, extending beyond the apex of the abdomen.

The tubercles and teeth on the internal paramera are sufficiently distinctive of this species, which I am inclined to think will eventually prove to be the ♂ of either *eugeniae* or *rotundatus*, the only species which are common in the neighbourhood of Bulawayo.

Habitat, Bulawayo. One specimen taken at light. In my collection.

A. DECOLOR, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 28, p. 668, ♀, 1878.

"Head smooth and without frontal sulcus. The very short declivity is separated from the dorsum of the epinotum by a sharp semicircular ridge. All the joints of the flagellum at least a little longer than wide. The mandibles longitudinally striate, smooth near the masticatory margin. The sides of the meso- and metathorax longitudinally rugose. Rusty red; antennae, abdomen, and legs yellow. Length 3.3 mm."

SUB-FAMILY DOLICHODERINAE.

The members of this sub-family are only likely to be confused with those of the *Camponotinae*, from which they may be distinguished by having the anal orifice transverse, and not circular. The petiole is 1-jointed, and the node, in all our South African species is small and much less conspicuous than in any of the *Camponotinae*. All our species are also very soft-bodied ants, the skeleton being but slightly chitinized.

Characters.

♀. Monomorphic. Frontal area more or less distinct. Antennae 12-jointed, 11-jointed in *Semonius*. Sting rudimentary, except in the Ceylonese genus *Aneuretus*. Middle and hind tibiae with one pectinate calcar, occasionally there is a small outer calcar.

♀. Always winged; like the worker except for the usual sexual differences.

♂. Clypeus prolonged backwards between the frontal carinae. Mandibles as in the ♀, or short and narrow. Antennae 13-jointed, the scape is not longer than the second joint of the flagellum except in *Tapinoma* and *Semonius*.

Nymphs never enclosed in cocoons.

The classification of this sub-family, especially in the definition of the genera, is based largely on internal anatomical characters, such as the structure of the gizzard. As we have only three indigenous genera, including very few species, it has fortunately not been found necessary to burden the description of the genera with these difficult details, which can only be observed with the aid of fine dissections.

All the workers of the *Dolichoderinae* possess anal glands which produce a secretion hardening on exposure to the air, and usually of an unpleasant odour. This secretion is used as a means of protection, since its stickiness serves to clog the limbs of other insects which may attack these ants.

All our species, with the exception of the introduced *Iridomyrmex humilis*, the "Argentine ant," are shy inconspicuous insects, forming only moderate-sized colonies. *Iridomyrmex humilis*, whose original home was probably in Brazil, is an ant which has recently spread through a large part of the globe. Its appearance in South Africa would appear to date from the time of the last Boer War, when it was probably introduced with forage. It is very common all over the Cape Peninsula, and in the neighbourhood of Cape Town it is not only a great pest in houses, but is also the dominant species. Thus on the slopes of Table Mountain very few ants of other species are to be found below the 800-1,000 ft. level, in which area *humilis* is exceedingly plentiful; above that level it is very rare, if not altogether absent, whereas other genera, e.g. *Plagiolepis*, *Ocymyrmex*, *Tetramorium*, are more commonly represented. The astonishing paucity of species and genera at the lower levels of the mountain, and the absence of *I. humilis* in the higher is probably due to two causes, namely, the non-dolichoderine species cannot survive in competition with the Argentine ant, and the latter is unfavourably affected by the climatic conditions of the higher

levels. How far the pest has spread in the South African Region I am not able to say, but the ant has been recorded as far east as Maseru in Basutoland.

The sub-family is divided into 4 tribes, of which only one, *Tapinomini*, Emery, is represented in South Africa.

Key to the Genera of the Tribe TAPINOMINI, Emery.

♂ ♂ and ♀ ♀.

- (2). 1. Antennae 11-jointed *Semonius*, Forel.
- (1). 2. Antennae 12-jointed.
- (4). 3. Scale of petiole distinct; base of abdomen not slanting forwards, not overhanging the petiole *Iridomyrmex*, Mayr (introduced genus).
- (3). 4. Scale of petiole rudimentary, base of abdomen slanting forwards and overhanging the petiole more or less.
- (6). 5. Anal orifice apical; abdomen, when seen from above, with 5th segment visible *Technomyrmex*, Mayr.
- (5). 6. Anal orifice inferior, not apical; 5th segment of abdomen not visible from above *Tapinoma*, Foerster.

♂ ♂

- (2). 1. Anterior wings with 2 closed cubital cells *Technomyrmex*, Mayr.
- (1). 2. Anterior wings with 1 closed cubital cell.
- (4). 3. Scape not longer than the 2nd joint of the flagellum .. *Iridomyrmex*, Mayr.
- (3). 4. Scape much longer than the 2nd joint of the flagellum.
- (6). 5. Scape as long as the first 3 or 4 joints of the flagellum taken together; or if longer, then the head is wider than long *Tapinoma*, Foerster.
- (5). 6. Scape as long as the first 7 or 8 joints of the flagellum taken together; head not wider than long *Semonius*, Forel.

GENUS IRIDOMYRMEX, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 12, p. 702, 1862.

Characters.

♀. Monomorphic; petiole with a distinct scale.

♀. Considerably larger than the ♂; the radial cell of the anterior wing is closed, 2 closed cubital cells and 1 discoidal cell.

♂. Scape shorter than the 2nd joint of the flagellum. In our introduced species the mesonotum is very convex and prominent in front, completely hiding the pronotum; the scutellum is also very large and gibbous. (Plate IV., fig. 42.)

I. HUMILIS, Mayr. (Plate IV., figs. 41 and 42.)

(*Hypoclinea*) Ann. Soc. Nat. Modena, vol. 3, p. 164, ♀, 1868. Forel, Verh. Zool. Bot. Ges. Wien, vol. 58, p. 395, ♂, 1908.

Newall, Journ. Econ. Entom., vol. 1, p. 28, ♀, 1908.

♀. 3.2-3.5 mm. Brown or blackish brown; legs, antennae and mandibles paler. Whole body covered with an exceedingly fine pale

pubescence, which is longer on the abdomen. Impunctate, subnitidulous. Head somewhat triangular, much wider behind than in front, sides very convex, posterior angles strongly rounded, occipital margin feebly arcuate. Mandibles moderately long, triangular, the basal margin two-thirds as long as the masticatory, the latter with 4 or 5 blunt teeth, and a large and sharp apical tooth. Clypeus feebly convex, the anterior margin slightly depressed and shallowly concave in the middle, posterior margin well defined. Frontal carinae short, flat and divergent behind. The scape reaches back beyond the occipital margin by one-fifth of its own length; flagellum slightly thickened towards the apex, all the joints longer than wide, 1st and 2nd joints sub-equal in length. Eyes large and flat, situated somewhat dorsally in the anterior half of the head. Pronotum narrower than the occipital margin of the head, moderately convex at the sides and above, and as long as wide. Pro-meso and mesoepinotal sutures well defined. Mesonotum longer than wide, and only a little more than half as wide as the pronotum, sloping towards the epinotum, from which it is separated by a wide and deep depression. Dorsum of epinotum distinctly convex transversely and longitudinally, about as long as wide, less than half as long as the mesonotum. The declivity is smooth and shining. The anterior face of the scale of the petiole is slightly convex, the posterior face flat and shining. The scale slants forwards and is widest in the middle, rounded above, and much wider than thick. Abdomen oval, all the segments wider than long. Legs slender.

♀. 6 mm. Dark brown, abdomen almost black, legs, antennae and mandibles paler. Pubescence longer and denser than in the ♂. Head, excluding the mandibles, a little longer than wide, narrower in front of the eyes than behind them, sides less convex than in the ♂. Eyes large, occupying about one-third of the sides of the head; ocelli small, situated near the occipital margin. Pronotum almost completely hidden above by the mesonotum; the latter is very long, twice as long as wide, very convex in front, moderately so at the sides, and flattened posteriorly. The scutellum is about one-third the length of the mesonotum, widest anteriorly, and rounded posteriorly; metanotum very short. The dorsum of the epinotum is twice as long as the metanotum, much wider than long, inclined towards the declivity, which is nearly vertical, but not sharply defined. Seen from the side, the thoracic profile rises gradually in front towards the posterior margin of the scutellum, beyond which it sinks abruptly to the level of the metanotum.

The scale of the petiole is much wider than in the ♂, and not so narrow above. Abdomen oblong. Wings slightly smoky, stigma and nervures dark brown.

♂. 3.8-4.2 mm. Brown, antennae, mandibles and legs pale yellow, a transverse area between the mesonotum and scutellum dirty yellow. Pubescence as in the ♂. The head is shaped like that of the ♀, but the posterior angles are less rounded. The eyes are very large, occupying more than half the sides of the head, their anterior margins being separated from the base of the mandibles by a distance equal to about half the length of the 1st joint of the flagellum. The mandibles are triangular, thin and very small. The antennae are short, filiform, not reaching back to the posterior third of the mesonotum; the scape is flattened, and shorter than the distance separating the two posterior ocelli; the 1st joint of the flagellum is a trifle more than half the length of the scape, the 2nd joint is longest, and two and a third times as long as the 1st. All the joints longer than wide, diminishing in length successively towards the apical joint, which is a little longer than the preceding joint. Pronotum hidden by the mesonotum. The latter is very globose, convex transversely, and as long as wide. The Mayrian and parapsidal furrows but feebly indicated. The scutellum is raised considerably above the level of the mesonotum and epinotum, and is much more convex transversely than in the ♀. The dorsum of the epinotum is much longer than in the ♀, as long as the scutellum and as long as its apical width; the declivity is vertical, with the brow distinctly rounded. The scale of the petiole is much wider than it is high, and more than twice as wide as long. Abdomen ovate, genitalia partially exerted. Legs long and slender. Wings as in the ♀.

Capetown. Maseru, Basutoland; (R. M. Sloley). (S.A.M., R.M., G.A. colls.)

GENUS *TECHNOMYRMEX*, Mayr.

Ann. Mus. Stor. Nat. Genoa, vol. 2, p. 147, 1872.

Characters.

♀. Anal orifice apical.

♀. Not much larger than the ♂. Anterior wings with 1 discoidal and 2 closed cubital cells.

♂. Antennae filiform; scape not longer than the first 2 joints of the flagellum. The cubital vein in the front wing is sometimes broken in the region of the 2nd cubital cell. Mesonotum not pro-

jecting above the pronotum. Petiole nodiform. Genital armature large.

Key to the ♂ ♀ of Technomyrmex.

- (4). 1. Species more or less yellowish.
 (3). 2. Clypeus with the anterior margin deeply excised in the middle. *arnoldinus*, Forel.
 (2). 3. Clypeus with the anterior margin only slightly excised. *nigriventris*, Santschi, race *albinasis*, Forel.
 (1). 4. Dark brown species *albipes*, Smith, race *Foreli*, Emery.

T. ARNOLDINUS, Forel. (Plate IV., figs. 39, 39a.)

Deutsch. Ent. Zeit. Beiheft, p. 222, ♀, 1913.

♂. 3-3.2 mm. Dirty brownish yellow, legs pale ochreous, apical abdominal segments, and sides of 1st and 2nd segments brown; or thorax, legs and antennae yellowish brown, head pale brown, abdomen wholly dark brown. Head, pronotum, and abdomen smooth and shining, mesonotum, dorsum of epinotum and mesopleura reticulate and rather dull, declivity of epinotum shining and very finely transversely striate. Pubescence pale yellow, scanty on the body, denser on the legs. The pilosity consists of dark, erect and bristly hairs, distributed in a peculiarly symmetrical manner as follows: there are 2 such hairs on the posterior margin of the head, the pronotum has a crescentic row of 6 hairs, parallel with its anterior margin, three on each side, the mesonotum has a pair on each side, and the margin of the declivity of the epinotum has 3 on each side and 1 in the centre. This arrangement of the pilosity is so distinctive in fresh specimens that it would alone serve to distinguish the species from all our other *Dolichoderinae*.

Head about one-quarter longer than wide, the sides moderately convex, the hind angles much rounded, the posterior margin straight. Eyes moderately convex, situated at about the middle of the sides of the head. Clypeus nearly flat, the anterior margin semicircularly and widely excised in the middle. Mandibles smooth, shining and sparsely punctured, the masticatory margin with about 7 small teeth anteriorly, and finely denticulated posteriorly. Scape of antenna reaches back a little beyond the occiput, 3rd-6th joints of the flagellum as wide as long, the rest longer than wide. Pronotum not so wide as the posterior margin of the head, quite one-third wider than long; pro-mesonotal suture distinct; mesonotum distinctly longer than wide, and as long as the pronotum. Mesopinotal suture deep. The dorsum of the epinotum much wider than long, crescentic in outline when seen from above, and rising

from the base towards its apical margin when seen from the side ; the declivity is very oblique, widest in its lower half, and two and a half times as long as the dorsum. Petiole long, without a scale, and completely hidden under the abdomen. The latter is oval, rather pointed at the apex, all the segments much wider than long. The darker variety differs only in colour from the type.

Bulawayo, under stones, also in a hollow stem, in shady moist places. Durban ; (C. B. Cooper).

(S.A.M., R.M., G.A. colls.)

T. NIGRIVENTRIS, Santschi, race *ALBINASIS*, Forel.

Santschi, in Forel, Schultze Forschungsreise Süd-Afr., footnote, p. 22, 1910.

Type species.

"♂. 2-2.8 mm. Pale testaceous yellow, the posterior region of the head, and often the shoulders and dorsum of the thorax more or less brownish, abdomen black. The hairs on the thorax are scanty, fairly short and yellow, they are longer and more abundant on the abdomen and around the mouth. The base of these hairs is often blackish. Pubescence fine, yellowish and moderately abundant all over, slightly lessening the shiningness of the abdomen. Head and thorax sub-opaque. The whole body microscopically reticulate-punctate. Mandibles smooth with a few piligerous punctures. Head a little longer than wide, slightly narrowed in front, the posterior angles rounded, the occipital margin feebly emarginate. The eyes are longer than one-fourth of the sides of the head, their anterior margins reaching the level of the antennal sockets. Clypeus with a wide but shallow median longitudinal groove which ends anteriorly in a distinct emargination. Mandibles with about a dozen teeth, diminishing in size from the apical to the basal. The scape reaches beyond the occiput by about the length of the 1st joint of the flagellum, the median joints of the latter a little longer than wide. The meso-metanotum is rounded posteriorly in an even curve as far as the floor of the meso-epinotal suture ; the stigmata of the mesonotum do not project above its profile. The profile of the epinotum almost rectangular, with the dorsum about one-third the length of the declivity ; the latter flat and clearly margined.

Brazzaville, French Congo."

Race ALBINASIS, Forel.

Forel. *loc. cit.* p. 22, 1910.

"♂. 1.7 mm. Smaller than the type species. Eyes a little smaller. Clypeus with the longitudinal groove hardly or not at all terminated by an emargination in front. As in the type, all the joints of the flagellum are at least a little longer than wide, but the rather shorter scape projects backwards beyond the occipital margin by not more than its own thickness. Thorax noticeably shorter. Pronotum with more distinct anterior angles, one and a quarter to one and a third times wider than long. Mesonotum wider than long. The very short dorsum of the epinotum also wider than long (in the type species distinctly longer, and not wider than long). Declivity of epinotum only bluntly margined. At the sides below, the stigmata project out step-like (only slightly so in the type species). Legs a little shorter. The whole body shining and only very faintly reticulate, the thorax a little less shining. Pubescence scantier (it is fairly scanty in the type species). Pilosity equally distributed. Yellowish brown, thorax and 1st abdominal segment lighter, brownish yellow. Antennae, clypeus, mandibles and legs yellowish white.

Table Mountain. (Schultze.)"

T. ALBIPES, Smith, race FORELI, Emery. (Plate IV., fig. 40.)

Journ. Proc. Linn. Soc. Zool., vol. 6, p. 38, ♀, (*Tapinoma*), 1861.

Race, Emery, Ann. Soc. Ent. France, vol. 62, p. 249, ♀, 1893.

Race, Forel, Ann. Soc. Ent. Belg., vol. 54, p. 446, ♀ ♂, 1910.

♂. 2.2-2.5 mm. Dark brown, base and apex of the scape, the flagellum and the mandibles brownish yellow, legs pale yellow or with the tibiae and femora more or less brown. Head and thorax very finely reticulate-punctate, the puncturation is a little larger on the meso- and epinotum, abdomen microscopically rugulose. Whole body covered with a very fine and short whitish pubescence; there are a few pilose hairs, less evenly distributed than in *arnoldinus*. The body sub-nitidulous, mandibles shining. Head a little longer than wide, wider behind than in front, sides convex, posterior margin shallowly arcuate. Clypeus with the anterior margin feebly emarginate in the middle. Mandibles with a few coarse punctures, the masticatory margin armed with numerous small teeth, the apical and sub-apical teeth the largest. The scape reaches back beyond the occipital margin by about the length of the 1st and 2nd joints of the flagellum; 1st joint twice as long as the 2nd, the latter as wide as

long, the rest longer than wide, apical joint as long as the two preceding taken together. Frontal carinae rather wide apart and divergent posteriorly. Eyes comparatively large, situated in the front half of the head. Thorax very similar in shape to *arnoldinus*; pronotum not so wide as the head, and not much wider than long, pro-mesonotal suture distinct. Mesonotum longer than wide, rising from in front towards the middle and thence sloping down to the meso-epinotal suture. Dorsum of epinotum about one-quarter to one-third the length of the declivity; the latter is widest below, rounded above, the lateral margins rounded but fairly distinct. Abdomen less convex transversely above than in *arnoldinus*, and less pointed towards the apex. Petiole oval, widest in the middle, and hidden by the abdomen which overhangs it.

♀. 3.2 mm. The eyes occupy at least one-third of the sides of the head, ocelli small and set far back. Seen from above, the pronotum is almost hidden by the large mesonotum which is as wide as long, convex in front, flat or slightly concave in the middle behind; the scutellum is about half as long as the mesonotum. The dorsum of the epinotum is almost obsolete, and the declivity less oblique than in the ♂, and not so narrow above. Wings very pale, nervures almost colourless, stigma very faintly tinged with yellow. Otherwise resembling the ♂, but the body is a little duller.

♂. 3 mm. Colour of the ♀, legs, antennae and mandibles yellowish, the femora darker except at the apex. Head much wider than long, and wider in front than behind, posterior margin slightly concave. The eyes large, occupying nearly the anterior half of the sides of the head; ocelli larger than in the ♀. Clypeus shorter than in the ♀, more convex transversely, the anterior margin almost straight. Mandibles large, coarsely punctured and shining, the masticatory margin distinctly dentate. The scape is not as long as the long diameter of the eyes, about as long as the 1st and 2nd joints of the flagellum together. Flagellum filiform, densely pubescent, 1st joint as wide as long, the rest longer than wide. The antennae extend back as far as the brow of the epinotum. The thorax is similar to that of the ♀, but the mesonotum is a little wider, and the scutellum shorter and more prominent; the parapsidal sutures well defined. The dorsum of the epinotum is longer and more convex transversely than in the ♀, and the slope of the declivity is less abrupt. The petiole is much rounder and wider above than in the ♂ or ♀. The genital armature is very large, and more or less exerted. Wings as in the ♀.

Bulawayo; common in moist places under stones, etc. Durban. (S.A.M., R.M., G.A. colls.)

Pubescence whitish, very fine and short. Pilose hairs absent. Very similar to *Technomyrmex albipes*, but differing in the following structural characters.

The head is proportionately wider, and is longer than wide; the frontal carinae are shorter and less divergent posteriorly, the scape is relatively longer. The mesonotum is not highest in the middle as in *albipes*, but at its anterior margin, sloping thence in a gradual curve to the meso-epinotal suture. The dorsum of the epinotum is longer and narrower than in *albipes*, being longer than it is wide below, whereas in *albipes* it is quite as wide below as it is long. The petiole is shorter and narrower. The abdomen widens towards the apex. The eyes are also larger, and the clypeus only feebly sinuate in the middle of the anterior margin.

♀. 4.8 mm. (Hitherto undescribed.) Considerably larger than the ♂. Head and abdomen dark brown, clypeus paler. Thorax brownish yellow, prothorax and tegulae a little darker, legs and antennae ochreous. Pubescence and puncturation as in the ♂. Head as wide as long, posterior margin straight. Eyes situated in the anterior half of the head, and occupying about one-quarter of the sides of the same. Thorax nearly as wide as the head. Pronotum exposed, mesonotum slightly rounded at the sides and in front, flat above, as long as wide, 4 times as long as the pronotum. Scutellum wider than long. Epinotum very little narrower than the scutellum; the dorsum is not sharply delimited from the declivity but merges into it gradually. The declivity is not so steep as in the ♂. The abdomen is nearly as long as the head and thorax together. The 1st segment is nearly twice as long as the 2nd, and one-third wider than long. There are a few black erect hairs on the 3rd and 4th segments, and some paler ones on the clypeus.

“ ♂. 4.7 mm. Head and thorax rusty brown; abdomen brown. Legs and mandibles yellowish. Otherwise like the ♀. Wings slightly tinged with brown, with a single cubital and a single closed radial cell.”

The ♂♂ which I have taken here with the ♀♀, do not attain to this size, being 3 mm. long. The scape is as long as the first 4 joints of the flagellum, and extends back just a little beyond the occipital margin. The ♂ of this species is very similar to that of *Technomyrmex albipes*, but is smaller and differs in the following details.

The head is longer than wide, the posterior angles more prominent. The antennae are longer, extending back as far as the base of the 2nd abdominal segment. The 1st joint of the flagellum

is one-quarter longer than wide, all the other joints at least twice as long as wide. The mesonotum is much more convex and the scutellum posteriorly is also more convex and higher. The epinotum resembles that of the ♀. The legs are long and slender.

The ♂ of the race differs from the type species in its larger size, stronger and denser puncturation, slightly shorter scape and duller surface.

Bulawayo; common. (S.A.M., R.M., G.A. colls.)

T. ARNOLDI, Forel. (Plate IV., fig. 44.)

Ann. Soc. Ent. Belg., vol. 57, p. 139, ♂, 1913.

♂. 1.6-1.7 mm. Light brown, anterior portion of the head, scape, 1st joint of the flagellum, mandibles, tarsi, articulations of the legs and the petiole, yellowish. Moderately shining and almost impunctate. A very fine pubescence on the whole body and legs. Pilose hairs absent except on the clypeus. Head very little longer than wide, rectangular, sides feebly convex, angles rounded, posterior margin almost straight. Eyes situated within the anterior third of the sides of the head. Clypeus wider than long, shallowly but widely emarginate on the anterior border. Mandibles shining and feebly punctured, masticatory margin with a few small teeth, the apical tooth larger and more acute. The scape does not reach back as far as the occipital margin; the flagellum is thickened towards the apex, the 1st joint as long as the 2nd, 3rd and 4th taken together, apical joint as long as the 3 preceding joints together, 2nd-9th joints wider than long. Pro-meso, and meso-epinotal sutures moderately distinct. Pronotum wider than the rest of the thorax, and a little wider than long; mesonotum almost as long as the pronotum; dorsum of epinotum wider than long, only half as long as the mesonotum, the declivity oblique, longer than the dorsum, widest below, its brow rounded. Petiole longer than wide, flattened dorso-ventrally. Abdomen oval, all the segments much wider than long.

♀. 2.7 mm. (Hitherto undescribed.) Dark brown, tarsi pale yellow, articulations of the legs, base of the scape, mandibles and anterior angles of the head brownish yellow. The sides and the posterior margin of the head are straight, the posterior angles rounded. Eyes large, ocelli small and set close to the posterior margin. Pronotum very short, mesonotum large and moderately convex, as wide as long and as long as the distance from the antennal sockets to the posterior margin of the head; scutellum wider than long, two-fifths as long as the mesonotum; epinotum

wider than long, curving very gradually from base to apex so that the dorsal and declivous portions cannot be distinctly defined. Abdomen oblong, as long as the head and thorax together. Other characters as in the ♀.

♂. 1.7 mm. (Hitherto undescribed.) Brownish black, front of head, epinotum and last 3 segments more or less flavous, mandibles, tibiae and femora fuscous, tarsi pale yellow. Pubescence microscopic, the whole body shining and impunctate. Head narrowing towards the occiput, widest across the eyes, one-third wider than long; eyes large, occupying nearly the anterior half of the sides of the head; ocelli on a slightly raised area, not very large. Clypeus shorter than in the ♀, otherwise similar. Mandibles well developed, with a sharp apical tooth, the masticatory margin minutely denticulate. Scape just reaching the occiput, as long as the first 6 joints of the flagellum, all the joints of the latter, except the 2nd, longer than wide, the 2nd as long as wide, the 1st joint half as long again as the 2nd. Pronotum not exposed; mesonotum one-third wider than long, Mayrian furrows obsolete, parapsidal sutures well defined; scutellum less than half as long as the mesonotum, and as wide as long. Epinotum widest at the base and as long as wide at the base. Abdomen ovate, all the segments much wider than long. Genital armature exerted. Wings slightly tinged with yellow, nervures very pale, stigma faintly fuscous.

Bulawayo, in a hollow stem of an *Acacia*. Plumtree, S. Rhodesia, in a hollow gall. Small nests, containing about 30 individuals.

Type of ♀ and ♂ in my collection. (S.A.M., R.M., G.A. colls.)

T. VOELTZKOWI, Forel, var. *RHODESIAE*, Forel. (Plate IV., fig. 43.)
Voeltzkow's Reise Ost Afrika, vol. 2, p. 84, ♀, 1907. (Variety) *Ann. Soc. Ent. Belg.*, vol. 57, p. 139, ♀, 1913.

♀. 2.5-3 mm. Black, clypeus, femora and scape brown, mandibles, flagellum brownish yellow, tibiae, tarsi, coxae and base and apex of femora pale straw-yellow. A very short and inconspicuous pale pubescence all over, and a few long pilose hairs on the clypeus and mandibles. Head shallowly but closely reticulate. Thorax shallowly reticulate-punctate, the puncturation being strongest on the mesonotum. Body slightly shining, the mesonotum and epinotum duller than the rest. Head a trifle longer than wide, the sides convex, the posterior margin moderately concave, the posterior angles strongly rounded. Eyes large, situated just in front of the middle of the sides of the head. Frontal carinae flat, linear and

sub-parallel. Clypeus with a deep and abrupt emargination in the middle anteriorly, which extends quite half the length of the clypeus, and is deeper than wide. Mandibles triangular, widest at the base, shining and sparsely punctured, masticatory margin with about 8 acute teeth, the apical the longest. The scape reaches back beyond the occipital margin by less than the length of the eye. Flagellum one-third longer than the scape, all the joints longer than wide. The thoracic sutures well defined, the posterior rather deep. Pronotum wider than long, rounded in front, the sides very convex, the dorsum moderately so. Mesonotum longer than wide, as long as the pronotum. Dorsum of epinotum wider than long, rising gradually from the suture towards the brow of the declivity, the latter sloping obliquely, longer than the dorsum and with the brow angular. Petiole flattened, longer than wide, widest in front of the middle and pointed at its base. Abdomen ovate. This variety differs from the type only in having the head a little wider behind, in the less convex sides, and the slightly longer scapes.

Bulawayo, nesting in grassy soil; not common.

(S.A.M., R.M., G.A. colls.)

T. GRACILIS, Forel.

Ann. Soc. Ent. Belg., vol. 57, p. 140, ♀, 1913.

♀. 2 mm. Ochreous; apex of abdomen, flagellum and posterior tibiae and femora brownish. Sub-opaque (Forel says "densely punctured"; if so, the punctures are too small to be resolved even under a magnification of 65 diameters). Pubescence short, decumbent and yellowish. Pilose hairs absent. Head almost quadrate and rather flat, not more than one-sixth longer than wide, sides nearly straight, posterior margin straight, hind angles widely rounded. Eyes large, situated more dorsally than laterally, a little in front of the middle of the head. Clypeus three times as wide as long, anterior margin with a shallow median emargination. Frontal carinae closer to each other than they are to the eyes. Mandibles smooth, narrow, largely hidden under the clypeus, and with about 4 or 5 teeth. The scape extends back beyond the occipital margin by one-third of its length; the 2nd joint of the flagellum two and a quarter times longer than wide, nearly as long as the 1st. Thorax narrow, elongate, with the dorsal profile nearly horizontal, therein differing markedly from our other two species. The pronotum is a little wider than long, mesonotum two-thirds as long as the pronotum. The dorsum and declivity of the epinotum of equal length; the declivity is very oblique, sloping

but slightly below the level of the dorsum, from which it is not clearly delimited. Petiolo flattened as in the other species, but more parallel-sided. Legs very long.

Matetsi, near the Victoria Falls. The nest of this species is placed in rather loose sandy soil. It is a very quick and erratic ant, and, owing to its colour, difficult to distinguish from the ground which it frequents.

(G.A. coll.)

GENUS SEMONIUS, Forel.

Schultze' Reise im west. und zentral Südafrika, Formicidae, p. 21, 1910.

Characters.

♂. Clypeus entire. Antennae 11-jointed, flagellum strongly incrassate, almost clavate. Anal orifice inferior.

♀. Much larger than the ♂. Head very elongate, much longer than wide. Wings with 1 closed cubital and 1 radial cell.

♂. Scape half as long as the flagellum. Mandibles well developed. Pronotum not exposed. Genital armature exerted. Smaller than the ♀. Wings as in the ♀.

S. SCHULTZEI, Forel. (Plate IV., fig. 45.)

Loc. cit. p. 21, ♂. Santschi, Voy. d'Alluaud and Jeannel, p. 120, ♂, 1914.

♂. 1.8-2 mm. Black or brownish, dull or only very slightly shining. Pubescence greyish, dense and microscopic; a few pilose hairs on the clypeus. Microscopically and closely punctured. Head one-fifth longer than wide, the sides moderately convex, the hind angles strongly rounded, the posterior margin almost straight. The anterior margin of the clypeus is straight or nearly so. The frontal carinae rounded, very short, nearer to the eyes than they are to each other. Eyes moderately large, flat, situated in front of the middle. Mandibles smooth and shining, with a few small punctures, feebly dentate. The scape reaches back as far as the posterior fourth of the head; all the joints of the flagellum, except the 1st and last, wider than long, the last three joints form a slight club. Thorax shorter and much narrower than the head, distinctly convex longitudinally. Thoracic sutures distinct. Pronotum one-third wider than long, sloping steeply in its anterior half. Mesonotum wider in front than behind, one-third wider than long. The dorsum of the epinotum is as wide as the mesonotum, and is not clearly delimited

from the very oblique declivity; the whole epinotum is a little longer than the mesonotum. Petiole flattened, acuminate at the base, widest below the middle. Abdomen ovate, overhanging the petiole. Legs short, all the femora rather broad.

♀. 3.5 mm. (Hitherto undescribed.) Black; head and thorax very smooth and shining, very sparsely pubescent. The pubescence very fine and short, arising on the head from microscopic punctures; thorax impunctate. Abdomen dull, and similar to that of the ♂, but larger. Tibiae and femora shining. Head, excluding the mandibles, two and one-fifth as long as wide, parallel-sided, somewhat flat above, the posterior angles rounded, the posterior margin straight. Eyes moderately large, situated within the anterior third of the head; ocelli small, set rather far back. Antennae 11-jointed; the length of the scape is less than the width of the head, the flagellum about one-third longer than the scape. Clypeus convex in the middle, the anterior border feebly emarginate in the middle. Mandibles sparsely but rather strongly punctured, elongate, the external margin twice as long as the masticatory, which is furnished with numerous small teeth and a large apical tooth. Pronotum very convex transversely in front, and sloping steeply downwards towards the neck from the level of the pro-mesonotal suture. Mesonotum flattened, about as long as wide; scutellum less than half as long as the mesonotum; epinotum one and a half times wider than long, the brow of the very short and vertical declivity is polished and shining. Wings with a yellowish tint, nervures ochreous, 1 closed cubital and 1 radial cell.

This sex differs remarkably from the ♂, particularly in the shape of the head, so much so that if it had not been taken with the ♀♀ and ♂♂ in large numbers in the same nest it might reasonably have been ascribed to a different genus.

♂. 2.1 mm. Black; mandibles, antennae, and legs brownish. Shining and impunctate, the pubescence very short and sparse. Head as long as wide between the eyes, where it is widest; distinctly narrowed in front of the eyes and contracting towards the hind margin. Mandibles about half as long as the head, similar to those of the ♀. The scape does not reach the occipital margin, it is half as long as the flagellum. Eyes large, situated just within the anterior half of the head, occupying about one-quarter of the sides. Ocelli small, hardly raised. There is a short median longitudinal impression between the posterior margin of the clypeus and the anterior ocellus. Clypeus rounded and raised in the middle, the anterior margin feebly convex. Seen from above, the pronotum is

entirely hidden by the mesonotum. The latter is similar to that of the ♀, but less flattened and with the parapsidal sutures more distinct. The scutellum is narrower and more convex posteriorly, and raised higher above the level of the epinotum. The latter is very smooth and shining, the dorsum wider than long, and merging gradually into the declivity. Genital armature exerted. Wings as in the ♀.

The above description differs in some respects from that given by Santschi, which was drawn up from a single specimen in a damaged condition. There can be no doubt as to the correct identity of the numerous specimens of ♂♂ on which the above description is based, since they were taken in the same nest with the ♂ and ♀.

S. Rhodesia; fairly common. Kalahari. (Schultze.) Durban. (Marley.)

This is a timid and quick ant, living on trees and nesting under the bark. When disturbed, it emits from the anal glands a white sticky fluid, which hardens on exposure to the air.

(S.A.M., R.M., G.A. colls.)