

- ♂. Scapes long, much longer than the head; the head as long as, or longer than wide . . . Sub-genus *Zealleyella*, Arnold, *n. s. g.* *
- (5) 6. ♀. Meso-metanotal suture obsolete, the meta-epinotal suture very feeble. Dorsum of epinotum not very convex, not higher, or very little higher than the mesonotum. (head hardly narrower in front than behind; 2nd joint of the flagellum much shorter than the 1st). In some, if not all species, some of the ♀♀ are used as honey-storage vessels, and have the abdomen thereby abnormally distended.
- ♀. Not much larger than the ♂. Sub-genus *Anoplolepis*, Santschi.

* I had originally erected this sub-genus to include the species *Trimeni*, *deceptor*, *Macgregori*, *decolor* and *melanaria*. Fortunately before the revision of the typescript of these pages had been completed, I received a letter from Dr. Santschi, in which he points out that the type of his sub-genus *Anoplolepis* is precisely the Indian species, *P. longipes* Jerdon, in which the metanotum is not delimited from the mesonotum. In this character, *longipes* agrees with the five species mentioned above, although in the elongate and constricted form of the mesonotum it differs very considerably from any of them. However, as it seems to me that the absence of the meso-metanotal suture is a feature to which greater importance should be attached, the five species should be placed with *longipes* in the sub-genus *Anoplolepis*. On the other hand, it is quite clear that the species *custodiens*, *Steingroeveri* and *Braunsi* which were cited by Santschi as belonging to his new sub-genus (see Voyage de Alluaud et Jeannel, p. 123, 1914) can not be attached to the same group as *longipes*, and I therefore propose to transfer the name *Zealleyella* to a new sub-genus to include those three species. I have much pleasure in naming this sub-genus in honour of my friend the late Mr. A. E. V. Zealley, of the Geological Survey of S. Rhodesia and formerly Curator of the Rhodesia Museum.

Key to the species of Plagiolepis, ♀♀,
(repletes or honey-vessels not included).

- (10) 1. Metanotum small, much less than half as long as the mesonotum, the meso-metanotal suture feeble or obsolete, at least in the ♀♀ minima, (sub-genus *Zealleyella*).
- (7) 2. Epinotum very convex and much higher than the meso-metanotum; ♀♀ usually polymorphic.
- (4) 3. Thorax (and abdomen) dull, clothed with a dense, decumbent and rather silky pubescence *custodiens*, Smith.
- (3) 4. Thorax more or less shining, at least the pronotum; with a sparse pubescence or none at all.
- (6) 5. ♀ major: scale of petiole thinner above than below; sides of head distinctly convex. ♀ minor: whole body moderately shining, particularly the head and pronotum; meso-metanotal suture feeble
Steingroeveri, Forel.
- (5) 6. ♀ major: scale as thick above as below; sides of head only slightly convex; ♀ minor: body very shining; meso-metanotal suture stronger
Braunsi, Forel.

- (2) 7. Epinotum not very convex or gibbous, not higher than the meso-metanotum; ♀♀ all of the same size, excepting some which are used as honey-storage vessels and have the abdomen artificially distended, (sub-genus *Anoplolepis*).
- (11) 8. Scapes barely extending beyond the hind margin of the head; the head as wide as long, only in the smallest workers a trifle (1/10th) longer than wide.
- (10) 9. Mesonotum wider than long; colour more or less ochreous
Trimeni, Forel.
- (9) 10. Mesonotum longer than wide; colour dark brown *Macgregori*, Arnold.
- (8) 11. Scapes extending beyond the hind margin of the head by at least one-fifth of their length; head at least one-sixth longer than wide.
- (13) 12. Sculpture of head and thorax distinct, reticulate-punctate
deceptor, Arnold.
- (12) 13. Sculpture feeble, merely rugulose.
- (15) 14. Fairly shining; colour and pilosity black . . . *melanaria*, Arnold.
- (14) 15. Dull; colour and pilosity more or less ochreous
Trimeni, var. *karrooensis*, Arnold.
- (1) 16. Metanotum at least half as long as the mesonotum.
- (28) 17. Metanotum very prominent, separated from the mesonotum by a deep and wide concavity, and from the epinotum by a strong suture, (sub-genus *Anacantholepis*).
- (21) 18. Scapes extend beyond the hind margin of the head by at least one-fourth of their length.
- (20) 19. Scapes extend beyond the hind margin by about four-fifths of their length; thorax black . . . *Deweti*, Forel.
- (19) 20. Scapes extend beyond the hind margin by a little more than one-fourth of their length; thorax testaceous
Van den Kelleni, Forel, race *polita*, Sants.
- (18) 21. Scapes much shorter.
- (23) 22. Head and thorax dull; the scape barely extends beyond the hind margin of the head . . . *Van den Kelleni*, Forel.
- (22) 23. Head and thorax shining, or at least not quite dull; scape longer.
- (25) 24. Colour entirely black . . . *Jouberti*, Forel.
- (24) 25. Colour partly red or yellow.
- (27) 26. Head and thorax only slightly shining
Van den Kelleni, var. *tricolor*, Forel.
- (26) 27. Head and thorax very shining . . . *decora*, Santschi.
- (17) 28. Metanotum not very prominent, separated by narrow sutures from both the meso- and the epinotum; or, if the meso-metanotal suture is large, then the metanotum is not prominent (*Brunni*). (sub-genus *Plagiolepis* s.str.).
- (34) 29. Meso-metanotal and meta-epinotal sutures moderately distinct.
- (33) 30. The scape extends beyond the hind margin of the head by at least one-fifth of its length.
- (32) 31. Meta- and epinotum transversely rugulose and dull; meso-metanotal suture not deep . . . *pygmaea*, var. *bulawayensis*, Arnold.
- (31) 32. Meta- and epinotum smooth and shining; meso-metanotal suture deep
pygmaea, var. *intermedia*, Emery.

- (30) 33. The scape just reaches the hind margin of the head *pygmaea*, Latr.
 (29) 34. Meta-epinotal suture very shallow; the scape barely extends beyond the hind margin of the head.
 (38) 35. Colour chiefly brown or brownish red, at least the abdomen brown.
 (37) 36. Thorax dark ochreous . . . *pygmaea*, var. *minima*, Arnold.
 (36) 37. Thorax brown or reddish brown . . . *pygmaea*, var. *punctum*, Forel.
 (35) 38. Colour mainly dark orange-ochreous, only with blackish patches here and there, chiefly on the abdomen.
 (40) 39. Pubescence fairly abundant, especially on the abdomen and the sides of the head . . . *Brunni*, var. *pubescens*, Forel.
 (39) 40. Pubescence scanty, almost wanting on the abdomen *Brunni*, Mayr.

P. rufescens Santschi, *P. fuscata* Emery and *P. decolor* Emery being unknown to me in nature, are not included in the above key; *P. capensis* Mayr is a synonym of *Acantholepis capensis*, Mayr. *P. nuptialis* Santschi is known only in the ♂ sex, and cannot therefore be included in the key.

SUB-GENUS ANACANTHOLEPIS, Santschi.

Göteborgs Kungl. Vetens. och Vitterh. Handl. XV, 2. p. 36, 1914.

For characters see table of sub-genera.

P. (sub-gen. ANACANTHOLEPIS) DECORA, Santschi.

Loc. cit., p. 36, ♀.

♀. 1.6–1.8 mm. Bright ochreous or amber yellow, the head with a reddish tinge in many specimens. Cheeks in front of the eyes, the apical third or more of the flagellum, the bases of the femora, the peduncle of the petiole and a spot on the sides of the first two abdominal segments brown. The spots on the abdomen are variable in size, sometimes limited to a triangular patch near the apical margin, and in other cases covering the whole of the sides of the segments. Smooth and shining, only the antennae slightly dull. A microscopic pubescence on the antennae, and a few brownish, sub-erect hairs on the margins of the abdominal segments, otherwise almost glabrous. Head subrectangular, with the corners widely rounded, the sides and posterior margin moderately convex, one fifth longer than wide. Eyes placed well in front of the middle of the sides. Clypeus and its anterior margin convex. The scape extends beyond the posterior margin of the head by a little less than the length of the 1st joint of the flagellum; the latter is longer than the 2nd and 3rd joints taken together. Pronotum convex, about as long

as wide, forming with the mesonotum a convexity which is a little higher behind than in front. Mesonotum a little wider than long, as long as the metanotum, from which it is separated by a deep suture. The metanotum, seen in profile, is angular, the stigmata placed at the apex of the angle, the anterior plane a little longer than the subvertical posterior plane. Meta-epinotal suture fairly deep. Epinotum convex, the dorsum twice as wide as long. Scale sub-ovate, rounded transversely above, as high as the petiole is long.

♀. 3.3 mm. (hitherto undescribed). Dark brown, the mandibles, antennae and legs brownish ochreous, the femora somewhat darker or yellowish brown. Head, thorax and petiole shining, the abdomen moderately so, the legs and antennae subopaque. Clothed with a very fine, decumbent greyish yellow pubescence, which is most abundant on the abdomen, and rather scanty on the dorsum of the thorax. Apical margins of the abdominal segments with a few long brown hairs.

Head and abdomen closely and microscopically punctured, the vertex rather sparsely, the thorax almost impunctate above. Head subquadrate, hardly narrowed in front, the posterior angles narrowly rounded, the posterior margin shallowly concave in the middle. Mesonotum and scutellum flat above; the former is as long as wide between the tegulae, the scutellum a little less than half as long as the mesonotum. The dorsum and declivity of the epinotum form a single oblique plane when seen in profile. Scale of petiole wider above than below, nearly as wide as high, the anterior face convex transversely, inclined forwards. Deûlated.

Stamford Hill, Natal (Traagaardh); Durban, (Arnold, Bell-Marley).

The examples in my collection had been erroneously determined by Dr. Forel as *P. Brunni* Mayr, to which they bear a very strong likeness, but from which they may be easily distinguished by their larger size and by the very different structure of the thorax. (S.A.M., R.M., G.A. colls.; type of ♀ in my collection).

P. (sub-gen. *ANACANTHOLEPIS*) *DEWETI*, Forel.

Ann. Soc. Ent. Belg. vol. 48, p. 423, ♀, ♀. 1904.

♂. 2.5-2.7 mm. Mandibles Smooth, shining, with a few large punctures, armed with 5 or 6 unequal teeth. Clypeus subcarinate, the anterior margin convex. Frontal carinae short. Eyes fairly large, placed barely in front of the middle of the sides. Three distinct ocelli. Head oval-rectangular, the posterior margin rounded at the

corners, straight in the middle. The scapes extend beyond the occiput by almost half their length. Second joint of the flagellum half as long as the 1st, one and a half times longer than wide. Thorax bi-emarginate. The mesonotum is constricted in the middle as in *Acantholepis*, forming in profile, a saddle-shaped depression. Its anterior portion forms with the pronotum the usual convexity. Its posterior portion, seen from the side, is cuneiform, almost acute and almost sub-bidentate at the summit, descending in a slope towards the deep meta-epinotal suture. The epinotum forms a rounded and high boss, the dorsum convex and ascendant, the declivity almost flat. Scale low, subrectangular, inclined forwards. Epinotum and clypeus subopaque, finely but distinctly rugose transversely. The rest of the body shining and almost smooth, except the abdomen which is feebly shagreened. A few erect, coarse and yellowish hairs on the head and abdomen. The rest without erect pilosity, but clothed with a very fine and sparse pubescence. More or less dark castaneous brown. tarsi and articulations yellowish. Antennae yellowish brown. Legs brownish.

♀. 4.7 mm. Head wider than long, the hind margin widely emarginate. The scapes extend by two-fifths of their length beyond the occiput. Declivity of the epinotum much longer than the dorsum. Shape of the thorax ordinary, not recalling in any way that of the ♂. A few erect hairs on the thorax; pubescence fairly dense, much more so than in the ♂. Otherwise like the latter. Deilated.

"Mountains of Natal. (R. C. Wroughton)."

Some specimens in the S. A. Museum have been determined for me by Dr. Santschi as being this species. They do not agree, however, entirely with the above description. The clypeus is as smooth and shining as the rest of the head, not subopaque and rugose: the colour of the body, femora and tibiae is dark brown, almost blackish brown.

The shape of the thorax in this species and the other species of the sub-genus recalls that of *Acantholepis*, but differs in not having a very noticeable suture between the meso- and metanotum. The latter also has less prominent stigmatic tubercles than in *Acantholepis*. In these specimens the ocelli are very small, visible only under a high magnification. The meso-metanotum is as long as the pronotum. The latter is half as wide again as long, very convex transversely, fairly so longitudinally. The scale of the petiole is two-thirds longer than it is wide above.

King Williams Town, (Rev. R. Godfrey). (S.A.M., G.A. colls.)

P. (sub-gen. ANACANTHOLEPIS) VAN DEN KELLEN, Forel.

Mitt. Schweiz. Ent. Ges. vol. 10, p. 310. §. 1901.

“♀. Head somewhat flattened, rectangular, a little longer than wide, shallowly emarginate behind. Eyes decidedly large, placed a little in front of the middle of the sides. The scapes extend very little beyond the hind margin of the head. Thorax fairly slender, strongly contracted at the mesonotum, especially so along the whole length of the meso- and metanotum, or quite as much so as in the *capensis* group of *Acantholepis*. Mesonotum longer than wide. Metanotum quite half as long as the mesonotum, with two slightly raised stigmata, separated from both the meso- and the epinotum by deep and somewhat constricting sutures. Dorsum of epinotum very wide, rectangular, at least twice as wide as long, separated from the declivity by a fairly sharp margin which ends on each side in a sharp corner. The declivity is also sharply margined at the sides. Scale thick, rounded above, strongly inclined forwards. Head and thorax dull, exceedingly finely and closely punctured, or reticulate-punctate. Abdomen and scale shining, very superficially reticulate.” Mossamedes.

Var. TRICOLOR, Forel.

Schultze, Reise Süd-Afrika, vol. 4, p. 24, §. 1910.

“♀. 4.6 mm. Differs from the type species as follows: Head much wider, quite as wide as long, or even wider. Scape somewhat longer, extending very distinctly beyond the occipital margin. Head and thorax not quite dull, the sculpture more superficial. The thoracic emarginations between the meso- and metanotum and between the latter and the epinotum more pronounced than in the type species. Pilosity the same, the blunt bristly hairs somewhat more distinct. Head, thorax, petiole and legs yellow-red; 1st abdominal segment above yellow; the rest of the abdomen black, with yellow margins to the segments. Club of antenna brownish.

Kalahari, between Kooa and Sekgoma, (L. Schultze)”.

Race POLITA, Santschi.

Göteborgs Kungl. Vetens. och Vitterh. Händl. XV, 2, p. 37, §. 1914.

“♀. 4.5-4.6 mm. Thorax and mandibles testaceous red. Head and abdomen black, sometimes reddish brown. Antennae and legs yellow, middle of the femora and part of the flagellum more or less

brownish. Shining. Smooth, very sparsely and finely punctured. Pilosity as in the type species. Head distinctly longer than wide, narrower in front, the sides very arcuate and the posterior margin fairly convex, the posterior angles considerably rounded. Eyes occupying one-fourth of the sides and placed in the middle. The scape extends beyond the occipital margin by more than a quarter of its length. First joint of flagellum longer than the three following joints; 2nd and 3rd joints nearly one-half shorter than the 4th, which is one and a half times longer than wide. Clypeus fairly strongly carinate, convex. Anterior face of the mesonotum longer and less abrupt than the posterior face. The dorsum and declivity of the epinotum together, form a convexity without precise limits. The front of the dorsum descends in an abrupt slope. Scale rounded at the summit. Much more shining than the var. *tricolor* or the type, the head more darkly coloured. Stamford Hill, Natal, (Traegaardh)".

P. (sub-gen. ANACANTHOLEPIS) JOUBERTI, Forel.

Schultze, Reise Süd-Afrika, vol. 4, p. 23, ♀, 1910.

"♂. 1.7-4 mm. — ♀. minor, 1.7-2 mm. Mandibles narrow, smooth, sparsely punctured, 5-dentate. Clypeus obtusely carinate, strongly arcuately produced in front. Head elongate, quite one-quarter longer than wide, rounded and rectangular, the sides very convex, behind barely concave and but little wider than in front. Eyes fairly large, placed at about the middle of the sides. The scape extends beyond the occipital margin by just one-fourth of its length. Second joint of the flagellum as wide as long, the succeeding joints very little longer than wide, (in *Deweti* Forel nearly twice as long as wide). Thorax almost precisely like that of *Deweti*, with the same swelling and two constrictions, but the mesonotum is less strongly constricted in the middle* and the dorsum of the epinotum is more convex, rising less posteriorly; the declivity is also steep. Scale strongly inclined forwards. Legs much shorter than in *Deweti*. Ocelli indistinct. Quite smooth and shining, with a very sparse and feeble puncturation. The epinotum has some very fine transverse rugae behind. Exserted pilosity on the body very scanty, absent from the limbs. A sparse, very fine but distinctly brighter pubescence all over.

Black; antennae and legs brown; scapes, mandibles and articulations dull reddish.

♀ major (repletes or honey-storage vessels) 3-4 mm. long, of which

* i. e. the meso-metanotal suture is less deep.

1.5-2.5 is taken up by the abdomen, which is greatly distended. Head trapezoidal, much narrowed in front, concave behind. Second and 3rd joints of the flagellum very slightly longer than wide. Scape as in the normal ♀. Mesonotum not at all constricted in the middle, but of the ordinary shape, forming with the pronotum a very wide convexity, in which the metanotum and the two stigmata merely continue the curve of the mesonotum down to the meta-epinotal suture. The latter and the epinotum and all else exactly as in the ♀ minor. Pro-mesonotal suture very distinct, as in the ♀ minor (hardly feebler). Ocelli indistinct.

"Kammagas, Little Namaland. (Schultze)."

I have preferred to copy the author's original description, as the only specimen (cotype) which I possess is somewhat damaged. From *Deveti* it may be distinguished by its smaller size, narrower pronotum which is as long as wide, and by the short meso-metanotum, which is barely widened posteriorly, (distinctly widened in *Deveti*).

SUB-GENUS ZEALLEYELLA, Arnold.

For characters see table of sub-genera.

P. (sub-gen. ZEALLEYELLA) CUSTODIENS, Smith.
(Plate VIII, figs 123, 123 a).

Cat. Hymen. B.M. VI, p. 33, ♀. 1858.

Roger, (*Camponotus hendecarthrus*) Berlin. Ent. Zeitschr. vol. 7,
p. 123, ♀. 1863.

Mayr, Ann. K.K.N.H. Mus. Wien. vol. 10, p. 148. ♂. 1895.

♀ maxima, 9.2 mm. Head, thorax, legs and antennae dark burnt sienna or brownish brick-red, the masticatory margins of the mandibles black, abdomen dark brown. Densely clothed all over with a pale yellow and silky or slightly golden pubescence. The pubescence on the flagellum somewhat oblique, elsewhere decumbent. On the abdomen the pubescence is long, slightly masking the integument, and is so arranged as to present a pattern of alternating dark and bright longitudinal stripes. This is due to the light being reflected in different directions, since the hairs on the median third or more of each segment are directed inwards, those on the outer third or less directed outwards, and at the extreme sides again directed inwards. Mandibles nitidulous, longitudinally striate and coarsely punctured. The rest of the body, including the legs and antennae,

dull, very closely and finely punctato-rugulose and reticulate-rugulose, or shagreened: the abdomen very closely rugulose. A few erect, yellowish and coarse hairs on the clypeus, thorax, edge of petiole and apical margins of the abdominal segments, and on the outer margins of the femora; the tibiae and metatarsi moderately spinose beneath. Head, excluding the mandibles, subquadrate, moderately narrowed in front, the sides feebly convex, the posterior margin shallowly emarginate. Mandibles large, armed with an acute and large apical tooth and 6 more obtuse teeth behind. Clypeus large, convex transversely, the anterior margin convex. Frontal area fairly distinct, triangular. Frontal carinae short, parallel. The scapes extend beyond the hind margin by about one-third of their length; all the joints of the flagellum longer than wide, the 1st to 4th at least three times longer than wide. A shallow frontal groove present, ending behind in a small pit which represents the vestige of the anterior ocellus. The lateral ocelli are also atrophied. Pronotum very convex transversely, the anterior half declivous in front, two-thirds wider than long. Pro-mesonotal and meso-epinotal sutures well defined. Mesonotum convex transversely, slightly so longitudinally, subrotund, very little more than half the width of the pronotum, not distinctly separated from the short metanotum. The latter, widened posteriorly, is barely one-quarter as long in the middle as the mesonotum. Dorsum of epinotum twice as wide as long, near the base impressed transversely in the middle; the stigmatic orifices at the apical angles of the dorsum are prominent or sub-tubercular: the declivity subvertical and longer than the dorsum. Anterior face of the scale of the petiole convex in all directions, the posterior face flat, the dorsal edge a little emarginate in the middle, higher than wide. Abdomen massive, subovate, highest in front.

♀ *media*, 5.3-7 mm. These differ but little from the largest ♂♂. The head is longer, as much as one-fifth longer than wide. The scape extends by half or nearly half its length beyond the occipital margin; the transverse depression between the mesonotum and metanotum is shallower and the transverse impression near the base of the dorsum of the epinotum is longer. The abdomen is also narrower or longer in proportion to the thorax than in the ♂ *maxima*. Colour as in the ♂ *maxim*, but the legs and flagellum more brownish.

♀ *minima*, 3.5-5 mm. Differing from the ♂ *maxima* in the same way as the ♂ *media*, but with these additional distinctions.

Head oblong-ovate, narrowed in front, at least one-fifth longer than wide, the sides less convex than in the larger ♂♂. All the joints of the flagellum relatively a little shorter. Mesonotum nearly

one-third longer than wide, the metanotum almost obsolete, with no transverse impression between the stigmata and the posterior margin of the mesonotum. The dorsum of the epinotum is less convex and the scale of the petiole is much thicker above. The colour is darker, of a dull reddish brown; the alternating arrangement of the pubescence on the abdomen is barely appreciable.

♀. 13-13.2 mm. Colour, sculpture, pilosity and pubescence similar to that of the ♂ maxima, but the head and thorax a shade darker, the abdomen almost black. The pubescence of the abdomen is shorter and the pattern less apparent than in the ♂ maxima. The pubescence on the epinotum is silvery, not golden. Head a little wider than long, subrectangular, the posterior margin straight, slightly narrowed in front. Mandibles armed with 9 or 10 acute teeth, dull, closely striato-punctate. Anterior margin of the clypeus subangular in the middle. Frontal carinae longer than in the ♂ maxima, divergent posteriorly, extending back as far as the level of the middle of the eyes. Frontal sulcus fairly deep, ending at the anterior ocellus. Ocelli not very large. Scape of antenna extending beyond the hind margin by about two fifths of its length. Pronotum slightly exposed above in the middle. Thorax massive, wider than the head. Mesonotum, seen from above, semicircular in outline in front, its anterior half fairly convex transversely, the posterior half flat above; more than one-third wider than long. Scutellum moderately convex transversely, wider than long, half as long as the mesonotum. Metanotum well defined. The dorsum and declivity of the epinotum form a single and steep plane. Scale as in the ♂ maxima, but thinner above. Anterior face of the abdomen vertical, its brow rounded. Abdomen very large, quite two-thirds wider than the thorax, subovate, the apex broad, all the segments much wider than long. Wings strongly tinged with ochreous-yellow, the nervures and stigma brown.

♂. 10.1 mm. Brownish black, the base and extreme apices of all the femora and tibiae, and the metatarsi brownish-ochreous, the rest of the tarsi and the antennae more or less reddish brown. Pubescence similar to that of the ♀, but a little finer and shorter, of a greyish silvery colour except on the mesonotum where it is pale golden. The alternating arrangement of the pubescence on the abdomen less distinct than in the ♀. Head subquadrate, as long as wide behind the eyes, parallel-sided and narrower in front of the eyes than behind them, where the sides are convex. Posterior margin feebly concave, almost straight. Eyes convex and projecting beyond

the sides. Ocelli not large. The scapes extend beyond the occipital margin by three-fifths of their length, they are slightly arcuated at their apical third and feebly incrassate from that point to the apex. Flagellum 11-jointed, all the joints longer than wide. Mandibles elongate triangular, closely striated and punctate, slightly shining, armed with 8 or 9 teeth, the apical tooth long and acute. Thorax similar to that of the ♀, but proportionately narrower, the mesonotum not wider than long. The metanotum is more prominent, subangular in the middle. Abdomen elongate-ovate, about two-thirds longer than wide. Genital armature exerted, the sagittae brownish yellow. Legs long and slender. Wings as in the ♀.

This is probably the commonest and most plentiful species of the Camponotine ants in South Africa, and is widely distributed over the whole region. It nests in the ground, forming very populous communities. The nest entrances are rarely surrounded by excavated material, the excavated earth being usually spread out in a very thin layer for a good distance all round the entrances; crateriform mounds are never formed. It is an exceedingly pugnacious species, preying chiefly on other insects, but its beneficent labour in this direction is probably more than counterbalanced by the harm it does in the dispersion and cultivation of scale-insects and Aphides. It is therefore to be regarded as a pest, especially in rose-gardens and citrus orchards. It may be kept in check to some extent by pouring a weak solution of potassium cyanide down the nests. From the narrower point of view of the myrmecologist, it may also be considered a nuisance, since it is such a dominant and pugnacious species that in many localities it occupies large areas of ground to the exclusion of other and more interesting kinds of ants.

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

Race FALLAX, Mayr.

(as species) Reise der Novara, Zool., p. 54, ♀. 1865.

Jahrb. Hamburg Wissen. Anst., vol. 10, p. 5, 1893.

Emery, Ann. Soc. Ent. France, vol. 63, p. 43, 1895.

Mayr, in the second reference cited, reduces this form from specific rank, remarking that "it cannot be maintained as a species distinct from *custodiens* on account of the exerted pilosity, . . . it is however, possible that in *fallax* the distinctly weaker constriction of the thorax between the meso- and epinotum and the less inclined dorsum of the latter, (similar to the usual condition in small ♂♂ of *custodiens*)

may prove to be a constant character when more abundant material is examined".

According to Emery, "the ♂ of *custodiens* attains a larger size, and in the maxima and media the middle joints of the flagellum are clearly more than twice as long as wide. In *fallax*, they are barely more than twice as long as wide, even in the largest ♂♂; in the smallest, the 3rd joint of the flagellum is barely half as long again as wide, whereas in the smallest *custodiens* they are almost twice as long as wide".

I have some examples of the ♂ minima of this race before me, so determined by Dr. Forel. Apart from the colour, which is a pale straw-yellow, a more abundant and more exerted pilosity here and there, it does not appear to me to be more than a very slight variety. The 5th and 6th joints of the flagellum are twice as long as wide, and the 4th joint a little more than twice.

Stormvlei, Swellendam Cape Prov.; Capetown, (Simon); Grahamstown, (Hewitt); Matroosberg, Hex River Mountains, (R. E. W. Tucker). The examples from Grahamstown and Matroosberg are of the same colour as *custodiens*. (S.A.M., R.M., G.A. colls.).

P. (sub-gen. ZEALLEYELLA) STEINGROEVERI, Forel.
(Plate VIII, fig. 124).

Mitt. Schweiz. Ent. Ges., vol. 9, p. 78, ♂. 1894.

♀. 2.7-7 mm. — ♂ maxima. Not unlike a smaller, darker and more compact *custodiens*, but without any silky pubescence or pattern on the abdomen. Dark rusty-reddish brown, the tarsi and antennae ferruginous, the thorax darker than the head; abdomen dark brown, the apical margins of the segments pale flavous, (in Forel's original description the colour is stated to be yellow-red, the abdomen brown; this probably refers to a callow specimen). Pubescence short, decumbent, yellowish and not dense, almost absent from the head, more abundant on the abdomen, but not sufficiently so as to mask the colour or sculpture. The pubescence on the tibiae, tarsi and antennae is oblique, very scanty on the femora. Abdomen with an abundant, short, yellow and exerted pilosity. Thorax superficially rugulose, the sculpture strongest on the dorsum of the epinotum; abdomen smooth, microscopically aciculate. Pronotum more shining than the rest of the thorax. Head very densely punctate-rugulose and also somewhat reticulate, a small median longitudinal area on the clypeus shining, with the sculpture more or less effaced. Mandibles with 7 teeth, the apical tooth long and acute; smooth and shining over

the basal half, strongly punctured, the apical half strongly striate. Clypeus more convex than in *custodiens*, its anterior margin arcuate. Frontal carinae and frontal area as in *custodiens*. The head is sub-ovate or subcircular, narrowed slightly in front, the sides much more convex than in *custodiens*, the posterior margin straight. The scape extends beyond the hind margin by one-sixth of its length. Pronotum shorter than in *custodiens*, quite twice as wide as long; the mesonotum a little wider than long; the metanotum very short, less distinct than in *custodiens* and separated from the epinotum by a much deeper suture. Epinotum more convex transversely than in *custodiens*. The scale of the petiole a little thinner than in that species, and barely or not at all emarginate in the middle of the upper edge. Abdomen subcircular, a little longer than wide.

♀ media, 4.8–5.8 mm. A little darker on the head and thorax, the former a little longer and less convex-sided. Otherwise like the ♀ maxima.

♀ minor, 3–3.8 mm. Dark brown or blackish brown, only the mandibles, antennae, tibiae and tarsi paler or ferruginous. Fairly shining all over, especially the cheeks and abdomen. The sculpture is much more superficial than in the larger ♀♀. The scapes are longer, extending beyond the hind margin by one-third of their length. The meta-epinotal suture is shallower, and the scale is much thicker above than in the larger ♀♀. The head is much less convex at the sides and is also longer than in the larger ♀♀.

♀ 11.8 mm. (hitherto undescribed). Very dark reddish brown, the abdomen blackish brown, the mandibles, antennae and legs more or less ferruginous. A more slender insect than the ♀ *custodiens* and not dissimilar, but easily distinguished by the following characters.

The sculpture is much stronger. The head is closely punctato-rugulose, between the frontal carinae mainly punctate. The clypeus is strongly and closely punctured, its anterior margin arcuate, not subangular in the middle. The frontal sulcus is much deeper than in *custodiens*. The mesonotum is closely punctured with fairly deep and small punctures: it is narrower than in *custodiens*, being only one-fifth wider than long. The scutellum is longer, or more than half the length of the mesonotum. The chief distinction between the two species lies in the form of the scale, which in this species is deeply and almost angularly excised above in the middle, whereas in *custodiens* the emargination is wide and shallow. The abdomen is longer, or one and a half times longer than wide. Wings hyaline, except the subcostal cell which is ochreous: all the nervures ochreous except the subcostal which is blackish brown.

♂. 6.7 mm. (hitherto undescribed). Black, the 1st abdominal segment sometimes paler or brownish black, the antennae and legs, excepting the ferruginous bases and apices of the femora and tibiae, brown, the tarsi brownish ochreous. Slightly shining all over, a narrow semicircular area in front of the ocelli very shining. Very finely and rather superficially punctate-rugulose, the mesonotum and scutellum very finely and evenly punctured, the abdomen exceedingly delicately rugulose. Very much like the ♂ of *custodiens*, but easily distinguished by its smaller size, darker colour and moderately shining integument. It also differs from it in the following features. The 1st joint of the flagellum is clearly shorter than the 2nd. (as long in *custodiens*). The eyes are much more prominent, hemispherical. The scale of the petiole is thinner, more deeply emarginate in the middle, the anterior face flat or slightly concave transversely, not convex. The genital armature is relatively much larger and quite differently formed. The stipes at the base is ochreous and very convex and large, narrowing rapidly to the long apical portion. The sagittae are elongate and subacute at the apex, not lamelliform, widely rounded at the apex and as wide there as at the base as in *custodiens*. The wings as in the ♀.

Willowmore, Mafeking, Orange River: Choaherib, S.W.A. (R. E. W. Tucker). The specimens from Choaherib have the cheeks more strongly punctured in the smaller ♂♂, and the ♀ is a trifle larger. (S.A.M., R.M., G.A. colls.; type of ♀ and ♂ in my collection.

P. (sub-gen. ZEALLEYELLA) BRAUNSI, Forel.

Ann. Soc. Ent. Belg. vol. 57, p. 144, ♀, 1913.

♀. 3.4-5.1 mm.

♀ maxima. 5.1 mm. Head, thorax and petiole reddish brown (a brownish burnt sienna), the mandibles and clypeus more reddish than the rest, abdomen dark brown, femora brown, tibiae, tarsi and antennae rusty reddish brown. Pubescence very scanty and short, longer on the legs and scapes and somewhat oblique. Pilosity short, yellowish, more abundant on the occiput and abdomen than elsewhere. Head slightly shining, finely and closely reticulate-rugulose: the rest of the body shining, very superficially rugulose on the sides of the pro-mesonotum, dorsum of epinotum and the scale of the petiole. Head barely longer than wide, narrowed a little in front, or including the closed mandibles, triangular with the basal corners rounded. The sides are much less convex than in *Steingroeveri*. Posterior margin feebly convex. Mandibles nitidulous, striato-punct-

ate, armed with 7 teeth, the apical tooth acute. Anterior margin of clypeus convex. Eyes placed at the posterior third of the sides. The scapes extend beyond the posterior margin by two-fifths of their length. Thorax like that of *Steingroeveri*, but differing in the presence of a fairly distinct suture between the meso- and the metanotum, and by the deeper meta-epinotal suture. The metanotum is also decidedly longer, being one-quarter as long in the middle as the mesonotum. The dorsum of the epinotum is one and a half times wider than long, the oblique declivity one-third longer than the dorsum. Scale of petiole wider above than below, as thick above as below, the summit entire and convex transversely.

♂ media. 4 mm. Colour of the head and thorax darker than in the ♀ maxima, more brown than red. Sculpture feebler, the surface more shining, especially the head. The latter and the scapes are a trifle longer. The thorax is relatively narrow, the mesonotum longer than wide, (as long as wide in the ♀ maxima) and the metanotum also longer or nearly one-third as long as the mesonotum. The metanotal stigmata are more prominent, subangular when seen in profile. The declivity of the epinotum is hardly longer than the dorsum. The scale is a little thicker and narrower above. Otherwise like the ♀ maxima.

♂ minor 3.1 mm. Like the ♀ media, but the whole colour blackish brown, except the tarsi and mandibles which are ferruginous.

Willowmore, Cape Prov. (Dr. B. Brauns). (R.M., G.A. colls.)

Sub-genus ANOPIOLEPIS, Santschi.

For characters see table of subgenera.

PLAGIOLEPIS RUFESCENS, Santschi.

Ann. Soc. Ent. France, vol. 85, p. 289. ♂. 1916.

♂, 3.3-6 mm. Possibly it attains to a larger size.

♂ major. Pale chestnut brown, cheeks yellowish. Limbs slightly paler than the body. Erect pilosity yellowish, fairly dense on the head and thorax (a little more abundant than in *Steingroeveri*), scantier on the femora, absent from the scapes. Pubescence sparse, hiding the sculpture very little. Fairly shining, particularly the abdomen, the head less shining. Front of the head and sides of the thorax very finely striolate, passing elsewhere into a reticulation with smooth spaces, especially on the abdomen. A fine piliferous puncturation all over. Head quadrate, the sides moderately convex,

the posterior angles slightly rounded and the posterior margin straight. Frontal area wide and triangular. Clypeus very convex, subcarinate. The scape extends beyond the hind margin by quite one-third of its length (shorter in *Steingröveri*). Mandibles closely and evenly striate, armed with 6 or 7 strong black teeth, the apical tooth twice as long as the others. Thorax like that of *Steingröveri*, but the promesonotum is a little more convex, the dorsum of the epinotum shorter, with the stigmatic orifices more prominent at the posterior angles. Scale rounded, or barely emarginate at the summit, erect, as high as in *Steingröveri*. Abdomen dilated.

♂ minor. More shining than the ♀ major; the sculpture more effaced; head a little longer than wide; the scape extends beyond the hind margin by half its length. Promesonotum less convex than in the ♀ major. The stigmata on the epinotum even more prominent at the posterior angles, the latter more accentuated. Scale thick, not emarginate above, abdomen smaller, otherwise like the ♀ major. It also differs from *Steingröveri* in colour, with which it is closely allied".

Cape Town, (Dr. Reichenperger).

PLAGIOLEPIS NUPTIALIS, Santschi.

Loc. cit., p. 289, ♂.

♂. 10-11.5 mm. Thorax, scale and antennae pale yellowish brown, the legs brownish ochreous, head blackish, mandibles ochreous with black teeth, the abdomen in greater part dirty brownish yellow, with indistinct darker or brownish bands dilated in the middle on the apical margins, the base of the 1st segment brown. The pubescence on the head and thorax less plentiful than in *custodiens*, the pubescence on the abdomen directed straight backwards, not undulate as in *custodiens*. This species bears a very great resemblance to *custodiens*, but differs from it as follows.

The head is longer, or a trifle longer than wide behind the eyes, the width behind the eyes is only one-fourth greater than the width of the anterior margin, (a little more than one-third in *custodiens*). The mandibles are shining, only aciculate and not sharply striate as in the other species, and with much blunter teeth. The eyes are a little smaller but more prominent. The scapes are nearly straight, not curved at the distal third as in *custodiens*. The thorax is lower, the dorsum of the mesonotum and scutellum not raised much above the base of the epinotum. The mesonotum is a little

narrower and much less gibbous in front. The scutellum, excluding its sloping sides, more pointed behind. The metanotum less prominent in the middle. The scale of the petiole is much thinner and much more shallowly emarginate above. The abdomen is wider and less convex from side to side. Genital armature brownish yellow, the apical half of the stipes narrower than in *custodiens* and less obtuse at the apex. Otherwise like the ♂ of *custodiens*. Willowmore. Cape Prov., (Dr. H. Brauns). Taken emerging from the nests of *P. custodiens*, and almost certainly living parasitically with that species. (S.A.M., R.M., G.A. colls).

P. (sub-gen. *ANOPIOLEPIS*) *TRIMENI*, Forel.

Ann. Soc. Ent. Belg. vol. 39, p. 429, ♀ (replete) 1895.

Deutsch. Ent. Zeitschr. Beiheft, p. 223, ♀. 1913.

♀. 2.5–3.2 mm. Pale ochreous (straw-yellow) with the flagellum gradually infuscate towards the apex, the scale of the petiole, apex of the abdomen, and a patch on each side of all the abdominal segments brownish; or yellowish brown, with only the scapes, tarsi and basal two-thirds of the 1st and 2nd, and basal half of the 3rd abdominal segments ochreous. The colour varies between these extremes. Clypeus slightly shining, the rest of the body including the legs and antennae dull, and clothed with a fine, whitish yellow and adjacent pubescence. A few erect yellowish hairs on the clypeus, apex of abdomen and margins of the abdominal segments.

Microscopically reticulate-rugulose all over. Head quadrate, the corners narrowly rounded, the posterior margin feebly convex, hardly narrower in front than behind. In the smaller ♀♀, especially in the more darkly coloured forms, the head is slightly longer than wide (one-tenth). Eyes large, occupying nearly one-third of the sides and placed a little behind the middle. Three very minute ocelli present. Mandibles shining, sparsely striate and punctured, the punctures large, 5-dentate. Clypeus sparsely and finely punctured, the anterior margin almost straight. Frontal area triangular, wider than long. The scapes barely extend beyond the occipital margin; 2nd joint of the flagellum hardly more than half the length of the 1st joint. Pro-mesonotal suture well defined. Meso-epinotal suture not deep. There is no distinct metanotum, the anterior margin of which is barely indicated by a shallow impression just in front of the stigmata. Mesonotum wider than long, not very convex transversely, almost straight longitudinally, and barely depressed behind. Dorsum of epinotum short, straight in profile, not higher

than the mesonotum, sloping very gradually into the longer and very oblique declivity. Scale of petiole inclined forwards, seen from the side cuneiform, the dorsal edge very thin or almost trenchant, feebly emarginate in the middle. Abdomen about one-quarter longer than wide, the sides moderately convex.

♂ replete, 4.6-6 mm. Head and thorax 2 mm. long, the rest made up of the abdomen in various degrees of distention. This form differs from the ordinary ♂ as follows: The head is a little wider, sometimes a little wider than long, quadrate, the sides straighter and almost parallel. The ocelli are larger and plainly visible. The thorax is relatively wider and less convex transversely, especially the pronotum. The dorsum of the epinotum is much wider, at least three and a half times wider than long in the middle. The abdomen when fully distended has the chitinous plates separated by the complete exposure of the intersegmental membranes. Otherwise like the normal ♂.

The structural differences pertaining to this form seem to indicate that as early as the larval stage certain individuals are set apart to serve as honey-reservoirs, and that the replete is not merely an ordinary ♂ selected by chance to fulfil that function.

♀ 5.6 mm. (hitherto undescribed). Mandibles, except the brown masticatory margin, antennae, tibiae, tarsi and apices of the femora ochreous, the last two joints of the flagellum infusate. Head and thorax pale brown (raw umber), the scutellum and metanotum ochreous brown, abdomen and petiole dark brown. Pubescence exceedingly short and dense, decumbent, pale yellowish, slightly golden in the middle of the abdominal segments, present all over including the legs and antennae. A few long yellowish pilose hairs on the clypeus, and some short and blunt ones on the apical margins of the abdominal segments. Mandibles and clypeus moderately shining, the rest dull. Sculpture as in the ♂. Head subquadrate, a little wider than long, the posterior angles rounded, the posterior margin straight. The eyes occupy nearly one-third of the sides, placed a little behind the middle. The scape reaches the occipital margin. Pronotum narrowly exposed above. Mesonotum fairly flat behind, one-third wider than long, the parapsidal sutures deep. Scutellum flat, convex only at its margins, much wider than long. Metanotum rounded and fairly prominent. Dorsum and declivity of epinotum confluent, forming a single oblique plane. Petiole as in the ♂. Abdomen elongate parallel-sided, twice as long as wide. Dehated, otherwise like the ♂.

It is to be noted that the emargination of the scale of the petiole is almost or quite obsolete in the smaller ♂♂, in which case the

insect approximates very closely to Emery's description of *decolor*, differing from that species only in the presence of erect hairs on the clypeus and abdomen.

S. Rhodesia, not rare; Natal.

A very agile insect, with very erratic movements. The nest is usually formed in sandy soil. The galleries containing the repletes are rarely less than a foot below the surface of the ground.

(S.A.M., R.M., G.A. colls.; type of ♀ in my collection).

Var. KARROOENSIS, n. v.

These differ from the type of the species in the longer head, almost one-quarter longer than wide in the smallest ♂♂, and in the longer scape which extends beyond the occipital margin by a little less than one-fourth of its length. The thorax is somewhat narrower and more convex transversely, the mesonotum being nearly as long as wide. The head is slightly shining all over. The repletes differ from those of the type species only in the shining head, with rather stronger sculpture; the abdomen is also slightly shining.

♀. These differ from the type species in the same way as the repletes. The colour is a little paler on the head, and the ocelli are larger. The joints of the flagellum are all relatively longer. Wings hyaline, faintly tinged with yellow, nervures ochreous.

Willowmore, Cape Prov. (Dr. H. Brauns).

(S.A.M., R.M., G.A. colls.; types in my collection).

P. (sub-gen. ANOPLOLEPIS) DECEPTOR, n. sp.

♂. 2.7-3.2 mm. Reddish ochreous, the flagellum somewhat fuscous, the middle and hind pair of legs pale yellowish brown, the scale of the petiole brownish ochreous, abdomen black, except the 1st and 2nd segments which are dirty yellow, the 2nd having also its apical margin black. Pubescence adjacent, very short, yellowish and inconspicuous, almost wanting on the head, thorax, legs and antennae. A very few yellowish, erect pilose hairs on the clypeus and apical margins of the abdominal segments. Head, thorax and petiole dull, very closely, finely and evenly reticulate-punctate or granulate. Abdomen rugulose and dull, except the last three segments which are smooth and shining.

Head subquadrate, about one-sixth longer than wide, the sides very feebly convex, not wider behind than in front, the posterior margin straight. Eyes large, placed a little behind the middle of the sides. Ocelli distinct. Mandibles slightly shining, striate, armed with 5 acute

teeth. Anterior margin of clypeus feebly convex. The scapes extend beyond the hind margin of the head by a little more than one-fifth of their length. Pronotum convex transversely, very little wider than long. Pro-mesonotal suture not strong, meso-metanotal suture obsolete, the metanotal region being indicated only by the stigmatic orifices. Mesonotum convex transversely, parallel-sided, as long as wide. Meta-epinotal suture narrow and not deep. Dorsum of epinotum widening very little posteriorly, nearly as long as wide, fairly convex above. The declivity is subvertical in its upper two-thirds, its lower third forming a subhorizontal shelf. The brow of the declivity rounded. Scale of petiole inclined very little forwards, wider above than below, the dorsal edge feebly convex transversely, thick and rounded from front to back. Abdomen elongate, two-thirds longer than wide. Legs fairly long and slender.

Sawmills, Ungusa River, S. Rhodesia.

To the naked eye, this species bears a deceptive resemblance in colour and movements to *Monomorium bicolor*, race *nitidiventris*. Like that species it is exceedingly agile and forms a nest in loose sand, surrounded by a low and more or less circular crater. It is tolerably distinct from *Trimeni* and its var. *karrooensis* in form and sculpture. Judging by the description alone, it resembles *decolor* Emery in sculpture, but is larger, of a different colour, and has a different scale and longer scapes.

(S.A.M., R.M., G.A. colls.; type in my collection).

P. (sub-gen. ANOPIOLEPIS) MACGREGORI, n. sp.

♀. 3 mm. Dark brown or blackish brown, the scape, basal half of the flagellum, and the tarsi ochreous, tibiae ochreous brown, mandibles ferruginous. The sculpture consists of a microscopic punctate rugulosity, but nevertheless stronger than in *Trimeni*; dull all over. Pubescence whitish on the head and thorax, greyish on the abdomen, similar to that of *Trimeni*, but much less apparent on the head and thorax. A few yellowish pilose hairs on the clypeus and apical margins of the abdominal segments. Thorax narrower and more convex transversely than in *Trimeni*. The mesonotum is distinctly longer than wide, and the dorsum of the epinotum longer than in *Trimeni*, or as long as the declivity. The scale of the petiole is thicker, not emarginate as in *Trimeni*. Otherwise like that species. Glenville, Bulawayo. Crawling on the trunk of a tree. 1 specimen.

Type in my collection.

P. (sub-gen. *ANOPIOLEPIS*) *MELANARIA*, n. sp.

♂. 2.8-3.1 mm. Black, all the tarsi, the anterior tibiae and the scapes more or less ochreous, the flagellum dirty brownish yellow, the mandibles bright reddish ochreous. Moderately shining, and almost smooth and without sculpture, at the most only very superficially and microscopically rugulose. Clothed with a very short, adjacent and brownish yellow pubescence. A few short brownish pilose hairs on the abdomen and clypeus. Very similar to *P. Macgregori* from which it differs in the colour, absence of sculpture, the shining integument, and also in the following characters.

The head is a little longer than wide, (one-sixth); the eyes are more convex and much larger, occupying nearly one-third of the sides of the head, (one-fourth in *Macgregori*); the scapes are longer, extending beyond the hind margin by one-fourth of their length, (one-tenth in *Macgregori*); the scale of the petiole is very thin above, almost trenchant, and the dorsum of the epinotum is more convex lengthwise.

♀ replete. 4.5 mm. (the abdomen 2.5 mm. long). Mesonotum a trifle wider than long, or as wide as long; the dorsum of the epinotum shorter than the declivity. Scale of petiole wide above and feebly emarginate in the middle. Otherwise like the normal ♀.

Sawnills. Ungusa River. S. Rhodesia. The nest is made in loose sandy soil, usually near the roots of a shrub or of grass. It is surrounded by an irregular crater and has an unusually wide and more or less elliptical entrance.

(S.A.M., R.M., G.A. colls.; types in my collection).

P. (sub-gen. *ANOPIOLEPIS*) *DECOLOR*, Emery.

Ann. Soc. Ent. France, Vol. 63, p. 44, ♀. 1895.

“♂. 1.7-2.5 mm. Flavo-testaceous, the head darker, the apex of the abdomen fuscous, dull, the cheeks, lower surface of the head and the coxae shining, pubescent, without erect pilose hairs on the clypeus and abdomen, head subquadrate, the angles rounded, the scapes extend barely beyond the occipital margin, thorax robust, distinctly impressed at the meso-epinotal suture, epinotum convex, the scale small, inclined forwards, acutely cuneiform.”

Hamman's Kraal; Kimberley.

“A little less squat than *P. pygmaea*, which this species resembles in the slightly depressed shape of the head and in the small scale, inclined forwards and cuneiform in profile. The thorax is formed in

much the same way as is *P. custodiens* and *fallax*; the pro-mesonotal suture is not strongly defined, the mesonotum is not impressed, and is longer than the epinotum; the profile of the dorsum of the thorax forms a very obtuse angle (the apex downwards) at the point of the meso-epinotal suture. All the upper part of the body is dull, even under a strong magnification; this is due to a close reticulate puncturation, reinforced by a microscopic fundamental sculpture. On the abdomen the punctures merge together into transverse rugulose lines."

SUB-GENUS *PLAGIOLEPIS*, Mayr, s. str.

For characters see table of sub-genera.

P. PYGMAEA, Latreille.

Ess. Hist. Fourmis France, p. 45. ♀, ♂. 1798.

Schenck, (as *Tapinoma*) Jahrb. Ver. Naturk. Nassau.

Vol. 8, p. 68 and 130 ♂, 1852.

♂. 1.3-2 mm. Dark brown, the scapes, tibiae and tarsi pale ochreous, the femora yellowish brown, mandibles ferruginous, flagellum fuscous ochreous. Smooth and very shining, the pronotum and the base of the dorsum of the epinotum sparsely and very finely punctured. Pubescence adjacent and sparse, almost obsolete on the thorax. A very few exerted, yellowish pilose hairs on the clypeus and margins of the abdominal segments.

Head subquadrate, a trifle longer than wide (excluding the mandibles) slightly narrowed in front, the sides feebly convex, the posterior margin straight or only shallowly concave. Eyes not large, placed at about the middle of the sides. Anterior margin of clypeus convex. Mandibles armed with 3 or 4 teeth. The scape just reaches the occipital margin; 1st joint of flagellum nearly as long as the 2nd-4th taken together, 2nd and 3rd joints a little wider than long, 4th and 5th as long as wide, the following joints a little longer than wide. Pronotum narrower than the head, very convex transversely, twice as wide as long in the middle; mesonotum a trifle wider than long. All the thoracic sutures distinct, the meso-metanotal and the meta-epinotal fairly deep. Metanotum twice as wide as long, a little more than half as long as the mesonotum, the stigmata fairly prominent. Dorsum of epinotum widened towards the apex, where it is twice as wide as long, joining the shorter and oblique declivity in a gradual curve. The apical third of declivity, near the scale, is almost horizontal. Scale of petiole inclined forwards, longer than

wide at the summit, the latter feebly convex from side to side and subtrenchant. Abdomen ovate, a little longer than wide.

♀ and ♂. I have no specimens of these sexes of the type species, nor am I able at present to obtain access to descriptions of them. They do not probably differ in any great degree from their varieties.

Var. INTERMEDIA Emery.

Ann. Soc. Ent. France. Vol. 63, p. 45, ♀, ♂. 1895.

♀, 2.2 mm. Head and thorax ochreous brown, the thorax paler than the head; abdomen brown. Legs, antennae and mandibles pale ochreous, the flagellum and middle of the femora somewhat fuscous. Entirely smooth and shining. A rather narrower insect than the type of the species, from which it differs chiefly by the longer metanotum, which is quite two-thirds as long as the mesonotum. The dorsum of the epinotum is more convex lengthwise and the declivity is less oblique. The meso-metanotal suture is deeper.

“♀ and ♂. The ♀ has the same colour as the ♀: as in the type, it is less shining and more punctate than the ♀. The ♂ is about as large as the ♂ of the type.”

Capetown, Vrijburg, Bloemfontein, (Simon); Durban & Isipingo, Natal. (S.A.M., R.M., G.A. colls).

Var. BULAWAYENSIS n. v.

This form differs from the type of the species, (with which it was included by Forel, Deutsch Ent. Zeitschr. Beiheft, p. 224, 1913) in the longer scapes which extend beyond the hind margin of the head by one-sixth of their length. The pronotum and basal half of the dorsum of the epinotum are not punctured. The metanotum and epinotum are transversely rugulose and somewhat dull. Otherwise like the type of the species.

♀, 4-4.3 mm. Brown, the legs, antennae and mandibles coloured as in the ♀. Pubescence very fine and short, decumbent, present all over. Pilosity as in the ♀. Smooth and fairly shining all over, at the most only microscopically punctate. Head a little wider than long, the sides parallel behind the eyes, convergent anteriorly in front of them, the posterior margin straight, the posterior angles narrowly rounded. The scapes extend beyond the hind margin of the head by one-fourth of their length. Thorax wider than the head. Mesonotum fairly flat above, wider than long. Scutellum half as long as the mesonotum, the posterior margin widely convex. Epinotum much wider than long, the dorsum and declivity forming a single

and low convexity. Scale as in the ♀. Abdomen elongate, almost parallel-sided, not quite twice as long as wide. Wings long, (anterior wing 4.5 mm.) tinged with yellow, nervures and stigma ochreous.

Bulawayo, nesting in grassy soil.

(R.M., G.A. colls., types in my collection).

Var. MMA, n. v.

♀, 4.3-4.8 mm. Head and thorax reddish ochreous, the head sometimes darker or brownish, abdomen brown. Legs, antennae and mandibles pale ochreous, the flagellum slightly infuscate. Differing from the type species by the colour and shorter scapes, the latter only just reaching the hind margin of the head. It is closely allied to var. *mediorufa* Forel, from which it differs by its larger size and by the shallowly concave hind margin of the head, (convex in *mediorufa*).

Hillside, Bulawayo. (G.A. coll.).

Var. PUNCTUM, Forel.

Ann. Soc. Ent. Belg. vol. 54, p. 448, ♀, ♂. 1910.

♀. 4.3-4.5 mm. Colour as in the type, excepting the flagellum which is dark brown, the first two joints excluded. It differs from the type of the species as follows. The metanotum is much longer, almost as long as the mesonotum; the meso-epinotal suture is very shallow. The pair of stigmata on the epinotum are less prominent and the dorsum of the epinotum is more convex lengthwise. Otherwise like the type of the species.

♀. 3.4 mm. (hitherto undescribed). Smaller than the type of the species and of a more reddish brown colour. The wings are fuscous, not tinged with ochreous as in the type, nervures pale brown. The scapes reach just beyond the hind margin of the head, and the latter is not wider than long. The mesonotum is narrower than in the type species, or as long as wide, and the scutellum is barely more than one-third the length of the mesonotum.

♂. 4.5-5 mm. Pale brown, the head somewhat darker, tarsi and antennae more or less yellowish. Slightly shining, smooth, feebly pubescent. Pilosity wanting. Head subquadrate, clearly wider than long, the posterior half a trifle narrower than the anterior half. Eyes large, occupying the anterior half of the sides of the head; the distance between the posterior ocelli is twice as great as between them and the anterior ocellus. The scape extends a little beyond the posterior margin of the head; 1st joint of the flagellum as long, or nearly as long as the 3 following joints taken together. The scutellum

is as long as wide, more convex than in the ♀. Scale of petiole shorter and also relatively wider above than in the ♀. Wings as in the ♀, but not very long.

Durban; Basutoland; Grahamstown.

(S.A.M., R.M., G.A. colls.; type of ♀ in my collection).

P. FUSCULA, Emery.

Ann. Soc. Ent. France, vol. 63, p. 45, ♀, 1895.

♀. 2 mm. Piceous or fuscous, mandibles, the base or the whole of the scapes, first joints of the flagellum, tarsi and articulations of the legs rufescent, very shining, sparingly and very minutely pubescent and sparsely pilose, legs and scapes without erect hairs; head truncate behind, the sides arcuate, mandibles narrow and 5-dentate, the scape extending beyond the occipital margin, thorax narrowed in the middle, the posterior part of the mesonotum (i. e. the metanotum) short and forming a more or less prominent transverse torus; epinotum very convex lengthwise, seen from the side gibbose, scale of the petiole thin and inclined forwards."

Capetown, (Simon); Natal, (Traegardh).

P. BRUNNI, Mayr.

Ann. K. K. N. H. Mus. Wien, vol. 40, p. 148, ♀, 1895.

♀. 1.3-1.7 mm. Dark orange or reddish ochreous, the apical two-thirds of the flagellum and the basal half of the femora more or less fuscous; a patch between the eyes and the base of the mandibles, a narrow apical band on the first three abdominal segments brown, (somewhat triangularly widened at the sides), the remaining segments more or less brownish ochreous. The pubescence is exceedingly sparse, short and inconspicuous. There are a few yellowish pilose hairs on the clypeus and abdomen. Smooth and very shining.

Head as long as wide, the sides moderately convex, narrower in front than behind, the posterior margin shallowly concave. Mandibles small, with 4 or 5 teeth. Eyes placed in front of the middle of the sides. The scape almost reaches the hind margin of the head; the 1st joint of the flagellum as long as the three succeeding joints taken together, the 2nd and 3rd almost twice as wide as long, the 4th as wide as long. Pronotum very convex, a little wider than long. Mesonotum nearly twice as wide as long, fairly convex transversely, separated from the metanotum by a wide and deep suture. The metanotum is quadrate, as long as wide and as long as, or even a

little longer than the mesonotum. Seen from the side, it is inclined upwards posteriorly but not prominent. Meta-epinotal suture feeble. The dorsum and declivity of the epinotum are not distinctly delimited, they form a single convexity. Scale of petiole low, shorter than the whole petiole measured along the ventral surface.

♀, 3.5 mm. Colour as in the ♂, but a band between the posterior ocelli, the whole or greater part of the scutellum and the apical half of all the abdominal segments dark brown. Pubescence longer and more abundant than in the ♂, especially on the head and abdomen. Pilosity as in the ♀. Smooth and shining. Head and mesonotum very finely and evenly punctured, the punctures piligerous, very small and shallow. Head as wide as long, parallel-sided behind the eyes, gradually narrowed in front of them, the posterior margin moderately concave. Eyes large, occupying a little more than one-third of the sides. Mesonotum as long as wide, three times longer than the scutellum. Epinotum wider than long, oblique and feebly convex from base to apex. Abdomen longer than wide. Wings tinged with ochreous, stigma and nervures ochreous.

♂, 1.4 mm. Pale ochreous brown, the head almost blackish brown, antennae and legs fuscous yellow. Very smooth and shining. Pubescence very fine and scanty. A few erect hairs on the clypeus and scutellum. Head subquadrate, wider than long, a little wider in front than behind. The eyes occupy more than the anterior half of the sides. The scape reaches the posterior margin of the head. Thorax like that of the ♀, but the scutellum is relatively larger, or about half as long as the mesonotum. Scale of petiole low, inclined very obliquely forwards, as wide as high. Abdomen ovate.

S. Rhodesia, fairly common and nesting under the bark of trees: Natal, (Traegaardh); Delagoa Bay, (Brauns).

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

Var. *PUBESCENS*, Forel.

Ann. Soc. Ent. Belg. Vol. 57, p. 140, ♀, 1913.

♀. Like the type of the species and differing from it only in the more abundant and longer pubescence, the wider thorax which is a little less constricted at the meso-metanotal suture, the shorter metanotum which is wider than long and only half as long as the mesonotum.

Bulawayo and Plumtree, S. Rhod.

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

3rd SECTION. EUCAMPONOTINAE.

TRIBE PRENOLEPIDINI, Forel.

GENUS PRENOLEPIS, Mayr.

Europ. Formicid., p. 52. 1864.

Characters.

♀. Antennae 12-jointed, the scape sometimes very long, inserted at the sides of the frontal area, not far from the hind margin of the clypeus. Maxillary palpi 6-jointed. Mandibles rather narrow, not large. Clypeus large. Frontal carinae short; frontal area not sharply defined. Eyes usually large. No ocelli. Pro-mesonotal, meso-metanotal and meta-epinotal sutures distinct. The metanotum short in the middle but fairly apparent at the sides, lower than the meso- or the epinotum. The latter unarmed. Petiole short, bearing a scale which is inclined forwards. Abdomen widest in front, somewhat overhanging the petiole. A coarse and long pilosity frequently present.

♂. Antennae 12-jointed. Pronotum not exposed above, or only very narrowly so in the middle. Mesonotum and scutellum fairly flat above, the former with well defined parapsidal sutures, and the scutellum sometimes with a median longitudinal impression. Abdomen large. Scale of petiole thicker than in the ♀ and also lower. Wings with 1 cubital cell.

♂. Antennae 13-jointed, smaller than the ♀, or even smaller than the ♀. Eyes and ocelli very large.

Distribution. Both hemispheres.

We have only two species in our region; they are easily distinguishable by the length of the scapes.

P. LONGICORNIS, Latreille. (Plate IX, fig. 433).

(as *Formica*) Hist. Nat. Fourmis, p. 443, ♀ 1802.

Jerdon, Madras Jour. Litt. Sc. vol. 47, p. 124, ♂. 1851.

André, Ann. Soc. Ent. France, (6) vol. I, p. 60, ♂. 1884.

♀. 2.7-3 mm. Pale smoky-brown, mandibles, antennae and legs much paler, the tarsi slightly ochreous. Smooth and moderately shining. Pubescence microscopic, present only on the legs and antennae. The body has a moderately abundant, coarse, blunt, erect, long and greyish white pilosity, less plentiful on the thorax than elsewhere. A few thinner hairs on the femora. The chitinous integument is rather thin. Head oval, excluding the mandibles and eyes not quite

half as long again as wide. Eyes large, convex, prominent, placed at the middle of the sides of the head and rather high up. Clypeus subcarinate, very convex transversely, the anterior margin feebly excised in the middle. Mandibles armed with 5 small teeth, the external margin much longer than the masticatory. Antennae very long, the scape two-thirds longer than the head and extending back as far as the meta-epinotal suture; the flagellum filiform, one and a half times longer than the scape, all the joints much longer than wide. Dorsum of the thorax fairly flat when seen from the side, depressed a little over the metanotum. Pronotum one-third wider than long, not very convex transversely. Mesonotum as long as wide, a little narrower behind than in front. Metanotum longer at the sides than in the middle, where it is about one-fifth as long as the mesonotum. Dorsum of epinotum half as long again as wide, joining the much shorter and oblique declivity in a low curve. Scale of petiole inclined forwards, the posterior face twice as long as wide, the anterior face very short. Abdomen ovate. Legs long and slender.

♀. 5.5 mm. Dark brown, the antennae and tarsi brownish ochreous, legs paler brown, the coxae and basal half of the femora somewhat ochreous. Apical margins of the abdominal segments pale fuscous yellow. Clothed with a short, but fairly dense pubescence all over, exceedingly fine on the legs and antennae. The coarse pilosity which is present in the ♂ is entirely absent. Dull. Microscopically rugulose, the sculpture somewhat stronger on the head than elsewhere. Head quadrate, and excluding the mandibles as long as wide. Antennae long, the scape extending beyond the hind margin of the head by two-thirds of its length. The eyes occupy the middle third or a little more of the sides of the head; ocelli moderately large. Mandibles 5-dentate, feebly aciculate. Pronotum very narrowly exposed above; mesonotum a little wider than long, fairly flat in its posterior part. Scutellum fairly flat, with a shallow median longitudinal impression; metanotum distinct. Dorsum and declivity of the epinotum forming a single steep plane. Scale of petiole completely hidden from above by the large and overhanging abdomen, which is oval and about one-third longer than wide. Deälated. Otherwise like the ♂.

♂, 3 mm. Similar to the ♀ but much paler in colour, with the same erect and rather coarse pilosity. Head oval, eyes and ocelli very large and prominent; mandibles narrow and feeble; clypeus as in the ♀. Thorax and abdomen moderately massive, the latter elongate, oval, convex above; the external genitalia large and prominent." (ex. Bingham, *Ants of India*).

Durban. This is a tropicopolitan species which has also been

introduced with plants and permanently established in many hothouses in temperate countries.

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

P. TRAEGAORDII, Forel, var. *NATALENSIS*, Forel.

Bull. Soc. Vand. Sc. Nat. vol. 50, p. 348, 8. 1914.

♀, 2.5-3 mm. Head and abdomen brown, the head darkest, thorax, legs and antennae brownish ochreous, the tarsi and mandibles ochreous. Pubescence moderately abundant, fine, adjacent, and of a pale greyish brown colour, very sparse on the pro-mesonotum. Pilosity coarse, dark brown, pointed, not blunt and not so long as in *P. longicornis*, shorter and more oblique on the legs, scapes and sides of the head than elsewhere. Pronotum and declivity of the epinotum smooth and very shining, abdomen superficially rugulose and fairly dull, the head shining and very sparsely punctured. Mesonotum and dorsum of the epinotum moderately shining and very feebly punctured. Head, excluding the mandibles, a little longer than wide, hardly narrower in front than behind, the sides subparallel, the posterior angles narrowly rounded. Clypeus very convex, subangular in the middle but not carinate, its anterior margin straight. Mandibles narrow, 6-dentate. Eyes placed in front of the middle of the sides. Scapes much shorter than in *longicornis*, extending beyond the hind margin of the head by about one-third of their length; 2nd joint of flagellum hardly longer than wide, 3rd and 4th one and a half times longer than wide, all the rest somewhat longer (in *longicornis* no joint is less than two and a half times longer than wide). Pronotum convex lengthwise and transversely, one and a half times wider than long. Mesonotum oval, slightly longer than wide, forming in profile with the pronotum a fairly strong convexity, not flat as in *longicornis*. Metanotum more deeply depressed than in that species, very short in the middle. Dorsum of epinotum distinctly convex lengthwise and transversely, wider than long, a little shorter than the oblique declivity. Scale of petiole slightly wider above than below, its dorsal edge convex from side to side and almost trenchant. Abdomen oval. Legs not long and not very slender.

Durban. (W. H. B. Marley, C. P. Merve).

Forel remarks of this variety, "Smaller than the type species. Head narrower, relatively longer, with the sides less convex. Pubescence more feeble. The mesonotum is also less convex and the epinotum lower, with the declivity much shorter and less distinct, whereas the dorsum is longer and less convex. Otherwise identical,

the erect pilosity the same and the colour similar but a shade darker."

I have specimens from Durban (leg. C. P. v. d. Merve), which agree very well according to the description cited above, with the type species, but the colour is not lighter than in var. *natalensis*, but darker, being of a very dark brown, the head almost black.

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

TRIBE OECOPHYLLINI, Forel.

GENUS OECOPHYLLA, Smith.

Journ. Proc. Linn. Soc. Zool. IV, Suppl. p. 404, 1860.

Characters.

♂. Antennae 12-jointed, long, inserted behind the frontal area but near the anterior ends of the frontal carinae: 1st joint of the flagellum very long. Maxillary palpi 5-jointed. Mandibles large, the masticatory margin long, longer than the basal, armed with numerous small teeth, the apical one large, acute and curved. Clypeus large: frontal area subtriangular. Frontal carinae short and fairly far apart. Eyes large, very convex and outstanding, almost hemispherical. Pronotum narrowed into a long neck in front. Pronotum-epinotal suture well defined, the meta-epinotal a little less so. Thorax strongly constricted and depressed along the meso- and metanotum, seen in profile, saddle-shaped. Epinotum unarmed, much higher than the metanotum. Petiole elongate, incrassate posteriorly, the posterior end produced into a small lamelliform flap on each side and embracing the abdominal articulation. Abdomen oval or subcircular. Legs long and slender.

♀. Antennae as in the ♂. Pronotum not visible from above. Mesonotum wide and gibbous in front. Scutellum much wider than long. Petiole subquadrate, short, seen from the side more or less obtusely conical. Wings with 1 cubital, and 1 closed radial cell which is rather long.

♂♂. Head relatively small: the mandibles porrect, very hairy and with an indistinct masticatory margin: ocelli prominent: eyes very large and prominent, giving great width to the head: antennae 13-jointed, filiform, the scape long, thickening slightly towards the apex, the basal joint of the flagellum remarkably clavate. Thorax very massive, the mesonotum broad and gibbous anteriorly, the pronotum sunk well below its level in front: scutellum large, laterally compressed, the rest of the thorax and epinotum sloping gradually

towards the apex of the latter. Petiole long, linear, scarcely, thickened at all; abdomen depressed, oval; external genitalia large."

I have not seen the ♂♂ of this genus, and the generic characters quoted above are taken from Bingham's "Ants of India".

Distribution. Tropics of the Eastern Hemisphere.

O. SMARAGDINA, Fabr., (Plate IX, figs. 434, 434a).

Syst. Ent. p. 828, ♀. 1775,

Guérin, (*Formica macra*) Voyage Coquille, Zool. II, p. 202, ♀. 1830.

Jerdon, Madras Jour. Litt. Sc. Vol. 47, p. 421, ♀, ♀, ♂. 1851.

♀, 7-11 mm. Yellowish (buff) red, the abdomen similar but with a brownish tinge as well, the apical margins of the segments paler and translucent. Pubescence short, decumbent, pale yellowish, fairly abundant all over; pilose hairs thin, present only on the anterior margin of the clypeus and the apical margins of the abdominal segments. Exceedingly finely rugulose and dull all over.

Head, including the closed mandibles, subtriangular with the angles rounded, widest behind, the posterior margin straight, the sides moderately convex, high in the middle and strongly convex from side to side. Mandibles closely striolate, the teeth black. Clypeus half as long as wide, raised towards the middle, the anterior margin convex. The scape, strongly incrassate near the apex, extends beyond the hind margin of the head by two-thirds of its length. All the joints of the flagellum longer than wide and decreasing in length progressively from the 1st to the penultimate joint. Pronotum narrower than the head, and including the neck-like portion longer than wide. Mesonotum narrowed a little behind, about as long as wide in front. Metanotum short in the middle, convex and considerably constricted in front, convex and much longer at the sides, in such a way as to embrace the anterior part of the epinotum; metanotal stigmata large and prominent. Epinotum very convex lengthwise, the dorsum about as long as the declivity. Petiole widening and rising gradually from its base to the posterior fourth, where it becomes slightly constricted and inclined downwards, produced on each side into a small flap embracing the articulation of the abdomen.

Abdomen oval or subcircular. Legs very long, the posterior femora as long as, or a little longer than the tibiae.

♂, 15-18 mm. Characters of the genus. Normally of a beautiful emerald-green, with a peculiar pellucid translucent appearance when alive. Varieties are found of a pale yellow, with more or less brownish

markings on the head and thorax". The colour is lost in dried or spirit-preserved specimens.

♂, 6-7 mm. More or less similar in colour to the ♀, sometimes dark brown, very pilose, the hairs brown and semi-erect; wings lacteous, hyaline, nervures yellowish brown. For the rest the characters of the genus."

The descriptions of the ♀ & ♂ quoted above are taken from Bingham's "Ants of India".

This species has so far been recorded within our limits only from Lourenço Marques (leg. K.H. Barnard). It is a decidedly tropical species and is not likely to be found except on the northern half of the east coast of the S. African region.

It inhabits trees and bushes, making its nest between leaves. It has the remarkable habit of using its larvae in order to obtain the silk with which the leaves are bound together to form the nest. This is effected by several workers holding the leaves in position while other workers, each bearing a larva in its jaws, move up and down the edges of the leaves and force the larvae to emit the silk from their glands. The silk-glands of the larvae of this species are enormously developed. A fuller account of the methods employed by this ant in making its nest may be found in Wheeler's "Ants", pp. 216-221. The larvae of *Oecophylla* are exceptional in not spinning cocoons. Whether this condition has been brought about by the glands being exhausted during the earlier stages of larval life cannot be decided at present. There are however, species of *Polyrachis* and *Camponotus* which also use their larvae for the same purpose as *Oecophylla*, but in some of these the larvae nevertheless manage to spin cocoons before pupating. (see Wheeler, Contr. Ent. Lab. Bussey Inst. Harvard Univ. no. 95).

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

TRIBE CAMPONOTINI, Forel.

Including the two genera *Camponotus*, Mayr. and *Polyrachis*, Fab.

GENUS CAMPONOTUS, Mayr.

Europ. Formicid. p. 35, 1861.

Characters.

♀. Antennae 12-jointed, inserted at the sides of the frontal carinae, some distance from the frontal area and from the clypeus; flagellum filiform. Dimorphic or polymorphic, having two or three fairly dis-

inct forms, i.e. ♂ or ♀ major, ♀ media and ♀ minor. No ocelli, but sometimes vestiges of same occur as indistinct pits. Frontal carinae more or less sinuate, usually well defined. Thorax usually widest in front, the pro-mesonotal and meso-metanotal or meso-epinotal sutures usually well defined. Epinotum unarmed, in some subgenera more or less subtruncate. Petiole of varying form, (see subgenera). In the ♂ the head is very large, subtriangular and with the angles rounded, or subcordate, wider than the thorax. In the ♀ minor the head is usually elongate, and more often longer than wide. The ♀ media has the head intermediate in form between that of the ♂ and of the ♀.

♀. Antennae as in the ♀. Rarely larger than the ♂; the head also not so wide as in that form. Ocelli not very large. Thorax of the form usual to the sex, the pronotum rarely exposed above. Wings with a closed radial and I cubital cell. Abdomen usually oblongo-ovate. Otherwise like the ♂.

♂, Antennae 13-jointed, scape as long or at least half as long as the flagellum. Ocelli and eyes large. Petiole thicker than in the ♀ or ♀. Abdomen small, considerably narrowed towards the apex or lanceolate, the genital armature small. Legs slender and feeble. Mandibles small and usually edentate except one apical tooth. Wings as in the ♀. Distribution. Both hemispheres.

This is an enormous genus comprising 1000 or more different forms. With the exception of *C. maculatus* and its subspecies and varieties, the identification of our species, with reference to the ♂, is not attended with much difficulty, as they fall into fairly easily recognised subgenera. This however is not the case with *C. maculatus*, a species which, with numerous and closely related races and varieties, is distributed over a large part of the globe. In the ♀ media and minor castes the specific characters are but slightly differentiated, and it is therefore essential that the ♂♂ should be obtained with the smaller ♀♀ whenever possible.

The degree of convexity of the thorax is often a valuable diagnostic character, although it is difficult to measure without the aid of a drawing-apparatus on the microscope. The standard which I have adopted is the ratio of the height to the length, the latter being measured in a straight line from the anterior point of the pronotum to the apex of the epinotum at its junction with the petiole, and the former by the length of the perpendicular from the highest point. These measurements are expressed by the symbols H.L. in the following pages, e.g. $1. = 3\frac{1}{2} H.$

The genus has recently been divided by Dr. Forel* into 25 subgenera, of which 13 are represented in our region. These subgenera are characterised by Dr. Forel as follows:

1. SUB-GENUS CAMPONOTUS, Mayr, s. str.

Type *C. herculeanus* L. Mandibles with 4 or 5 teeth, rarely 6. Clypeus neither carinate nor lobed. Head not truncate. Dorsum of thorax convex, neither excised nor marginate, widened in front, narrowed behind. Species usually large, robust and usually lignicolous, excavating galleries in wood. With transitions towards *Myrmoturba*. In all countries excepting Australia.

2. SUB-GENUS MYRMOTURBA, Forel.

Type *C. maculatus* F. Mandibles with 7 or 8 teeth, rarely 6. Clypeus lobed and carinate. Dorsum of thorax convex, neither excised nor marginate, widened in front, narrowed behind. Head of ♂ minor nearly always with a distinct hind margin. Living in the ground or under stones.

3. SUB-GENUS MYRMOPHYMA, Forel.

Type *C. quadrisectus* Smith. Vertex of head more or less strongly swollen. Otherwise in shape and stature similar to *Myrmoturba*. The clypeus, however, is more often without a carina and has a lobe which is narrowed and often dentate or emarginate in front. Mandibles usually with 6 teeth. Australian, Malayan and African. With transitions towards *Myrmoturba*.

4. SUB-GENUS MYRMOPSAMMA, Forel.

Type *C. mystaceus* Emery. Mandibles 5 dentate. Clypeus not carinate. Anterior margin of the head, above and below, and often the upper third of the clypeus furnished with transverse rows of long psammophore bristles or ammochaetae. Form of the body similar to that of *Myrmoturba*. African species of arenicolous habits. The scape sometimes has a dentiform process at the base.

5. SUB-GENUS DINOMYRMEX, Ashmead.

Type *C. gigas* Latr.. Very large or long species. Head of the ♂ minor narrowed behind into a neck, or at least with the posterior margin reduced to the limits of the articular border, i. e. obsolete. Otherwise like *Myrmoturba*.

* See Mem. Soc. Ent. Belg. Vol. 20, pp. 87 et seq. 1912 and Rev. Suisse Zool. Vol. 22, pp. 257—275, 1914.

6. SUB-GENUS MYRMOSERICUS, Forel.

Type *C. rufoglaucus* Jerdon. Identical with *Myrmoturba* but entirely dull, very finely sculptured, with a silky sheen and more or less covered with a fairly abundant pubescence on the whole body, especially the abdomen.

7. SUB-GENUS MYRMOSAGA, Forel.

Type *C. quadrimaculatus* Forel. Dorsum of epinotum concave, saddleshaped, the rest of the thorax convex, not marginate. Smallish species, generally shining. Shape generally like that of *Myrmoturba*, but more robust. The clypeus carinate and with a short lobe. Mandibles usually with 6 teeth.

8. SUB-GENUS MYRMAMBLYS, Forel.

Type *C. fastigatus* Roger. Head subtruncate in front, mandibles thick, clypeus high and narrow, the lateral pieces obsolete or nearly so. The ♀ major and ♀ minor strongly dimorphic, but the former do not constitute a distinct ♀ caste. Living in hollow stems and trunks of trees, the ♀ major guarding and closing the entrances to the nest with their subtruncate heads.

9. SUB-GENUS COLOBOPSIS, Mayr.

Type *C. truncatus* Spin. (Characterised by its strong dimorphism). The ♀ has the head sharply truncate in front and nearly always with the truncate area bounded by a sharp raised margin. The clypeus is usually continued behind past the truncate area, thus forming an angle with its anterior portion. The ♀ acts as a janitor, closing the entrance to the nest with the truncated face of the head. Some species have the thorax excised (i. e. at the meso-epinotal suture). The species live in the wood of trees, in stems, galls and hollow spines.

10. SUB-GENUS MYRMOTREMA, Forel.

Type *C. foraminosus* Forel. The ♀ and ♀ major with the anterior part of the head abundantly pitted. Clypeus usually without lobe or carina, mandibles usually 6-dentate. Thorax not marginate, convex in front, narrowed behind. Entirely African.

11. SUB-GENUS ORTHONOTOMYRMEX, Ashmead.

Type *C. lateralis* Ol. Epinotum cuboid, wide, distinctly marginate,* usually with a distinct angle between its two faces. Thorax usually, but not always emarginate between the mesonotum and the epinotum.

* Not in all our species.

Generally squat species, with the head short, mandibles thick and armed with 5 or 6 teeth. Head not truncate. Partially terrestrial and partially arboreal.

12. SUB-GENUS MYRMOSPINCTA, Forel.

Type *C. cinerascens* F. Thorax excised between the mesonotum and the epinotum, but not marginate, especially the epinotum. Head simple.

13. SUB-GENUS MYRMEPOMIS, Forel.

Type *C. fulvopilosus* De Geer. Large species. Pronotum of ♂ major with dentate or angular shoulders. Thorax not excised. Epinotum not dentate.*

These divisions are not entirely natural and will no doubt undergo revision from time to time, but they are of use in facilitating the study of this very large genus. In the case of some species, it depends on the degree of importance which one is inclined to attach to each of two or more characters whether the species be placed in this sub-genus or that. For instance, *C. Dofleini* Forel is included in the sub-genus *Myrmosphincta* by Dr. Forel, on account of the structure of the epinotum. But the degree of difference, even including the epinotum, which this species shows to *C. Mayri* (sub-gen. *Orthonotomyrmex*) is slight, or at least of a lower degree of value in classification than the points of resemblance. I have therefore preferred to place it in the sub-genus *Orthonotomyrmex*. Moreover, *C. scalaris* Forel, our other representative of the sub-genus *Myrmosphincta*, is a totally different looking insect, and to place it and *Dofleini* together is but to enhance the artificial character of these sub-genera.

SUB-GENUS CAMPONOTUS, Mayr, s. str.

For characters see table of sub-genera.

We have but one species in this sub-genus, *C. belligerum* Santschi. It bears a close resemblance to *C. maculatus*, from which it may be distinguished by the structure of the clypeus and mandibles and the dorsum of epinotum. From the type of the subgenus, *C. herculeanus*

* We have only one species, with several races and varieties, all of which may be recognised by the presence of a thick and oblique pilosity on the abdomen, composed of blunt quill-like hairs or bristles, nearly always hiding the colour and sculpture of the integument.

it differs somewhat in the shape of the epinotum, which approximates to that of *C. maculatus*, having the declivity very oblique and merging gradually into the dorsum. The latter is however, different from that of *maculatus*, in that it is not compressed laterally and not ridge-like or cristate above.

C. BELLIGERUM, Santschi.

Ann. Soc. Ent. France, vol. 88, p. 384, ♀, ♂, 1920.

♀, 15 mm. Head ferruginous (burnt sienna), an indistinct patch on the middle of the vertex, the cheeks and the anterior half in front of the eyes, dark brown or black. The inner edge of these dark lateral areas forms a straight line stretching from the anterior ends of the frontal carinae to the anterior margin of the eyes. Mandibles and basal two-thirds of the scapes dark castaneous, the apical third of the scapes black, the flagellum ferruginous. Thorax and petiole ferruginous, but a little paler than the head. Abdomen brownish black, the base and basal half of the sides of the 1st segment and a small and very diffuse spot on each side of the 2nd and 3rd segments dark ochreous, the apical margins of all the segments testaceous. Legs reddish ochreous, becoming gradually darker towards their apices. A very short and inconspicuous pubescence on the legs and antennae, abundant only on the flagellum, absent from the thorax and abdomen, on the cheeks sparse and inserted in shallow foveae. Pilosity short and sparse, yellowish, present only on the clypeus, meso- and epinotum, scale and apical margins of the abdominal segments. Tibiae cylindrical, strongly setose below; posterior metatarsi with two dense rows of subspatulate hairs on their lower surfaces, (this character occurs in several species of *Camponotus*). Moderately shining, the abdomen more so than the rest of the body. Sculpture like that of *C. maculatus*, but the head is also sparsely and shallowly punctured, the punctures pubescent. Mandibles with 5 acute teeth, finely striolate and strongly punctured: the basal margin much longer than in any of the *Myrmoturba* group, being almost as long as the masticatory margin. Head quadrate, barely longer than wide, the sides feebly convex, the posterior margin straight, the posterior angles narrowly rounded, as wide in front as behind, except the anterior 7th, which is a little narrower. Median area of clypeus arcuately produced in front but not lobed, the anterior margin crenulate, almost twice as wide in front as long. Frontal area small, triangular and well defined. Frontal

carinae feebly sinuate, hardly convergent behind. Eyes rather large, placed a little behind the middle of the sides. The scapes extend beyond the hind margin by as much as their apical width. Pronotum not in the least flattened above, but convex from side to side and lengthwise, two-thirds wider than long in the middle. Pro-mesonotal suture distinct. Mesonotum very little wider in front than behind, as long as wide. Meso-epinotal suture feeble. Dorsum of epinotum rather broad, two and a half times longer than wide, moderately oblique, arcuate from side to side, joining the oblique declivity in a widely rounded angle. The declivity is two-thirds as long as the dorsum and slightly convex from above to below. Scale of petiole rather narrow, as high as, or a little higher than the petiole is long below, both faces moderately convex, subacuminate above.

♂ minor, 8 mm. Head more or less yellowish brown, the cheeks darkest. Mandibles pale castaneous, antennae brown. Thorax dirty ochreous, the sides and the petiole somewhat fuscous. Abdomen brownish black, the apical margins widely pale testaceous, the 2nd segment with a pale ochreous spot on each side and extending from the base to beyond the middle of the segment. Legs pale ochreous, darkening towards their apices. Sculpture, pilosity etc. as in the ♀, but the head is more shining and almost impunctate. Head slightly and gradually widened from the eyes towards the anterior margin, where it is widest, nearly one-third longer than wide. The sides behind the eyes convex, convergent posteriorly to the very narrow and indistinct posterior margin. Mandibles as in the ♀, but narrower and longer, the teeth very acute. Clypeus very convex transversely but not carinate and not lobed in front, the anterior margin arcuate. The eyes are very convex, large, placed behind the middle. The scapes extend beyond the hind margin of the head by nearly half their length. Pronotum less convex transversely than in the ♀. Mesonotum narrowed behind. Dorsum of epinotum long, barely delimited from the declivity, the two faces forming a more or less continuous oblique plane. Scale of petiole cuneiform, seen from the side its outline forms an isosceles triangle, the base of which is slightly convex and forms the anterior face, the posterior face being as long as the ventral margin and longer than the anterior face. Otherwise like the ♀.

The ♂ minor resembles that of *maculatus* and some of its varieties, but is easily distinguishable by the 5-dentate mandibles, the clypeus, the thick scale and the subspatulate hairs on the posterior metatarsi.

Ababis, S. W. Africa. (R. W. E. Tucker).

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

SUB-GENUS MYRMOTURBA, Forel.

For characters see table of subgenera.

♂. In this sub-genus, the head of the ♂ is usually more or less triangular and with the angles rounded, or subcordate; the posterior margin always more or less concave. The scapes are rarely long, and in few of them do they extend beyond the hind margin by as much as one-fourth of their length. In taking the measurement, it should be noted that the length of the head is taken from the anterior margin of the clypeus to the level of the posterior angles; in measurements of the scape, that limb should be turned back parallel to the long axis of the head, not directed obliquely to the posterior angles. The pronotum is usually more or less convex transversely and slopes downwards in front. In many species the pronotum has two shallow impressed lines, one on each side of the middle, oblique and convergent anteriorly. In the ♀♀ these lines are more or less parallel. They are inconspicuous as a rule, and not easily seen unless the insect is held at a certain angle.

The mesonotum is narrowed gradually backwards and the epinotum is frequently widened towards the brow of the declivity. The thorax is therefore always somewhat constricted at the meso-epinotal level. Usually a trace of the metanotum is visible, but as this segment is very small and inconspicuous, the suture between it and the epinotum is referred to in the following pages as the meso-epinotal. The dorsum of the epinotum is narrow, the sides converging above to form a narrow and rounded angle (i.e. the actual dorsum) the dorsum nearly always merging gradually into the declivity, very rarely subangularly. The degree of convexity of the dorsal profile of the thorax varies, but in many cases (*maculatus* and its races and varieties), to so slight a degree that it is difficult to appreciate. The scale of the petiole also exhibits slight variations, but on the whole it cannot be relied on as a diagnostic character of much value. Some authors have placed a great deal of emphasis on the absence or otherwise of short spines or setae on the lower surface of the tibiae and also on the shape of that joint. In cross-section it is either round, quadrate-oblong or prismatic. The normal fundamental sculpture of the sub-genus, as exemplified by *G. maculatus*, consists of a very fine and even rugulosity on the thorax and abdomen, somewhat reticulate in parts, and on the head of a reticulation which merges into a rugulose sculpture here and there. The sculpture in most of the species is barely appreciable under a magnification of less than 16 diameters. The pubescence is conspicuously scanty on

the body, and not very apparent even on the legs and antennae. The pilosity is scanty, consisting as a rule of a few marginal bristly hairs on the abdominal segments, on the anterior margin of the clypeus, and a few isolated hairs on the pronotum, brow of the declivity and the upper edge of the scale.

♂ media. This differs from the ♀ in having the head more elongate, widest at, or a little behind the middle, very little narrower in front than behind, often parallel-sided. The sculpture, especially of the head is usually finer, and if spots of pale colour are present on the abdomen of the ♀, these are usually indistinct or less clearly defined in the ♂ media. The scale is usually thicker than in the ♀. The antennae are also proportionately longer.

♂ minor. Antennae relatively much longer than in the ♀, and a little longer than in the ♂ media. The head is nearly always wider in front than behind, that is, parallel-sided in front of the eyes and gradually narrowed behind the same to the posterior margin. The thorax is more compressed behind and the scale of the petiole is thicker, and more convex in front. The abdominal maculae are usually indistinct. Metanotum entirely obsolete in most cases.

♀. In this sex the shape of the head resembles that of the ♂ media, being usually longer than wide, very little narrower in front than behind and widest at the middle or a little behind it. The sculpture is similar to that of the ♂ media. The mesonotum is fairly flat above, convex in front from side to side. The two faces of the epinotum usually fairly clearly defined. Scale like that of the ♀ but somewhat thinner. Abdominal maculae as clearly defined as in the ♀.

♂. The anterior portion of the head, in front of the eyes, usually parallel-sided, the posterior portion, including the eyes, more or less trapezoidal or semi-circular, narrowing gradually backwards to the narrow posterior margin, which is considerably narrower than the clypeal margin. Thorax like that of the ♀, but the epinotum is much lower, the dorsum and declivity less clearly defined. Scale of petiole thicker and lower, the dorsal edge usually emarginate and thick. Abdomen lanceolate-ovate. Sculpture and pilosity as in the ♀.

C. maculatus is an extraordinarily variable species, widely distributed over the warmer regions of the globe, and comprising about 100 different races and varieties. In our region alone it is represented by about 30 different forms. In view of the probability that there are many intermediate forms, at present unknown, but which will be discovered in the future, it does not seem wise to burden with varietal names all the different manifestations of variability which

are exhibited by this protean species. I have therefore in some cases, e.g. race *Liengmei* Forel, given only alphabetical signs to the different forms.

Key to the species of Myrmoturba, ♀♀.

- (24) 1. Body entirely black or dark brown*, only the petiole sometimes paler, (*Liengmei* excepted, which has very dark ochreous spots on the abdomen).
- (19) 2. The scape extends beyond the hind margin of the head by at least as much as its apical width.
- (10) 3. Clypeus very obtusely, or not at all carinate.
- (5) 4. Over 15 mm. long race *Liengmei*, Forel, var. *α*.
- (4) 5. Less than 10 mm. long.
- (9) 6. Whole body fairly dull, especially the head.
- (8) 7. A coarse, bristly and white pilosity present . . . *nivosetosus*, Mayr.
- (7) 8. Pilosity thin and yellowish *acrapimensis*, Mayr.
- (6) 9. Whole body moderately shining *Werthi*, Forel.
- (3) 10. Clypeus distinctly carinate.
- (12) 11. Smaller species, not more than 11 mm. long
race *negus*, var. *Beritschi*, Forel.
- (11) 12. Larger species, more than 11 mm. long.
- (18) 13. Head dull above.
- (17) 14. Femora more or less ochreous; the scape extends beyond the hind margin of the head by not more than the length of the 1st joint of the flagellum.
- (16) 15. Abdomen black, the first 3 segments sometimes with spots of paler colour, but nevertheless very dark race *Liengmei*, Forel.
- (15) 16. Apical half of femora brownish red; abdomen entirely black
race *Liengmei*, var. *α*.
- (14) 17. Femora black; scapes longer, almost reaching the pro-mesonotal suture
natalensis, Smith.
- (13) 18. Head with a more or less distinct glossiness; (tibiae and apical half of femora black) *maculatus*, race *Knysnae*, Arnold.
- (2) 19. The scape does not, or only just reaches back as far as the hind margin of the head.
- (21) 20. Head very finely, but distinctly reticulate-punctate or granulate
maculatus, race *congolensis*, Em..
- (20) 21. Head very finely rugulose and slightly shining.
- (23) 22. Head a little wider than long, the sides convex
maculatus, race *Empedocles*, Forel.
- (22) 23. Head longer than wide, the sides straight, except over the anterior third
maculatus, race *Thalcs*, Forel.
- (1) 24. Thorax, or at least the epinotum and petiole, neither black nor very dark brown, but of some shade of a reddish, ochreous or pale brownish colour.
Abdomen spotted with ochreous or the base more or less pale.
- (32) 25. Not more than 12 mm. long.
- (29) 26. Head neither black nor brown.

* Excepting the mandibles, apical margin of the clypeus, the lower part of the sides of the thorax, and the extreme apical margin of the abdominal-segments.

C. MACULATUS, Fab. (Plate IX, figs. 149, 149a, 150).

Spec. Insect. I. p. 491, ♂. 1781.

(*Formica thoracica*) Syst. Piez. p. 395, ♀. 1804.

Mayr, Verh. Zool. Bot. Ges. Wien, vol. 12, p. 654, ♂. 1862.

Donisthorpe, Ent. Record, vol. 27, p. 221, ♀. 1914.

♀. 12 mm. Head black, thorax black or blackish brown above, the lateral margins of the pronotum, the mesopleura, the lower half of the epinotum and the lower third of its declivity ochreous, scale ochreous or brownish ochreous, abdomen black, with dull ochreous spots on each side disposed as follows: 1st segment, on the basal half or two-thirds an elongate and not very sharply defined pair of spots which are usually confluent at the base; 2nd segment, a pair of round spots, rarely extending beyond the basal half of the segment; 3rd segment, a pair of much smaller spots of a dark brownish ochreous colour with diffuse margins. Femora and coxae ochreous, tibiae and tarsi blackish brown. Scapes black, flagellum testaceous and becoming darker or brownish towards the apex. The extreme apical margins of the abdominal segments testaceous. Head and thorax dull, abdomen moderately shining. A few erect, brownish yellow pilose hairs arising from shallow pits, on the head, pronotum and apical margins of the abdominal segments; on the brow of the epinotum and edge of the scale some similar but black hairs. A few short and yellowish hairs on the anterior margin of the clypeus. Sides of the head, legs and scapes with a sparse, short and adjacent pubescence, the flagellum with a more abundant but finer pubescence. Head very finely and closely reticulate; with a few small and very shallow punctures scattered over the clypeus and the front of the cheeks. Thorax and abdomen very finely rugulose.

Head as long as wide, narrowed in front, the sides convex and converging anteriorly, the hind margin distinctly concave, the posterior angles rounded. Median area of clypeus produced into a rectangular lobe in front, projecting over the base of the closed mandibles. Clypeus carinate, the carina not reaching the anterior margin which is feebly crenulate. Mandibles dull, sparsely and finely punctured, armed with 7 acute teeth. The scapes extend a little beyond the hind margin of the head, all the joints of the flagellum much longer than wide. Eyes feebly convex, placed in the middle of the sides. Degree of convexity of thorax, L. = $3\frac{1}{3}$ H. Pronotum nearly one and a half times wider than long in the middle; mesonotum slightly wider than long, metanotum distinct and twice as wide as long. Declivity of epinotum smooth and shining, otherwise not clearly

delimited from the much longer and oblique dorsum. Scale of petiole twice as high as thick (from front to back), convex above from side to side, the edge trenchant, the anterior face convex, the posterior face almost flat. Femora and tibiae compressed, oblong in cross-section, hardly prismatic.

♂ media, 9-10 mm. Head dark brown, thorax reddish pale brown, darkening posteriorly, abdomen black with the pale spots obsolete or nearly so, lower part of the sides of the thorax, the scale and the legs ochreous, the posterior tibiae and tarsi somewhat brownish but not dark brown as in the ♀.

Head about one-fourth longer than wide, widest across the eyes, which are relatively larger than in the ♀ and placed just behind the middle: the sides of the head moderately convex, the posterior margin very little wider than the anterior and less concave than in the ♀, the posterior angles widely rounded. The scape extends beyond the hind margin by about one-third of its length. The pronotum is flatter than in the ♀, and the scale is thicker and more convex vertically in front. Otherwise like the ♀.

♂ minor, 7.7-8.2 mm. Head, antennae and thorax dirty yellowish brown, the pronotum somewhat paler. Abdomen brownish, with the ochreous spots on the 1st segment elongate, confluent and very indistinctly defined. Legs ochreous, tibiae and tarsi somewhat reddish. Head nearly one and a half times longer than wide, the sides in front of the eyes straight and parallel, behind the eyes convex and convergent, the posterior margin shallowly concave and much narrower than the anterior, the posterior angles less rounded than in the ♀ media. The scapes extend by half their length beyond the hind margin. Eyes more convex than in the ♀ media. The convexity of the thorax lower than in the ♀ or ♀ media. Scale more convex in front than in the ♀ media. The projecting lobe of the clypeus is relatively wider and shorter than in the ♀ media, and its anterior margin is convex, not straight as in the ♀ and ♀ media.

♀, 14.5 mm. Length of front wing 13 mm. Colour, pubescence, pilosity and sculpture like that of the ♀, but the blackish brown colour of the thorax is more sharply delimited from the ochreous colour which extends over the whole of the sides of the thorax and the declivity of the epinotum; the pronotum ochreous at the sides. In addition, the head is paler or reddish brown at the sides and posterior angles, and the abdominal spots are wider, much more

sharply defined, the 4th segment with a small spot on each side. The scutellum and metanotum shining and almost smooth. Head one-fourth longer than wide, the posterior margin almost straight, otherwise formed like that of the ♂ media. The scapes extend beyond the hind margin by one-third of their length. The carina on the clypeus more obtuse than in the ♂ media. Ocelli small. Mesonotum a little longer than wide, with a median impressed line on its convex anterior portion. Scutellum about as wide as long, rounded posteriorly. Dorsum of the epinotum convex from side to side and lengthwise, as long as the subvertical declivity. Anterior face of the scale less convex than in the ♂. Abdomen elliptical, not quite twice as long as wide. Wings suffused with ochreous yellow, the nervures and stigma yellowish brown.

♂, 9.4 mm. Head, flagellum, petiole and thorax more or less ochreous, the head somewhat darker or reddish ochreous (raw sienna), the dorsum of the mesonotum and scutellum reddish brown, abdomen brown, the basal segment paler; femora, ochreous, scapes, tibiae and tarsi brownish yellow. Pilosity, pubescence and sculpture as in the ♀, but the abdomen is more shining, and the epinotum and petiole are entirely smooth and shining. Head, excluding the mandibles, as long as wide across the eyes, the sides in front of the eyes subparallel or slightly convergent anteriorly, the sides behind the eyes convex and forming with the posterior margin a semicircle. Eyes very large and convex, two-fifths as long as the head; ocelli fairly large. Frontal carinae parallel on the posterior half, not convergent as in the ♀. Clypeus raised towards the middle line but hardly carinate, twice as wide as long. Mandibles small, with 3 or 4 obtuse teeth. The scapes extend beyond the hind margin by half their length, all the joints of the flagellum longer than wide and becoming progressively shorter to the penultimate joint. Mesonotum as long as wide, convex in front, flat posteriorly, the parapsidal sutures distinct. Scutellum nearly half as long as the mesonotum, narrower behind than in the ♀, its sides vertical. The dorsum and declivity of the epinotum form a continuous and steep curve, their limits not clearly defined but the dorsal portion much the shorter. Scale of petiole low, seen from the side broadly conical, hardly higher than thick at the base, the dorsal edge rather thick, the anterior face subquadrate and a little wider below than above. Abdomen lanceolate. Femora compressed. Wings as in the ♀.

Common throughout S. Rhodesia and the greater part of S. Africa.

This is one of the two common ants, (*Pheidole punctulata* being the

other), to which the popular name of "Sugar-ant" has been applied. It is very largely crepuscular and nocturnal in its habits, and is often a nuisance in houses where it visits pantries, cupboards and other places where sugary substances are kept. The nest is usually placed under stones in the ground, and has the entrance surrounded by an irregular and low crater. The ♀♀ media and minor may be seen now and again at work round the entrance of the nest during the day, but the ♂♂ are very rarely seen in the open before sunset.

Up to a quite recent date, it was assumed that the type species of *maculatus* of Fabricius was the form with pale tibiae, common in Egypt. However, in a paper published a short time ago, Prof. Emery pointed out that Fabricius described his species as having black tibiae, so that the Egyptian form must be treated as a variety of the type. The latter is in the Banksian collection in the British Museum, and has recently been redescribed by Donisthorpe. I have also had the opportunity of examining the type and from the description which I wrote out at the time, it is clear that the only feature in which it differs from the Rhodesian specimens (on which the foregoing descriptions have been based), is the presence of 5 or 6 fine setae on the lower margin of the posterior tibiae. Notwithstanding the importance which some authors have attached to the absence or presence of such setae, I can not for my part regard the lack of those structures in the Rhodesian specimens as the slightest justification for separating the latter as a variety.

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

Race MANZER, Forel.

Ann. Soc. Ent. Belg. vol. 54, p. 452, ♀, 1910.

Rev. Zool. Afric. vol. I, p. 280, ♂ minor (?), 1911.

♀, 13-14.7 mm. Colour, sculpture and pilosity like that of *maculatus* i. sp. but the head is more castaneous red, becoming paler towards the posterior angles. The ochreous spots on the 1st and 2nd abdominal segments coalesce and form a band on each side, the spots on the 3rd segment very dark and small, or almost obsolete. Head nearly one-fifth longer than wide, the sides less convex and the posterior angles less rounded than in the type of the species. Scapes longer, extending beyond the hind margin by two fifths of their length. Mandibles longer. The anterior margin of the lobe of the clypeus more distinctly crenulate than in the type of the species. Thorax less convex lengthwise than in the type. Scale thicker, especially its dorsal edge. Tibiae setose below.

♂ minor, 40·2 mm. The yellow markings on the abdomen are very wide, so as to leave a narrow triangle of blackish brown extending over the middle of the first three segments, the remaining segments being entirely dark. The rest of the body, the legs and the antennae dark ochreous, the meso-epinotum somewhat reddish ochreous. The scapes are longer than in the type species, extending as far as the pro-mesonotal suture. Otherwise like the ♀ minor of the type species. This form of the ♂ was taken with the ♀ which are typical, so that the ♂ described by Forel doubtfully as belonging to this race is evidently something else.

Victoria Falls, (Wroughton, Arnold).

G.A. coll.

Race ATRAMENTARIUS, Forel.

(as variety) Ann. Mus. St. Petersburg, p. 12, §. 1904.

Ann. Soc. Ent. Belg. vol. 49, p. 180. 1905.

"Identical with the type of the species, but nearly entirely black, having only the flagellum, the bases of the legs and a narrow row of spots on the abdomen, and sometimes a part of the thorax, of a brownish dull yellow colour. A little more shining than the type of the species. It recalls the var. *melanoticus*, Em. of race *substitutus*. Passes into the type by every variety of colour. Tibiae not setose Abyssinia."

Also at Durban, (Wilms), (teste Forel, in Schultze, Reise Süd-afrika, where the author raises it to the rank of a race).

Race ATRAMENTARIUS, var. LIOCNEMIS, Emery.

R. C. Acc. Sc. Bologna, p. 30, §. 1904-5.

(as *lactipennis*, Smith) Ann. Soc. Ent. France, p. 46, 1895.

"♀. Smaller than the type species and more slender, maximum length 40·5 mm. Head of the ♂ less large, $3\cdot2 \times 2\cdot8$ mm.), with the occipital angles more rounded; the tibiae are not setose, and measure at the most only 3 mm. Sculpture feebler, whereby the whole insect is rendered more glossy. Colour as in the type species, but the contrast between the yellow and the black is even sharper." Makapan and Pretoria; S. W. Africa (Lubbert), teste Forel, Schultze's Reise, p. 26. I have not seen this form or the race *atramentarius*. Notwithstanding the fact that in his original description Forel treated *atramentarius* as a variety "passing into the type by every variety of colour", yet in Schultze's Reise he raises it to subspecific rank

and attaches to it *liocnemis*, Em., as a variety. Quite recently Dr. Santschi has removed the latter from *atramentarius* and placed it with race *radamoides*, Forel, (see Ann. Soc. Ent. France, vol. 85, p. 293, 1917), at the same time expressing the opinion that *atramentarius* is more nearly allied to var. *Muthildae*, Forel of race *negus*, Forel. The not infrequent changes, similar to the foregoing, which have been made from time to time in respect to *maculatus* and its numerous forms, serve to show how confused our knowledge of this group still is, and also on what subtle distinctions many of the so-called races and varieties have been so rashly erected.

Race RADAMOIDES, Forel, var. DIFFUSUS, Santschi.

Grandidier, Hist. Madagasc. vol. 20, p. 213, 1891.

(variety). Ann. Soc. Ent. France, vol. 85, p. 293, 9¹, 9², 1917.

♀ major, 13-13.6 mm. Larger than the var. *madecassa* Emery. The head of a reddish brown, has the posterior angles less reddish brown, the vertex more or less blackish. The yellow markings on the abdomen are as extensive as the black ones, their limits generally diffuse. With the exception of a dorsal triangular spot, the 1st segment is entirely yellow. Tibiae not, or only slightly brownish. Length of posterior tibiae, 3.6-3.9 mm.

♀ minor, 8 mm. Yellow, a longitudinal band on the dorsum of the abdomen which becomes less distinct as the size of the insect decreases. Matopo Hills, S. Rhodesia, (Arnold), types: Natal, (Muralt and Traegaorth). The Natal specimens are smaller and pass into the var. *liocnemis*."

In the same paper, Dr. Santschi records the var. *madecassa* Emery (R. C. Acad. Bologna, p. 30, 1904) from Natal. It differs from *liocnemis* in having the head black instead of brown and the spots on the abdomen more distinct.

Race LACTEIPENNIS, Smith,

Cat. Hymen. D. M. VI, p. 34, ♀, ♂, 1858.

♀. This form differs from the type of the species in having the head less convex-sided and longer, one-seventh longer than wide. The dorsal profile of the thorax is also less convex and the scale of the petiole thicker, with the anterior face more convex. The thorax is darker, and the abdomen black or blackish brown above, with only the apical margins of the segments and the base of the 1st pale testaceous. Legs dark ochreous, only the tarsi brownish.

The colour of the abdomen in the ♀ like that of the ♂. The ♀ minor and the ♂ do not differ to any noteworthy extent from those of the type of the species.

Durban. I have a ♂, received from the British Museum, bearing a label in Smith's handwriting.

Race *TRAEGAORDII*, Santschi.

Goteborgs K. Vetens. Vitterh. Handl. XV, 2, p. 38, ♂, ♀, ♂, ♀. 1914.

♂, 10.5 mm. Head black, thorax and abdomen brown, tibiae dark brown, mandibles and scapes blackish, femora and tarsi pale brown, the former becoming paler towards the base. Trochanters, coxae, petiole and flagellum ochreous. Margins of the abdominal segments translucent and testaceous; the paler spots on the 1st and 2nd segments very dark, diffuse and relatively larger than in the type of the species. Pilosity rusty red, sparse on the thorax and abdomen, slightly more abundant on the anterior third of the head. Tibiae not setose below. Head subopaque, the occipital angles slightly shining, the rest of the body shining. Sculpture as in the type of the species. Head less convex-sided and less narrowed in front than in the type, and less deeply concave behind, a trifle longer than wide. Mandibles a little more strongly punctured. The scape extends beyond the hind margin of the head by about one-fourth of its length. Thorax relatively longer and narrower than in the type, and less convex above, $L = 4 H$. The angle between the two faces of the epinotum, although considerably rounded, is more distinct than in the type, and the dorsum is about twice as long as the declivity. Scale higher than wide at the base, narrower than in the type, but more convex in front. Abdomen longer than wide and narrower than in the type. Tibiae slightly compressed.

♀ minor, 7.5–8 mm. Colour of the head, thorax and legs like that of the ♂, but the head is a little darker. Abdomen pale brown, the spots on the first 3 segments much lighter and larger than in the ♂ of this race, or in the ♀ minor of the type species. Moderately shining all over. The sides of the head behind the eyes are longer and less convex than in the type species. The scapes extend beyond the hind margin of the head by nearly half their length. Otherwise like the ♀ minor of the type.

♀, 11–12 mm. Head as in the ♀ media, more rectangular than in the ♂, one-fifth narrower in front, fairly shining. The eyes,

which are a little more convex, occupy the whole of the 3rd fourth of the sides. Scutellum and mesonotum in front very shining. Epinotum fairly dull, finely shagreened, the dorsum as wide as the declivity. Scale high, thin, trenchant at the summit, slightly concave behind. Wings hyaline, with rusty-red nervures, the anterior wing 44 mm. long. Colour, pilosity and sculpture as in the ♀.

♂, 7.5 mm. Yellow. Three elongated spots on the mesonotum and the base of the abdominal segments brownish. Sculpture and pilosity as in the ♀. The cheeks less hirsute. Head longer than wide, rounded behind the eyes, which are very convex and occupy the whole of the middle third of the sides. The scape extends by more than half its length beyond the occiput. Clypeus strongly carinate, mandibles dull and shagreened, finely dentate. Epinotum only slightly convex from above to below, its two faces not distinctly delimited. Scale thicker than high, rounded above. Anterior wing 7 mm. long. Otherwise like the ♀." Natal, (Traegaordh, H. B. Marley). (S.A.M., R.M.G.A. colls.).

Race *TRAEGAORDHI*, var. *MUGER*, Forel. (Plate IX, fig. 154).

Bull. Soc. Vaud. Sc. Nat. vol. 50, p. 250, ♀. 1914.

♀, 8-11 mm. The head is duller than in the type of the race, and the spots on the abdomen are darker, smaller and less distinct. The head of the ♀ minor is a little narrower behind. Otherwise identical with the type of the race."

Durban. (H. B. Marley).

Contrary to the author's statement, the head of the ♀ in all the specimens before me is just as dull as in the race, and the abdominal spots are, if anything, more distinct. The only notable difference which I can see is, that the ♀ minor has the abdominal spots clearer and paler, and widened so as to form almost complete transverse bands. The head is just as wide behind as in the race. In my opinion, the separation is not justified by such trifling differences and the varietal name should be suppressed. (S.A.M., G.A. colls.).

Race *RADAMAE*, Forel, var. *MIXTELLUS*, Forel.

Grandidier, Hist. Madagasc. p. 31 & 33, ♀. 1891.

♀, 40 mm. Head, antennae and tarsi yellowish red, thorax, petiole and legs ochreous, first three abdominal segments with wide flavous apical margins and large pale ochreous spots on each side, leaving

only a narrow median area and a narrow band in front of the apical margins pale brownish. Mandibles ferruginous, shining, sparsely but strongly punctured, their masticatory margins black: the anterior margin of the clypeus also blackish. Abdomen shining, the rest of the body subopaque. Head as long as wide behind, less narrowed in front, the posterior angles more widely rounded, the posterior margin much less concave (almost straight) than in the type of the species. Eyes placed just behind the middle of the sides. Clypeus more obtusely carinate than in the type of the species. Frontal carinae more convex externally and wider apart behind. Pronotum less convex transversely. Mesonotum a little more compressed, the dorsum of the epinotum wider and distinctly delimited from the sides, (in the type of the species the sides of the epinotum meet above in a very narrow angle, its apex rounded off, so that the actual dorsal face is rendered almost obsolete). Convexity of the thorax, $L. = 3\frac{1}{4} H$. The scale is less convex in front. The vertex of the head, behind the frontal carinae lacks the half dozen or so piligerous punctures which are present in the type species. Posterior tibiae not setose below. Otherwise like the type of the species.

Estcourt, Natal. (Wroughton, Haviland).

The description given above is based on specimens collected by Wroughton and named by Dr. Forel himself, from the B.M. and S.A.M. colls.

Race PICTIVENTRIS, Mayr. (Plate IX, fig. 153).

Ann. K. K. N. H. Mus. Wied, vol. 16, p. 28, ♀, ♂. 1901.

♀, 8.5–9 mm. Head, thorax, antennae and petiole dark yellowish red, the occipital lobes of the head paler, the legs dirty ochreous. The pale ochreous (stramineous) colour on the first 3 abdominal segments extends right across, leaving only a narrow preapical blackish brown band on each segment, somewhat angularly widened in the middle; the 4th segment is blackish brown, with a transversely elongate yellow spot on each side, the apical segment blackish brown. Moderately shining, the occipital lobes distinctly so. Pilosity brownish, much less abundant on the abdomen than in the type of the species. Mandibles moderately shining, sparsely and coarsely punctured. Head less emarginate behind than in the type of the species. Clypeus sharply carinate, the lobe rectangular in front. The scapes extend beyond the hind margin by one-third of their length. Frontal carinae more convex externally and wider apart than in the type. Dorsum of epinotum as long as the declivity, the latter steep and fairly

clearly delimited. Tibiae feebly compressed, not setose below. Otherwise like the ♀ type species.

♂ minor, 6.3 mm. Head a little paler than in the ♀, the blackish bands on the abdomen more diffuse; the two faces of the epinotum less clearly delimited. Otherwise like the ♀, excepting the usual differences between the castes.

Port Elizabeth, (Brauns); Kammagas, S. W. A. (Schultze).

The above description is based on cotypes presented to me by Dr. Brauns. Other specimens from Willowmore, (leg. Brauns), differ slightly from the type of the race in being a little larger, and in having the colour of the head and thorax paler and the darker abdominal bands much paler, or brownish ochreous.

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

Race *PICTIVENTRIS*, var. *OCTOMACULATA*, Forel.

Ann. Soc. Ent. Belg. vol. 54, p. 442, ♂, 1910.

“♂, 6-11 mm. A little larger than the type of the race. The brown colour of the abdomen darker. It is more extensive, although still more distinctly defined, and in such a way as to reduce the yellow colour to four rounded lateral spots on the first four segments and to a fairly narrow posterior band on the first three segments. The rest of the body is of a more reddish yellow and brighter. Otherwise identical; tibiae not setose.”

Natal, 3,500 ft. (Wroughton).

Some specimens from the Matroosberg, Hex River Mountains, 3,500-5,000 ft. (leg. R. W. E. Tucker) are intermediate between this variety and the race, the colour of the head and thorax being brighter than the type, the dark colour of the abdomen paler or more reddish brown, and with the yellow markings narrower, especially on the 4th segment.

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

Race *THORACIUS*, Fab., var. *INCOMMODA*, Forel.

Bull. Soc. Vaud. Sc. Nat. vol. 50, p. 250, ♂, 1914.

♂, 14 mm. Head and scapes black, thorax ochreous below and brownish red above, petiole and first two segments of abdomen ochreous, the latter with diffuse transverse brown bands over their apical halves, the rest of the abdomen blackish, all the segments with translucent and testaceous apical margins. Flagellum and legs reddish ochreous, the metatarsi almost brown. Head and thorax

fairly dull, abdomen moderately shining. Sculpture, pilosity etc. as in the type species; posterior tibiae finely setose below. Head as wide as long, more convex-sided than in the type species, including the closed mandibles subcordate, the posterior margin much more concave and with the occipital lobes more prominent. Clypeus obtusely carinate. Frontal carinae wider apart behind than in the type species. Thorax wide, the epinotum less compressed, the dorsum and declivity of about equal length, and meeting at an angle of about 120°. Convexity of thorax greater than in the type species, $L. = 3H.$, highest at about the middle of the mesonotum. Abdomen less elongate. Otherwise like the type of the species.

♀ media, 10.5 mm. Dull ochreous, the head and antennae reddish ochreous, the abdomen like that of the ♂ but with the dark bands on the first two segments less distinct. Head quite one-third longer than wide, the sides almost straight or only very feebly convex, hardly narrower in front than behind, the posterior margin almost straight and much wider than in the type of the species. The scape extends beyond the hind margin by about two-fifths of its length. Convexity of thorax, $L. = 3H.$ Otherwise like the ♀ media of the type of the species.

♀ minor, 9.5 mm. Like the ♀ media, but the head is ochreous only. The anterior margin of the lobe of the clypeus is straight, not arcuate as in the type of the species. Frontal carinae wider apart behind. Otherwise like the ♀ minor of the type.

Hab. ? ex S. A. Mus. coll.

Race COGNATUS, Smith.

Cat. Hymen. B. M. VI, p. 35, ♀, 1858.

“♂ major, $5\frac{1}{2}$ lines, (ca. 12 mm.). Extremely like *maculatus*, which it may be; the antennae and head as in that species, the legs entirely ferruginous; the abdomen entirely black. In other respects the same as *maculatus*.

♀ minor. This insect differs from the small ♀ of *maculatus*; the head is of a different form, being narrowed slightly behind the eyes and is more sharply emarginate behind; the scale of the peduncle is more elongate and pointed at the apex; the abdomen entirely black and the legs red. Notwithstanding the differences pointed out, this species will probably prove to be a variety of *maculatus*. Port Natal.”

This race is unknown to me; it has been recorded from S. W. Africa, the Cape Flats and Kamnagas, Little Namaaland.

Race COGNATUS, var. BOERA, Forel.

Schultze, Reise Südafrika, vol. 4, p. 27, ♀, 1910.

“♀. 8–13 mm. Differs from the type of the race by the brighter and entirely rusty yellow-red or brownish yellow colour, even in the largest ♀. Scapes, tarsi and mandibles somewhat darker brown. Otherwise the shape, sculpture and pilosity agree entirely with *cognatus*.

♀, 13 mm. Entirely brownish yellow like the ♀, dealated. Little Namaland, Steinkopf and Kamnagas, (Schultze); in a rotten tree-stump. The race *Ballioni*, Forel (Ann. Soc. Ent. Belg. vol. 48, p. 176, 1904, habitat, Port Elizabeth), is only a darker variety of the true *cognatus*, at the time insufficiently known to me, differing from the same in having a darker ♀ minor, and in the narrower shape, (the head of the ♀ minor being also shorter and less narrowed behind). All varieties of *cognatus* have hirsute cheeks.”

Race INTONSUS, Emery.

R. C. Acad. Sc. Bologna, p. 29, ♀, 1904–5.

“♀. Of the size of *maculatus* i. sp. (12.5 mm. long); the head of the ♀ is less wide (3.4 × 3.1 mm.), narrower apically, (greatest length of scape 2.8 mm., of posterior tibiae 3.5 mm.). In the ♀ minor the sides of the head, from the eyes to the occipital margin, are straighter than in *maculatus*. The sculpture is stronger and the integument duller all over. The sides of the head have a stronger sparse puncturation, the punctures bearing short, straight hairs. The tibiae are setose below. Colour entirely pale yellow in the ♀ minor; in the ♀ media, the abdomen is more or less brown; in the ♂ the thorax is ferruginous, the head darker, the abdomen brown or black, either without spots or with indistinct spots of a brownish yellow and darker than in *maculatus*. Cape Prov. and Transvaal.”

Race BAYNEI, n. race.

♀. 10.8 mm. Head and scapes black, flagellum reddish brown, thorax black above, brown at the sides, epinotum black above, ochreous at the sides and on the declivity; petiole, coxae and femora ochreous (of a paler colour than in the type of the species), the tibiae and tarsi dark brown. Abdomen entirely blackish brown, only the extreme apical margins flavous and translucent. Sculpture much more superficial than in the type of the species, the whole body more shining, especially the head. Pilosity brownish yellow,

much shorter and scantier than in the type of the species. In the shape of the head and the epinotum this race resembles race *radamae*, var. *mixellus*. The head is much more convex above than in the type species. It is as wide, or a little wider than long, the sides more convex, the posterior margin less concave and the occipital lobes less prominent than in the type of the species. The posterior margin of the head is only very shallowly emarginate or almost straight. The frontal carinae more divergent behind than in *maculatus* i. sp. Clypeus flatter transversely, more obtusely carinate, the lobe less produced. Metanotum distinctly defined. Dorsum of epinotum flat transversely, feebly convex lengthwise, distinctly delimited from the sides and the declivity, its junction with the latter forming a distinct but wide angle; declivity as long as the dorsum.

Convexity of thorax, L. = $3\frac{1}{2}$ H., highest at the meso-epinotal suture. Scale less convex in front and behind than in the type of the species. Tibiae barely compressed, not setose below. Otherwise like the ♀ of the type species.

♂ media, 8.2 mm. Colour, sculpture and pilosity as in the ♀. Head about one-sixth longer than wide, the posterior angles more rounded than in the ♂ media of *maculatus* i. sp. and the posterior margin straight, not concave. Otherwise like the ♀.

♂ minor, 6.5–7 mm. Legs ochreous, tarsi slightly brownish ochreous, scapes brown, thorax brownish above on the pro-mesonotum, ochreous elsewhere. Abdomen yellowish brown. Head nearly half as long again as wide, the outline behind the eyes semicircular; in front of the eyes the sides are straight and slightly convergent anteriorly. Otherwise like the ♂ media.

Hermanus, Cape Prov. (L. Lochee-Bayne).

(S.A.M., R.M., G.A. colls; types in my collection).

Race *SEXPUNCTATUS*, Forel.

Mitth. Schweiz. Ent. Ges. vol. 9, p. 66, ♀, ♂, ♀. 1894.

This race, originally described as a distinct species, was subsequently reduced to a race of *maculatus* by its author, and yet later was once more re-instated in its specific rank. Santschi, going even further, proposed that it should be removed to the sub-genus *Dinomyrmex*, a view with which Forel apparently agrees, since in his recent revision of the genus, (Rev. Suisse Zool. Vol. 22, p. 268, 1914), he lists it under that sub-genus.

I have received from Dr. Forel, cotypes of the ♀, ♂ and ♀ of this form and a careful examination of these specimens convinces

me that *sexpunctatus* is no more than a race of *maculatus* and fairly closely related to race *Liengmei*. It is a significant fact that the latter was originally described by Dr. Forel as a variety of *sexpunctatus*. The hind part of the head in the ♀ minor of *sexpunctatus* is certainly more straight-sided than in *Liengmei*, but like that race, it has a distinct posterior margin, quite unlike the typical structure of *Dinomyrmer*, e. g. *longipes* Gerst. It is also only with some hesitation that I have decided to retain *Liengmei* in the subspecific rank to which it is now assigned by Forel. Apart from colour differences, there is little to distinguish the two forms, but the varieties *Hansingi* and *importunoides* appear to stand closer to *Liengmei* than to *sexpunctatus*. (This race is in fact race *probativus* of *C. compressus* F. See appendix).

♀. 16-18 mm. Black, flagellum, coxae, trochanters, basal half or more of the femora dull reddish-ochreous, petiole dark yellowish brown. Abdomen with a small, dull ochreous, subtriangular and rather diffuse spot on each side of the first three segments, placed near the basal margin and not extending as far as the middle of the segment; those on the 3rd segment very dark and almost obsolete. Sides of the head below the eyes nitidulous, abdomen moderately shining, the rest of the body dull. Sculpture like that of *maculatus* i. sp. but a little stronger, and with the sides of the head finely, but quite distinctly and sparsely punctured. Pilosity brownish red, absent from the legs, very sparse on the head.

Head as long as wide, the sides less convex than in the type species, the posterior margin not deeply emarginate, its middle third almost straight. Scapes relatively much longer than in the type species, extending beyond the hind margin by almost one-third of their length. Mesonotum more convex in all directions. Convexity of thorax $L = 3\frac{1}{2} H$. Declivity of epinotum oblique, much shorter than in the type species, two-fifths as long as the dorsum and merging gradually into the latter. Scale of petiole much more convex above in front, the lower third of the anterior, and the whole of the posterior face vertical. The scale is about as thick below as wide above. Tibiae strongly compressed, the dorsal and inner and outer faces canaliculate, the lower edge with a row of very short setae.

♂ minor, 10.5-12 mm. Head castaneous red or brown, thorax more or less ferruginous, (burnt sienna), femora reddish ochreous and becoming darker towards their apices, tibiae and tarsi reddish brown, abdomen a little paler than in the ♀, with the ochreous spots paler and larger, especially on the 1st segment. Head four-sevenths longer

than wide, wider in front than behind, the sides in front of the eyes straight and parallel, behind the eyes convergent and only feebly convex, (less convex than in the ♀ minor of the type species), the occipital margin straight and very narrow, but nevertheless distinct. Clypeus very obtusely carinate in the middle. Scale of petiole as in the ♂ but thicker. Tibiae as in the ♂ but less deeply canaliculate. Otherwise like the ♂.

♀. 18 mm. Colour, sculpture and pilosity as in the ♂, but the spots on the abdomen are obsolete or nearly so. Anterior half of the mesonotum shining. Head narrower, less convex-sided and less emarginate behind than in the ♂. Mesonotum very convex in front, longer than wide; scutellum as long as wide at the base. Dorsum of epinotum convex lengthwise, merging by a gradual curve into the vertical declivity. Scale cuneiform, higher than wide, the dorsal edge almost trenchant, the anterior face very feebly convex, the posterior face flat. Wings deeply tinged with yellowish brown, nervures brown. Otherwise like the ♂.

Delagoa Bay. (G.A. colls.).

Race IMPORTUNA, Forel.

(as var. of *sexpunctatus*) Schultze, Reise Südafrika, vol. 4, p. 27, ♂, 1910.

Sitzungsab. K. Bayer. Akad. Wiss. p. 288, ♀, ♂, 1911.

♂. 14-16 mm. Colour like that of *C. caffer* Em, or of a pale coloured *cognatus*, but with diffuse brownish yellow lateral spots on the first three abdominal segments. Head dull, sometimes inclining to rusty-red and sometimes to brown. Thorax dull, abdomen shining. Much brighter than the typical *sexpunctatus* and with less sharply defined colour contrast than in *Liengmei*. The spots much smaller than in the latter and not so yellow. Duller than either of those forms but otherwise like them and with hirsute cheeks and setose tibiae. Scale thin. This variety looks deceptively like *caffer* Emery, but is more compressed and differs from it by the scale and cheeks.

♀ minor, 9.5 mm. This differs from *sexpunctatus*, *Liengmei* and var. *Hansingi* in having the head only moderately narrowed behind and possessing a hind margin more or less like that of *maculatus*, i. sp. The scale is also much less thick, higher than thick, (as thick as high in *Liengmei* ♀ minor). The colour is of a paler yellow; on the abdomen the segments have each a brown band behind, dilated in the middle and at the sides. . . . Legs and antennae a little shorter than in *Liengmei*; setae, sculpture and pilosity as in that race, including the hairs on the cheeks.

♀, 16-17 mm. Head trapezoidal, shorter than in *Liengmei*. The yellow abdominal spots smaller and redder than in that race. Wings somewhat darker than in *Liengmei*. Body brownish red, abdomen black and with the six spots, the base and the ventral surface reddish yellow. Otherwise like the ♀.

♂, 11 mm. Black; wings brownish. Cheeks without hairs (also the case in *Liengmei* ♂, which is however reddish). Otherwise like other races of *maculatus*. Tibiae setose."

Cape Prov. and Mozambique.

Race LIENGMEI, Forel.

Mitth. Schweiz. Ent. Ges. vol. 9, p. 67, ♂, 1894.

♀, 15-17.3 mm. Colour in general like that of *sexpunctatus*, but the femora are entirely reddish yellow and of a brighter yellow than in that race; the petiole is also reddish yellow, and the spots on the abdomen are brighter and larger, but nevertheless diffusely defined. The spots on the 1st segment are confined for their greater part to the vertical anterior face of the segment and are more or less confluent at their base. The pilosity of the abdomen is reddish yellow and more abundant all over. Head entirely dull, mandibles shining, (subopaque in *sexpunctatus*). The head is a little more convex-sided than in that race and the clypeus is more sharply carinate. The scape is shorter than in *sexpunctatus*, extending beyond the hind margin by only one-sixth of its length. The subvertical declivity of the epinotum is much longer, being as long as the dorsum: the latter is fairly straight and almost horizontal except at its rounded junction with the declivity. Scale of petiole cuneiform, much thinner than in *sexpunctatus*, very little more convex in front than behind, much higher than wide above. A very fine, yellowish and adjacent pubescence on the thorax, and some fine exerted pilose hairs on the cheeks in front of the eyes. Otherwise like that race.

♂ media, 12.5 mm. Head, thorax, petiole, flagellum and legs reddish ochreous (reddish raw sienna), the head somewhat darker at the sides, the scapes brownish and more or less ochreous at the base and apex, abdomen brownish or blackish brown, the ochreous spots much larger than in the ♀, diffusely margined, widest anteriorly and so arranged as to leave only a more or less triangular dark area in the middle of each segment; all the segments with the apical margins widely flavous and translucent. The head is less narrowed towards the base and the sides are more convex than in *sexpunctatus*, the

frontal carinae a little closer together. The clypeus is less sharply carinate than in the ♀ media of *sexpunctatus*, and the declivity of the epinotum is slightly longer and less oblique. Otherwise like *sexpunctatus*.

♂ minor. Forel says the minimum size of these is 9.5 mm. They have "a yellow thorax and only a brownish median longitudinal line on the abdomen and a brownish lateral spot".

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

Var. α.

♂. 15 mm. A little smaller than the type of the race. The head a little more convex-sided, and the petiole slightly thinner, the femora more reddish and becoming gradually darker or brownish red on the apical half. Otherwise like the type of the race.

♀ media, 11 mm. Colour much the same as in *Lienqmei*, but the head is darker or brownish red, the dorsum of the thorax and the tibiae also a shade darker. The yellow spots on the first two abdominal segments are paler, more distinctly defined and longer, extending from the base almost to the apical margin of the segments. The head is more convex behind the eyes, and the latter are placed further back, at the posterior third (just behind the middle in the type of the race).

♂ minor, 8-10 mm. The colour as in the ♀ media, but the head paler or varying from brownish ochreous to rusty-reddish brown, the dark median longitudinal band on the first two abdominal segments narrower. The head behind the eyes is trapezoidal, that portion of the sides feebly convex in the larger ♂♂ (10 mm.), but straight in the smallest ♂♂. The scale of the petiole is thicker than in the ♀ media, longer below than wide above, the dorsal face rounded.

Harris, S.W.A. (R. W. E. Tucker).

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

Var. β.

(syn. *melanocnemis*, Santschi, Ann. Soc. Ent. France, vol. 79, p. 368, 1910 and vol. 84, p. 278, 1915).

♂, 15.5 mm. The size of this form is not stated in Santschi's description. My specimens have been determined as *melanocnemis* by Dr. Santschi himself. Apart from the slightly smaller size, the only other points of difference lie in the colour and slightly thinner petiole. The colour of the lower half of the thorax, the petiole and femora is of a dark reddish-ochre, darker than the colour of the femora in

the race. The femora in this variety are slightly darkened towards their apices. The spots on the abdomen are also dark reddish ochreous, but nevertheless brighter than in *Liengmei*, and quite discrete, even on the 3rd segment. The scape is a trifle shorter, only just reaching beyond the hind margin of the head. Otherwise identical with the type of the race.

Bulawayo. (G.A. coll.).

Var. γ .

(syn. race *manzer*, var. *contaminatus*, Santschi, Ann. Soc. Ent. France, vol. 85, p. 291. 1916).

2. Like var. β differing from it only as follows:

The colour of the head is lighter, being dark brown rather than black, and showing a reddish tinge over the occipital lobes. The dark reddish brown colour on the thorax is confined to the upper surface of the pro- and mesonotum, all the rest, including the promesonotal suture being of a dark reddish ochreous. The petiole is very dark brown or black, (ochreous in var. β), and the tibiae and tarsi are ferruginous instead of black. The abdominal spots are much darker than in var. β , and less clearly defined. The two faces of the epinotum form an almost continuous curve, whereas in var. β there is a very obtuse or wide, but nevertheless appreciable angle between them. The scale is slightly more convex in front and less trenchant above. Otherwise like the 2 of var. β .

♂ media, 11.4 mm. Like the ♂ media of *Liengmei* but smaller, the thorax entirely ochreous, although somewhat infuscate above, the femora entirely bright ochreous, the head brownish ochreous. The eyes are less convex than in *Liengmei*.

♂ minor, 9.5 mm. Like the ♂ media excepting the usual differences in the shape of the head which exist between the two castes.

Matopo Hills, S. Rhodesia.

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

Var. δ .

Like var. γ in every particular except the colour. The dark colour on the head (and abdomen) is black and not brown, and the dorsum of the pro-mesonotum is also black, and unlike var. γ , this black colour extends over the mesonotum and the dorsum of the epinotum. The sides and ventral surface of the thorax, the petiole and the femora are of a much paler ochreous yellow than in var. γ , so that the contrast between the two colours is much greater. This

is more clearly noticeable on the abdomen, in which the spots on the first two segments are of a pale straw-yellow and are sharply defined. The spots are also longer, extending to the apical fourth of the segments.

The same paler coloration is shown in the ♂♂ media and minor. Otherwise this var. does not differ from var. *γ*.

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

Var. *ε*.

(syn. *C. Arnoldinus* Forel, Bull. Soc. Vaud. Sc. Nat. vol. 50, p. 254, 1914 and *C. maculatus*, race *melanocnemis* Forel, nec Santschi).

Some of the specimens constituting this variety have been determined by Dr. Forel as *melanocnemis* Santschi (= var. *β* mihi), but they differ more from that form than they do from *Liengmei* itself. In the sculpture, shape of the thorax etc. they are like *Liengmei*, but the colour differs from both that race and *melanocnemis* as follows. The legs are entirely reddish ochreous, and the abdomen is immaculate in the smaller ♂♂ as well as in the ♀. The abdomen is dark brown, becoming a shade paler towards the base and apex. The head and thorax are moderately glossy, the anterior half of the head distinctly so. The scape extends beyond the hind margin by nearly one-third of its length. The dorsum of the epinotum is one-fifth longer than the declivity, their junction being more distinctly angular than in *Liengmei*. In the ♀ minor the thorax is entirely yellowish brown, becoming paler at the sides below. In the ♀ and ♂ media, the thorax is black or brownish black above, only the declivity of the epinotum and the lower margins of the sides being paler.

I consider *C. Arnoldinus* Forel synonymous with this variety. In the specimens determined by Forel as *Arnoldinus* the tibiae are, as in the specimens just described, compressed, not cylindrical as stated in Forel's description. The ♂♂ minores of the two series are absolutely indistinguishable, and in the ♀♀ the only appreciable difference is that the mesonotum of "*Arnoldinus*" is slightly wider and less narrowed posteriorly.

Durban, nesting in rotten and moist logs of wood.
(S.A.M., R.M., G.A. colls.).

Race LIENGMEI, var. IMPORTUNOIDES, Forel. (Plate IX, fig. 152).

Bull. Soc. Vaud. Sc. Nat. vol. 50, p. 249, ♀, 1914.

♂. 16-17 mm. Head varying from brownish red (burnt sienna) all over, to reddish brown and becoming paler towards the posterior margin. Mandibles dark reddish brown. The flagellum, the thorax and petiole entirely brownish red or burnt sienna, the upper surface of the thorax a shade darker than the lower part of its sides. Tibiae, tarsi and scapes dark reddish brown. Abdomen brownish black, the apical margins of the segments pale flavous and translucent, the spots of a dark reddish ochreous, large and fairly sharply defined, those on the 3rd segment very little smaller than on the 2nd. The sculpture of the head is a little stronger than in the type of the race and distinctly more so than in the type of the species.

Head as long as wide, the posterior margin more deeply emarginate than in the type of the race, and also differing from the latter (in which the sides are continuously convex), by having the middle third of the sides straight. The mandibles are also longer than in the race, being half as long as the head. The lateral angles of the lobe of the clypeus are sharply rectangular, (much more than a right angle in the type of the race). The meso-metanotal and meta-epinotal sutures more deeply impressed than in the race. The dorsum of the epinotum is wider and less oblique, forming with the subvertical declivity a continuous curve; the declivity as long as the dorsum, (shorter in the race). Convexity of thorax, $L. = 4 H.$ Scale of petiole thinner, less convex in front, the sides moderately convex, (almost straight in the race).

♀ media, 12.2 mm. Colour as in the ♂ but a little paler. The spots on the basal half of the first abdominal segment extend right across it, (separated by a narrow median line of black in the ♂), the 3rd segment is entirely black. The head is like that of the ♀ media of the race but is widest behind the eyes and not in the middle; the posterior margin is much wider than in the type of the race, and very shallowly emarginate. The clypeus is more sharply carinate, the lobe longer and rectangular. Scale of petiole higher and less convex in front than in the race.

♀ minor, 8-9 mm. Head, thorax and legs ochreous or reddish ochreous, the antennae and tarsi reddish brown. Abdomen brownish, the pale markings dull ochreous and diffuse. Sides of the head in front of the eyes parallel, behind the eyes convergent and modera-

tely convex, the occipital margin very narrow. Scale of petiole as long as high, the anterior and posterior faces convex.

Smithwinkle Bay and Hermanus, Cape Prov., (Phillips, Locher-Bayne) (S.A.M., R.M., G.A. colls).

Race *LIENGMEI*, var. *HANSINGI*, Forel. (Plate IX, fig. 161).

Ann. Soc. Ent. Belg. Vol. 54, p. 452, ♀, 1910.

♂, 16 mm. Head as in *Liengmei*, the sides convex and bearing a short exserted pilosity, (absent in *importunoides*). The median area of the clypeus is wider than long, (as wide as long in *importunoides*), the lobe shorter and with its anterior margin more sharply crenulate, the median carina also stronger. The mandibles are duller and shorter than in that variety. The sculpture of the head is stronger than in *importunoides*, with the anterior third of the head also sparsely and distinctly punctured. The ochreous spots on the 2nd abdominal segment wider, almost meeting in the middle at the base, the spots on the 3rd segment obsolete. Otherwise like *importunoides*.

♀ media, 12-12.8 mm. The spots on the first two abdominal segments larger than in the ♂, confluent at the base of the segments, those on the 3rd segment also large and almost meeting in the middle. The lobe of the clypeus shorter and with wider lateral angles than in *importunoides*. The sides of the head are convex from front to back, not parallel in front of the eyes as in *importunoides*.

♀ minor, 9-? mm. Head shorter than in *importunoides*, being barely two-thirds longer than wide (quite three-fourths longer in the other variety). Otherwise like the ♀ minor of *importunoides*.

♀, (hitherto undescribed) 16 mm. Colour as in the ♀ media: the head widest behind, but otherwise like that of the ♀ media. The mesonotum has a dark median and two lateral longitudinal bands of brownish colour. Declivity of epinotum vertical, longer than the dorsum. Scale of petiole with a trenchant and straight dorsal edge, feebly indented in the middle. Wings hyaline, nervures and stigma brown.

Willowmore, (Arnold); Grahamstown, (Cherry).

(S.A.M., R.M., G.A. colls.; type of ♀ in my collection).

Race *FORNASINI*, Emery.

Ann. Soc. Ent. France, Vol. 63, p. 46, ♀, 1895.

♂, 15 mm.; head 4.3×4.2 mm.; scape 4 mm.; posterior femur 5 mm. Closely allied to *cognatus* and *compressus*, almost as robust

as the latter, the head wider than in *cognatus*, less narrowed in front, the cheeks entirely devoid of pilose hairs. The scale is also thicker and more convex on both faces. The whole insect is dull above, the abdomen shining below, the head and thorax very closely punctured, the abdomen transversely striolate. A long, fine and decumbent pubescence on the whole body, sparse, more abundant on the abdomen; in *cognatus* and *compressus* the decumbent pubescence is just as abundant but shorter, and the punctures from which the hairs arise are less evident; in addition, there are also some long and erect hairs as in *cognatus*. The pubescence is very short and entirely decumbent on the scapes, longer and more oblique on the tibiae, which have numerous setae on the ventral margin: the tibiae are compressed, but not at all prismatic, their sides barely canaliculate in the larger examples. Delagoa Bay."

Race KNYSSAE, n. r.

♂. 15.5-16.3 mm. Black, the flagellum, lower third of the sides of the thorax, the petiole and basal third of the femora reddish ochreous; apical margins of the abdominal segments testaceous and translucent. Head and thorax nitidulous, abdomen smooth and very shining. The sculpture of the head and thorax finer than in *maculatus* i. sp. Pilosity erect, fulvous, sparse on the head and abdomen, fairly abundant on the thorax. Pubescence decumbent, very short and sparse all over. Sides of head without exerted pilosity. Mandibles shining, coarsely punctured, the punctures larger and more abundant than in race *Liengmei* or *maculatus* i. sp. Clypeus with a few shallow punctures. Head, including the closed mandibles, like that of *Liengmei* but more triangular, the occipital lobes larger and more prominent posteriorly, the posterior margin much more concave; the head is as long as wide, and at its widest point (just behind the 2nd third) almost twice as wide as across the anterior margin of the clypeus. The latter carinate, the anterior margin of the lobe sharply crenulate. The scapes extend beyond the hind margin of the head by one-fourth of their length. Eyes placed in the middle of the sides. Frontal carinae as wide apart in the middle as they are long. Mesonotum more convex lengthwise than in *Liengmei* or *maculatus* i. sp., the metanotum indistinct. Dorsum of epinotum slightly flattened transversely, distinctly delimited from the sides, about twice as long as wide, longer than the subvertical declivity, its junction with the latter being a wide but distinct angle. Scale of petiole nearly twice as high as wide, the two faces only very slightly convex,

the dorsal edge thin and feebly emarginate in the middle. Tibiae compressed, the sides not canaliculate, feebly setose below.

Some of the $\mathfrak{Q}_1 \mathfrak{Q}_1$, 13 mm. long, are intermediate between the largest and the \mathfrak{Q} media and have the head narrower behind than in the largest $\mathfrak{Q}_1 \mathfrak{Q}_1$, but nevertheless still triangular.

\mathfrak{Q} media, 12 mm. Dorsum of thorax brown, the femora ochreous over the basal two-thirds. Head oblong, a little wider behind than in front, widest behind the eyes, two-sevenths longer than wide, the sides moderately convex, the posterior margin feebly concave. Eyes placed behind the middle of the sides. Mandibles sharply punctured, the masticatory margin ferruginous. Clypeus more sharply carinate than in the \mathfrak{Q}_1 , but the anterior margin of the lobe barely crenulate. The two faces of the epinotum less distinctly delimited than in the \mathfrak{Q}_1 . Anterior face of the scale convex, the posterior face flat, the dorsal edge entire.

\mathfrak{Q} minor, 10-11 mm. Like the \mathfrak{Q} media, but with the thorax paler and the yellow colour of the femora extending almost to their apices. Head nearly half as long again as wide, the sides in front of the eyes straight and slightly convergent anteriorly, the sides behind the eyes form with the posterior margin a continuous convexity: hardly narrower in front of the eyes than behind them. Otherwise like the \mathfrak{Q} media.

\mathfrak{Q} , 16.5 mm. Colour and pilosity as in the \mathfrak{Q}_1 , a narrow transverse band at the base of the epinotum and the declivity of the same brownish ochreous. Head a little longer than wide, subquadrate, the posterior margin straight and one-fifth wider than the anterior, the sides slightly convex posteriorly, the posterior angles narrowly rounded. Mesonotum and scutellum fairly shining, the head and epinotum moderately so, the abdomen very shining as in the \mathfrak{Q}_1 . Scutellum convex lengthwise and transversely, a little higher than the mesonotum. Dorsum of epinotum shorter than, and merging gradually into the vertical declivity. Both faces of the scale a little more convex than in the \mathfrak{Q}_1 , the dorsal edge not emarginate. Deelated.

George, near Knysna Forest, Cape Prov. (Dr. H. Brauns).

This race was determined by Dr. Forel as *Fornasinii* Em., but it is quite distinct from that race in several features, e.g. the shining integument, the shape of the head, etc. It approaches race *Empe-docles* Forel, but the occipital lobes are not angular.

(S.A.M.R.M., G.A. colls.: types in my collection).

Race THALES, Forel.

Ann. Soc. Ent. Belg. Vol. 54, p. 453, ♀, ♂, ♀, ♂. 1910.

♀, 9-11 mm. Head black, thorax, abdomen, legs and flagellum reddish brown, the first two segments of the abdomen paler than the others. Shining, the abdomen more so than the rest of the body. The fundamental sculpture like than of *maculatus* i. sp. but more superficial, the head and thorax with a sparse piligerous puncturation in addition. Pilosity yellowish, sparse all over, the sides of the head without exerted hairs. Pubescence very fine, adjacent, almost absent from the body. Head as long as, or a little longer than wide, trapezoidal, not much narrowed in front, the middle half of the sides straight, the anterior and posterior fourth feebly convex, the posterior margin moderately concave. The posterior angles very narrowly rounded, subrectangular, projecting slightly backwards. Clypeus obtusely carinate. Mandibles shining, strongly punctured, 7-dentate. Scapes barely reaching beyond the occipital margin; frontal carinae divergent behind; eyes placed at about the middle of the sides. Thorax short and robust, the mesonotum a little wider than long, (longer than wide in the type of the species). The metanotum is almost or quite obsolete. The epinotum is strongly compressed from side to side, leaving a very narrow dorsum, narrower than in *maculatus* i. sp., very oblique, about twice as long as the declivity and joining the same in a curve. Scale of petiole low, not much higher than wide, the dorsal edge rather thick, the anterior face feebly convex, the posterior face flat. Tibiae feebly compressed and finely setose below.

♂ minor, 5.5-7 mm. Dark reddish brown, the anterior half of the head somewhat paler. Head quadrate, barely longer than wide, the sides and posterior margin straight, the posterior angles rounded. The scape extends beyond the occipital margin by two-fifths of its length. Scale of petiole subcuboid, with a distinct dorsal face which curves downwards in front; seen from above, the dorsal face is about one and a half times wider than long. Otherwise like the ♀.

♂, 11-11.5 mm. Like the ♀. Wings faintly tinged with rusty-red, nervures of the same colour. Thorax wider than the head. Scale wide, thick, subcuboid, having at the summit an almost flat or obtusely convex face. The scapes extend beyond the occiput by as much as their apical width.

♂, 7 mm. Head convex behind, wide. Mandibles wide. Scale

wide, its anterior and posterior faces vertical and parallel, widely and deeply emarginate at the summit so as to form two obtuse horns, whose apices are as thick as the base of the scale. Black: mandibles, flagellum and tarsi rusty-red. Wings as in the ♀. Otherwise like the ♀."

Basutoland, (Wroughton): Reddersburg, O. F. S. (Brauns).
(S.A.M., R.M., G.A. colls.).

Race EMPEDOCLES, Forel.

(as var. of *Thales*) Deutsch. Ent. Zeitsch. Beiheft, p. 224, ♀, 7. 1913.

♀. 10-13.6 mm. Tarsi and flagellum ferruginous, the legs and scapes dark brown, all the rest black, with the apical margins of the abdominal segments narrowly testaceous. Sculpture, pilosity and pubescence as in *Thales*, but the head is more distinctly punctured in front of the eyes and below the frontal carinae, and the thorax is slightly less shining. It differs from *Thales* chiefly in the shape of the head, the concavity of the occiput being much deeper, so that the occipital lobes are more prominent posteriorly. They are strongly angular, only the extreme apex of the angle being rounded off. In the largest ♀; ♀ the head is a little wider than long, more quadrate than in *Thales*, the sides a little more convex. The scape is shorter than in *Thales*, not reaching the posterior margin by as much as the length of the 1st joint of the flagellum. The mandibles have 7 teeth, the basal one small, (not 6 as stated by Forel).

♀ media, 8.3 mm. Like the ♀, but with the mandibles ferruginous, the tarsi and flagellum of a brighter red than in the ♀. The head is subquadrate, very little wider behind than in front, the sides fairly convex, the posterior margin straight, the posterior angles widely rounded, not projecting backwards. The scape extends beyond the hind margin.

♀ minor, 6.7-7.3 mm. Like the ♀ media, but with the head a little narrower, or a trifle longer than wide, the posterior angles more widely rounded.

Salisbury, S. Rhodesia. (Father O'Neil). M'fongosi, Zululand, (W. E. Jones); Krantz Kloof, Natal, (W. B. Marley); Pretoria (Sir A. Theiler).

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

Race EMPEDOCLES, var. DIABOLUS, Forel.

(as race of *natalensis*, Smith), Bull. Soc. Vaud. Sc. Nat.,
vol. 46, p. 84, ♀, 1879.

♂. 12 mm. Like the type of the race in general, but the head is subopaque, and the posterior margin much more deeply concave, the occipital lobes acutely angular (less than 90°), projecting far beyond the apex of the emargination. The lobes are one-sixth the length of the head, and when seen direct from above, project backwards like cones to a point level with the middle of the pronotum.

♀ minor, 8 mm. Like the ♀ minor of *Empedocles* but with the head duller, not narrowed anteriorly, if anything a little wider in front than behind, the posterior margin moderately concave.

Salisbury, S. Rhodesia, (R. L. Thompson).

This form represents the extreme point of development in the degree of angularity and prominence of the occipital lobes. In *Thales* the lobes are subrectangular and only slightly projecting, more so and rectangular in *Empedocles*.

It is not without some hesitation that I have assigned these specimens from Salisbury to *diabolus* Forel, since the latter taken at Lessonto, O. F. S. was described as a race of *natalensis*. However in his recent review of the genus, Forel gives *diabolus* specific rank. The Rhodesian specimens agree very closely with Forel's description, but unfortunately he gave no information as to the length of the scapes, which in these specimens are much too short to admit of any close relationship to *natalensis*. Moreover, the latter is a dull insect, which *diabolus* certainly is not.

(G.A. coll.).

Race CONGOLENSIS, Emery.

Ann. Soc. Ent. Belg., vol. 43, p. 439, ♂, ♀, 1899.

♂. 13 mm. Piceous, almost black, the legs dark brown, the flagellum, tarsi and coxae reddish or yellowish brown. Dull, but with a slight greasy gloss, more pronounced on the abdomen than elsewhere. Pubescence scanty and very short, a little more abundant on the legs; pilosity thin, yellowish and sparse everywhere. Sculpture stronger than in *maculatus* i. sp., the sides of the head distinctly reticulate. Head very much like that of *Empedocles*, the occipital lobes similar. The scape falls short of the occipital margin by as much as the length of the 1st joint of the flagellum. Clypeus carinate, the anterior corners of its lobe rectangular. Mandibles less strongly

punctured than in *Empedocles*, slightly dull near their bases. Dorsum of epinotum one-third longer than the vertical declivity, rounded transversely but nevertheless distinct from the sides, not subcristate as in *Empedocles* and *Thales*. Scale of petiole one-third higher than the petiole is long, the anterior face moderately convex, the posterior face flat, the dorsal edge convex from side to side. Tibiae compressed and setose below.

♀ minor, 6.5–8 mm. Head one-fourth to one-third longer than wide, the sides convex, the posterior margin straight or feebly concave in the larger examples, not wider behind than in front. Legs with an oblique and longer pilosity than in the ♂. Dorsum of epinotum at least twice as long as the very oblique declivity, joining the latter in a low curve, narrower above than in the ♂, but wider than in the ♀ minor of *Empedocles*.

♀, 13 mm. Head 3.8 × 3 mm.; scape 2.5, posterior femur 3.8, tibia 3.2 mm. Relatively small, colour and sculpture as in the ♀. Head subrectangular, with rounded angles, barely a little narrower in front than behind. The scale is higher than in the ♂, its anterior face less convex, the dorsal edge straight or slightly impressed in the middle. Wings yellowish, the marginal and submarginal nervures brown, the other nervures testaceous."

Bindura, Mashonaland, (G. Coghill).

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

Race AGRICOLA, Forel.

Ann. Soc. Ent. Belg. vol. 54, p. 454, ♂, ♀. 1910.

♀, 5–8 mm.

♂. Mandibles as *Thales*, but shining, a little less punctured, barely or not at all reticulate. Lobe of the clypeus a little longer; frontal carinae less divergent. Eyes placed behind the middle. Sides of the head a little more convex, the head a little narrower at the occiput. Otherwise the head is like that of *Thales*, including the length of the scapes. Thorax like that of *Thales*, but with the meso-epinotal suture very distinct, and the dorsum of the epinotum hardly longer than the declivity. Scale fairly thin and high, the dorsal edge obtuse. Tibiae cylindrical, not compressed, sometimes with one bristle near the base of the internal margin. Legs short. Densely and finely reticulate-punctate and dull. Abdomen and scale finely shagreened or rugulose transversely, the scale subopaque, the abdomen shining. Legs shining and feebly rugulose. There is a fine and distinct puncturation on the abdomen, indistinct elsewhere.

Erect pilosity very sparse on the body and yellowish, absent from the tibiae and scapes, which alone have a sparse and distinct pubescence. Reddish brown; scapes brown, legs yellowish, abdomen black, the margins of the segments bright yellow.

♀ minor. Head rectangular, longer than wide, the posterior margin nearly straight or barely convex; the scapes extend beyond it by about two-fifths of their length. Otherwise like the ♂, but the thorax and head are subopaque, somewhat reticulate, the abdomen brown or partly rusty brown, the margins of the segments bright yellow."

Mountains of Natal, (Wroughton).

Race NEGUS, Forel, var. BERTSCH, Forel.

"Very much like the variety *Schweinfurthi* Forel, but the head of the ♂ is less wide and the sides are less convex. The legs and antennae are also darker, of a deep brown, the scapes black. In addition, the pubescence is more distinct, although sparse on the abdomen and limbs. The scale is a little thicker and the erect pilosity is of a paler colour. The tibiae are also a little narrower and more cylindrical."

♂, 9.5 mm. Black, the thorax very dark brownish black, the legs dark brown, paler only at the bases and apices of the femora and tibiae. The apical margins of the abdominal segments testaceous and translucent. Dull, the abdomen with a very faint glossiness. The sculpture is similar to that of the type of the species, but the abdomen is more densely rugulose.

Head like that of the type of the species but the posterior margin less concave, the sides in front of the eyes more convergent. The dorsum of the epinotum is a trifle longer than the declivity, its junction with the latter forming a wide but fairly distinct angle, rounded at the apex. The scale is much narrower than in *maculatus*, higher than long, twice as high as wide, subacuminate above, the anterior face only very slightly convex.

♀ minor, 6.5-7.5 mm. Head longer than wide, slightly wider behind than in front, the outline behind the eyes almost semi-circular, the sides in front of the eyes straight and subparallel. Scale of petiole a little narrower and thicker, otherwise like the ♂.

George, Cape Prov. (Brauns).

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

Race NEGUS, var. MATHILDAE, Forel.

Zool. Jahrb. vol. 29, p. 266, ♂, ♀. 1910.

“♂. 10.5 mm. Mandibles small, smooth, sparsely punctured, the external margin feebly convex, the apex narrow. Clypeus sharply carinate, its fairly rectangular lobe having a slightly concave anterior margin. Head as wide as long, with very convex sides, narrowed in front and behind, more strongly so in front, strongly and arcuately emarginate behind. Frontal carinae sinuate, moderately divergent. Frontal area small and triangular. Eyes flat. The scape extends beyond the hind margin by not quite twice its own apical width. Thorax narrow, feebly convex in all directions above. Declivity of the epinotum half as long as the long and narrow dorsum. Scale moderately thick, biconvex, fairly trenchant above. Tibiae rounded, feebly compressed, with a row of setae on the lower margin. Dull, head finely reticulate-punctate, thorax rugulose-reticulate. Abdomen and legs nitidulous, closely and finely rugulose transversely. The scattered puncturation is distinct only on the abdomen, and fairly fine. The brownish yellow and exerted pilosity is very sparse on the body, rather more abundant on the scale and abdomen, absent from the tibiae, scapes and cheeks. The pubescence on the scapes and tibiae more abundant, elsewhere very sparse and fine. Black. Thorax dark brown. Legs and mandibles of a brighter brown, flagellum ferruginous. Apical margins of the abdominal segments yellowish.

♀ minor, 6.5 mm. Head elongate and oval, 1.2 mm. wide and 1.8 mm. long, not narrowed into a neck behind, the convex sides merge into the wide and articular hind margin. Clypeus, mandibles etc as in the ♂, but the eyes are convex. The scape extends beyond the hind margin by about half its length. The long dorsum of the thorax very feebly convex. Scale very thick, almost wedge-shaped. Otherwise like the ♂, but the head and thorax are brown.

♀, 12.5 mm. Wings faintly tinged with brown. Head and thorax blackish brown. Tarsi and tibiae reddish like the flagellum. Head rectangular, with the angles rounded, longer than wide.”

It is generally difficult to identify the winged forms of this genus when apart from their workers, but their identification is rendered all the more difficult when the description is cut down to the narrow limits of that of the ♀ given above, which is indeed well-nigh useless.

Zoutpansberg, Transvaal, (Rolle).

This form completes the list of the *maculatus* group, for our region.

C. CAFFER, Emery.

Ann. Soc. Ent. France, vol. 63, p. 47, 21, 2. 1895.

“♀ major. Head, thorax and petiole fuscous, base of the 2nd and following abdominal segments with a small spot on each side, flagellum and femora testaceous-ferruginous, mandibles dark ferruginous; dull, scarcely pubescent and most scantily pilose. Head emarginate and widest behind, narrowed in front, the frontal carinae close together, clypeus carinate, produced into a wide truncated lobe, mandibles 7-dentate. Dorsum of thorax nearly straight, scale of petiole thick, convex in front and behind, narrowed above; tibiae moderately compressed, the lower margin setose.

♂ minor. Testaceous, the mandibles, the base and sides of the abdomen darker, the scapes, the middle of the dorsum of the abdomen and the ventral surface of the same fuscous. Head narrowed arcuately from the anterior to the occipital margin. Scale thick, nodiform, acuminate above.

♀ maxima, 16 mm.: head 4.8 mm. long, 4 mm. wide behind, 3.7 in front; scape 4.5 mm., posterior femur 5 mm. long.

♂ minima, 9.5 mm.; head 2.3 mm. long, 4 mm. wide behind and 1.3 in front; scape 3.5, posterior femur 3.5 mm. long.

Makapan, Bechuanaland, (Simon).

In the shape of the head, this ant recalls certain species of *Camponotus* of the *dorycus* group, In the ♀ major, the head is widest right at the back, and its posterior margin is widely emarginate. In the small ♀♀ on the contrary, the greatest width is near the mouth; the head is narrowed a little as far as the eyes, more strongly so behind them as far as the occipital margin, which is narrowly emarginate and sharply angular on each side. The frontal carinae are near together, their posterior extremities hardly more divergent than the anterior. The scale of the petiole is remarkably thick, especially in the small ♀. . . . The thorax is narrow, its dorsum almost straight in the middle, passing into the declivity of the epinotum by a wide arc. The whole body is dull, and covered with a close reticulate puncturation, over which are scattered the sparse pubescent punctures, the pubescence decumbent and very short: on the head of the larger specimens the punctures are larger and pit-like, and more abundant on the mandibles. The latter dull except along the masticatory margin. A few large punctures with long hairs. On the abdomen the sculpture becomes almost transversely rugulose. . . . The legs are dull and finely reticulate, they have only

a very short and decumbent pubescence; the tibiae feebly compressed, furnished with a few setae below."

This species is also recorded by Forel from the Cape.

C. BERTOLONI, Emery.

Loc. cit., p. 51, ♀, ♂.

Mayr, Ann. K. K. N. H. Mus. Wien, vol. 46, p. 28, ♂. 1901.

♀. Piceous, shining, mandibles, antennae and tarsi fusco-ferruginous; tibiae, coxae, femora and margins of the abdominal segments pale testaceous, very sparsely pilose and pubescent. Head in the ♀ maxima a little longer than wide, narrower in front, the clypeus and cheeks with large, oblong and piligerous punctures, frontal carinae divergent and sinuate, clypeus obtusely carinate, slightly and arcuately produced in front, mandibles short, arcuate and with 6 teeth, punctulate and sparsely punctate, dull, more elongated in the ♀ minor. The latter has fewer and smaller piligerous punctures on the cheeks and clypeus. Thorax moderately elongate, compressed behind, the dorsal profile arcuate and continuous, the declivity of the epinotum hardly shorter than the dorsum, joining the latter in an obtuse angle. Abdomen very finely rugulose transversely, the scale of the petiole thin, subplanate behind, convex in front. Scapes and tibiae without erect hairs, the tibiae not setose below.

♀ major, 7 mm. Head 1.8×1.6 ; scape 1.5; posterior femur 1.6 mm. long.

♀ minor, 5 mm. „ 1.6×1.3 ; „ 1.3; „ „ 1.3 mm. „

♀. Colour and sculpture like that of the ♀ major, but the cheeks and clypeus with fewer piligerous punctures." Capetown.

♂, 6-6.8 mm. Shining, blackish brown, mandibles, scapes and legs brown, the flagellum, tarsi and genital armature more or less brownish yellow, the articulations of the femora and coxae more or less pale yellow or brownish yellow. The exerted pilosity is exceedingly sparse, and absent from the antennae and legs; the decumbent pubescence also very sparse but fairly abundant on the antennae. The whole body is moderately shining and very finely rugulose, the abdomen transversely so. The mandibles are more coarsely rugulose than the rest of the body, also coarsely and sparsely punctured, with 4 well developed teeth. The head is almost wider than long. Clypeus strongly carinate, the anterior margin slightly produced and arcuate. Eyes fairly large, very convex and prominent. The cheeks are hardly more than half as long as the eyes. Wings faintly tinged with ochreous, the nervures ochreous, the stigma brown. Node of petiole low and transverse."

Port Elizabeth. (Brauns).

C. BIANCONII, Emery.

Loc. cit. p. 52, ♀ major.

“♀ major. Very similar to *Bertolonii*, and like it in colour and sculpture, but larger and with the cheeks barely pilose, without elongate foveae, only with minute pubescent points, the clypeus with a few piligerous foveae, its lobe truncate and subemarginate; the scale of the petiole is reddish, higher and thinner than in *Bertolonii*, its sides convex, its dorsal edge acuminate; the femora fuscous. 9 mm. long. Head 2.8×2.8 ; scape 2.2; posterior femur 2.5. Capetown, a single specimen.

Resembles *Bertolonii* so much that it might be regarded as only a race of the same. However, the size, the absence of piligerous foveae and erect hairs on the cheeks, as well as the narrow and biconvex scale with its trenchant edge, sufficiently characterise this ant. The shape of the head and thorax is about the same as in *Bertolonii*.”

C. NATALENSIS, Smith.

Cat. Hymen. B. M., vol. 6, p. 33, ♀, ♂. 1858.

♂. 14–17 mm. Black, the apical margins of the abdominal segments narrowly testaceous and translucent, flagellum and tarsi dark reddish brown. Entirely dull, the fundamental sculpture of the head like that of *maculatus*, but somewhat coarser, the floor of the spaces between the reticulations quite dull. The sides of the head and clypeus fairly abundantly sprinkled with shallow pubescent foveae. Thorax finely and closely reticulate-punctate, abdomen and petiole finely and transversely rugulose, but much more strongly than in *maculatus* and its races. Legs and scapes slightly shining, moderately punctured. The whole body, legs and antennae clothed with a fairly abundant, long and reddish yellow pubescence, oblique on the legs and abdomen, almost decumbent elsewhere. Pilosity long, fulvous, fairly plentiful on the abdomen, pronotum and clypeus, sparse elsewhere, absent from the cheeks.

Head about one-eighth longer than wide, widest behind, the sides moderately convex, the posterior margin deeply concave, the occipital lobes rounded but fairly prominent posteriorly. Mandibles strongly punctured, moderately shining but dull near the base, armed with 6 or 7 teeth. Clypeus sharply carinate, produced in front into a rectangular lobe the margin of which is crenulate. Frontal carinae slightly raised and trenchant. Eyes placed just behind the middle of the sides. Scapes rather long, extending beyond

the hind margin by quite one-third of their length and as far as the pro-mesonotal suture. Pronotum very little wider than long in the middle. In profile, the dorsum of the thorax does not form a continuous curve, as the mesonotum is more convex and raised somewhat abruptly above the level of the hind margin of the pronotum. Metanotum very small, barely defined posteriorly. Dorsum of the epinotum oblique, rounded above from side to side, a little longer than the oblique declivity. Convexity of thorax, $L. = 3\frac{1}{2} H.$; highest at the anterior third of the mesonotum. Scale of petiole higher than long, about two-thirds higher than wide above, the anterior face moderately convex, the posterior face flat. Tibiae compressed, the sides flat, the upper and lower surfaces rounded, sparsely setose on the lower margin.

♀ media. 15.5 mm. Head one-third longer than wide, the sides nearly straight, convex and convergent only over the anterior and posterior sixths, hardly narrowed in front, the posterior margin moderately concave, the posterior angles narrowly rounded. The scape extends beyond the hind margin of the head by more than one-third of its length. Pronotum as long in the middle as wide. Dorsum of epinotum about twice as long as the declivity. Scale of petiole thicker and more convex in front than in the ♂. Pilosity a little less abundant on the abdomen. Punctuation of the head weaker. Otherwise like the ♂.

♀ minor, 9-13 mm. In the smallest of these, the head behind the eyes is almost trapezoidal, the width just behind the eyes being three times the width of the occipital margin, the latter straight. In front of the eyes the sides are parallel, the head not wider across the clypeus than across the eyes. With increase in size, the sides become correspondingly more convex, and the width greater, so that in specimens 13 mm. long, the width of the posterior margin is much more than half the width of the head just behind the eyes, but still less than the width across the clypeus. The latter is only arcuately produced in the smallest ♀♀, and the carina is almost obsolete. The convexity of the thorax is much less than in the ♂, $L. = 4\frac{1}{2} H.$ The scale of the petiole is much thicker, seen from the side subconical, the two faces equally convex. Otherwise like the ♀ media.

♀, 19 mm. Colour and sculpture of the head as in the ♂. Pilosity shorter and less abundant. The mesonotum slightly glossy. The scutellum, metanotum, petiole and abdomen moderately shining.

Clypeus more coarsely punctured than in the ♀, the mesonotum very sparsely and shallowly punctured. Head widest behind, the sides convex behind the eyes, in front of them straight and convergent anteriorly, the posterior margin almost straight, the posterior angles narrowly rounded. Scapes long, extending beyond the occipital margin by very nearly half their length. The mesonotum has a median impressed line or groove extending over the anterior convexity, and continued thence as a very faint line as far as the posterior margin. The slightly depressed area between the mesonotum and the scutellum is smooth and shining. The scutellum is fairly broad, and transverse behind. Dorsum of epinotum short, merging by a short curve into the longer and vertical declivity. Scale of petiole thin, both faces nearly flat, the dorsal edge trenchant and emarginate in the middle. Wings tinged with ochreous brown, nervures testaceous, stigma brown.

♂. This sex is unknown to me. Smith's very short description is useless and not worth quoting.

Krantz Kloof and Eshowe, Natal, (W. H. B. Marley); Durban.

Var. *FULVIPES*, Emery.

Ann. Soc. Ent. France, vol. 63, p. 51, 1895.

"The ♀ differs from the type of the subspecies, (i. e. *corvus* Forel), by the fulvous colour of the legs, contrasting with the dark colour of the body."

Makapan, (Simon); Zululand, (Traegaardh).

Var. *POLITICEPS*, Santschi.

Göteborgs K. Vetens. och Vitterh. Bandl. XV, 2, p. 38. 1914.

♀ media, 9 mm. Flagellum, tibiae and tarsi ferruginous, the rest of the legs and the scapes brown. Shining, especially the head (dull posteriorly in the type and the other races). Sides of the thorax and the dorsum of the epinotum dull, otherwise like the type."

Pietermaritzburg, (Traegaardh).

In the type of the species only the mesopleura are slightly shining, the dorsum of the epinotum is dull, not shining, as one might infer from the description of this variety.

Race *CORVUS*, Forel.

Bull. Soc. Vaud. Sc. Nat., vol. 46, p. 79, 9♂, ♀, ♂, ♀. 1879.

♀, 5.5-12 mm. Form extremely compact, dwarfish. The head of the larger ♀ is 3.8 mm. wide × 4.5 mm. long (including the

closed mandibles) whereas the thorax is hardly 4 mm. long and at the pronotum 2.5 wide. Mandibles with 6 or 7 teeth. Clypeus carinate at least in the ♀ minor, prolonged into a lobe in front, the anterior margin of the lobe feebly emarginate in the middle. Head of the ♀ major strongly concave behind. The whole thorax arched, as in *C. herculeanus*. Scale entire, rounded at its upper margin like that of *C. sylvaticus*, but a little thicker. Legs and antennae short. Of an ebony-black colour, shining, the legs, flagellum, base of the scapes and sometimes the thorax and mandibles of a more or less reddish or yellowish brown. Apical margins of the abdominal segments narrowly yellowish. Head very finely reticulate, thorax less finely reticulate-rugulose, less shining than the rest; abdomen very finely rugulose transversely. In addition, there are some very sparse punctures on the whole body, which are deep, large and abundant on the mandibles and front of the head of the ♀ major. The mandibles are also very finely reticulate-punctate between the larger punctures. A few long hairs on the body. Pubescence almost identical with that of *C. sylvaticus*. Tibiae and scapes with a feeble decumbent pubescence.

♀, 13-14.5 mm. Like the ♀, but the clypeus not carinate. A median longitudinal impressed line on the anterior third of the mesonotum, and two lateral longitudinal lines which do not reach either the anterior or posterior margin, (as in *natalensis* i. sp.). Scale entire. Colour, sculpture and pilosity as in the ♀. Mesonotum very shining and very feebly reticulate. Wings nearly hyaline, but slightly infusate on the anterior margin, nervures and stigma brownish yellow.

♂, 6-6.5 mm. Black, dull, except the abdomen which is slightly shining; legs, antennae, mandibles and apical margins of the abdominal segments more or less reddish brown. Wings a little darker than in the ♀. Head and thorax finely but very closely reticulate-punctate. Scale thick, nodiform. Lobe of clypeus somewhat rounded. Clypeus without a carina. There are two impressed longitudinal lines parallel with the median line on the anterior third of the mesonotum, and also lateral lines as in the ♀. Pilosity and pubescence as in the ♀.

Valdezia, Transvaal. (Berthoud): Pretoria and Makapan, (Simon).

This race is unknown to me in nature, but judging by the size, compact form and shining integument, it appears to me to bear a suspicious resemblance to the race *Empedocles* Forel. It certainly is more closely allied to that race, if not identical with it, than to *natalensis*, which is a much larger and differently shaped insect.

C. ACVAPIMENSIS, MAYR.

Verh. Zool. Bot. Ges. Wien, vol. 42, p. 664, ♀, 1862.

♀, 7.7–8.2 mm. Very dark brown or blackish brown, the anterior third or less of the head sometimes more or less reddish brown, the legs and antennae pale brownish ochreous (pale burnt umber), the mandibles castaneous red. Head and thorax dull, the anterior margin of the head feebly shining, the petiole and legs moderately shining, the abdomen subopaque at the base, the apical half nitidulous. Head and thorax closely and finely reticulate-punctate, petiole and legs smooth, abdomen transversely rugulose or aciculate, and also very sparsely punctured. Pubescence yellowish, short, decumbent and very scanty. Exserted pilosity long, pointed, pale yellow, on the head present only on the clypeus and between the frontal carinae.

Head, including closed mandibles, subtriangular, the posterior angles rounded, the sides moderately convex, the occipital margin shallowly concave. Clypeus very obtusely carinate, hardly produced into a lobe in front, or only into a very short one, the anterior margin feebly concave in the middle. Mandibles moderately shining, shallowly punctured, armed with 6 or 7 teeth. Scape of antennae extending beyond the hind margin by about the length of the 1st joint of the flagellum. Eyes flat, placed behind the middle of the sides. Frontal carinae fairly far apart. Pronotum one-third wider than long, less convex than in *C. maculatus*, somewhat flattened above. Mesonotum as long as wide in front, less narrowed behind and less convex transversely than in *C. maculatus*; metanotum very short, almost linear. Dorsum of epinotum twice as long as wide, merging gradually into the sides, but nevertheless wide in comparison with *maculatus* and most of its races, also merging by a low and rounded angle into the shorter and oblique declivity; the latter is smooth and shining at the base. Convexity of thorax fairly great, L. = $3\frac{1}{2}$ H.; the dorsal profile forms a curve which is almost continuous, broken only at the junction of the two faces of the epinotum. Scale of petiole thin, twice as high as wide, higher than the petiole is long, the anterior face barely convex, the posterior face flat, the dorsal edge trenchant and moderately convex from side to side. Tibiae almost cylindrical, not setose below.

♂ minor, 5.6 mm. A little paler than the ♀, the head and thorax being more or less reddish brown. The head is a little more than one-fifth longer than wide, widest across the eyes, the sides in front of the eyes moderately convergent anteriorly, convex behind them, the posterior margin straight or feebly convex and not much wider

than the anterior margin. Eyes placed behind the middle of the sides, between the third and last fourth. Frontal carinae less sinuate than in the ♀, hardly wider apart behind than in front. Clypeus more distinctly carinate, and with a longer lobe in front than in the ♀, its angles also sharper. The scapes extend beyond the hind margin by nearly half their length. Convexity of thorax slightly greater than in the ♀, the pronotum sloping much more steeply downwards in front, and flatter above. The dorsum of the epinotum is one and three-quarter times longer than the declivity. Scale of petiole thicker but hardly more convex in front. Otherwise like the ♀.

♀, 42 mm. Head trapezoidal, widest behind, the posterior angles moderately rounded, a trifle longer than wide. Clypeus barely carinate. The anterior third of the head with a sparse and shallow puncturation in addition to the fundamental sculpture. Mesonotum, scutellum, and abdomen slightly shining. The mesonotum very finely rugulose, with a few large pit-like punctures at the base and on the sides. Scutellum almost as wide behind as in front. Dorsum of epinotum very short, merging rapidly into the vertical declivity. Scale of petiole much wider than in the ♀, the dorsal edge trenchant and emarginate in the middle. Abdomen very shallowly punctured as well as rugulose. Femora dark brown. Declated. Otherwise like the ♀.

♂, 6.3 mm. Dark blackish brown, mandibles, the basal two-thirds of the scapes, the tarsi and the bases of the tibiae ochreous, the flagellum brownish yellow. Head, mesonotum and scutellum dull, the rest slightly shining. Pilosity and pubescence thinner and scantier than in the ♀. The outline of the head, seen from above, is semicircular behind the eyes, in front of them the sides are straight and moderately convergent anteriorly. Head as long as wide across the eyes. The latter placed in the middle, large, convex and prominent. The scapes are as long as the head (including open mandibles). Mandibles strongly pubescent, slightly shining and sparsely punctured. Clypeus with a median transverse impression a little behind the straight anterior margin; behind the impression the median area is gibbous or almost tuberculate, hardly carinate. On the very convex anterior half of the mesonotum there is a shining longitudinal line on each side of the median line, which merge together at about the middle of the mesonotum. Scale of petiole thick, moderately convex in front and behind, twice as wide as high and at least three times wider than thick, subquadrate when seen

from in front or from behind, the dorsal face thick, deeply and widely emarginate in the middle. Wings tinged with pale yellow, nervures and stigma ochreous.

Bulawayo, Bembesi and Redbank, S. Rhodesia. Not common, forming small nests in the ground.

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

C. NIVEOSETOSUS, Mayr.

Verh. Zool. Bot. Ges. Wien, vol. 12, p. 665, ♀, 1862.

Reise der Novara, Formicid. p. 35, ♀, 1865.

♂, 8 mm. Black, antennae and tarsi ferruginous, mandibles dark castaneous red. Head and thorax dull, the cheeks and mandibles slightly shining, abdomen slightly shining and transversely rugulose. The sculpture of the head and thorax consists of an exceedingly fine and close puncturation, somewhat reticulate as well on the thorax, (the sculpture much denser than in any of the preceding species). The pubescence is very fine and short, decumbent and pale yellowish white, on the legs somewhat longer and fairly abundant, elsewhere very sparse. The erect pilosity is very distinctive of this species, consisting of thick, blunt and almost snow-white hairs. These are scarce on the head; there is a row of such hairs, short and oblique, on the anterior margin of the clypeus and on the masticatory margins of the mandibles. There is a transverse row on the posterior half of the pronotum, three or four hairs on the mesonotum, and a row on each side of the declivity and dorsum of the epinotum. The edge of the scale is similarly fringed with them, and there are about three transverse rows on each abdominal segment. They are absent from the legs and antennae. Head, including closed mandibles, more or less triangular. It is widest behind and about as long as wide, the posterior margin almost straight. The scapes extend beyond the hind margin of the head by little more than their apical width. Median area of clypeus subquadrate, convex transversely, a little longer than wide, its anterior margin feebly convex, the projecting lobe very short. Frontal area small. Eyes flat, placed at the posterior third of the sides. Mandibles with 6 or 7 teeth, slightly shining, coarsely and sparsely punctured. Head not more than half as wide again as the pronotum. The latter is twice as wide as long, not very convex transversely, with distinct but obtusely angled shoulders. Dorsum of the epinotum wide, slightly arcuate lengthwise, a little longer than the subvertical declivity, which it joins in a wide angle. The declivity, seen from the side, is feebly

concave from above to below. Convexity of thorax, $L. = 3\frac{1}{2} H$. Scale of petiole fairly wide above, the anterior face convex, the posterior face flat, the dorsal edge fairly trenchant and convex transversely. Tibiae cylindrical, not setose below.

♀ minor, 6 mm. Head a little less than one-fourth longer than wide, the posterior angles rounded, the posterior margin slightly convex, the sides feebly so and convergent anteriorly, one and a half times wider just behind the eyes than across the anterior margin. Scapes longer than in the ♂. Disc of pronotum flatter. Dorsum of epinotum one-fourth longer than the declivity. Otherwise like the ♂.

♀, 11.2 mm. Colour, pilosity, pubescence and sculpture as in the ♂. Head like that of the ♀ minor, but a little less narrowed in front. Mesonotum a trifle longer than wide, the shoulders of the pronotum rounded and visible from above; scutellum wide. Dorsum of epinotum trapezoidal, moderately convex, more than twice as wide at the base as long in the middle, shorter than the vertical declivity. Edge of scale less convex transversely, the upper half of the anterior face slightly concave transversely. Wings tinged with pale ochreous, nervures ochreous, stigma brown. Otherwise like the ♂.

♂, 6 mm. Black. Head and mesonotum dull, finely and closely reticulate-punctate; the rest of the body moderately shining and rugulose. Pilosity dirty white, less abundant than in the ♂ or ♀, and not truncated. Head a little wider across the eyes than long, semicircular in outline behind the eyes, straight and almost parallel-sided in front of them. Clypeus slightly convex transversely, the anterior margin arcuate. Scapes barely longer than the width of the head. Eyes large and convex, occupying a little more than the middle third of the sides. Mesonotum convex in front, flat above and behind. Scutellum gibbous. The declivity of the epinotum slightly oblique, its brow more rounded. Petiole nodiform, with a long upper face which is rounded from front to back and two and half times wider than long. Wings as in the ♀.

Port Elizabeth, (Brauns); Durban, (Marley); Lehututu, Kalahari, (Schultze). (S.A.M., R.M., G.A. colls.).

Race *IRREDUX*, Forel.

Schultze, *Reise Südafrika*, vol. 4, p. 30, ♂, 1910.

♂, 8 mm. ♂ 4.5–6 mm. Differing from the type of the species as follows:

The basal half of the scape reddish ochreous, the tarsi dark brown. The sculpture sharper and more coarse on the head and thorax, and clearly so on the abdomen, which is finely striate transversely and sprinkled with wide, shallow and piligerous punctures. The pilosity is longer, much more abundant on the thorax and abdomen than in the type of the species, (the pronotum has from 13-16 hairs on each side), the tips of the hairs pointed. The pubescence is also more abundant and distinctly longer. The two faces of the epinotum are much more oblique, their junction hardly angular.

Natal, 5,500 ft. (Wroughton, Haviland).

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

C. WERTH, Forel.

Bull. Soc. Vaud. Sc. Nat. vol. 44, p. 18, ♀ minor, 1908.

" " " " " " 50, p. 253, ♀, 1914.

Enderlein, Deutsche Südpolfahrt, vol. 10, p. 393 & 426-8, ♀, 1908.

♀, 6.5-8.2 mm. Black, tarsi dark brown. Pubescence decumbent, very short and inconspicuous, almost confined to the legs and antennae. Pilosity sparse, long, fairly pointed and not thick, of a dirty whitish colour, more abundant on the abdomen than elsewhere, and absent from the legs and antennae. Shining, sculpture of the usual type of the sub-genus, but the anterior half of the head is finely and clearly reticulate and subopaque, and the vertex sparingly and shallowly punctured. The mesonotum has 3 or 4 large piligerous punctures on each side, and there are also a few on the pronotum. Head subquadrate, a trifle longer than wide, moderately narrowed in front, the sides fairly convex, the posterior margin straight or nearly so, the posterior angles widely rounded. Clypeus very obtusely carinate, with a very short lobe, the anterior margin moderately convex. Mandibles slightly shining, strongly punctured, 6-dentate. The scapes extend beyond the hind margin by about the length of the 1st joint of the flagellum. Eyes placed just behind the middle of the sides. Frontal carinae sinuate, widely divergent behind. Pronotum flattened above, its dorsum joining the sides in a very rounded angle and forming indistinct shoulders in front, twice as wide as long. Promesonotal suture sharply defined. Mesonotum slightly tumid in front. Meso-epinotal suture ill-defined in the middle. Epinotum with a fairly distinct dorsal face, slightly flattened, oblique lengthwise, and about one-third longer than wide. It joins the declivity in a fairly distinct but wide angle: the declivity is two-thirds as long as the dorsum. Scale of petiole convex in front, flat behind, the edge convex from side to side. Tibiae cylindrical, not setose below.

♀ minor, 4.7, 5.3 mm. Head a little longer than wide, widest across the eyes, the sides in front of the eyes straight and convergent anteriorly, the sides behind the eyes together with the posterior margin semicircular. Clypeus subcarinate, the carina more distinct than in the ♂. The scapes extend beyond the hind margin by about half their length. Pronotum more clearly flattened above, so that the junction of its dorsum with the sides is almost marginate or submarginate. Dorsum of epinotum one and a half times longer than the declivity, about two and a half times longer than wide, the declivity feebly concave from above to below. Scale of petiole much thicker than in the ♂, and more obtuse above. Otherwise like the ♂.

♀, 9.4 mm. (hitherto undescribed). Piceous, the apical margins of the abdominal segments widely testaceous; coxae and femora dirty ochreous yellow, tibiae and tarsi brownish yellow, basal half of the scapes reddish yellow, flagellum brownish red, mandibles castaneous. Pilosity longer and thinner than in the ♂, and of a dark ochreous brown colour. Very shining all over, the anterior half of the head somewhat duller than the rest. Sculpture of head and abdomen as in the ♂, but the punctures on the front of the head and on the space between the frontal carinae stronger and more abundant. Thorax exceedingly finely rugulose, the mesonotum and scutellum with a very fine and sparse puncturation. Head like that of the ♂, but a little less narrowed in front, the carina on the clypeus more distinct, the anterior margin feebly concave. Mandibles striatopunctate. Mesonotum with a dull median longitudinal line extending over the anterior fourth. Scutellum rather convex transversely. Dorsum of the epinotum four and a half times wider at the base than long in middle, much shorter than the vertical declivity. Scale a little thicker above than in the ♂. Abdomen very shining, only microscopically rugulose. Dealkated.

Caledon, Cape Prov. (E. Phillips); Matroosberg, Hex River Mts, (R. W. E. Tucker).

This species was first discovered in Kerguelen Island, whither it had evidently been imported from the Cape.

(S.A.M., R.M., G.A. colls.: type of ♀ in my collection).

SUB-GENUS MYRMOPHYMA, Forel.

For characters see table of subgenera.

♂. The head is quadrate or subquadrate, the sides only moderately convex or straight, the posterior margin straight and the

posterior angles more or less rectangular, at the most only very narrowly rounded. The head is not much narrower in front than behind, highest in the middle, the anterior third usually fairly steep. The scapes in our species are short, not extending beyond the hind margin of the head. The mandibles are robust, strongly convex on the outer margin. The clypeus is not carinate; anteriorly it is narrowed and produced into a lobe; its median area is large but the lateral triangular pieces are small and separated from the median area by a deep depression. The thorax is much more compact and less narrowed posteriorly than in the sub-genus *Myrmoturba*. The scale has a trenchant dorsal edge. Abdomen immaculate. The sculpture is more or less like that of *Myrmoturba*, but the anterior half of the head is usually more strongly sculptured, reticulate and sharply punctured, and duller than the rest of the head. The tibiae are not prismatic, rarely compressed.

♀ media and minor. Clypeus arcuately produced, not lobed. Eyes large and prominent. Mandibles with 5 or 6 teeth as in the ♀. In general, very similar to the ♀♀ of the sub-genus *Myrmoturba*.

♀. Head shaped like that of the ♀, and not like that of the ♀ media as in the sub-genus *Myrmoturba*. Scutellum flat, dorsum of epinotum fairly long, with a deep depression between it and the metanotum. Scale as in the ♀. Abdomen elongate and narrow, in one species sharply maculate.

♂, see *C. emarginatus* Em.

The habits of our species are almost unknown, with the exception of *C. crepusculi* Arnold.

Key to the ♀♀ of sub-gen. Myrmophyma, Forel.

- (2) 1. Black species, anterior margin of clypeus convex, not produced into a distinct lobe *Reevei*, Arnold.
- (1) 2. More or less yellow species, anterior margin of clypeus produced into a lobe.
- (4) 3. Anterior margin of the clypeal lobe convex, indistinctly crenulate *crepusculi*, Arnold.
- (3) 4. Anterior margin of the clypeal lobe not convex,
- (6) 5. Head elongate, at least one-fourth longer than wide; clypeal lobe angularly and deeply emarginate *Havilandi*, Arnold.
- (5) 6. Head quadrate, barely longer than wide; clypeal lobe not angularly emarginate.
- (8) 7. Clypeal lobe shallowly and arcuately emarginate, the emargination bounded on each side by a blunt and slightly projecting tooth or tubercle. *emarginatus*, Emery.
- (7) 8. Clypeal lobe rapidly narrowed anteriorly, snout-like, not emarginate, but bearing 3 or 5 blunt teeth or tubercles.

- (12) 9. Clypeal lobe with 3 obtuse teeth on its anterior margin.
 (11) 10. Mandibles with 6 teeth; abdomen blackish . . . *nasutus*, Emery.
 (10) 11. Mandibles with 5 teeth; abdomen brownish ochreous
 nasutus, race *subnasutus*, Arnold.
 (9) 12. Clypeal lobe with 5 obtuse teeth.
 (14) 13. Mandibles with 6 teeth . . . *nasutus*, var. *quinquedentata*, Forel.
 (13) 14. Mandibles with 5 teeth . . . *nasutus*, var. *pretiosa*, Arnold.

Bull. Soc. Ent. Ital. vol. 18, p. 356, ♀, ♂, ♀, ♂. 1886.

Microscopically rugulose on the thorax and abdomen; the head a little more strongly rugulose, the anterior third especially the clypeus, reticulate, the cheeks with some scattered and shallow punctures. Pubescence decumbent and exceedingly fine and sparse on the head, more abundant on the legs and antennae, absent from the rest of the body. Pilosity yellowish, very sparse.

Head subquadrate, one-sixth longer than wide, parallel-sided, narrowed only over the anterior 8th, the posterior margin convex, the posterior angles moderately rounded; seen from the side, the head is subtruncate behind. Mandibles shining, sparsely and coarsely punctured, 5-dentate. Clypeus convex transversely but not carinate, the lobe short and arcuately emarginate, the emargination bounded on each side by a broad and truncate tooth which is wider than long. Frontal area indistinct behind. Frontal carinae widely divergent, the distance between them behind being equal to their length. Eyes large, flat, placed behind the middle and occupying one-fourth of the sides. A trace of the median ocellus is present. (Emery gives no information as to the length of the scapes, and in the only specimen before me, these have become detached). Sides and front of the pronotum steep, the dorsum of the segment convex transversely. Mesonotum a little wider than long. Metanotum fairly distinct, short. Dorsum of epinotum a little longer than wide, very slightly oblique, as long as the steep declivity, which it joins in a widely rounded angle. Scale of petiole thin, ovate, nearly flat behind, slightly convex in front. Tibiae very slightly compressed, with a few setae below.

♀ minor, 3.5–4 mm. Pilosity, pubescence and colour like that of the ♀, but the colour is a little paler, the margins of the abdominal segments translucent and flavous, legs pale straw-yellow. Sculpture exceedingly superficial, almost obsolete, the clypeus and cheeks as smooth as the rest of the head. Head not quite one-third longer than wide across the eyes, the sides in front of the eyes straight and feebly convergent anteriorly, behind the eyes convex, posterior margin also convex. Eyes convex and large, placed behind the middle, occupying one-third of the sides of the head. Clypeus subcarinate, its anterior margin arcuate. Mandibles less convex externally than in the ♀. The scapes extend beyond the hind margin by a little more than one-fourth of their length. Pronotum convex transversely, not flattened above lengthwise; mesonotum not much narrower behind than in front. Dorsum of epinotum not cristate, longer than the declivity and much longer than wide. Scale of petiole convex on both faces, thicker than in the ♀. Tibiae cylindrical, not setose below.

♀, 8.5 mm. Black or brownish black, the mandibles and anterior margin of the head dark reddish brown, the apical margins of the abdominal segments testaceous. Legs more less ochreous, antennae yellowish brown. Sculpture and pilosity as in the ♀. Head like that of the ♀, but the lobe of the clypeus is shorter, more shallowly emarginate, the tubercles less pronounced. In the single specimen before me, the mandibles have 5 teeth as in the ♀, not 6 as stated by Emery. Ocelli small. A narrow area of the pronotum is visible from above, both in front and at the sides. Mesonotum slightly convex in front only. Metanotum well defined. Dorsum of epinotum horizontal, much wider than long, merging by a short curve into the much longer and subvertical declivity. Scale a little thicker than in the ♀. Abdomen oblong, parallel-sided. Wings hyaline, nervures and stigma ochreous.

♂, 4 mm. Black, scapes and tarsi dark brown, flagellum brown. Shining, microscopically rugulose, the mesonotum also with a few small and shallow punctures. Pilosity yellowish, thin and long, sparse on the head and thorax, fairly plentiful on the abdomen. The eyes occupy the middle third of the sides of the head. Clypeus gibbous or subcarinate in the middle, its anterior margin feebly concave. Masticatory margins of the mandibles oblique and edentate. Scapes fairly long, extending beyond the hind margin by half their length; 1st joint of flagellum widened apically or pyriform. Scutellum not much higher than the dorsum of the epinotum. Scale of

petiole thick, the posterior face convex transversely, the anterior face slightly concave, the dorsal edge rounded, thick, feebly convex from side to side. Wings as in the ♀.

Cape Town. (S.A.M. coll.).

C. CREPUSCULI n. sp. (Plate IX, figs. 155, 155a).

♂, 7.2–8.5 mm. Similar to *emarginatus*, but larger and darker. Head, thorax legs and antennae dark ochreous, the head somewhat reddish ochreous with the anterior fourth or so reddish brown. Mandibles ferruginous, the masticatory margin black. Abdomen dirty ochreous, becoming increasingly darker or yellowish brown towards the apex, the apical margins of all the segments pale. Sculpture and pilosity like that of *emarginatus*. Head also like that of *emarginatus*, but a little narrower in front and the sides more convex, the posterior margin moderately concave, the posterior angles rectangular and very narrowly rounded. The clypeus is convex transversely, feebly concave lengthwise over the anterior third, produced in front into a lobe, the anterior margin of which is convex and indistinctly crenulate. Mandibles shining, very strongly punctured, less convex externally than in *emarginatus*, armed with 6 sharp teeth. The scapes fall short of the hind margin by as much as two-thirds of the length of the 1st joint of the flagellum. Pronotum more convex transversely than in *emarginatus*. Mesonotum only a trifle wider than long, the pro-mesonotal and meso-metanotal sutures well defined, the meta-epinotal suture very feeble. The metanotum is about twice as wide as long. Dorsum of epinotum very little longer than wide, convex lengthwise and transversely, joining the equally long declivity in a very wide and obtuse angle. Anterior face of the scale convex, the posterior face flat, the dorsal edge convex transversely and trenchant. Tibiae cylindrical, with a few short setae below.

♀ media. 7.5–8.2 mm. Almost as large as the ♂, but having the head more like that of the ♀ minor. It is however, slightly widened anteriorly in front of the eyes, not parallel-sided. The metanotum is as large and as well defined as in the ♂. The scale is much thicker than in the ♀ minor, the anterior face very convex. Otherwise like the ♀ minor.

♀ minor, 4.7–5 mm. Very similar to the ♀ minor of *emarginatus* but larger. Sides of the head, in front of the eyes, parallel. Clypeus subcarinate, the anterior margin slightly produced and angular

in the middle. Mandibles 6-dentate, shining, shallowly and sparsely punctured. The scapes extend beyond the hind margin by one-third of their length. Pronotum less convex than in *emarginatus*, the whole thorax narrower than in that species, the mesonotum much narrower behind than in front. Metanotum indistinct or obsolete. Dorsum of the epinotum only slightly oblique, feebly convex lengthwise, narrow, twice as long as the oblique declivity. Scale of petiole cuneiform, the posterior face flat and a little longer than the convex anterior face, the dorsal edge hardly trenchant. Colour ochreous, the thorax and abdomen brownish yellow.

♀, 9 mm. Head dark ochreous, the anterior angles, the basal half of the clypeus and the vertex more or less brown. Thorax brown, the scutellum more or less ochreous. Petiole dark ochreous, abdomen dark brown, the 1st segment with a narrow, transverse and dull ochreous streak at the middle of each side. Legs ochreous, tarsi and antennae ferruginous. Epinotum subopaque, the rest of the body fairly shining. Sculpture as in the ♂, the meso- and epinotum fairly strongly rugulose, the mesonotum also sparsely but strongly punctured. Head like that of the ♂, but as wide in front as behind, the posterior margin feebly convex. Dorsum of the thorax fairly flat, the dorsum of the epinotum very little lower than the rest. Mesonotum one-fourth longer than wide; pronotum slightly visible from above. Dorsum of epinotum two and a half times wider at the base than long, slightly convex lengthwise, the meta-epinotal suture deeply impressed. Declivity of the epinotum subvertical, one-third longer than the dorsum. Scale of petiole cuneiform, both faces flat, the dorsal edge trenchant, as high as the whole petiole is long.

Abdomen oblong, the sides feebly convex. Deilated. Otherwise like the ♂.

Hillside, Bulawayo and Nyamandhlovu, S. Rhodesia. Nesting in sandy soil. The entrance to the nest is a very small hole, rarely more than 3 mm. wide, without any excavated material surrounding it, and therefore not easily seen. The colonies are small, rarely comprising more than 18 individuals. This ant is a very nimble insect, and never appears above ground during broad daylight, but forages after sunset.

(S.A.M., R.M., G.A. colls.; types in my collection).

C. HAVILANDI, n. sp.

♂, 8 mm. Head piceous, the extreme posterior angles ochreous. Thorax reddish ochreous, abdomen ochreous and becoming darker or

ferruginous brown towards the apex, or sometimes ferruginous brown all over. Legs dark ochreous, antennae reddish ochreous. A few short yellowish pilose hairs on the clypeus, anterior corners of the head, thorax, petiole and abdomen, but scanty everywhere. Legs and antennae with a yellowish, sparse and short pubescence. Legs, thorax and abdomen moderately shining, very finely and transversely rugulose. Vertex and occipital third of the head reticulate-rugulose, the rest of the head densely and rather sharply reticulate-punctate and subopaque. The clypeus and upper part of the occiput with a few elongate and shallow punctures. Head oblong, one-fourth longer than wide, the sides subparallel, converging only very slightly in front, the posterior margin straight or nearly so, the posterior angles rectangular and narrowly rounded. The head is subtruncate behind, Frontal carinae sinuate, widely divergent, as wide apart at the posterior fourth as they are long: a well defined frontal sulcus reaches back as far as the posterior ends of the carinae. Eyes placed behind the middle, fairly large, hardly convex. The scapes fall short of the hind margin by as much as their apical width. Mandibles short, strongly convex externally, subopaque, finely striate on the basal, and coarsely striato-punctate on the apical half, armed with 5 broad and blunt teeth. Median area of clypeus subcarinate, longer than wide, the lobe narrowed towards the extremity, deeply and subangularly emarginate, the emargination at least half as deep as it is wide, the edge of the emargination slightly raised all round. The lateral pieces of the clypeus small and indistinct. Thorax not unlike that of *crepusculi*, but the pronotum is only slightly convex lengthwise, somewhat flattened transversely, the sides almost vertical but nevertheless merging gradually into the upper face. The metanotum is distinct, the meta-epinotal suture more deeply impressed than the other suture. Scale not much wider above than below, flat behind, moderately convex in front, higher than the whole petiole is long. Posterior tibiae cylindrical, not setose below.

♀ media, 7 mm. Head ferruginous, darkest behind. Mandibles bright ferruginous, the masticatory margin black, with 6 teeth which are more acute than in the ♂. Thorax, petiole, legs, antennae and the basal half or thereabouts of the abdomen bright ochreous, the apical half of the abdomen and the antennae yellowish brown. Sculpture of the head like that of the ♂ but more superficial. The head is more narrowed in front than in the ♂ and the sides are moderately convex. The clypeus is only arcuately and shallowly emarginate. Scapes longer, extending beyond the hind margin by one-fourth of their length. Dorsum of epinotum longer, twice as

long as the declivity. Scale thicker, its dorsal edge obtuse, the posterior face slightly convex. Otherwise like the ♀.

♀ minor, 4.8–5.8 mm. Oebreous, the posterior half of the head and the meso-epinotum somewhat darker. Very similar to the ♀ minor of *emarginatus*, but larger and differing from it and from *crepusculi* in the pronotum which is distinctly flattened above. The scale of the petiole is inclined forwards and has a thick dorsal face which is two and a half times wider than long. The anterior face merges gradually into the dorsal face and is very convex, the posterior face flat and longer than the anterior. Otherwise like the ♀ media.

Slievyre, Natal. (Haviland), ex. Natal Museum coll.

This species is easily recognised in the ♂ caste by the shape of the head, the clypeus and the strongly contrasted colours of the head and thorax.

(R.M., G.A. colls.; types in my collection).

C. NASUTUS, Emery.

Ann. Soc. Ent. France, vol. 63, p. 53, ♂, ♀(?), 1895.

“♂. Sordid testaceous, anterior margin of head dark ferruginous, abdomen, except the base and the apical margins of the segments, blackish; dull, abdomen nitidulous. Pilosity and pubescence very scanty, the latter short. Head truncate behind, very little narrower in front than behind, frontal carinae distant, sinuate, the clypeus convex transversely, barely carinate, produced in front into a narrow porrect lobe which is tridentate at the apex. Mandibles convex, sex-dentate. Thorax robust, the pronotum obtusely marginate, the meta-epinotal suture defined, the dorsum of the epinotum merging arcuately into the declivity. Scale moderately compressed, obtusely truncate above, its edge not trenchant. Tibiae feebly compressed, setose below.

9 mm. long; head, as far as apex of clypeus, 2.8 mm. long, 2.3 mm. wide; scape 1.9 mm.; posterior femur 2.6 mm. maximum width of thorax 1.7 mm.

Pretoria, one specimen, (Simon).

This species is remarkable chiefly on account of the clypeus, strongly arched transversely, the lobe of which, narrow and produced, forms a sort of beak, truncate and ending in 3 teeth, which are almost as strong as those of the mandibles. The depressions between the median and lateral pieces of the clypeus are very deep, and the lateral pieces project forwards.... The sculpture is like that which is seen in many dull forms of *C. maculatus*; a fundamental reticulate-

puncturation, on which stronger and pubescent punctures are superimposed I attribute with some doubt to this species two ♀ minima from Kimberley, in spite of considerable differences in the sculpture and shape.

♀, 4.5–5 mm. Head parallel-sided, not much longer than wide, rounded behind, with large eyes placed far backwards. Clypeus emarginate on each side, feebly produced and truncate in the middle, very obtusely carinate, fringed with a few hairs. Pronotum not marginate, rounded in front; the thorax is fairly robust in front and is narrowed behind as far as the meso-epinotal suture; the epinotum is parallel-sided, somewhat flattened above; the dorsal profile of the thorax forms a continuous arc, but with the angle of the epinotum very obtuse. Scale thicker than in the ♂, but of the same shape. Head and thorax shining, very finely and superficially punctulate, with some scattered pubescent punctures, but with very few long hairs. Pubescence and setae on the tibiae as in the ♂. The scape extends beyond the posterior margin of the eye by half its length. Colour pale testaceous, the head and middle of the abdominal segments darker."

Var. *QUINQUEDENTATA*, Forel.

Ann. Soc. Ent. Belg., vol. 54, p. 451, ♂, ♀. 1910.

"♂. The lobe of the clypeus has 5 teeth, owing to each of the lateral teeth being divided into two. Otherwise agrees well with the description of the type species, but the scale is acuminate.

♀ minor, 7 mm. The 5 teeth of the clypeus smaller but distinct. Scale acuminate. Eyes very large, a little longer than their distance from the occipital margin. Entirely yellow; abdomen somewhat brownish yellow. Metanotum not defined. Mandibles 5-dentate, (6-dentate in the ♂). Natal, (Haviland).

Var. *PRETIOSA*, n. v.

♂, 10 mm. Head and thorax yellowish brown-red, (pale burnt sienna), the anterior corners, the clypeus and the vertex (excepting the anterior half of the space between the frontal carinae), brown or piceous, the posterior half and the sides of the thorax and the petiole darker or reddish brown; abdomen piceous, the apical margins of the segments widely testaceous. Legs ochreous, tarsi and antennae ferruginous. Mandibles very shining all over, with 5 teeth, fairly abundantly punctured, the punctures small but deep. Lobe of the

clypeus with 5 teeth as in var. *quinguedentata*. Otherwise like the type of the species.

In addition, the following features should be noted. The pronotum is very little wider in front than behind, two and a half times wider than long, with subangular shoulders. The mesonotum is twice as wide in front as behind; all the thoracic sutures well defined. The metanotum is three times wider than long, but it is also much longer and clearly defined than in the other species of the sub-genus. Scale barely truncate above, the dorsal edge only feebly convex in the middle. The posterior metatarsi are furnished with two rows of lanceolate or subspatulate hairs, as in *C. belligerum mystacens*, etc.

♀, 10.6 mm. Colour of the head like that of the ♂, but paler and of a more ochreous tint, the lobe of the clypeus ferruginous. Thorax, petiole, coxae, femora and tibiae reddish ochreous; a brown, longitudinal band on each side of the mesonotum, tarsi and antennae ferruginous. Abdomen ochreous at the base and on the ventral surface, piceous above, with a large, sharply defined and bright ochreous spot on each side of the 2nd, 3rd and 4th segments.

Head quadrate, and excluding the projecting lobe of the clypeus as long as wide, parallel-sided, the posterior margin strongly convex, the posterior angles acute and rectangular. Teeth on the lobe of the clypeus less distinct than in the ♂. Mandibles with 5 teeth as in the ♂. Mesonotum very shining in front, less so behind, sparsely but clearly punctured at the sides. Epinotum closely and finely reticulate and dull. Posterior metatarsi as in the ♂. Otherwise like the ♂.

Hillside, Bulawayo. 1 ♂, 1 ♀. Types in my collection.

Race SUBNASUTUS n. r.

♂, ca. 11 mm. (The single specimen has had the abdomen distended by the action of the fluid in which it was preserved, and measures actually 12.5 mm.). Ochreous, the anterior angles of the head brownish, the median area of the clypeus reddish ochreous and brownish at the margins; mandibles bright castaneous red, the teeth black abdomen brownish yellow. The lobe of the clypeus is shorter than in var. *pretiosa*, its sides oblique; the median area of the clypeus is also shorter and wider, or one-third wider than long, (including the lobe), whereas in *pretiosa* it is as wide as long. The mandibles are very smooth and shining, sparsely but coarsely punctured, 5-dentate. The scale of the petiole is a little narrower above. Otherwise like *pretiosa*, including the posterior metatarsi.

♂ minor, 7 mm. Head nearly one-third longer than wide, semi-circular behind the eyes, parallel-sided in front of them. The eyes occupy a little more than one-quarter of the sides, and are placed just behind the middle. Clypeus arcuate in front, not lobed, carinate. The scapes extend beyond the hind margin of the head by half their length, and reach the pro-mesonotal suture. Mandibles triangular, the basal margin nearly as long as the masticatory, 5-dentate, moderately shining, sparsely and finely punctured. Dorsum of the epinotum about one and a half times longer than the declivity, and merging gradually into the same. Scale of petiole cuneiform, both faces feebly convex, the anterior shorter than the posterior, the dorsal edge trenchant. Sculpture of the head feeble. Otherwise like the ♀.

Natal, 3,500 ft. (Haviland). ex Natal Museum coll.

Types in my collection.

C. REEVEI, n. sp.

♂ major, 6-6.2 mm. Black, tarsi dark brown, mandibles dark reddish brown. A very sparse, yellowish and erect pilosity on the

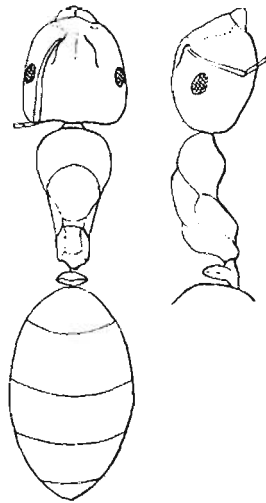


FIG. 58.—*C. reevei*, n. sp.

body; pubescence very sparse, present only on the legs and antennae. Slightly shining, the anterior four-fifths of the head dull. Microscopically and transversely rugulose, the anterior half of the head very finely and superficially reticulate, somewhat more strongly

so on the clypeus which, like the cheeks, has a few large and very shallow punctures. Mandibles 6-dentate, dull, rugulose, with a few strong punctures.

Head about as long as wide behind, subquadrate or only slightly narrowed in front, the posterior margin almost transverse, the sides and posterior angles moderately convex. Clypeus not carinate, very slightly convex transversely, the median area a little wider than long, its anterior margin feebly arcuate. Frontal carinae divergent, wider apart behind than they are long. Eyes feebly convex, placed at about the middle of the sides. The scapes just extend back as far as the occipital margin. Pronotum not very convex above, the shoulder rounded, the sides fairly steep but not marginate laterally, wider than long. Promeso- and meso-epinotal sutures well defined. Mesonotum convex transversely, as wide in front as long, obovate, considerably narrowed posteriorly. Dorsum of epinotum convex lengthwise and transversely, slightly widened towards the apex, one and a half times longer than wide, the sides fairly steep, a little longer than the declivity, which it joins in a rounded but fairly distinct angle; declivity concave and subvertical. Scale of petiole fairly thick, the dorsal edge rounded from front to back, the anterior face feebly convex, the posterior face flat. Tibiae cylindrical.

♀ minor, 3.5–4 mm. Head subovate, widest in the middle, the margin behind the eyes semicircular, one-third longer than wide. Scapes longer than in the ♀ major, extending beyond the hind margin by one-third of their length. Pronotum relatively longer than in the ♀ major, slightly flattened above. Meso-epinotal suture shallower, dorsum of epinotum more oblique and scale of petiole relatively narrower and more obtuse above than in the ♀ major. Otherwise like the latter.

Port Elizabeth, (C. Reeve), ex. Albany Museum coll.
(S.A.M., R.M., G.A. colls.; types in my collection).

SUB-GENUS MYRMOPSAMMA, Forel.

For characters see table of sub-genera.

♂. Head usually wider than long, not much narrower in front than behind. In all forms excepting *C. cuneiscapus* Forel, which may be recognised by the angular lobe at the base of the scapes, the structure of the clypeus is distinctive. The upper third or so of the clypeus forms a shelf (more or less crescentic in outline) which slopes downwards and forwards, and the lower two-thirds, which is subvertical and concave lengthwise, meets the upper third

at an angle, (this is easily seen when the head is looked at from the side). The front edge of the shelf is fringed with a row of long bristles or ammochaetae, curving downwards and forming a sort of moustache. A similar row of bristles, curving forwards and upwards is placed behind the mouth on the ventral surface of the head. In a groove on the basal margin of the mandibles there is another fringe of such bristles, but less coarse than those on the clypeus, and the lower surface of the mandibles is also furnished with one or two rows of long and thin hairs, directed inwards. The thorax is not unlike that of the *Myrmoturba* group, but is more robust, and the epinotum is less compressed, its dorsum less cristate. Scale of petiole thick below, acuminate and trenchant above; the anterior face has its basal half vertical and the upper half oblique, so that a rounded, ill-defined angle is seen when the scale is looked at from the side.

♀ media and minor. Head longer than in the ♀, but not much longer than wide, usually a little wider in front than behind. The clypeus, ammochaetae etc. as in the ♀. Scale of petiole thicker.

♀. Head like that of the ♀ media, but equilateral.

♂. Clypeus with ammochaetae as in the ♀ and ♀. Mandibles long and narrow.

The members of this subgenus, which is confined to the S. African Region, are adapted for living in sandy localities, like the *Ocymyrmecini* which are also provided with ammochaetae.

Key to the species of the sub-genus Myrmopsamma.

- (2) 1. Scapes with an angular dilatation or lobe near the base in front; clypeus without a moustache *cuneiscapus*, Forel.
- (1) 2. Scapes simple; clypeus with a moustache.
- (6) 3. Head of the ♀ not very deeply emarginate behind, the depth of the emargination less than half the length of the eye. Colour of head and thorax not dark brownish red, abdomen not black.
- (5) 4. Head moderately emarginate behind; colour of head and thorax more or less yellowish red or red *mystaceus*, Emery.
- (4) 5. Head barely emarginate behind; colour pale ochreous
mystaceus, var. *ersanguis*, Forel.
- (3) 6. Head and thorax very dark brownish red; posterior emargination of the head in the ♀ as deep as the eye is long. *mystaceus*, var. *kamac*, Forel.

C. simulans Forel is not included in the above key, as it appears to me that only the ♂ minor of that species has been described: it differs from all the above species in having the eyes nearly half the length of the sides of the head.

G. MYSTACEUS, Emery. (Plate IX, figs. 143, 143a & b).

Bull. Soc. Ent. Ital., vol. 18, p. 356, ♀, ♂. 1886.

♂, 13.5–15 mm. Head and thorax varying from ochreous rusty-red to dark red (burnt sienna), the anterior margin of the head darker or brownish. Coxae and femora dull ochreous, the femora becoming darker towards their apices, scapes, tibiae and tarsi more or less dark brown, flagellum ferruginous. Abdomen varying from a yellowish brown becoming darker towards the apex to entirely dark reddish brown. A very short, decumbent and scanty pubescence on the tibiae, wanting elsewhere. The mesonotum and abdominal segments with a very few short and thin exerted hairs. Excepting the ammochaetae, the body is otherwise glabrous. The moustache on the clypeus extends as far as the middle of the closed mandibles. Head and thorax subopaque, abdomen shining. Head very closely reticulate-rugulose, more reticulate than in the *maculatus* group. Clypeus longitudinally rugose or rugulose on the anterior half. Thorax and abdomen microscopically and transversely rugulose.

Head, excluding the mandibles, varying from one-ninth to one-eighth wider than long, the sides fairly convex, not much narrower in front than behind, the hind margin widely and not deeply emarginate, the depth of the emargination being less than half the length of the eye, the occipital lobes moderately angular and narrowly rounded. The scape extends beyond the hind margin by about two-fifths of its length. Eyes placed at the middle of the sides. Anterior margin of the clypeus straight; the clypeus is moderately convex transversely, its upper third convex lengthwise, the lower two-thirds concave lengthwise. The pits or depressions between the median and lateral pieces of the clypeus fairly deep. Mandibles 5-dentate, the teeth large and acute, the apical tooth long, quite twice as long as the subapical; the basal half dull and finely shagreened, the apical half and the teeth shining, finely and sparsely punctured, the basal margin bordered by a deep sulcus in which is inserted a row of long hairs curving inwards towards the opposite mandible. Pronotum convex, about twice as wide as long. Pro-mesonotal suture well defined. Mesonotum subovate, a trifle longer than wide. Mesometanotal suture feeble. The metanotum hardly defined. Dorsum