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ANTS FROM SUMATRA.

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*Ants from Sumatra.* By W. C. CRAWLEY, B.A., F.E.S.,  
F.R.M.S. *With Biological Notes by* EDWARD JACOBSON.

Subfamily I. *PONERINÆ*.

*Chrysapace*, gen. nov.

♀. Apterous. Head truncate behind the ocelli, forming a plane surface almost at right angles to the vertex, the lateral angles bluntly bordered. Mandibles broad and triangular. Frontal carinæ joined to the clypeus, rising high between the articulations of the antennæ, and gradually narrowing to a point at a distance equal to three times their width at the widest, where they abruptly converge and terminate. Antennal fossæ limited laterally by a carina as in *Cerapachys*.

Antennæ 12-jointed, the funicular joints gradually thickening to the apex, the last four joints thickening more rapidly, but not forming a club; the apical joint is longer than the preceding two together. Eyes well developed, placed posteriorly.

Thorax large and massive, without a trace of sutures.

Pronotum with a sharp anterior border.

Petiole and postpetiole bordered anteriorly but not laterally, the latter separated from the following segment by a deep constriction.

The basal segment of gaster covers more than half the whole gaster.

Pygidium truncate, oval, bordered along the apical half, which is spinulose.

This genus comes near *Cerapachys* and *Phyracaces*. Taking the characters given in Emery's table (Gen. Insect. *Ponerinae*), it differs principally from *Sphinctomyrmex* in not having the segments of the gaster separated from each other; from *Cerapachys* in not having an antennal club formed by the apical joint; and from *Phyracaces* in not having the petiole bordered.

The sculpture is remarkable.

*Chrysapace jacobsoni*, sp. n. (Fig. 1.)

♀. Length 7 mm.

Black; apices and terminal border of mandibles, the anterior portion of frontal carinae, base and apex of scape, the tarsi, the dorsal surface of tibiae, the trochanters, and articulations of femora castaneous-red; funiculi reddish brown.

Head and body with a sparse golden pilosity, antennae and legs with abundant erect hairs. Pubescence nil, except on funiculi.

Head as broad as long, broadest behind, narrowing somewhat rapidly in front of the eyes. Mandibles with a broad edentate terminal border, apex with a blunt double tooth. Clypeus slightly concave, depressed along its slightly convex anterior border. Frontal carinae feebly emarginate behind the centre. Eyes moderately large, prominent, placed at the posterior angles of the head just before the truncated portion. Ocelli small, situate at the anterior border of the truncation, just above the level of the eyes. A faint ridge extends from the end of the frontal carinae to the anterior ocellus.

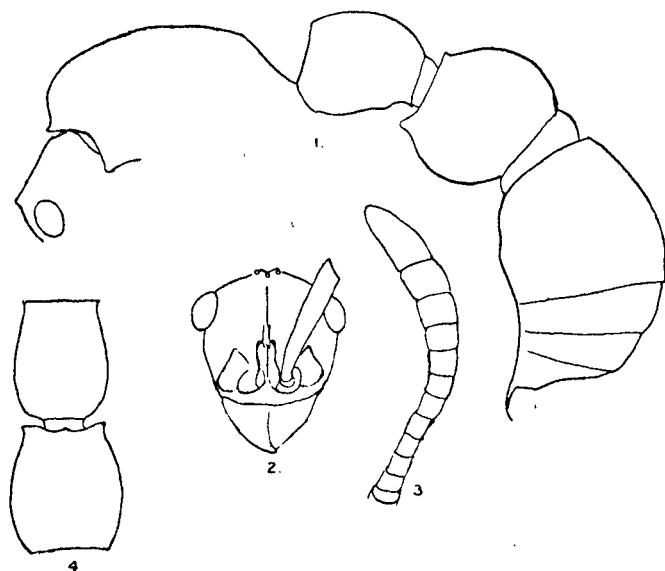
Carinae of cheeks with a blunt margin, forming an acute angle posteriorly. The anterior extremity is raised and thickened. The carina extends from the anterior border of the antennal fossa, turns inwards after the thick and rounded anterior lateral angle, continues in a straight line to the posterior angle, which is nearly on a level with the termination of the frontal carinae, then descends obliquely, terminating in the centre of the upper margin of the antennal fossa. It is more prominent than in any species of *Cerapachys* or *Sphinctomyrmex* with which I am acquainted. Occipital border concave. The entire neck is encircled with a sharp border.

The scape gradually thickens from base to apex, where

it is not quite twice as thick; it reaches to the top of the ocelli. Funiculus twice as long as scape (v. characters of genus).

Thorax very massive, evenly convex in both directions. The sharply bordered anterior margin of the pronotum is continued laterally in an S-shaped curve, ending in a blunt angle below. From above the thorax is slightly narrower in front, the sides convex for their posterior two-thirds. Declivity of epinotum feebly concave.

Fig. 1.



*Chrysapace jacobsoni.*

1. Side view of body.
2. Front of ~~beak~~ head.
3. Funiculus (on slightly larger scale).
4. Pedicel from above.

Petiole from above nearly once and a half as long as broad, slightly broadening posteriorly to a point about one-sixth from the end, where it narrows rapidly to its bordered extremity, which is more than one-half as wide as the anterior extremity, which is also bordered. In profile the anterior border is truncate, the upper surface convex, descending rapidly posteriorly. Postpetiole from above as broad as long, broader posteriorly, the sides convex. Anteriorly it is

bordered, the border forming a small tooth in the centre and at each side. In profile it is very thick, convex above and below, produced anteriorly beneath into a blunt process.

First segment of gaster proper longer than the remainder, broadest in front. The rest of the gaster narrows rapidly to its apex.

Sting large.

Moderately shining; entire body deeply and regularly striate, somewhat similarly to some species of *Diacamma*, but more deeply and regularly. Mandibles finely striate, except the apex and terminal border; the striæ are coarser on the outer border and interspersed with one or two irregular punctures.

Head from articulations of antennæ to ocelli regularly transversely striate, the striæ interrupted by the central line. There are a few piligerous points on the ridges of the striæ. The number of striæ on this portion of the head is 14. From the ocelli to the occipital border the striæ curve towards the lateral angles, the central ones being longitudinal. On the sides of the head they curve upwards from the genal carinæ to the border of the neck.

On the pronotum the striæ are transversely arched, starting from the transverse anterior as a base, the central stria forming a loop. On the part corresponding to the mesonotum the striæ diverge anteriorly from the centre. The base of epinotum is striated similarly to the pronotum. On the declivity the rounded cord-like ridges are flattened. Petiole and postpetiole longitudinally striate, the striæ curving slightly outwards from base to apex. On the petiole the upper surface of the ridges is bluntly angulate, instead of round as on the thorax and head, and on the postpetiole the upper edge is acute. Remaining segments of gaster longitudinally striate, the ridges being broad and flat, so that the surface appears to have narrow grooves cut into it, instead of ridges standing out from it.

Scapes with irregular longitudinal punctures. Legs smooth and shining.

A single ♀, Suban Ajam (*Benkeulen*), Sumatra (No. 6), July 1916. W. C. C. coll.

*Stictoponera costatum*, Em. ♂, Fort de Kock, 1913.  
920 metres.

*Stictoponera menadensis*, Mayr. ♂, Fort de Kock, 1922.

*Odontoponera transversa*, Sm. ♂ ♀ ♂, Fort de Kock; Padang; Tamiai; Serapai; Kalung; Buo, etc., 1913-1922.

*Diacamma holosericum*, Rog. ♂, Rimbo Pengadang.

*Diacamma rugosum*, Le G., race *sculpturatum*, Sm. ♀, Muara Kiawei.

*Pachycondyla (Bothroponera) tridentata*, Sm. ♂, Fort de Kock; Andalas, 1922.

*Pachycondyla (Ectomomyrmex) astutus*, Sm. Fort de Kock.

*Euponera (Brachyponera) luteipes*, Mayr. ♂ ♀, Fort de Kock, Oct. 1913.

✓✓ *Trapeziopelta nitida*, sp. n. (Fig. 2.) = *emeryi* ? <sup>7-11</sup>

♂. Length 3.5 mm.

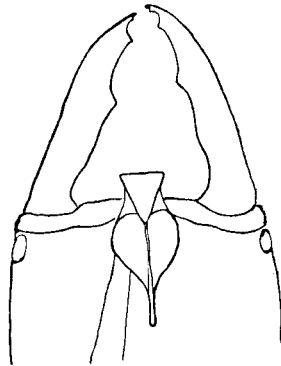
Dark castaneous (mahogany-colour); mandibles, antennæ, and legs paler; 1st and 2nd segments of gaster with a dark patch across centre. A fairly plentiful yellow pilosity over whole body, including legs and antennæ, longest and thickest at apex of gaster. The clypeal process has two pairs of long hairs. There is a short pubescence on upper surface of head.

does not  
seem  
likely!  
reversed?

Head rectangular, slightly broader than long, a fraction narrower behind; the occipital border widely and shallowly concave, the angles rounded. Frontal groove well defined. Eyes placed less than their length from the articulation of the mandibles, oval, consisting of about 16 facets. Process of clypeus in the form of an equilateral triangle, very slightly broader than long, the base of the triangle in front, where the border is straight. Mandibles long and narrow, nearly as long as the head. Seen from the side they are narrow at the base, gradually widening on the inner side to a point beyond the halfway line, where is a tooth; from this point the sides are parallel to a point more than halfway to the apex, forming another tooth; the remainder forms an oblique terminal border with two small teeth at the apex. The outer border is uniformly concave. The mandibles enlarge gradually, not abruptly as in *bidens*. From the side of the base of the mandible a narrow groove runs, curving slightly downwards and continuing along the extreme edge of the mandible for more than two-thirds of its length. Club 4-jointed; the 1st joint of funiculus more than twice as long as the 2nd, and the last about equal to the two preceding ones. The scapes are only half as thick at the base as at the apex: they just fail to reach the centre of the occipital border.

Pronotum (without neck) as broad as long, the sides parallel, the posterior border concave. Mesonotum twice as broad as long. Base of epinotum twice as long as broad, rectangular, in profile rounding evenly into the declivity, which is less than half as long, flat in the centre, concave at each side, forming two lateral angles. The mesoepinotal suture forms a slight incision in the back of the thorax. From above the node is slightly broader than long, widest behind where it is straight, the anterior angles rounded. In profile it is slightly concave in front, straight behind, and moderately rounded above. The second segment of the gaster is longer than the first, the constriction between moderately deep. Smooth and shining. The mandibles with a few small points; the upper surface

Fig. 2.

Front of head and mandibles of *Trapeziopelta nitida*.

of head with small punctures, close together and small in front, larger and more separated behind. Frontal carinae punctured. Thorax and node with a few small points, and the gaster with less.

Fort de Kock, 1922 (143). Type, W. C. C. coll.

In size, shape of mandibles and of the clypeal process, and position of eyes is distinct from *bidens*, Em., which it otherwise resembles. From *emeryi*, For., it differs in having the first tooth nearer the middle of the mandible, in the broader head, slightly different clypeal process, and in having the occipital border concave. The mandibles of *nitida* approach more nearly to those of *emeryi* than to those of *bidens*.

*Trapeziopelta mandibularis*, sp. n. (Fig. 3.) = *modiglianii* <sup>semicallow ♀</sup>

♂. Length 6.5 mm.

Dark castaneous; funiculi paler, apex of gaster darker. A plentiful pale yellow pilosity spread over the body, legs, and antennæ, most abundant on apex of gaster. Pubescence almost nil. Mandibles broad and short, somewhat like those of *modiglianii*, Em., narrow at base, swelling rapidly to near the halfway distance, where is a strong tooth; then curving inwards for a little more than half of the distance to the apex, forming another strong tooth; the edge between this point and the apex is oblique, with two well-defined small teeth besides the apical one. A narrow sulcus runs across the base of the mandible underneath and down the extreme lateral border of the apex. Clypeal process very similar to that of *modiglianii*, broader than long,

Fig. 3.



Mandible of *Trapeziopelta mandibularis*.

with a tridentate anterior border. The three teeth are small and obtuse, and the centre one does not project as in *modiglianii*.

Head as long as broad, equally broad in front and behind, sides slightly convex, posterior angles rounded, occipital border concave. Eyes moderately large, situate their length from the base of the mandibles. The scape reaches to less than its breadth from the occiput. Frontal groove well marked and deep. Joints 3-9 of scape as broad or broader than long, the apical nearly equals the three preceding ones. There is no distinct club.

Pronotum as broad as long without the neck. Sutures well marked, that between the mesonotum and epinotum showing a slight incision in profile. Base of epinotum  $1\frac{1}{2}$  as long as the declivity, fairly flat with an evenly rounded angle between. From above the base is not quite



twice as long as broad. It has a faint longitudinal groove down the centre. Declivity slightly concave in the centre. Node from above as broad as long, widest behind, the sides feebly convex, all the angles rounded, the anterior ones more than the posterior. First segment of gaster almost the same shape as the node, but larger, the constriction between it and the second segment very deep.

Smooth and shining. A few small punctures on the mandibles and scapes. Frontal carinae and head with scattered punctures, larger and more elongate at the occiput. Thorax, node, and first segment of gaster have similar but larger punctures, some elongate. The second segment has a few small points.

A single ♀. Gunung Dempu, 1400 metres, 1916 (1265). Type, W. C. C. coll.

Like *modiglianii*, Em., differing in colour, size, and shape of mandibles, which are even broader.

*Leptogenys (Lobopelta) diminuta*, Sm., var. *fruhstorferi*, Em.

♀ ♂, Fort de Kock, Tamiai, 1915, 1921.

♂. Length 5.5 mm.

Dark brown; mandibles, antennae, legs, basal segments of gaster and genitalia brown; margins of segments of gaster testaceous. Wings pale brown and iridescent; nervures darker.

Body, including antennae and legs, with moderately long erect hairs, shorter on antennae and legs, and most abundant on apical segments of gaster and tips of stipites. Antennae fairly pubescent, legs less so.

Mandibles small and short, half as long as the distance between their tips, twice as long as broad, the points rounded. Clypeus large and rounded, the anterior border slightly sinuate. Head almost circular; eyes very large, occupying nearly the whole of the sides and almost reaching the base of mandibles. Scapes nearly three times as long as the first joint of funiculus, the second longer than the first plus the scape. The remaining joints gradually diminish till the apical, which is about one-quarter longer than the previous one.

Mesonotum separated from the scutellum by a deep sulcus. Base of epinotum feebly convex in both directions. Node round at apex, where it is narrower than at the base; from above it is narrower and rounded in front, broad and straight behind. There is a slight constriction between the 1st and 2nd segments of the gaster.

*Genitalia*.—Stipes broad and pointed, swelling above the tip on the upper side into a broad tooth. The apex is curved inwards. Volsella and lacinia short, not reaching so far as the angle of the stipes, consisting of three parts, the inner flat and broad, narrowing abruptly at the apical third into a slender elongate point, ventral; the broad portion is terminated above by a blunt angle. The median part is longer and spatulate at the apex, dividing halfway down to form the outer part, which is simple and rounded at apex. Sagittæ long, twisted half over near the apex and curving outwards, enclosing the volsellæ and nearly touching the stipites. They have a series of small back-pointed teeth round the apex and inner border. Sensoria on the stipites and outer double part of volsellæ.

Clypeus shining, with a few irregular punctures. Head shining; there are a few wrinkles between the ocelli. Pronotum encircled with fine striæ. Anterior portion of mesonotum smooth with irregular elongate punctures, the remainder irregularly longitudinally rugose with elongate punctures. Mayrian furrows transversely ridged; sulcus of mesonotum longitudinally ridged. Scutellum evenly striate longitudinally. Epinotum shining with irregular punctures. The rest shining.

♀ (not described). Length 8 mm.

Apterous, ergatoid. Larger than the ♂. Colour similar, but the entire scape ferruginous and the legs more uniformly ferruginous.

There is a small but distinct anterior ocellus, and two microscopical depressions representing the others. The node is shorter and more rounded anteriorly in profile than in the ♂. Gaster very large, as long as the head and thorax together, and swollen.

Striation of thorax more regular, otherwise like the ♂.

1 ♀. Tamiai, July 1915. (5468). Type, W. C. C. coll.

*Leptogenys (Lobopelta) iridescens*, Sm. ♂, Sungai Kumbang.

*Odontomachus latidens*, Mayr. ♂, Suban Ajam.

*Odontomachus hæmatoda*, Ltr. ♂ ♀, Sumatra (Padang).

*Odontomachus rixosus*, Sm. ♂, Aur; Rimbo Pengadang.

♀ (not described). Deälate. Length (without mandibles) 12 mm.; mandibles 2 mm.; head 3·4 mm.; width of head at eyes 2·4 mm.

Brown; mandibles and antennæ red-brown, legs yellow, tibiæ and tarsi darker. Head as in ♂, but more robust; depression on vertex above ocelli with faint radiating striæ.

Pronotum semicircularly transversely striate, scutellum smooth and shining, and epinotum coarsely, transversely striate. Otherwise like ♂.

Rimbo Pengadang, June 1916 (21). Type, W. C. C. coll.

Though not taken with ♂ ♂, there can be little doubt that this is the female of *rixosus*.

#### Subfamily DORYLINÆ, Leach.

*Enictus aitkeni*, For., var. *dentata*, For. ♂, Aur, 1914.

These ants were observed as they were coming out of a hole in the ground, making an invasion in a native house. A continuous stream of thousands of workers was pouring forth, marching in a column of 3 to 4 individuals side by side, along the posts of the house to the roof. The aim of this expedition was to rob a nest of another ant, *Pheidole plagiaria*, Sm., of their eggs, larvæ, and pupæ. The victims made no resistance whatever, but fled to the remotest parts of the roof, carrying away as many of their brood as they were able to save. They were, however, robbed by their enemies, who pursued them everywhere. The predatory ants set out at 7 P.M. and returned to their hole about noon, laden with their spoil. No imagines of the *Pheidole* were taken.

#### Subfamily MYRMICINÆ, Lep.

*Metapone jacobsoni*, sp. n.

♀. Length 6.4 mm.

Black; mandibles dark red-brown, funiculus, extremities of scapes, the tibiæ and tarsi, parts of femora, and the apex of gaster castaneous. Gaster very dark brown, almost black.

Body moderately provided with a short pilosity interspersed with a few longer hairs, most abundant at apex of gaster. The gaster in addition has a sparse pubescence. Mandibles short and broad, the internal and external borders almost straight and subparallel, armed with five teeth, the apical long and pointed, the two following shorter and less pointed, the two basal ones blunt and indistinct.

Head long and narrow, nearly  $1\frac{1}{2}$  as long as broad, the sides parallel, feebly contracted in front of eyes, the occipital border shallowly emarginate. The clypeus slightly depressed

in the centre of the anterior border, which is produced in a short, feebly emarginate lobe; the posterior suture almost effaced. Antennal club 3-jointed, the apical not quite equalling the two preceding. Eyes large and flat, behind the middle line. There is a slight depression representing the frontal area, but no indication of a frontal groove.

Sides of pronotum submargined, the shoulders feebly angular. Declivity of epinotum short and vertical. From above the epinotum is widest in front, nearly as broad as long, narrowing behind to half this width. Node of petiole from above nearly 1.3 as long as broad, very slightly wider behind, where it is widely emarginate, with blunt angles; the sides subparallel and sub-bordered. In profile it is vertical in front, feebly convex along the top, behind with a blunt triangular tooth on each side (seen as a blunt angle from above). Stalk about half as long as the node. Underneath is a flat lamella ending in a small tooth in front. Postpetiole from above about as broad as long, straight in front, the sides convex, behind with blunt lateral angles. In profile it is vertical in front and convex above, beneath with an anterior transverse ridge bearing several long hairs.

Gaster long and narrow, sting exerted.

Shining; mandibles with a series of coarse elongate punctures along the masticatory border, the rest with a few smaller circular punctures. Whole of head finely and longitudinally striate, the striæ regular, here and there interspersed with small points. Scrobe more finely and regularly striate than the rest of head. Scapes smooth with a few small points. Whole of thorax and epinotum striate in a similar manner to the head; the node has irregular striæ curving round its anterior border, and is interspersed with points. Postpetiole and gaster finely shagreened. Legs smooth, with traces of ground reticulation.

2 ♀ ♀. Fort de Kock, Apr. 1914; Oct. 1914. Nos. 153, 1223. The other ♀ is 7 mm. long, and has the cheeks and clypeus coloured like the mandibles; the gaster is also slightly less dark than in the type.

Type, W. C. C. coll.

*Sima (Tetraponera) allaborans*, Walk., subsp. *crassiuscula*, Em. ♂, Fort de Kock, 1914.

*Sima (Tetraponera) attenuata*, Sm. ♂, Buo, 1914.

*Sima (Tetraponera) pilosa*, Sm. ♂, Padang.

*Ischnomyrmex longipes*, Sm. 4 ♀ ♀ ♂, Serapai, 1915;  
Sungai Kumbang, 1915. 1400 metres.

4 (not described). Length 6 mm.

Ferruginous, scapes, second node, gaster, and borders of mandibles brown.

There is a fairly plentiful yellow-brown pilosity on the body, most abundant on the gaster. Antennæ and legs with long erect hairs. Length of head 2.5 mm., width 2.2 mm., slightly broader in front; the sides from eyes to occiput feebly convex, from the eyes to the base of mandibles they are concave, forming prominent angles. Front somewhat swollen, vertex depressed. Occiput deeply and widely emarginate, as in *Pheidole*. Mandibles massive, the terminal border edentate, the apex with two blunt and stout teeth. Frontal area impressed, indistinctly triangular. Clypeus with a central carina, which broadens posteriorly, the anterior border feebly convex with a slight incision in the centre. Eyes placed just inside the anterior third of sides. Frontal carinæ short, divergent. Frontal groove begins at the posterior margin of the eyes and continues to the occiput. The scapes reach as far as the centre of the occipital emargination. All joints of the funiculus longer than broad, the first rather more than twice as long as broad, the remainder increasing in length and insensibly thickening.

Thorax as in the ♀, but pronotum shorter and higher, the mesonotum more raised in front, and the spines longer. Pedicel shorter, the nodes higher, the apex of the first emarginate, with a small tooth at each side; the second as in the ♀, but shorter and broader in proportion, the lateral angles bluntly conulate. Legs long, but less so than in the ♀. Gaster broad and rounded.

Mandibles smooth and shining, with a row of punctures along the terminal border, and scattered points over the rest. Clypeus with lateral striæ. Rest of head longitudinally striate; the striæ, widely separated in front, diverge and become closer together and finer towards the occiput. The striæ extend to the sides of the head, where they are very fine, but disappear beneath. In addition there is a reticulate ground-sculpture most abundant on the sides and vertex. On each side of the frontal groove are a few scattered piligerous tubercles. Pronotum moderately shining, with a few transverse rugæ at the base. Mesonotum with transverse rugæ. There is a fine ground-sculpture on the thorax. Base of epinotum and petiole sub-matt. Postpetiole and

base of gaster matt, densely and finely reticulate, the former in addition with a few elongate punctures. Rest of gaster smooth and shining.

Forel (*Tijdschr. v. Ent.* lviii. p. 289 (1915)), in his description of the ♀ of *longipes*, subsp. *pseudola*, refers to the "type," but I cannot find that any description of the ♀ of *longipes* has been published.

Type, W. C. C. coll.

♀ (undescribed). Length 9 mm.

Dark brown; mandibles, scapes, occiput, and legs red-brown, tarsi paler. Wings yellow-brown, nervures darker.

There is a plentiful yellow-brown pilosity over the whole body, legs, and antennæ. Sparse pubescence on head and parts of thorax.

Mandibles as in ♀. Clypeus shorter and broader, depressed behind the anterior border, the carina less prominent. Head considerably shorter and broader, slightly broader than long, broadest just behind the eyes, which are placed at the anterior third of sides. Vertex swollen. Frontal groove, beginning behind the anterior ocellus, deeper and shorter than in the ♀. Ocelli large. Occipital border widely and shallowly concave. The scapes extend just beyond the occiput.

Thorax massive, nearly as wide as the head. There is a deep transverse sulcus between the scutum and scutellum. Declivity of epinotum equal to the base, both feebly concave. Spines blunt, wide apart, less than half as long as the width between their points.

Sides of petiole from above slightly concave; from the side it rises rapidly for two-thirds of its length to the apex, which forms less than a right angle. The apex is excised. Postpetiole from above much broader than long, with a prominent conule on each side. The sides in front of the conules are feebly convex, behind them concave. Gaster broader than head or thorax.

Sculpture much coarser than in ♀. Head longitudinally rugose, and reticulate-rugose on each side as far as a line continuing the frontal carinæ. Occiput finely reticulate. There is also a fine ground-reticulation over whole head.

Pronotum shining in front, reticulate-striate at sides. The longitudinal line at anterior third of scutum smooth with transverse striæ diverging from it: these curve down the rest of the scutum and become wrinkled striæ. Sulcus with coarse longitudinal ridges. Scutellum irregularly transversely rugose. Epinotum moderately shining with a

few lines. Petiole irregularly rugose and reticulate behind. Postpetiole finely transversely rugose in front and reticulate behind. The entire gaster microscopically reticulate. There are a few indistinct longitudinal lines at the base.

♂ (not described). Length 6.5 mm.

Testaceous-yellow; dorsum of mesonotum darker. Wings yellow-brown, nervures darker. Two cubital cells. Pilosity sparse, yellow. Legs with a few semi-recumbent hairs. Funiculus pubescent, also thorax.

Mandibles spatulate, with a sharp tooth at each angle of the terminal border. Anterior part of clypeus with a transverse depression forming a narrow convex border. In the centre the clypeus has a rounded carina. Head narrowing rapidly behind the eyes, forming a prominence terminated by three large ocelli. Eyes very large, occupying two-thirds of the sides, and prolonged below the articulations of the mandibles. Scape  $2\frac{1}{2}$  times as long as the first joint, which is almost globular; the remaining joints are long and thin.

Thorax large and massive. Base of epinotum longer than the declivity, both slightly concave, the angle between them has a blunt tooth on each side. Petiole long and thin; seen from above, slightly broader behind; in profile it forms a moderate convexity with a small angle at each side of the highest point; postpetiole  $1\frac{1}{2}$  times as wide as the petiole, widest behind. Gaster long and narrow.

Moderately shining, with a faint ground-reticulation. Scutellum with a stronger reticulation and transverse lines. Metanotum with transverse striæ.

*Genitalia*.—Rather short, the whole organ not quite  $1\frac{1}{2}$  as long as wide, the lamina annularis being  $\frac{7}{10}$  of the rest. Stipites not separated into squamulæ; each stipes curves inwards towards the apex, which is truncate. Volsellæ simple, narrow, curved in the form of a boomerang; at the base, whence the curved part originates, there is only a round angle. Sagittæ very broad; the dorsal two-thirds consist of a plate with a broad rounded apex, the margin of which curves round a short distance ventrally, then turns back, forming a deep incision, thence continuing its former direction with a serrated edge. This form gives the sagitta the appearance of consisting of two parts. Penicilli long, the apices broader than the base. Subgenital plate with a point, slightly spatulate at the apex.

Base of subgenital plate, penicilli, tips of stipites, and base of volsellæ pilose. Tips of the latter with sensoria.

Serapai (Kurintji), July 1915 (1229). Types, W. C. C. coll.

*Pheidole plagiaria*, Sm. ♂, Aur, 1914; Fort de Kock, 1921.

*Pheidole havilandi*, For. ♂, Gunung Talamau, 1917.

*Myrmicaria carinata*, Sm. ♂, Gunung Dempu, 1916.  
1400 metres. Sibolga, 1913.

*Myrmicaria castanea*, sp. n.

♂. Length 5.0 mm.

Entirely castaneous. Yellow-brown pilosity very plentiful over whole body, legs, and antennæ.

Head squarer behind the eyes than in *carinata*, distinctly broader behind than in front, occipital border straight. Anterior border of clypeus feebly convex, in centre almost flat; there is a faint ridge down the upper half. Mandibles with four teeth. Antennæ shorter than in *carinata*, extending considerably less than half their length beyond occipital border. Promesonotum as in *carinata*. The raised lateral border of base of epinotum more deeply incised in centre, and the base is considerably longer and narrower, twice as long as wide at the widest point. Spines closer together and straighter, considerably longer than their interval, and horizontal with the base. Pedicel similar to that of *carinata*, but slightly narrower.

Moderately smooth and shining. Mandibles evenly striate. Clypeus, except for the central ridge, smooth. Head smooth except for a few striæ between the frontal carinæ, eyes, and base of mandibles. Scares hardly, if at all, striate. Promesonotum mostly smooth, with a few irregular striæ, less than in *carinata*; epinotum and sides of thorax smooth. The rest smooth, except for a few wrinkles at the back of the second node.

A single ♂. Gunung Gedeh (No. 129), Jan. 1916. W. C. C. coll.

I am somewhat doubtful in describing this species, but I cannot make it agree with any of the known forms, and Prof. Emery considers it new.

*Cardiocondyla wroughtoni*, For. ♂, Fort de Kock, 1921.

*Crematogaster (Orthocrema) fritzi*, Em. ♂ ♀, Fort de Kock, 1921.

*Crematogaster (Orthocrema) batuvi*, For. ♂, Fort de Kock, 1922.

*Crematogaster (Orthocrema) longipilosa*, For. ♂, Buo, 1914.



*Crematogaster* (*Acrocælia*) *dohrni*, Mayr, subsp. *rogenhoferi*, Mayr, var. *lutea*, Em. ♂, Sumatra.

These ants were found under a shield of carton, beneath which aphids were being tended.

*Crematogaster* (*Acrocælia*) *dohrni*, subsp. *rogenhoferi*, var. *nitida*, nov. Fort de Kock, 1922.

♂. Brown; head and thorax sometimes slightly less dark, but altogether darker than var. *lutea*, which it resembles in its small size (3.5 mm.). First joint of pedicel narrower than in *rogenhoferi*, and the anterior angles less rounded than in *lutea*. The spines more divergent. Sculpture much finer; head moderately shining, the front almost smooth, the rest very finely longitudinally striate; reticulation almost nil. Pronotum somewhat shining, with longitudinal ridges and fine reticulation. Mesonotum entirely smooth and shining (densely reticulate in *rogenhoferi*). Base of epinotum finely longitudinally striate, the declivity smooth and shining, the space between the base of spines entirely smooth and shining. Second node smoother than in the type. Gaster moderately shining, with faint ground-reticulation. Pilosity sparser.

Fort de Kock, Dec. 1922. Type, W. C. C. coll.

*Crematogaster* (*Acrocælia*) *cornuta*, sp. n.

♂. Length 5 mm.

Castaneous-yellow; apical segments of gaster and the entire antenna, except the point of apical joint, brown.

There is a plentiful long yellow pilosity over the whole body; scapes and tibiae with erect hairs.

Head broader than long, broadest behind the eyes; the sides convex, the occipital border concave, angles rounded.

Mandibles with four teeth. Clypeus depressed along the anterior border, which is feebly concave, almost straight. Eyes placed very slightly behind the middle of sides. The scapes exactly reach the centre of occipital border. Club of funiculus 3-jointed. Second joint of funiculus shorter than the first, slightly longer than broad; joints 3-5 subequal, about as long as broad, 6-7 considerably longer and thicker, longer than broad.

Pronotum flat, nearly three times as broad as long without the neck. Mesonotum flat anteriorly, descending to the suture in a gradual curve, the declivity slightly bordered, but without denticles, the suture deep. Base of epinotum as in *spengeli*, but slightly longer and without the median

depressed line ; declivity almost vertical, slightly concave. Spines very long, pointed, somewhat more than twice as long as the width between their bases, not unlike, but much longer than, the spines of *spengeli* ; the bases very thick. They are almost straight and widely divergent, the distance between their points being more than  $3\frac{1}{2}$  times as wide as the distance between their bases, measuring from the inner edge.

Petiole longer than wide, widest just in front of the middle, where the sides form an angle ; in front and behind this angle the sides are not convex, but almost straight. Postpetiole with a moderately deep sulcus.

Densely reticulate and sub-matt. Mandibles coarsely striate. Clypeus with longitudinal striæ. Cheeks and antennal sockets with fine curving striation. Rest of head densely and finely reticulate-striate ; the striæ are longitudinal, except on the occiput, where they are transverse. Thorax similarly sculptured, but less reticulate and consequently less dull. Base of epinotum and bases of spines longitudinally striate, moderately shining. Declivity smooth and shining, but the striæ continue as far as the space between the bases of the spines. Gaster moderately shining with a superficial reticulation.

Though belonging to a different subgenus, this ant resembles *Cr. spengeli* at first glance. It is characterized by the very long divergent epinotal spines.

♀ . Length 8 mm.

Darker than the ♂ ; teeth of mandibles black, the bases brown ; head ferruginous, the sides above the eyes darker ; scutum ferruginous, with the anterior central portion and an oblong patch on each side above brown ; legs, antennæ, and rest of thorax ferruginous ; gaster castaneous, the borders of the segments brown. Wings dusky yellow, nervures brown.

Head, dorsum of thorax, and gaster with a plentiful short pilosity ; head and gaster with a scattered pubescence. The pilosity is shorter than in the ♂ .

Head short and broad, broader than long, slightly wider behind, sides feebly convex, the occiput concave. Eyes in centre of sides. The scapes do not reach the occipital border.

Spines short and thick, less than half as long as the distance between their bases.

Entire head densely longitudinally striate, the striæ diverging above the eyes towards the lateral angles. Entire

thorax densely striate, the pronotum transversely, the scutum longitudinally, except for the anterior central portion which is smooth and shining; postscutellum and epinotum longitudinally striate. Gaster smooth and shining. Otherwise like the ♂.

♂. Length 3.5 mm.

Dark brown or black; mandibles, antennæ, and legs paler. Wings dusky, iridescent. There is a plentiful short yellow pilosity and a thin pubescence over the body. Legs with short hairs; scapes covered with a very short dense pilosity. Mandibles tridentate, the apical tooth long and pointed, the others small. Mandibles narrow at base, broadening at the centre. Head small, broader than long. Eyes of moderate size, occupying less than two-thirds of the sides, very prominent, placed nearer the anterior border than the posterior, but they do not reach the base of the mandibles. Clypeus convex, the anterior border straight; posteriorly it is very deeply transversely impressed in a line with the antennal insertions. The head narrows rapidly behind the eyes, the occiput being slightly rounded, and there is a small concavity between the posterior ocelli. Antennæ 11-jointed; scape twice as long as broad, first joint broader than long, the second much broader and longer, the longest with the exception of the apical, more than twice as long as broad, the next three subequal, more than half as long as the second, the remainder becoming thinner and longer. The apical is about as long as the second. Thorax very massive, overhanging the head, with a wide transverse impression at the base of the scutum. Spines short and thick, twice as long as broad at base. First node slightly broader in front, the sides feebly convex, the second rounded, broader than long. Gaster small.

Moderately shining; vertex with a few indistinct striæ. Scutum smooth and shining in front, the rest of mesonotum and sides of pronotum finely striate. Scutellum finely reticulate, pedicel slightly roughened, gaster smooth and shining.

*Genitalia*.—Short and broad, as usual in this genus, broader than long without the annular lamina. Stipes short and blunt, slightly turned inwards at apex. Volsella with a broad base, the apical hooked portion more than one-third as broad as the base, curving down in a blunt rounded point. There is a short lateral rounded process at the side.

Sagitta as broad as long, the teeth long and thick at base,

gradually diminishing in length and thickness to a short distance from the apex where they discontinue. The apex has the appearance of having a semicircular incision, the open space being covered by a membrane. There are a few sensoria on the apex of the volsellæ, and the lower halves of the sagittæ are covered with rows of minute spikes.

Pantjuran Gading (Kurintji), Sept. 1915. Types, W. C. C. coll.

*Crematogaster (Paracrema) spengeli*, For., subsp. *compacta*, subsp. n.

♂ major. Length 4.2 mm.

Rather smaller than type. Dull castaneous, head and thorax darker, front and vertex often brown. Apex of gaster and sometimes a patch each side of the first segment a lighter brown. Pilosity scanty; a scattered golden pubescence principally on head, gaster, legs, and antennæ.

Head as in type, broader than long, widest at eyes, the sides convex, occipital angles rounded, occipital border concave. Eyes behind the middle of sides. Clypeus as in type. Mandibles with four teeth. There is a distinct but minute anterior ocellus, the others being only faintly indicated. The scape extends beyond the centre of the occipital border by about its width.

Whole thorax more robust than in the type, the pronotum broader and shorter, the median tubercle of mesonotum not so marked, the declivity more abrupt, a distinct transverse impressed line dividing the two parts of the mesonotum. Base of epinotum broader, the spines stouter, wider apart, and more divergent. Petiole hardly narrower behind than in front, postpetiole broader and shorter.

Sculpture as in type.

♀ minor. Length 3 mm.

Similar to ♂ major, but ocellus absent, and scapes extending more than  $\frac{1}{4}$  of their length beyond the occiput.

Suban Ajam, July 1916. Types, W. C. C. Coll. (3).

*Crematogaster (Paracrema) spengeli*, For., var. *taipingensis*, For. ♀ ♀ ♂, Kalung.

The ♂ major measures over 6 mm., and the head is 1.6 mm. broad by 1.4 mm. long.

*Crematogaster (Physocrema) fulmeki*, For., var. ♂, Serapai, 1915.

Apparently a variety of *fulmeki*, but further study is required.

NOTE.—These ants are regular inhabitants of the leaf-stalks of *Nauclea obtusa*, Bl., belonging to the Rubiaceæ.

This plant has naturally thickened leaf-stalks. The ants perforate these thickenings in the young stalks and make a hollow in the interior, which does not in the least harm the plant. Mr. Jacobson has inspected many scores of these plants and never found a single specimen which was not infested by this species of ant. Generally all the older stalks are inhabited. When the stalk is still green and soft, one generally finds only one entrance-hole, giving admission to a small cavity in which a single female is found, often accompanied by eggs or a few larvæ and pupæ. The entrance-hole is often nearly closed again by parenchymous growth of the stalk. Older stalks grow woody and have a brown colour. They are, without exception, perforated in numerous places and hollowed out over their entire length. These old stalks are inhabited by a number of females and numerous workers, and sometimes males. The ants which inhabit the different stalks of the same plant all belong to the same colony.

*Monomorium floricola*, Jerd. ♀ ♀, Sumatra, 1920.

A whole colony found in the bore-hole of a beetle in a branch.

*Monomorium pharaonis*, L. ♀ ♀ ♂, Fort de Kock, 1920.

*Solenopsis geminata*, F., var. *rufa*, Jerd. 4 ♀ ♀ ♂, Fort de Kock, 1920; Padang, 1913, etc.

These ants live in nests excavated in the soil, which is deposited outside their galleries. The paths leading from their nests to their foraging grounds are more or less hollowed out and cleaned from all obstacles such as little grains of sand, straws, and other vegetable matter. Larger objects, such as stones, etc., are undermined by tunnels. These ants bite and sting very fiercely, causing a violent itch.

*Pheidologeton affinis*, Jerd. 4 ♀ ♀, Fort de Kock, 1914, 1922.

*Pheidologeton affinis*, Jerd., var. *spinosior*, For. 4 ♀, Fort de Kock, 1922.

*Pristomyrmex trachylissa*, Sm. ♀, Gunung Dempu, 1400 metres, 1916.

*Atopula ceylonica*, Em., var. *sumatrensis*, For. ♀, Padang.  
♀ (not described). Length 5.5 mm.

Pale ferruginous; mandibles, antennæ, legs, and apical

segments of gaster castaneous. Terminal border of mandibles black. Body with a short blunt pilosity. Antennæ with adpressed hairs.

Head a fraction longer than broad, sides subparallel, slightly concave at their anterior third, where the eyes are situated, and slightly convex at the posterior third, joining rounded posterior angles. Occipital border concave.

Mandibles broad and triangular, with a row of small blunt teeth. Clypeus longitudinally convex. Scapes fail to reach the occipital border by about twice their breadth. Joints 2-8 of funiculus longer than broad. The 3-jointed club has the first joint shortest, the second slightly longer and thicker, and the apical considerably longer. Eyes of moderate size, prominent. Femora swollen. Thorax with an oblique-angled meso-epinotal emargination. Pronotum with very small, sharp, anterior angles. Dorsum of thorax constricted between the pronotum and mesonotum.

Base of epinotum  $1\frac{1}{2}$  as long as broad, rectangular, in profile almost flat. Base  $\frac{2}{3}$  as long, feebly concave. Spines blunt, hardly thinner at apex than at base, slightly directed outwards and upwards, shorter than the distance between their points.

Stalk of petiole nearly as long as the node, the latter from above, oval, slightly broader behind; from the side it is higher behind, subtruncate in front, rounded behind. Post-petiole broader than long, slightly broader behind, sides convex, broader than first node; from the side, convex above, and with a very convex projection beneath. Gaster oval. Subopaque; mandibles smooth with small scattered punctures. Upper surface of head longitudinally and coarsely rugose, the clypeus and front merely striate. Thorax longitudinally rugose, the rugæ becoming more reticulate posteriorly. Pedicel reticulate-rugose. Base of gaster longitudinally striate, the rest smooth and shining. Legs smooth and shining.

1 ♀, Padang, west coast (No. 15), Sept. 1913. W. C. C. coll.

*Meranoplus mucronatus*, Sm. ♀, Aur, 1914; Padang, 1913.

*Meranoplus castaneus*, Sm. ♀, Buo, Mar. 1914.

*Tetramorium pacificum*, Mayr. ♀, Fort de Kock, 1922.

Found in a deserted bore-hole in a decayed branch. Gunung Dempu, 1916.

*Cataulacus horridus*, Sm., ♂ ♀.

♀ (not described). Deälated.

Length 6·5–7·0 mm.

Colour as in ♂ ; wing-insertions ferruginous. Pilosity more plentiful.

Eyes no larger proportionately. The anterior ocellus alone present. Spines of epinotum broader at base, shorter, less dilated (subparallel). Sculpture of head similar, but more reticulate. Scutum of mesonotum longitudinally striate. Rest of thorax sculptured as in ♂.

The broad bases of the spines are longitudinally striate. Base of gaster more deeply striate ; otherwise, except for sexual differences, similar to the ♂.

1 ♀, Sibolga, July 1913 (No. 57). W. C. C. coll.

*Proatta butteli*, For. ♂ ♀ ♂, Fort de Kock, 1921 (No. 1186).

Found in a decayed bamboo in the earth in company with many myrmecophilous Gryllidæ.

♀ (not described). Length 4·5 mm. (♂ 2·3).

Dark reddish brown ; mandibles, clypeus, frontal carinæ, anterior of mesonotum, wing-insertions, apical segments of gaster, legs, and antennæ ferruginous. Wings fuscous. Pilosity almost nil.

Head with mandibles in the form of an almost equilateral triangle, much broader behind and narrower in front than in the ♂. Broader than long without mandibles. Occipital border concave. Mandibles narrow, with three acute teeth at apex followed after a space by a broad blunt tooth near the base. Frontal carinæ shorter and wider apart, and the teeth on the occiput blunter. The scape just passes the occiput. Eyes prominent, placed below the middle of the sides. On the vertex is a prominence rising into two short longitudinal ridges, concave between ; the anterior ocellus is placed in front of this prominence, and the posterior ocelli at each side of the lateral ridges. Thorax massive, the scutum roughly forming a square when looked at from above ; laterally the pronotum has a pair of blunt spines, one above the other.

Anteriorly the mesonotum has a short longitudinal impressed line and two wide ridges, which converge near the centre. Scutellum prominent ; it is slightly concave from side to side, with a central ridge.

Metanotum with a central blunt spine (Forel, in his description of the ♂, speaks of this spine as belonging to the epinotum). Epinotal spines short, broad at base and

acute at apex, curving slightly inwards. In profile the declivity equals the base, both concave. Pedicel as in the ♂, but broader and shorter. Gaster large and oval, the basal border feebly sinuate. The basal segment covers nearly the whole gaster.

Head longitudinally and densely reticulate-rugose; pronotum transversely so; rest of thorax similar to the head. Bases of epinotal spines striate. Pedicel transversely rugose. Base of gaster longitudinally reticulate-striate, rest of basal segment closely striate. In addition, the whole body has a microscopic ground-reticulation.

2 ♀♀ (one immature). Fort de Kock, March 1921 (No. 1186). Type, W. C. C. coll.

The genus was described by Forel (Rev. Suisse de Zool. xx. 15, p. 768, 1912) from ♂♂ and ♂♂ found with other ants in a termites' nest in Sumatra. There was no trace of fungus gardens in the nest, though Forel conjectures that the genus may have habits similar to the Attini of the new world.

#### Subfamily *DOLICHODERINÆ*, For.

*Dolichoderus* (*Hypoclinea*) *tuberifer*, Em. ♂, Sungai Kumbang, 1400 metres, Aug. 1915.

*Dolichoderus* (*Hypoclinea*) *bituberculatus*, Mayr. ♂♀, Fort de Kock, July 1922, etc.

*Dolichoderus* (*Hypoclinea*) *taprobanæ*, Sm. ♂, Buo, 1914.

*Dolichoderus* (*Hypoclinea*) *carbonarius*, Em., var. *latisquama*, Em. ♂♀, near Pajokumbah, West Coast Sumatra, 1923.

The small carton nests built by this ant were found in thousands on the branches of several adjoining trees of different kinds. From a distance it looked as if the branches were covered with galls. All the nests on each tree apparently belonged to one colony.

Originally every nest had only from one to three openings, the other holes being made afterwards when the ants were kept in confinement in the tin. The original entrances have slightly raised borders. In the nests a certain kind of coccid was bred by the ants on the branches. Some of the nests contained from one to four fertile females. No males were found. All contained eggs, larvæ, and pupæ, besides an amount of finely divided vegetable matter, apparently the building material for the carton.



[The largest of these nests measures  $2\frac{1}{4} \times 1\frac{1}{2}$  inches, and is roughly oval. Others are longer and narrower,  $\frac{3}{4} \times 2$  inches, the smallest being circular, less than  $\frac{1}{2}$  inch in diameter. In colour they are dark grey-brown.—W. C. C.]

*Tapinoma andamense*, For., var. *capsincola*, For. ♂ ♀, Fort de Kock, Nov. 1913.

*Tapinoma melanocephalum*. ♂ ♀, Fort de Kock, Oct. 1920.  
Found in a decayed branch in a deserted bore-hole.

*Technomyrmex grandis*, Em. ♂, Fort de Kock, 1913.

Subfamily *FORMICINÆ*, Lep.

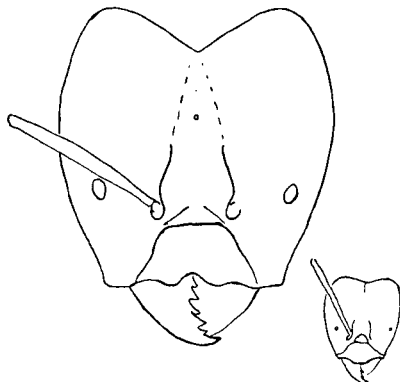
*Pseudolasius jacobsoni*, sp. n. (Fig. 4.)

♂. Length 7 mm.

Castaneous - yellow; mandibles dark brown, and the clypeus and a triangular patch enclosing the ocelli dark castaneous. Apical segments of gaster shaded with darker colour, the borders of the segments testaceous.

Body, including scapes and legs, with a fairly abundant

Fig. 4.



Head of soldier and worker minima of *Pseudolasius jacobsoni*  
on same scale.

erect yellow pilosity; on the head it is confined to the clypeus, ocellar region, and occipital border. Epinotum nearly bare. There is a very fine pubescence on head, thorax, legs, and antennæ.

Length of head (excluding mandibles) 2.6 mm. ; width 2.4 (nearly).

Mandibles broad at base, the external border very convex, armed with five strong blunt teeth. Clypeus deeply emarginate in front, and raised in the centre behind the emargination. Head broadest just behind the eyes, which are small, flat, and placed at the anterior third of sides and somewhat nearer to the sides than to the frontal carinæ. Occipital border with a wide and deep triangular emargination. Frontal area broad and triangular, indistinct. Frontal carinæ slightly narrower behind. Anterior ocellus distinct, the posterior pair indicated by small pits; the whole situated in a shallow depression, from the back of which a distinct groove runs to the occiput. Anterior half of scapes flattened and slightly curved; the joints of funiculus decrease very slightly in length to the apical, which is not quite twice as long as the two preceding ones. The scapes reach to about their width from the centre of the emargination of occiput.

Pronotum wider than long, widest behind the middle; from this point, where it forms an angle, the sides converge in almost straight lines to the neck, and posteriorly in a similar way to the posterior border, which is twice as wide as the neck. Thorax constricted at meso-epinotal suture, where it is emarginate. Base of epinotum short, the declivity regularly convex. There is a slight longitudinal impression in the centre of the segment. Scale from above broad and flat, in profile cuneiform. Gaster much smaller than the head, and slightly wider than the pronotum.

Whole body moderately shining. Mandibles smooth and shining, with one or two small punctures and a few striæ at the base. Clypeus and frontal area smooth and shining; the rest of head covered with a fine ground-reticulation, most dense anteriorly. Thorax and gaster almost entirely smooth and shining.

♂ *media*. Length 4.0 mm.

Colour as in ♀, but mandibles dark castaneous, and the clypeus hardly darker than the rest of the head, and the patch on the vertex is paler than in the ♀. Pilosity rather more abundant.

Head measures  $1.23 \times 1.17$  mm., the sides are less convex and the emargination of the occiput less deep, and the whole upper surface of the head is flatter. Mandibles triangular, the outer border straighter and the masticatory border broader than in the ♀, with 8-9 sharp teeth. The clypeus is less deeply emarginate and without the prominent raised portion. Eyes similarly placed; no ocelli, merely faint indications less noticeable than in the ♀. The scapes

are much longer, reaching to one-quarter of their length beyond the centre of the occiput. Thorax somewhat longer and narrower and epinotum more rounded in profile.

Mandibles opaque, finely longitudinally striate, with a few small points.

♀ minor. Length 2·3 mm.; head  $·78 \times ·76$  mm. Differs as follows from the ♀ media:—Mandibles with eight smaller teeth; clypeus barely emarginate; scapes slightly longer; epinotum flatter. Otherwise similar.

♀ minima. Length 2 mm. Similar to ♀ minor, except for size.

Sibolga, Aug. 1913. No. 1250. The ♀ ♀ vary slightly in colour, some being darker. Types, W. C. C. coll.

*Prenolepis jacobsoni*, Crawley (Ent. Rec. xxv. 2, p. 30, 1923).

♀. Length 26 mm.

Yellow-testaceous, head somewhat darker, the gaster dark castaneous, lighter in some specimens.

Mandibles with six teeth. Head small, oval, as long as broad, broadest at eyes which are large and prominent and situated barely behind the middle of sides; the head narrows rapidly behind the eyes, the occipital border straight. Clypeus carinate, the anterior border feebly sinuate, the posterior border marked out with a black line. Frontal area deep. Scapes long, extending more than half their length beyond the occipital border.

Thorax stragulate and emarginate at mesonotum, the pronotum and mesonotum forming a curve with an obtuse angle at the suture, and the epinotum forming a rounded convexity. Scale thick, very inclined, straight and sharp-edged at top, the stalk long and thick, the whole pedicel fitting into a recess in the basal segment of gaster. This latter is concavely truncate at its anterior border.

Head and gaster provided with plentiful long yellow-brown hairs; pronotum has one pair of short followed by two pairs of long hairs; the mesonotum has one or two pairs of short hairs. The legs and antennæ covered with plentiful long semi-adjacent pilosity. There are a few short adpressed hairs on the cheeks. Entirely smooth and shining.

Fort de Kock, Sumatra. Type, W.C.C. coll.

Recalls *Pr. naoroji*, Forel, from Assam and N.W. India, but thorax not so pilose, the epinotal convexity only a little more than half the pronotal convexity (in *naoroji* not much shorter than the pronotal). The scale, truncation of gaster, and length of scapes apparently similar.

Nest found under a fallen tree. This ant builds in the ground.

*Camponotus (Myrmoturba) maxwellensis*, For. ♀, Serapai, 1915.

*Camponotus (Myrmoturba) tinctus*, Sm., var. *carinifer*, Vieh. ♀, Muara Sako, 1915; Aur, 1914.

*Camponotus (Dinomyrmex) gigas*, Ltr. ♀, Batang Palupuh, Sibolga, etc.

The nest was in the forest under the roots of a tree, and could not be reached.

*Camponotus (Dinomyrmex) dorycus*, Sm., subsp. *carin*, Em., var. *labiensis*, For. ♀, Gunung Dempo, 1400 metres; Aur, 1916.

*Camponotus (Myrmosphinctus) camellinus*, Sm. ♀, Fort de Kock, 1913; Kaluna, 1913.

*Camponotus (Myrmamblys) reticulatus*, Rog., subsp. *sericellus*, Vieh., var. *rugosior*, Craw. ♀ ♂ ♀ (Ent. Rec. xxxv. 2, p. 30, 1923), Fort de Kock, 1921.

♂ major. Length 5 mm.

Slightly smaller than *sericellus*, the sculpture of head coarser, and pubescence on gaster less abundant. Mandibles with six teeth. The light colour of head extends as far as the eyes and over a great part of the space between the frontal carinae. Frontal area dark. Bands on the borders of the segments of gaster almost white. Otherwise corresponds to Viehmeyer's description of *sericellus* from Singapore.

♂ minor. Length 3.5 mm.

Slightly smaller, otherwise corresponds to the subsp. description.

♀. Length 5.5 mm.

The light colour of head more sharply defined than in ♂ major, and does not extend beyond the articulations of the antennae nor between the frontal carinae. Wings hyaline. Wing-insertions yellow-white. Head smaller and narrower in front, and mandibles less massive than in ♂ major. The angle between base and declivity of epinotum rounded. Otherwise like ♂ major except for sexual differences.

♂. Length 4 mm.

Dark brown, gaster darker, almost black; mandibles,

extremities of cheeks, and articulations of antennæ paler; insertions of wings and the two hind coxæ yellow-white. Borders of segments of gaster not paler than rest. Gaster abundantly pilose.

The scapes extend more than one-third of their length beyond the occiput. Mandibles edentate. Clypeus feebly convex, the anterior border straight. Eyes occupy more than half the sides of head, which narrows behind. Node low and thick.

Whole head feebly reticulate; the thorax more faintly so, and shining; gaster densely and finely transversely reticulate.

Sumatra, Fort de Kock, 1921. 920 metres (*Jacobson*, 1175).

Kindly compared with a co-type by Prof. Emery.

*Camponotus (Colobopsis) badius*, Sm. ♀, Buo, 1914.

*Camponotus (Colobopsis) saundersi*, Em. ♀, Buo, 1914.

*Echinopla melanarctos*, Sm. ♀, Aur, 1914; Balun, 1914.

*Polyrhachis bihamata*, Drury. ♀, Padang, Aur, etc., 1914.

*Polyrhachis bellicosa*, Sm. ♀, Buo, 1914; Padang, 1913, etc.

*Polyrhachis ypsilon*, Em. ♀, Muara Kiawei, 1915.

*Polyrhachis (Myrmhopla) defensus*, Sm. ♀ ♀, Fort de Kock; Aur; Sibolga, etc.

*Polyrhachis (Myrmhopla) acantha*, Sm., var. *diaphantus*, Sm. ♀, Aur, 1914.

*Polyrhachis (Myrmhopla) abdominalis*, Sm. ♀, Padang.

*Polyrhachis (Myrmhopla) moeschi*, For. ♀ type, Fort de Kock, 1921 (*Crawley*, Ent. Rec. xxxv. 2, p. 31, 1923).

♀. Length 5 mm.

Legs black, insertions of antennæ and borders of mandibles brown. A few hairs on mandibles and anterior border of clypeus, and apex of gaster; a row of bristles under first joint of tarsi; a fine scattered pubescence on femora, tibiæ, and gaster; otherwise glabrous. Mandibles with five teeth. Clypeus strongly arched, not carinate, the lateral anterior border convex with a central projecting portion, occupying rather more than one-third of the whole anterior border, with a crenate edge ending in a tooth at each side. Frontal area broadly triangular, indistinct. Frontal carinæ sinuate,

equally wide in front of and behind articulation of antennæ. Head as long as broad, widest at eyes, which are prominent and placed at the posterior angles; occipital border convex. Antennæ very long, reaching to base of gaster.

The scape extends almost two-thirds of its length beyond the occiput. All funicular joints long and narrow, the second shorter than the first or third. Pronotum with rounded shoulders. Promesonotum convex in both directions, the mesonotum bluntly bordered. Thorax constricted and slightly impressed at mesoepinotal suture. Base of epinotum nearly twice as wide as long, barely half as long as declivity, with two long horizontal spines slightly directed outwards, thick at base, almost as long as the declivity. Legs long.

Node from the side more or less conical, from in front slightly wider at apex, sides straight; the two fine spines are horizontal, more widely spreading proportionately than the epinotal spines, nearly as long as the space between their bases.

Shining; mandibles with scattered punctures and finely striate at base. Rest of body with a fine ground-reticulation, which on the promesonotum has a circular direction, and on scale and gaster is more or less transverse.

*Polyrhachis (Myrmhopla) striata*, Mayr. ♀, Port de Kock.

*Polyrhachis (Myrma) mayri*, Rog. ♂, Muara Kiawei.

*Polyrhachis (Myrmotherinax) thrinax*, Rog., subsp. *javanica*, Mayr, var. (Crawley, Ent. Rec. xxxv. 2, p. 31, 1923). Fort de Kock, 1920.

The var. *javanica*, according to the description, has legs and antennæ ferruginous, but two specimens from Sumatra have the antennæ (except the last three or four joints of funiculus) and entire legs dark brown or black. Emery tells me he has a specimen from Singapore with similar colouring. As there does not appear to be any other difference in these specimens from the type, I prefer to record them as subsp. *javanica*, Mayr, simply.

Fort de Kock, Sumatra (E. Jacobson, 1097, 1920).

Forel ('Formicides des Indes et de Ceylan,' part 111) refers to "race *javana*, Mayr," and is followed by Bingham ('Fauna of British India,' vol. ii., Formicidæ, p. 411). The name given by Mayr to his variety in Tijds. voor Entom. x. 1867, p. 20, is *javanica*.

These ants make their nests of cardboard-like matter (not

woven) between two or more adjoining leaves. The ants, when disturbed, quiver their bodies up and down.

*Polyrhachis (Cyrtomyrma) rastellata*, Ltr. ♀ ♀ ♂, Sangai Kimbang, 1600 metres, etc.

*Polyrhachis rastellata*, var. *javana*, Vieh.

♀. Length 6 mm.

A single ♀ appears to be this variety, as the legs are red and the tarsi black, as given by Viehmeyer as the colour of his var. *javana* (♀). He gives no description of the ♀.

Fort de Kock, Sumatra (*Jacobson*, 1177).