

VII.—KEYS TO THE GENERA AND SUBGENERA OF ANTS

By WM. M. WHEELER

KEY TO THE SUBFAMILIES¹

♂, ♀

1. Cloacal orifice round, terminal, surrounded by a fringe of hairs; sting transformed into a sustentacular apparatus for the orifice of the poison vesicle, which has a peculiar structure called by Forel "pulviniferous vesicle" (*vessie à coussinet*). Abdominal pedicel consisting of a single segment; no constriction between the second and third segments. Male genitalia not retractile. Nymphs rarely naked, most frequently enclosed in a cocoon.

FORMICINÆ.

Cloacal orifice in the shape of a slit.....2.

2. Sting rudimentary (except *Aneuretus*); abdominal pedicel consisting of a single segment; no constriction between the second and third segments of the abdomen; the poison glands are often vestigial and there are anal glands which secrete an aromatic product of characteristic odor (*Tapinoma*-odor). Nymphs without a cocoon.....DOLICHODERINÆ.

Sting developed, though sometimes very small, but capable nevertheless of being exerted from the abdomen. The first two segments of the abdomen usually modified, either forming together a two-jointed pedicel, or the first alone (petiole) forming the pedicel, the second (postpetiole) being merely constricted posteriorly and articulating with a spheroidal surface of the third segment, which is usually transversely striated (stridulatory organ); rarely the second segment is not appreciably modified.....3.

3. Pedicel of two segments, the petiole and the postpetiole; rarely (in *Melissotarsus*, *e. g.*) the postpetiole is attached to the following segment over its whole extent. Frontal carinæ usually separated from each other (except in the *Melissotarsini* and certain *Attini*). In the male the copulatory organs are almost always exerted (being entirely retractile in certain genera of the *Solenopsidini* only); cerci nearly always present (except *Anergates*). Nymphs naked.....4.

¹Wheeler, Wm. M. 1920. 'The subfamilies of Formicidæ, and other taxonomic notes.' *Psyche*, XXVII, pp. 46-55.

Pedicele consisting of a single segment, more rarely of two, but in this case the frontal carinæ are very close to each other and do not cover the insertions of the antennæ (Dorylinæ) or the mandibles are linear and denticulate (*Myrmecia*) 5.

4. Clypeus not prolonged back between the frontal carinæ (in some species of *Pseudomyrma* there is an apparent prolongation which, however, is the equivalent of the frontal area and is often separated from the clypeus), its posterior margin rounded. Median spurs of middle and hind tibiæ pectinate. Ocelli almost always developed in the worker. Antennæ 12-jointed in worker, female, and male. Fore wings with two closed cubital cells, rarely with one. Larvæ hypocephalic and with a trophothylax; the thoracic and first abdominal segments furnished with peculiar exudatory papillæ (*exudatoria*) which form a cluster around the mouth.

PSEUDOMYRMINÆ.

Clypeus almost always prolonged between the frontal carinæ; if not, the spurs of the middle and hind tibiæ are simple or absent, or the antennæ are 11-jointed in worker and female, 12-jointed in the male and the fore wings have one closed cubital cell. Larvæ orthocephalic, without exudatoria around the mouth.

MYRMICINÆ.

5. Frontal carinæ very close to each other, almost vertical, not at all covering the antennal insertions; abdominal pedicel of one or two segments. In the male the genitalia are completely retractile (except in *Leptanilla*) and the subgenital lamina is usually (if not always) furcate; cerci absent. Nymphs usually naked (eyes and ocelli absent in the ♀ of all African genera).

DORYLINÆ.

Frontal carinæ separated or close together; in the latter case they are dilated anteriorly to form an oblique or horizontal lamina, covering in part the insertion of the antennæ; abdominal pedicel of a single segment (except *Myrmecia*). Copulatory organs of the male incompletely retractile; subgenital lamina never furcate (except in *Paraponera*); cerci nearly always present. Nymphs usually enveloped in a cocoon (eyes present in the ♀ of most African genera).

CERAPACHYINÆ and PONERINÆ.

DORYLINÆ Leach

Key to the Tribes

1. Worker and Soldier: pygidium tridentate, with a median impression; maxillary and labial palpi 2-jointed; cheeks without a longitudinal carina; first abdominal segment not separated from the second by a constriction. Female: cloaca open, leaving the sting uncovered; hypopygium forked and extending considerably beyond the pygidium; thorax unsegmented. Male: pterostigma of fore wing very elongate and narrow; radial cell open and elongate, one closed cubital cell; genital armature retractile.....**DORYLINI** Forel.
- Worker and Soldier: pygidium simple; maxillary palpi 2- or 3-jointed, labial palpi 2-jointed; cheeks longitudinally carinate; a constriction usually separates the second and third abdominal segments, making the petiole 2-jointed. Female: cloaca covered by the pygidium; hypopygium not considerably extended. Male: pterostigma of fore wing broad or narrow; radial cell elongate, one or two closed cubital cells; genital armature retractile.....**ECITONINI** Forel.
- Worker: pygidium simple; maxillary and labial palpi 1-jointed; cheeks not carinate; petiole 2-jointed. Female: cloaca open, leaving the sting uncovered; hypopygium lobed and extending beyond the pygidium; thorax with a suture behind the anterior pair of legs, which is effaced on the dorsum. Male: fore wings without pterostigma or nervures. Genital armature extended, not retractile.....**LEPTANILLINI** Emery.

1. **Dorylini** Forel

Dorylus Fabricius. (Ethiopian, North Africa, the Mediterranean coast of Asia Minor, Indomalayan, Papuan).

♂, ♀

- a. Antennæ 12-jointed in the soldier and in the large- and medium-sized worker. (Indomalayan).....Subgenus **Dichthadia** Gerstæcker.
- Antennæ 9-jointed. (Ethiopian, North Africa, Indomalayan, Papuan).
Subgenus **Alaopone** Emery.
- Antennæ 11- or 10-jointed.....b.
- b. Pygidium with a semicircular impression, the margins of which are sharp.
Antennæ 11-jointed.....c.
- The impressed area of the pygidium without distinct margins.....d.
- c. Antennæ short and thick; all the joints of the funiculus, except the last, much wider than long. (Ethiopian).....**Dorylus**, *sensu stricto*.

Antennæ elongate; at least some of the joints of the funiculus longer than wide. (Ethiopian).....Subgenus **Anomma** Shuckard.

- d. Subapical tooth of mandibles simple; antennæ 11-jointed; worker major 13 mm. long. (Same distribution as the genus).

Subgenus **Typhlopone** Westwood.

Subapical tooth of mandibles double, or truncate; worker major 8 mm.
long. (Ethiopian).....Subgenus **Rhogmus** Shuckard.

♀

The female of *Typhlopone* Westwood is unknown.

- a. Antennæ 12-jointed Subgenus **Dichthadia** Gerstæcker.
Antennæ 11-jointed *b.*

- b. Hypopygium having the shape of a cleft plate which is narrowed behind.

Subgenus **Dorylus**, *sensu stricto*.

“ **Anomma** Shuckard.

“ **Rhogmus** Shuckard.

Hypopygium wide, forming two lobes which are divergent behind.

Subgenus **Alaopone** Emery.

♂

- a. Mandibles wide at the base and prolonged into a point, with the inner margin deeply excised..... Subgenus **Dichthadia** Gerstæcker.

- Mandibles shaped differently.....b.
b. Petiole wider than long, its posterior face concavely excavated.....c.

- Petiole nearly square, or round.....*d.*
c. Mandibles less than 4 times as long as wide.

Subgenus **Dorylus**, *sensu stricto*.

Mandibles more than 4 times as long as wide.

Subgenus **Anomma** Shuckard.

- d. Mandibles about 3 times longer than wide.

Subgenus **Typhlopone** Westwood.

Mandibles much shorter.....e.

- e. Wings with a second recurrent nervure . . . Subgenus **Rhogmus** Shuckard.

Wings without a second recurrent nervure. Subgenus **Alaopone** Emery.

2. Ecitonini Forel

The female of *Cheliomyrmex* and the worker and female of *Enictogiton* are unknown.

४०, २४

1. Antennæ 10-jointed. No vestiges of eyes. (Ethiopian, North Africa, Indomalayan, Papuan, northeast Australia).

Ænictus Shuckard.

- Antennæ 12-jointed.....2.

2. Pedicel composed of one segment, the postpetiole not sharply separated from the gaster by a constriction. Eyes vestigial. Claws with a median tooth. (Neotropical).¹

Cheliomyrmex Mayr.

Pedicel composed of two segments. Eyes present or absent. Claws simple or with a median tooth. (Neotropical, except the Antilles and Chile; central and southern United States).

Eciton Latreille.

- a. Claws simple.....Subgenus **Acamatus** Emery.
- Claws with a distinct median tooth.....b.
- b. First joint of the funiculus at most half the length of the second. Head with a more or less curved spine on each side at the occipital angle. Eyes distinct. Soldier with hook-shaped mandibles (*E. rapax* has no soldier).....Subgenus **Eciton**, *sensu stricto*.
- First joint of the funiculus more than half the length of the second. Head without spines or at most with a simple, straight spine at the occipital angle. Mandibles of the soldier not hook-shaped.

Subgenus **Labidus** Jurine.

♀

1. Antennæ 10-jointed.....**Enictus** Shuckard.
- Antennæ 12-jointed.....**Eciton** Latreille.
- a. Claws simple.....Subgenus **Acamatus** Emery.
- Claws with a distinct median tooth.....b.
- b. Epinotum and petiole above with a pair of blunt, horn-like projections. Subgenus **Eciton**, *sensu stricto*.
- Epinotum and petiole above without projections. Subgenus **Labidus** Jurine.

♂

1. Pterostigma of fore wing narrow; radial cell closed; two closed cubital cells.....2.
- Pterostigma of fore wing broad; radial cell open.....3.
2. Mandibles very long, slender, and falcate, with a peculiar cluster of short, erect hairs at the base on the inner side; subgenital plate with four apical teeth; hind femora distinctly flattened.

Cheliomyrmex Mayr.

Mandibles shorter and of a different shape, or if of the same shape then without the peculiar cluster of hairs; subgenital plate with three apical teeth; hind femora not or only feebly flattened.

Eciton Latreille.

- a. Legs short, the hind femur not reaching the hind margin of the second segment of the gaster; head narrow; thorax hump-backed, much raised above the head.....Subgenus **Acamatus** Emery.

¹I have recently placed *Cheliomyrmex* in an independent tribe, the Cheliomyrmecini.

Legs long, the hind femur reaching to or beyond the hind margin of the second segment of the gaster; head large, the thorax moderately inflated. Subgenera **Eciton**, *sensu stricto* and **Labidus** Jurine.

3. Two closed cubital cells. Thorax long and narrow; scutellum not prominent. Legs short and thick; tibiae with a long spur (Congo). **Ænictogiton** Emery.

One closed cubital cell. Thorax with the mesonotum much raised above the pronotum; scutellum prominent. Legs usually slender; tibiae with a rudimentary spur. . **Ænictus** Shuckard.

3. **Leptanillini** Emery

Leptanilla Emery. (Corsica, Sardinia, Barbary, Singapore, and Borneo).

CERAPACHYINÆ Forel and **PONERINÆ** Lepeletier

Key to the Tribes¹

♂, ♀

1. Claws pectinate. Mandibles articulated near the anterior angles of the head. Constriction behind the postpetiole feebly marked.

LEPTOGENYINI Forel.

Claws simple or toothed; in certain *Simopone* pectinate, but in these the postpetiole is separated by a strong constriction behind. 2.

2. Mandibles articulated to the middle of the anterior margin of the head, when closed placed parallel to each other in front of the clypeus; when opened they lie in a straight line parallel to the anterior margin of the head. Postpetiole not separated by a constriction behind. ODONTOMACHINI Mayr.

Mandibles articulated to the anterior angles of the head. 3.

3. Postpetiole narrower than the following segment, forming with the petiole a two-jointed pedicel. Mandibles linear, very long. Antennæ 12-jointed. Claws toothed. Metanotum developed dorsally, between the mesoscutellum and the epinotum.

MYRMECINI Emery.

Not having all these characters. 4.

4. Head flattened, much as in *Dorylus*: the face with two deep and broad antennal fossæ below, in which the antennæ are inserted close together, just above the short and obtuse clypeus. Frontal carinæ very approximate. Eyes absent. Mandibles

¹For the convenience of identification of specimens the tribes of the Cerapachyinae and Ponerinae have been united in one key.

- narrow, with three apical teeth. Antennæ 11-jointed, their funiculus much thickened. Postpetiole very feebly constricted behind. Female unknown. . DORYLOZELINI, new tribe.
- Head of the usual Ponerine shape. Not with all these characters..5.
5. Face on each side with a scrobe which extends to the hind margin of the head and is recurved behind the eye, so that it can take the scape and funiculus of the antenna. Mandibles triangular, robust. Antennæ 12-jointed. Petiole with a ventral spine near its base; postpetiole separated by a constriction behind. Claws toothed. PARAPONERINI Emery.
- Facial scrobes usually absent; when feebly marked (as in *Acanthoponera* and *Prodiscothyrea*) they never extend behind the eyes; but the frontal carinæ often take up the base of the scape. In *Paranomopone* a deep facial scrobe on each side in front of the eye accommodates scape and funiculus. 6.
6. At least one ocellus in the worker. Body of worker and female elongate, cylindrical; pygidium impressed, armed at the sides with several stumpy spines (female as far as known winged). Antennæ 12-jointed. CYLINDROMYRMICINI Emery.
- Usually no ocellus in the worker. 7.
7. Petiole depressed, articulated over its whole width with the postpetiole. Antennæ 12-jointed. 8.
- Articulation between the petiole and postpetiole narrow; if broader (as in *Prionopelta*) the hind tibiæ have one or no spur and the pygidium is not bordered by a row of small spines 9.
8. Two spurs on the hind tibiæ. Mandibles narrow. Thorax with distinct sutures in the worker; the metanotum not developed dorsally. Pygidium not bordered by spines.
- AMBLYOPONINI Forel.
- Tibiæ with a single, broad, pectinate spur. Mandibles in the worker subtriangular. Thorax without distinct sutures. Pygidium impressed, with a lateral row of spines in the worker.
- ACANTHOSTICHINI Emery.
9. Insertion of the antennæ nearer the sides than the middle line of the head. Mandibles narrow, arcuate, with spiniform teeth. Antennæ 12-jointed. Petiole with a high scale above; constriction behind the postpetiole indistinct. Claws simple.
- THAUMATOMYRMICINI Emery.

- Not having all these characters. 10.
10. Insertion of the antennæ exposed. 11.
 Insertion of the antennæ at least partly covered by the frontal
 carinæ. In *Ophthalmopone* almost exposed. 12.
11. Gaster strongly reflexed ventrally, or if not (as in *Probolomyrmex*
 and *Escherichia*) the frontal carinæ are fused together and
 with the clypeus. Mandibles subtriangular. Antennæ 9-, 10-
 or 12-jointed. Tibiæ with one or no spur. Claws simple.
 PROCERATIINI Emery.
- Gaster straight. Frontal carinæ distinct from each other. Anten-
 nal fossa margined by lateral carinæ of the cheeks.
 CERAPACHYINI Forel.
12. Frontal carinæ remote, more or less parallel, or feebly diverging
 behind, without lateral lobe (except in the Neotropical genus
Alfaria) ECTATOMMINI Emery.
 Frontal carinæ with a lateral lobe. 13.
13. Insertion of the antennæ approximated; the frontal carinæ usually
 converging behind the lobe. 14.
 Insertions of the antennæ remote. Clypeus flat. The body
 entirely covered with a very fine pruinose pubescence.
 Mandibles subtriangular. Antennæ 12-jointed. Middle and
 hind tibiæ with two spurs. Claws toothed.
 PLATYTHYREINI Emery.
14. Middle and hind tibiæ without spurs. Legs very long. Claws very
 large, simple. Clypeus short, its anterior margin arcuate, with
 little teeth. Mandibles elongate, narrow at the base, broad-
 ened toward the middle, with small, unequal teeth along their
 inner margin. Eyes small. Antennæ 12-jointed, filiform.
 Female ergatoid. ONYCHOMYRMICINI Ashmead.
 Middle and hind tibiæ with one or two spurs. Antennæ 12-jointed.
 PONERINI Forel.

CERAPACHYINÆ Forel

1. Cerapachyini Forel

In a recent paper on the Australian members of this tribe¹ I have followed Ern. André in restricting *Sphinctomyrmex* Mayr to the genotype *S. stali* Mayr, from South America; that species is only known by the female and the genus is therefore not included in the following key. This

¹Wheeler, Wm. M. 1918. 'The Australian ants of the ponerine tribe Cerapachyini.' Proc. American Acad. Arts Sciences, LIII, pp. 215-265.

female has the segments of the gaster separated by constrictions; but the eyes are well developed; the thorax has distinct sclerites and was probably winged; the antennæ are 12-jointed and the pygidium is emarginate. Santschi refers certain African male ants to *Sphinctomyrmex*, but it is very improbable that they correctly belong there; and the same remark applies to the male he describes as *Lioponera*.

♂

1. Gaster elongate, cylindrical, the segments separated from each other by pronounced constrictions. Female as far as known ergatomorphic or dichthadiiform, wingless and without distinct sutures on the dorsal face of thorax. (Indomalayan, Papuan, Australian).....**Eusphinctus** Emery.
 - a. Antennæ 11-jointed in worker and female.

Subgenus **Eusphinctus**, *sensu stricto*.

Antennæ 12-jointed in worker and female.....*b*.
 - b. Worker with well-developed eyes and emarginate pygidium. Large, black species.....Subgenus **Zasphinctus** Wheeler.
 - Worker eyeless or with very minute eyes. Pygidium entire. Smaller, ferruginous or yellow species....Subgenus **Nothosphinctus** Wheeler.

Segments of the gaster not thus separated.....2.
 2. Last antennal joint much thicker and larger than the preceding joint, forming a one-jointed club. Petiole not marginate on the sides. (Syria, Ethiopian, Malagasy, Indomalayan, Papuan, Australian, Neotropical, Texas).

Cerapachys F. Smith.

 - a. Antennæ 12-jointed.....Subgenus **Cerapachys**, *sensu stricto*.
 - Antennæ 11-jointed.....Subgenus **Parasyscia** Emery.
 - Antennæ 10-jointed.....Subgenus **Ooceraea** Roger.
 - Antennæ 9-jointed.....Subgenus **Syscia** Roger.

Last antennal joint not enlarged, though longer than the preceding joint, and not forming a distinct club.....3.
 3. Funiculus of antenna terminating in a 4-jointed club. (Indomalayan and Australian; Ethiopian and North African species doubtful).....**Lioponera** Mayr.
- Funiculus not terminating in a 4-jointed club. Petiole marginate on sides. (Ethiopian, Malagasy, Indomalayan, Papuan, and Australian).....**Phyracaces** Emery.

2. **Acanthostichini** Emery

Acanthostichus Mayr. (Neotropical and Texas).

- a. Female wingless, dichthadiiform; eyes small, flattened; ocelli replaced by three depressions. Male rather stout, with short and thickened antennæ; thorax without Mayrian furrows. Worker known, with the characters given in the key to the tribes.

Subgenus **Acanthostichus**, *sensu stricto*.

- Female winged and slender, with lengthened, cylindric gaster; eyes and ocelli well developed. Male rather slender, with slender antennæ; thorax with well-developed Mayrian furrows. Worker unknown.

Subgenus **Ctenopyga** Ashmead.

PONERINÆ Lepeletier

1. **Cylindromyrmicini** Emery

♂

1. Antennæ 12-jointed. Middle and hind tibiæ with two spurs. Claws simple. Female winged, similar to the worker. (Neotropical).....**Cylindromyrmex** Mayr.
Antennæ 11-jointed. Tibiæ with a single, pectinate spur. Claws toothed or pectinate. Female unknown. (Ethiopian, Malagasy).....**Simopone** Forel.

2. **Myrmeciini** Emery

Myrmecia Fabricius. (Australia, Tasmania; one species described from New Caledonia doubtfully belongs here).

- a. Worker: mandibles short and broad. Scape not extending beyond three quarters of the length of the head. Female and male unknown.

Subgenus **Promyrmecia** Emery.

- Mandibles long and narrow. Scape almost reaching to or even extending beyond the occipital margin of the head.....b.

- b. Worker and female: mandibles with a long, recurved apical tooth, and unequal teeth along the inner margin.

Subgenus **Myrmecia**, *sensu stricto*.

- Worker and female: mandibles linear, always straight and serrate. Male unknown.....Subgenus **Pristomyrmecia** Emery.

3. **Amblyoponini** Forel

♂, ♀

The female, where known, is winged.

1. Mandibles blunt at the apex, with two teeth-rows on their inner margin. Clypeus denticulate along the anterior margin. Frontal carinæ remote. Eyes present, but very small. Sculpture coarse. (Malagasy, Ethiopian, Indomalayan).

Mystrium Roger.

- Mandibles pointed2.

2. Anterior margin of the clypeus arcuate and as a rule denticulate. Antennæ slender, not club-shaped. Eyes usually small. Teeth on the inner margin of the mandibles partly in two rows. Integument partly dull. (Mediterranean, Nearctic, Neotropical, Indomalayan, Papuan, New Zealand).

Stigmatomma Roger.

- a. Frontal lobes approximate. (Papuan).

Subgenus **Fulakora** Mann. (Type: *S. (Fulakora) celata* Mann).

Frontal lobes widely separated . . . Subgenus **Stigmatomma**, *sensu stricto*.

Anterior margin of the clypeus without teeth, often straight or emarginate. Middle teeth of the mandibles in one row. Integument smooth and shining. 3.

3. Funiculus club-shaped, short and thick, slightly flattened. Eyes small. (Indomalayan, Papuan, Australian).

Myopopone Roger.

Funiculus slender, filiform, hardly thickened toward the apex. . . 4.

4. Frontal carinæ remote. Inner margin of the mandibles with a few teeth. Eyes very small. (Australian, Papuan, New Zealand) **Amblyopone** Erichson.

Frontal carinæ apparently more approximate. Mandibles denticulate along the entire inner margin. Clypeus produced into a rectangular lobe. Eyes absent or vestigial. Female unknown. (Ethiopian) **Xymmer** (Santschi).



The male of *Amblyopone* is imperfectly described; that of *Xymmer* is unknown.

1. Frontal carinæ distinct. No cerci. Middle tibiæ with two spurs.

Mystrium Roger.

Frontal carinæ vestigial. Cerci developed 2.

2. Integument dull. Middle tibiæ with one spur.

Stigmatomma Roger.

Integument smooth and shining. Middle tibiæ with two spurs (generic identity still doubtful) **Myopopone** Roger.

4. **Paraponerini** Emery

Paraponera F. Smith. (Neotropical).

5. **Platythyreini** Emery

Platythyrea Roger. (Tropicopolitan).

6. **Ectatommini** Emery

♂ (♀ when known)

1. Worker: face on each side with a deep scrobe in front of the eye; this scrobe incompletely divided by a longitudinal ridge into two compartments, one for the accommodation of the scape and one for the funiculus. Antennæ ending in an indistinct, 3-jointed club. Claws simple. Female ergatoid, with one ocellus. (Australian).....**Paranomopone** Wheeler.
Face without deep scrobes to accommodate the whole of the antennæ.....2.
2. Antennæ ending in a 3- or 4-jointed club. Claws simple. Female winged, with eyes and ocelli.....3.
Antennæ not ending in a distinct club. Claws as a rule toothed or bifid.....5.
3. Articulation of petiole and postpetiole not remarkably narrower than the postpetiole (as in the Amblyoponini). Middle and hind tibiæ with one spur. (Neotropical, Indomalayan, Papuan).....**Prionopelta** Mayr.
Articulation of petiole and postpetiole much narrowed, as usual in this tribe.....4.
4. Petiole distinctly narrowed into a peduncle at the base. (Neotropical).....**Typhlomyrmex** Mayr.
Petiole not pedunculate at the base. (Borneo, Papuan, Neotropical).....**Rhopalopone** Emery.
5. Basal segment of the gaster strongly curved or vaulted dorsally, so that its hind part is directed downward or even anteriorly..6.
Basal segment of the gaster of normal shape.....8.
6. Thorax with pronounced promesonotal and mesoëpinotal sutures. Eyes normally developed. Basal segment of the gaster moderately vaulted. Petiole with a basal spine ventrally; postpetiole also with a ventral, flattened tooth, directed anteriorly. Female and male unknown. (Papuan).
Wheeleripone Mann. (Type: *Wheeleripone albiclava* Mann).
Thorax of the worker without traces of sutures dorsally.....7.
7. Eyes of the worker small. Basal segment of the gaster very strongly curved. Female winged, with two closed cubital cells, or ergatoid. (Neotropical).....**Alfaria** Emery.
Eyes of the worker larger. Basal segment of the gaster more feebly curved. Female winged, with one closed cubital cell. (Indomalayan, Papuan).....**Stictoponera** Mayr.

8. Antennal fossæ extending backward above the eyes. Epinotum with teeth or spines. Promesonotal suture very distinct in the worker. Posterior coxæ unarmed. (Neotropical, Australian, New Zealand; including *Heteroponera* Mayr).
Acanthoponera Mayr.
Antennal fossæ short or indistinct, as usual.....9.
9. Promesonotal suture very distinct in the worker; often mobile, or at least interrupting the striation.....10.
Promesonotal suture entirely obsolete, or impressed but not interrupting the sculpture.....12.
10. Posterior coxæ armed with a spine. Female winged, with one closed cubital cell. (Neotropical)....**Holcaponera** Mayr.
Posterior coxæ unarmed. Female ergatoid or winged with two closed cubital cells.....11.
11. Worker: small; first joint of the funiculus very little shorter or even longer than the second; the latter as a rule less than twice as long as thick. Spurs of the middle and hind tibiæ sinuate and broadly pectinate. Female winged. (Indomalayan, Papuan, Australian).....**Chalcoponera** Emery.
Worker: larger; first joint of the funiculus distinctly shorter than the second; the latter slender, at least twice as long as thick. Spurs of the middle and hind tibiæ straight or feebly sinuate, shortly pectinate. Female unknown, probably highly ergatoid. (Australian, Papuan).....**Rhytidoponera** Mayr.
12. Worker: mandibles long and narrow, obliquely truncated at the tip, denticulate along the inner margin. Female unknown. (Haiti).....**Emeryella** Forel.
Worker: mandibles triangular or linear, but not toothed along the inner (basal) margin. Female when known, winged, with two closed cubital cells. (Neotropical, Texas).
Ectatomma F. Smith.
- a. Clypeus on each side with a tuberculate swelling covering the insertions of the antennæ; mandibles triangular. Posterior coxæ unarmed.
Subgenus **Ectatomma**, *sensu stricto*.
Clypeus not swollen above the insertions of the antennæ. Posterior coxæ as a rule with a spine.....b.
- b. Epinotum with a pair of long spines....Subgenus **Poneracantha** Emery.
Epinotum unarmed or at most with short teeth.....c.
- c. Mandibles triangular; the apical margin denticulate and separated from the inner or basal margin by an angle.
Subgenus **Parectatomma** Emery.

Mandibles narrow and more or less linear; the inner or basal margin curves gradually into the apical margin which is not denticulate.

Subgenus **Gnamptogenys** Roger.

♂

The male of *Paranomopone* and *Rhopalopone* is unknown; that of *Alfaria* is doubtful.

1. Antennal scape much longer than the two following joints together.
One closed cubital cell 2.
Antennal scape not longer than the third joint or if longer, wings
with two closed cubital cells. 3.
2. Articulation of the petiole and postpetiole not remarkably narrower
than the postpetiole **Prionopelta** Mayr.
Articulation of petiole and postpetiole as usual, much narrowed.
Typhlomyrmex Mayr.
3. Two closed cubital cells. 4.
One closed cubital cell 5.
4. Scape as long as or longer than the second joint of the funiculus.
Mayrian furrows on the mesonotum feeble or indistinct.
Rhytidoponera Mayr.
Scape shorter than the second joint of the funiculus. Mayrian
furrows pronounced. **Chalcoponera** Emery.
Ectatomma F. Smith.
Emeryella Forel.
?Alfaria Emery.
5. Sculpture of fine, close striæ. Petiole short, thickened behind into
a node **Holcoponera** Mayr.
Sculpture of coarse foveolæ, sometimes confluent. Petiole elongate,
not swollen into a node **Stictoponera** Mayr.

7. **Thaumatomyrmicini** Emery

Thaumatomyrmex Mayr. (Neotropical).

8. **Proceratiini** Emery

♀ (♀ when known)

1. Clypeus separated by a distinct suture from the front, cheeks and
frontal carinæ. Antennæ 12-jointed 2.
Clypeus fused with the cheeks and frontal carinæ, the whole forming
a plate projecting out over the mandibles; the antennæ
are inserted close to the anterior margin of this structure. . . 4.

2. Anterior margin of the clypeus projecting in the middle. Thorax without dorsal sutures. Petiole more or less nodiform. Female winged. (Ethiopian, Mediterranean, Japan, Nearctic, Neotropical).....**Sysphincta** Roger.
Anterior margin of the clypeus not projecting in front.....3.
3. Dorsal sutures of the thorax faint or absent. Petiole scale-like. Antennæ not ending in a club. Female winged. (Nearctic, Indomalayan, Papuan).....**Proceratium** Roger.
Thorax with distinct promesonotal and mesoëpinotal sutures. Petiole decidedly transverse, less squamiform, the anterior surface being flattened. Funiculus ending in a distinct, 3-jointed club. Female unknown. (Haiti).
Spaniopone Wheeler and Mann.
4. Antennæ 12-jointed.....5.
Antennæ 9- or 10-jointed. Basal segment of the gaster vaulted, the remaining segments forming an anteriorly directed cone. Thorax without dorsal sutures.....7.
5. Basal segment of the gaster vaulted, the remaining segments forming an anteriorly directed cone. Eyes present. Dorsal sutures of the thorax faint or absent. Female unknown. (South Africa).....**Pseudosphincta** Arnold.
Segments of the gaster straight, directed posteriorly.....6.
6. Eyes present, very small. Thorax with obsolete promesonotal and distinct mesoëpinotal sutures. (Ethiopian).
Escherichia Forel.
Eyes absent. Thorax without dorsal sutures. Female unknown. (South Africa).....**Probolomyrmex** Mayr.
7. Antennæ 9-jointed. Clypeus forming a semicircular disc. Frontal carinæ small and short. Face without lateral depressions for the antennal scape. Female winged. (Nearctic, Ethiopian, New Zealand, Indonesian, Java, Papuan).
Discothyrea Roger.
Antennæ 10-jointed. Clypeus forming a very short, transverse plate. Frontal carinæ large, the face deeply and broadly excavated at their sides, forming scrobes for the accommodation of the antennal scape. Female winged. (Australasian, Indomalayan).....**Prodiscothyrea** Wheeler.

♂

Known only for two genera.

1. Frontal carinæ not fused with each other. Wings with one closed cubital cell.....**Sysphincta** Roger.

Frontal carinæ fused with each other. Wings with one closed cubital cell. **Discothyrea** Roger.

9. **Dorylozeini**, new tribe

Dorylozelus Forel. (Australian). ♂ unknown.

10. **Ponerini** Forel

♀

1. Middle and hind tibiæ with two spurs. 2.
Middle and hind tibiæ with a single, well-developed spur, which is always pectinate; the lateral spur rudimentary or absent. . . 19.
2. The two spurs of the middle tibiæ simple, small. Median spur of the hind tibiæ pectinate, the lateral one simple. Mandibles elongate subtriangular, curved downward. Eyes absent. Antennæ thickened. Petiole with a ventral tooth. Female winged and with eyes and ocelli. (Neotropical, Indomalayan, Ethiopian). **Centromyrmex** Mayr.
Median spur of both middle and hind tibiæ well developed, pectinate. Eyes usually present (in *Pseudoponera* very small or absent). 3.
3. Mandibles narrow, converging near the base where they are provided with a strong tooth beneath; in front of this tooth they are projecting into a beak. Eyes very large, placed near the base of the mandibles. Antennæ filiform. Claws bifid. Female winged. (Indomalayan). **Harpegnathos** Jerdon.
Mandibles of normal shape. 4.
4. Anterior margin of the clypeus arcuate, with numerous denticulations. Antennæ filiform. Pronotum with two spines on its anterior margin. Claws simple. Female winged. (Indomalayan, Papuan). **Odontoponera** Mayr.
Anterior margin of the clypeus unarmed or with two teeth. 5.
5. Node of the petiole compressed above and forming a sharp edge, with a slight notch behind followed by a terminal blunt tooth. Antennæ filiform. Anterior margin of the clypeus emarginate, on each side with an obtuse tooth. Claws simple. Female unknown. (South Africa). **Streblognathus** Mayr.
Petiole shaped differently. 6.
6. Clypeus with a median, raised portion, produced in front. Female winged. 7.
Clypeus without a raised, projecting, median area. 9.

Frontal carinæ fused with each other. Wings with one closed cubital cell. **Discothyrea** Roger.

9. **Dorylozeini**, new tribe

Dorylozelus Forel. (Australian). ♂ unknown.

10. **Ponerini** Forel

♀

1. Middle and hind tibiæ with two spurs. 2.
Middle and hind tibiæ with a single, well-developed spur, which is always pectinate; the lateral spur rudimentary or absent. . . 19.
2. The two spurs of the middle tibiæ simple, small. Median spur of the hind tibiæ pectinate, the lateral one simple. Mandibles elongate subtriangular, curved downward. Eyes absent. Antennæ thickened. Petiole with a ventral tooth. Female winged and with eyes and ocelli. (Neotropical, Indomalayan, Ethiopian). **Centromyrmex** Mayr.
Median spur of both middle and hind tibiæ well developed, pectinate. Eyes usually present (in *Pseudoponera* very small or absent). 3.
3. Mandibles narrow, converging near the base where they are provided with a strong tooth beneath; in front of this tooth they are projecting into a beak. Eyes very large, placed near the base of the mandibles. Antennæ filiform. Claws bifid. Female winged. (Indomalayan). **Harpegnathos** Jerdon.
Mandibles of normal shape. 4.
4. Anterior margin of the clypeus arcuate, with numerous denticulations. Antennæ filiform. Pronotum with two spines on its anterior margin. Claws simple. Female winged. (Indomalayan, Papuan). **Odontoponera** Mayr.
Anterior margin of the clypeus unarmed or with two teeth. 5.
5. Node of the petiole compressed above and forming a sharp edge, with a slight notch behind followed by a terminal blunt tooth. Antennæ filiform. Anterior margin of the clypeus emarginate, on each side with an obtuse tooth. Claws simple. Female unknown. (South Africa). **Streblognathus** Mayr.
Petiole shaped differently. 6.
6. Clypeus with a median, raised portion, produced in front. Female winged. 7.
Clypeus without a raised, projecting, median area. 9.

7. Female: wings with three closed cubital, two discoidal and two submedian cells, one of the latter very small. Raised portion of the clypeus excavated in the middle and bordered by lateral ridges. Postpetiole without ventral tooth at the base. Middle tibiae and metatarsi furnished above with rows of spines. Worker unknown. (Ethiopian)..... **Glyphopone** Forel.
 Female: wings with two closed cubital, two discoidal, and one submedian cells.....8.
8. Female: median area of the clypeus moderately raised, convex, slightly produced in front, hardly carinate on the sides, almost flat or very shallowly concave in the middle. Middle tibiae and metatarsi furnished with rows of spines. Claws simple. Worker unknown. (Ethiopian)..... **Leptopone** Arnold.
 Worker and female: median area of the clypeus deeply excavated in the middle, shining, with heavy striae, bordered laterally by strong ridges. Antennae filiform. Middle tibiae without rows of heavy spines. Postpetiole with a ventral, blunt, compressed tooth near its junction with the petiole. Claws with a small tooth near the middle. (Ethiopian).... **Paltothyreus** Mayr.
9. Anterior margin of the clypeus with a tooth on each side of a median emargination. Claws with a median tooth. Female unknown. (Neotropical)..... **Dinoponera** Roger.
 Anterior margin of the clypeus not or bluntly bidentate; in the latter case the claws simple.....10.
10. Mesepisternum with an oval cavity leading to the first stigma which is covered by a small pronotal lobe. Petiole with a pair of spines directed backwards. Claws simple. Female unknown, probably ergatoid. (Indomalayan, Papuan, Australian).
Diacamma Mayr.
 Mesepisternum of the usual shape.....11.
11. Claws with a tooth near their base. Cheeks carinate. Scape of the antennae compressed. Scale of the petiole thick, more or less nodiform. Female wingless, ergatoid. (Ethiopian).
Megaponera Mayr.
 Claws simple¹.....12.
12. Eyes large, placed behind the middle of the head length. Female unknown. (Ethiopian)..... **Ophthalmopone** Forel.

¹*Euponera peringueyi* Emery and *E. havilandi* (Forel) are described as having a small tooth near the base or the middle of the claws. Yet they can not well be placed in *Megaponera*. It is possible that, when better known, they will be separated as a genus, for which the name *Hagensia* Forel (type: *Megaponera* (*Hagensia*) *havilandi* Forel) could then be used.

- Eyes placed in the middle or before the middle of the sides of the head.....13.
13. Cheeks carinate. Eyes placed about or slightly before the middle of the sides of the head. Female winged. (Neotropical).
Neoponera Emery.
 a. Mandibles almost sublinear. Node of the petiole club-shaped, being gradually raised behind..... Subgenus **Eumecopone** Forel.
 Mandibles subtriangular. Node of the petiole not club-shaped.
 Subgenus **Neoponera**, *sensu stricto*.
- Cheeks not carinate. Eyes placed before the middle of the sides of the head.....14.
14. Mesoëpinotal suture obsolete in the worker. Usually large-sized species. Female winged.....15.
 Mesoëpinotal suture more or less distinct.....18.
15. Pronotum more or less marginate on the sides. (Neotropical to Texas).....**Pachycondyla** F. Smith.
 Pronotum not marginate on the sides.....16.
16. Upper part of the head separated from the sides and from the occiput by a blunt ridge. Mesepisternum of the worker divided from the sternum by a distinct suture. (Ethiopian, Indo-malayan, Japan, Papuan, Australian)..**Ectomomyrmex** Mayr.
 Upper part of the head not separated from the sides and from the occiput by a ridge. Mesepisternum fused with the sternum in the worker (except in one Malagasy species).....17.
17. Petiole surmounted by a flattened scale which curves back over the postpetiole and terminates in a comb of five teeth. Gaster without constriction behind the postpetiole. Epinotum with two stout spines. Mandibles elongate. (West Africa).
Phrynoponera Wheeler.
- Petiole with a thick node, rarely somewhat compressed and dentate above or behind. Gaster with pronounced constriction between the postpetiole and succeeding segment. Epinotum usually unarmed. Mandibles subtriangular. (Ethiopian, Malagasy, Indomalayan, Papuan, Australian).
Bothroponera Mayr.
18. Mandibles subtriangular, with a distinct edge between the apical or masticating and the basal, inner margin. Female winged. (Tropicopolitan, Mediterranean, Japan, New Zealand).
Euponera Forel.

- a. Mandibles elongate, with an extensive masticating margin, which is armed with numerous teeth. First joint of the funiculus as a rule shorter than, or as long as, the following, seldom longer (including *Xiphopelta* Forel).....Subgenus **Mesoponera** Emery.
Mandibles comparatively short, with small or a few teeth. First joint of the funiculus noticeably longer than the following.....b.
- b. Length 9 to 10 mm. Mandibles with 8 teeth. (Malagasy).
Subgenus **Euponera**, *sensu stricto*.
Much smaller.....c.
- c. Mesonotum convexly swollen, surrounded by a deeply impressed suture. Metatarsus of the middle legs without stiff hairs on its dorsal face.
Subgenus **Brachyponera** Emery.
Mesonotum depressed; surrounding suture not deeply impressed. Middle legs short, their metatarsi furnished with stiff hairs or spines on their dorsal face.....Subgenus **Trachymesopus** Emery.
- Mandibles long and narrow; their masticating, apical margin passes through a curve into their basal, inner margin.
Middle legs short, their metatarsi with stiff hairs above.
Pseudoponera Emery.
- a. Apex and masticating margin of the mandibles strongly dentate. Eyes very small. Female winged. (Indomalayan).
Subgenus **Pseudoponera**, *sensu stricto*.
Apex of the mandibles dentate, their masticating margin with feeble traces of teeth. Eyes obsolete or absent. Female unknown. (Ethiopian).
Subgenus **Promyopias** Santschi.
19. Mandibles subtriangular, very long, ending in a very elongate apical tooth, the apical margin also with three long teeth. Clypeus unarmed, without projecting lobe. Eyes absent. Mesoëpinal suture obsolete. Integument moderately punctate. Abdomen with feeble pubescence. Female unknown. (Indomalayan).....**Emeryopone** Forel.
Not having all these characters.....20.
20. Integument very finely and densely punctate. At least the abdomen with abundant pubescence. No lateral spur on hind and middle tibiæ.....21.
Integument smooth, or sparsely punctate, or coarsely sculptured. Abdomen without pubescence.....23.
21. Clypeus with a sharp point in the middle of its anterior margin. Mandibles elongate, narrow, with 3 to 5 strong teeth. Eyes vestigial. Female unknown. (Neotropical).
Belonopelta Mayr.
Clypeus unarmed.....22.

22. Antennæ ending in a 4-jointed club. Eyes vestigial or absent. Female winged, with eyes. (Ethiopian, Indomalayan, Papuan)..... **Cryptopone** Emery.
Antennæ without distinct club or the club is 5-jointed. Eyes small, sometimes obsolete or absent. Female winged; sometimes also an ergatoid female present. (Cosmopolitan).
Ponera Latreille.
23. The two lobes of the frontal carinæ fused into a plate which is slightly notched in front above the clypeus. Clypeus much produced into a broad plate, truncate in front and with sharp lateral angles. Mandibles subtriangular, their apical margin strongly dentate. Eyes small. Female unknown. (Ethiopian)..... **Asphinctopone** Santschi.
Clypeus not projecting, or with a narrow median lobe (*Trapeziopelta*), but in that case the mandibles are linear..... 24.
24. Clypeus short; the frontal carinæ contiguous and forming a plate which is raised above the clypeus. Mandibles slightly curved, linear, broadened and spear-shaped in their apical third, ending in a blunt apex; hollowed out into a rim along their inner margin. Eyes vestigial. Female unknown. (Ethiopian).
Cacopone Santschi.
Clypeus, frontal carinæ, and mandibles shaped differently..... 25.
25. Clypeus with a projecting median lobe. Eyes present or vestigial. Mandibles linear. Lateral spur of the middle and hind tibiæ small, but present. Claws simple. Female winged. (Malayan, Papuan)..... **Trapeziopelta** Mayr.
Clypeus without projecting median lobe..... 26.
26. Mandibles falciform, flattened, broadened towards the third of their length, ending in a sharp point. Eyes present. Female winged. (Ethiopian)..... **Psalidomyrmex** Ern. André.
Mandibles not falciform, nor flattened..... 27.
27. Mandibles linear, arcuate, pointed, with one tooth or two spaced teeth along their basal, inner margin. Eyes vestigial. Female winged, with eyes. (Indomalayan, Papuan, Ethiopian).
Myopias Roger.
Mandibles blunt at the apex, linear, with a few irregular teeth along their inner margin. Eyes small. Female winged (or in some species ergatoid?). (Ethiopian)..**Plectroctena** F. Smith.



The male of the following genera is unknown: *Glyphopone* Forel, *Leptopone* Santschi, *Ectomomyrmex* Mayr, *Phrynoponera* Wheeler, *Pseudoponera* Mayr, *Emeryopone* Forel, *Belonopelta* Mayr, *Cryptopone* Emery, *Trapeziopelta* Mayr, *Myopias* Roger, *Asphinctopone* Santschi, and *Cacopone* Santschi.

1. Middle and hind tibiæ with two spurs, those on the middle tibiæ sometimes very small. 2.
Middle and hind tibiæ with a single spur. 12.
2. The two spurs of the middle tibiæ very small, simple. Median spur of the hind tibiæ large, pectinate. Mandibles very short, without teeth. Antennæ short. Pygidium without spine. Mesonotum with Mayrian furrows. . . . **Centromyrmex** Mayr.
Median spur of both middle and hind tibiæ large and pectinate. . . 3.
3. Postpetiole pyriform, almost forming a second node of the pedicel. Mandibles rather vestigial. Antennæ long. Pygidium with a long terminal spine. Mesonotum with two deep, converging furrows. **Harpegnathos** Jerdon.
Postpetiole as usual, with a feeble or indistinct constriction between it and the gaster. 4.
4. Scape club-shaped and flattened, distinctly longer than the third antennal joint. Frontal carinæ vestigial. Mandibles very short, blunt. Pygidium not ending in a spine.
Megaponera Mayr.
Scape shorter than the third antennal joint; if almost equal, the mandibles end in a long, sharp point and the frontal carinæ are distinct. 5.
5. Scape only slightly shorter than the third antennal joint. Mandibles ending in a long, sharp point. Frontal carinæ distinct.
Ophthalmopone Forel.
Scape much shorter than the third antennal joint. 6.
6. Pygidium continued into a curved spine. 7.
Pygidium blunt or pointed, but not continued into a spine. . . . 9.
7. Anterior margin of the clypeus produced into a rectangular lobe. Frontal carinæ absent. Pronotum without Mayrian furrows. Claws toothed. **Dinoponera** Roger.
Anterior margin of the clypeus without projecting, rectangular lobe. 8.
8. Anterior margin of the clypeus strongly, arcuately projecting in the middle. **Diacamma** Mayr.

Anterior margin of the clypeus truncate or feebly projecting.

Neoponera Emery.

Pachycondyla F. Smith.

Bothroponera Mayr.

Euponera Forel.

9. Petiole unarmed ventrally.....10.
 Petiole with a strongly projecting, ventral lamella ending behind
 in a tooth or spine. Postpetiole unarmed ventrally.....11.
10. At least 15 mm. long. Postpetiole ventrally with a strong tooth
 which is curved behind. Pygidium pointed.

Paltothyreus Mayr.

Much smaller. Postpetiole unarmed ventrally. **Euponera** Forel.

11. Black. Ventral lamella of the petiole ending behind in a tooth-
 shaped, projecting angle. Pygidium blunt.

Odontoponera Mayr.

Testaceous. Ventral lamella of the petiole ending behind in a spine.
 Pygidium pointed, carinate.....**Streblognathus** Mayr.

12. Pygidium pointed or ending in a spine. Scutellum depressed or
 feebly convex. Integument finely punctate. In some species
 also ergatoid, wingless males.....**Ponera** Latreille.
 Pygidium blunt. Scutellum projecting above. Integument with
 coarse sculpture. Large species.....13.
13. Mesonotum with converging furrows.....**Plectroctena** F. Smith.
 No converging furrows on the mesonotum.

Psalidomyrmex Ern. André.

11. **Onychomyrmecini** Ashmead

Onychomyrmex Emery. (Australian). ♂ unknown.

12. **Leptogenyini** Forel

♀

1. Mandibles very narrow, sublinear, with teeth all along the inner
 basal margin. Female unknown. (Australian).

Prionogenys Emery.

Mandibles linear without teeth along the inner margin, or more or
 less triangular, with or without teeth. Female as far as known,
 ergatoid. (Neotropical, southern Nearctic, Ethiopian, Mala-
 gasy, Indomalayan, Papuan, Australian)..**Leptogenys** Roger.

- a. Mandibles very long, but crossing each other feebly, enclosing a large
 space between them and the clypeus, linear, acute or with two small
 apical teeth placed close together. (Distribution as for the genus).

Subgenus **Leptogenys**, *sensu stricto*.

- Mandibles differently shaped *b.*
- b.* Mandibles broadly crossing each other; very elongate but not linear, somewhat broadened to the half or two-thirds of their length, then narrowed into a sharp point; sometimes with a præapical tooth. (Malagasy) Subgenus **Machærogenys** Emery.
- Mandibles less lengthened *c.*
- c.* Clypeus armed with several teeth. Petiole lengthened into a spine (Australian) Subgenus **Odontopelta** Emery.
- Clypeus unarmed or with a tooth on each side. Petiole not lengthened into a spine (distribution as for the genus) Subgenus **Lobopelta** Mayr.

The male is known only for *Leptogenys*; it differs from all other known male Ponerinæ in having pectinate claws.

13. **Odontomachini** Mayr

♀, ♀, ♂

1. Worker: no oblique swellings starting from the eyes to border the antennal fossæ; the latter not confluent; the head without distinct postocular hollows. Female similar, winged or ergatoid. Male: pygidium usually not terminating in a spine. (Tropicopolitan, Mediterranean) **Anochetus** Mayr.
- a.* Worker and female: head more or less broad, as a rule broadly emarginate behind; mandibles usually short, broadened in their distal part and narrowed just before the præapical tooth. (Tropicopolitan).

Subgenus **Anochetus**, *sensu stricto*.

Worker: head elongate, narrowed behind, not or feebly emarginate at the hind margin; mandibles long, not broadened in their distal part, denticulate along the entire inner margin. Female unknown. (Neotropical) Subgenus **Stenomymrmex** Mayr.

On each side of the face an oblique swelling extending out from the eye and bordering the antennal fossæ *2.*

2. Worker: antennal fossæ confluent in a frontal depression, behind the frontal carinæ, and separated by two rounded ridges from the deep and oblique postocular hollows. Female similar, winged. Male with the pygidium ending in a spine. (Tropicopolitan, southern Nearctic) **Odontomachus** Latreille.

Worker: antennal fossæ not confluent on the front; postocular hollows feebly marked. Female ergatoid. Male unknown. (Malagasy) **Champsomyrmex** Emery.

PSEUDOMYRMINÆ Emery

This subfamily contains only one tribe, the Pseudomyrmini of Forel.

♂, ♀

1. Clypeus neither inflected nor dentate, not or feebly emarginate. (Neotropical, southern Nearctic) **Pseudomyrma** Guérin.

Clypeus suddenly descending in front, or as if inflected or subtruncated, usually armed with teeth at the level of this inflection; rarely it is uniformly sloping and deeply emarginate at the anterior border. (Paleotropical) 2.

2. Large and stout species. Frontal carinæ farther apart. Maxillary palpi 5-jointed, labial palpi 4-jointed. Petiole and postpetiole armed beneath with a stout tooth. Worker with three well-developed ocelli. Male: antennæ as in *Tetraponera*; the pro- and mesosterna not separated by a gap. Fore wings with two cubital cells. Youngest larval stage (trophidium) with exudate organs in the form of elongate appendages. (Ethiopian).

Pachysima Emery.

Smaller and more slender species. Frontal carinæ closer together. Petiole and postpetiole without stout teeth ventrally. Worker with one, two, or three ocelli. Youngest larval stage with the exudate organs in the form of simple tubercles 3.

3. Maxillary and labial palpi 3-jointed. Worker: eyes small (about $\frac{1}{2}$ of the sides of the head); first joint of the funiculus very long, joints 2-7 very short and transverse, the three terminal joints forming a distinct clava. Female: winged or ergatoid, otherwise much like the worker but with developed ocelli. Male: second funicular joint much shorter than the scape, not longer than the first; a deep ventral gap between pro- and mesosterna; fore wing with one cubital cell. (West African).

Viticicola Wheeler.

Maxillary palpi 5-jointed, labial palpi 4-jointed. Worker: eyes much larger (about $\frac{1}{3}$ or more of the sides of the head); funiculus gradually tapering to the slightly thickened tip, without clava. Female: winged, no ergatoid form known. Male: second funicular joint much longer than the first, only slightly shorter than the scape. Fore wing of female and male with two cubital cells. (Ethiopian, Malagasy, Palestine, Indomalayan, Papuan, Australian) **Tetraponera** F. Smith.

Myrmicinae Lepeletier

Key to the Tribes

♂, ♀

1. Clypeus not prolonged back between the frontal carinae, its posterior margin rounded. Median spurs of middle and hind tibiae pectinate. Ocelli almost always developed in the worker. Antennae thickened, 11-jointed in worker and female, 12-jointed in the male; the funiculus much flattened in female and worker. Legs of worker and female short; the femora broad, distinctly compressed; the middle and hind tibiae and metatarsi ending in a circlet of teeth. Fore wings with one closed cubital cell.....METAPONINI Forel.
Clypeus almost always prolonged between the frontal carinae; if not, the spurs of middle and hind tibiae are simple or absent. In the ordinary worker the ocelli are not developed; but in strongly dimorphic species they may be more or less distinct in the worker major or soldier.....2.
2. Median spurs of middle and hind tibiae pectinate. Antennae 12-jointed. Fore wings as a rule with two closed cubital cells, or the separation between the two is incomplete; if with one closed cubital cell, the cubitus is united with the radius by a moderately long intercubitus.....MYRMICINI F. Smith.
Spurs of the middle and hind tibiae simple or absent, sometimes barbate, very rarely finely pectinate.....3.
3. Head more or less cordate, emarginate on the occipital margin and strongly narrowed in front; its posterior angles broadly rounded and devoid of spines (except in *Microdaceton*).....4.
Head differently shaped; either not cordate or with its posterior angles spinose.....5.
4. Antennae of female and worker 4- to 12-jointed, the last joint very much longer than the preceding; 13-jointed in the male. Mandibles not falcate, usually porrect. Fore wings originally with one closed cubital and a closed radial cell, but the venation often much reduced.....DACETONINI Forel.
Female: antennae 12-jointed; mandibles falcate; frontal carinae forming a bifurcate plate which overlaps the clypeus; antennal scrobes deep, containing the antennal scape. Male: antennae 13-jointed. Fore wings with two closed cubital and a closed radial cell. Worker unknown....STEGOMYRMICINI, new tribe.

5. Frontal carinæ closely approximated. Thorax unarmed, without dorsal sutures or impressions in the worker. Fore wings with one closed cubital and a closed radial cell.

MELISSOTARSINI Emery.

Frontal carinæ more or less distant; if close to each other (as in certain Attini) the thorax has a distinct mesoëpinotal depression.....6.

6. Postpetiole articulated to the dorsal surface of the following segment. Thorax with more or less distinct dorsal sutures in the worker, impressed at the mesoëpinotal suture. Antennæ 10- or 11-jointed. Front wings with one closed cubital cell; the radial cell variable; the intercubitus sometimes very short or disappearing.....CREMATOGASTRINI Forel.

Postpetiole inserted at the anterior end of the following segment. 7.

7. Worker: thorax flat, subtriangular, without dorsal sutures or impressions; epinotum with two pairs of spines and a broad, flat declivity. Petiole and postpetiole short and thick, not pedunculate; the gaster also short and broad. Antennæ 12-jointed, with a feeble, short, 3-jointed club. Cheeks strongly margined behind. Clypeus with 3-lobed anterior border. ♀ and ♂ unknown.....ARCHÆOMYRMICINI Mann.

Worker: without all these characters combined; either the antennæ 11-jointed, or the thorax with dorsal sutures, or the epinotum unarmed or bispinose.....8.

8. Worker: thorax without dorsal sutures or impressions; the epinotum bispinose. Antennæ 11-jointed in all sexes; the 3 terminal joints forming a club in the worker. Wings with one closed cubital and a closed radial cell.

STEREOMYRMICINI Emery.

Worker: thorax with more or less distinct dorsal sutures; usually impressed at the mesoëpinotal suture; when the thorax has no impressions or sutures, the epinotum is usually unarmed or the other characters do not all agree.....9.

9. Worker and female: antennæ 7-jointed, elongate, without distinct club; scape not enclosed in a groove; epinotum bispinose. Male: antennæ 13-jointed; abdomen cordate and flattened. Fore wings with one closed cubital and an open radial cell.

MYRMICARIINI Forel.

Worker and female almost always with more than 7 joints in the antennæ; when 7-jointed, the last joint is very large, or there

- is a differentiated club, or the scape may be enclosed in a deep groove, or the epinotum is unarmed. Abdomen of the male not cordate nor flattened. 10.
10. Antennal scrobe deep, capable of containing the folded antenna, placed at the side of the head, below the eyes; the carina formed by its dorsal margin (and which does not correspond to the frontal carina of other ants) passes outside of the eye; posterior angles of the head usually pointed or prolonged or denticulate. Antennæ 11-jointed in all sexes. Epinotum often spinose or tuberculate. Body broad, flattened. Fore wings with one closed cubital, an open radial and no discoidal cell. (Old World tropics). . . . CATAULACINI Emery.
- No antennal scrobe, or if a groove is present it is shaped differently and is delimited on the inner side only by the frontal carinæ. Antennæ of the male usually 12- or 13-jointed. 11.
11. Frontal carinæ continuing backward above the eyes on the sides of the head; a scrobe in front of the eye sufficiently deep to conceal the whole antennal scape. Epinotum well developed and with a long basal face. Body broad, flattened, often with scale-like hairs. Antennæ 11-jointed in female and worker, the funiculus swollen, but without differentiated club; 13-jointed in the male. Gizzard fungiform, of peculiar structure. Fore wings with one closed cubital and a closed radial cell. (Neotropical). CRYPTOCERINI F. Smith.
- Scrobe absent or feebly marked or placed differently. When the scrobe is similar (as in certain Meranoplini) the epinotum is short, with the basal face feebly developed or absent. Gizzard of the usual form. 12.
12. Worker and female: the shallow antennal scrobes bordered laterally by a more or less distinct carina of the cheeks; antennæ 11-jointed (with the exception of *Proatta*, where they are 12-jointed). Fore wings with one closed cubital cell. (Neotropical with the exception of *Proatta*). 13.
- Antennal foveæ or scrobes not bordered below by a carina of the cheeks. 15.
13. Worker and female: antennæ with a distinct club of three joints, the last of which is decidedly predominant. Male: antennæ 13-jointed. Fore wings with the brachius developed beyond the nervulus, the brachial cell being more or less complete; intercubitus very short or absent. Workers monomorphic. OCHETOMYRMICINI Emery.

Worker and female: antennæ usually without distinct club and the terminal joint not predominant. Fore wings with the brachius not developed beyond the nervulus, the latter passing by a loop into the submedius; very rarely (*Sericomyrmex*, *Myrmicocrypta*) there is a trace of brachius beyond that loop; radial cell closed; no discoidal cell. Workers sometimes dimorphic.

14.

14. Worker: antennæ 12-jointed; fore tarsi not dilated. Male: antennæ 13-jointed; pterostigma well developed. Female unknown. Not fungus-growing. (Sumatra). PROATTINI Forel.

Worker and female: antennæ 11-jointed. Fore tarsi of the worker more or less dilated. Male: antennæ usually 13-jointed (12-jointed in *Sericomyrmex* and certain *Cyphomyrmex*; 11-jointed in *Pseudoatta*). Pterostigma narrow or absent. Fungus-growing ants. (Neotropical and southern Nearctic).

ATTINI F. Smith.

15. Worker: monomorphic; head underneath with a psammophore; the body long and slender; petiole pedunculate, the peduncle very thin and longer than the node; postpetiole more or less barrel-shaped; gaster small, more or less pyriform; legs very long and slender; antennæ 12-jointed, nearly filiform. Female probably highly ergatoid, wingless. Male: antennæ 13-jointed, the scape very short; fore wings with one closed cubital, a short closed radial, and no discoidal cell.

OCYMYRMICINI Emery.

Worker: only exceptionally with a psammophore, in which case the other characters given above do not agree; the antennæ often terminate in a club. 16.

16. Worker: monomorphic; thorax as a rule short; promesonotum large; epinotum with a very short or no basal face; often the mesonotum overarches the epinotum; hairs usually dense and soft, or spatulate; antennæ 9- to 12-jointed (also in the female), usually partly concealed in a scrobe which is sometimes similar to that of the Cryptocerini. Male: antennæ 12- or 13-jointed; Mayrian furrows very distinct. Fore wings with one closed cubital and a closed radial cell. MERANOPLINI Emery.

Worker: thorax of the usual shape; the epinotum usually with a distinct basal face. 17.

17. Worker and female: antennæ 12-jointed, the three last joints forming an incrassate club; epinotum with two spines or teeth; in the worker the promesonotal suture obsolete dorsally,

the mesoëpinotal distinctly impressed; legs slender; middle and hind tibiæ without spurs; petiole with long, cylindrical peduncle and a broad oval node; postpetiole usually large; body hairs simple. Worker minute, monomorphic. Male often wingless and ergatoid. Fore wing with one cubital and a very incomplete radial cell; the brachius is not developed beyond the nervulus. CARDIOCONDYLINI Emery.

Not presenting all these characters; either the spurs are present, or the body hairs are clavate, or the number of antennal joints is different, etc. 18.

18. ¹Fore wings with two closed cubital cells (except in *Stenamma*, *Oxyopomyrmex* and certain *Aphænogaster*). Antennæ usually 12-jointed in worker and female, and 13-jointed in the male (except in *Oxyopomyrmex*, *Machomyrma*, and a few *Pheidole*).

PHEIDOLINI Emery.

Fore wings with one closed cubital cell. 19.

19. Fore wings with the radial cell variously shaped; the venation usually of the *Solenopsis* type, with a more or less developed intercubitus; in a few cases the intercubitus is very short or lacking (type of *Formica*). 20.

Venation of the fore wings of the *Formica* type, the intercubitus being very short or altogether absent. 21.

20. Radial cell either open or closed. Antennæ of worker and female 7- to 12-jointed, often with a 2- or 3-jointed club; in the male 12- or 13-, rarely 11-jointed. Mayrian furrows of the male absent or indistinct (except in *Huberia* and the subgenus *Chelaner* of *Monomorium*).

SOLENOPSIDINI Forel (including PHEIDOLOGETONINI Emery).

Characters negative; genera which cannot be placed in any other tribe. Radial cell as a rule closed. Mayrian furrows usually very distinct in the male. MYRMECININI Ashmead.

21. Antennæ 11- or 12-jointed in worker and female, with a 2- or 3-jointed club; more than 10-jointed in the male. Epinotum usually spinose. LEPTOTHORACINI Emery.

Antennæ 10- to 12-jointed in worker and female; 10-jointed in the male, four joints being fused into a long one. Clypeus with a posterior ridge bordering the antennal foveæ.

TETRAMORIINI Emery.

¹The following five tribes are very unsatisfactorily defined, chiefly on the winged, sexual forms. Since the worker phase is more frequently met with, I have prepared a key based on these forms and including all the genera of the tribes in question. See pp. 670-687.

1. **Myrmicini** F. Smith

8

1. Thoracic dorsum without any trace of suture or impression 2.
 Thoracic dorsum impressed at the mesoëpinotal suture; promesonotal suture usually distinct 3.
2. Mandibles not of the granivorous type, elongate and narrow; their inner margin very oblique, with 5 or 6 indistinct teeth and passing without angle into the apical margin. Labrum bidentate, projecting beyond the anterior margin of the clypeus. Petiole cylindrical, without distinct node. (Neotropical) **Hylomyrma** Forel.
 Mandibles subtriangular and broad, with a distinct angle between the apical and inner margins. Labrum not projecting nor bidentate. Petiole with a very distinct node. (Neotropical and Nearctic) **Pogonomyrmex** Mayr.
 - a. Small species, roughly sculptured. Head short. Mandibles much curved. Under side of the head without psammophore.
 Subgenus **Epebomyrmex** Wheeler.
 Larger species, usually with less coarse sculpture. Head with a psammophore underneath. Usually with only two epinotal spines, which are sometimes absent. A few species are polymorphic.
 Subgenus **Pogonomyrmex**, *sensu stricto*.
 Larger species, very opaque, with fine sculpture. Epinotum with two pairs of spines. Mandibles less convex than in *Pogonomyrmex*, *sensu stricto*; probably not granivorous; no psammophore on the under side of the head which is lengthened.
 Subgenus **Forelomyrmex** Wheeler (= *Janetia* Forel).
3. Funiculus of the antennæ filiform, the terminal joints not forming a club. Under side of the head with a psammophore. Head almost square. (Ethiopian) **Cratomyrmex** Emery.¹
 Funiculus of the antennæ slightly swollen into a 3- to 5-jointed club. Under side of the head without psammophore. Head longer than broad. (Holarctic, Indomalayan) . . . **Myrmica** Latreille.
 - a. Epinotum bispinose. Club of the antennæ 3- or 4-jointed.
 Subgenus **Myrmica**, *sensu stricto*.
 Spines of the epinotum replaced by blunt projections. Club of the antennæ 5-jointed.
 Subgenus **Manica** Jurine (= *Neomyrma* Forel; *Oreomyrma* Wheeler).

¹In a recent paper (1920, Ann. Soc. Ent. France, LXXXVIII (1919), p. 378) Santschi writes: "Since I know the entire series of workers of *C. regalis*, I am no longer able to differentiate them from the genus *Messor*, the female alone is somewhat aberrant in its large size. *Cratomyrmex* is at most a subgenus of *Messor*." Emery in his original description of the genus states that in *Cratomyrmex* the tibial spurs are feebly pectinate. In *Messor* they are simple. In the absence of specimens of *Cratomyrmex* I have preferred to leave this genus provisionally among the Myrmicini.

2. **Pheidolini** Emery

This tribe contains the following genera: *Stenammas* Westwood; *Sifolinia* Emery; *Aphænogaster* Mayr; *Messor* Forel; *Novomessor* Emery; *Veromessor* Forel; *Goniomma* Emery; *Oxyopomyrmex* Ern. André; *Machomyrma* Forel; *Ischnomyrmex* Mayr; *Ceratopheidole* Pergande; *Parapheidole* Emery; *Decapheidole* Forel; *Pheidole* Westwood; *Epipheidole* Wheeler; *Sympheidole* Wheeler. (See p. 670).

3. **Melissotarsini** Emery

♀

1. Female and worker: antennæ 6-jointed, ending in a two-jointed club; legs short and thick; the hind metatarsi dilated and slightly compressed. Male: antennæ 12-jointed, filiform; tarsi simple. (Ethiopian, Malagasy). **Melissotarsus** Emery. Worker: antennæ 10-jointed; metatarsi not dilated. Female: antennæ 11-jointed, very short, the 9 apical joints forming a thick club; metatarsi not dilated. Male: antennæ 12-jointed. (Ceylon, Singapore) **Rhopalomastix** Forel.

4. **Metaponini** Forel

Metapone Forel. (Indomalayan, Australian).

5. **Stereomyrmecini** Emery

Stereomyrmex Emery. (Ceylon).

6. **Myrmecariini** Forel

Myrmecaria W. Saunders. (Ethiopian, Indomalayan, Papuan).

7. **Cardiocondyliini** Emery

Cardiocondyla Emery. (Tropicopolitan and warm temperate regions).

This tribe also includes *Xenometra* Emery, of which only the female is known.

8. **Crematogastrini** Emery

Crematogaster Lund. (Tropicopolitan and warm temperate regions; in North America reaching to Canada).¹

- a. Antennæ 10-jointed.

Subgenus **Decacrema** Forel. (Type: *C. (Decacrema) decamera* Forel).

- Antennæ 11-jointed. b.

¹The following key to the subgenera is largely a translation of Santschi's recent key published in the Bull. Soc. Ent. France, 1918, pp. 183-184.

- b. Epinotal spines enormously developed. Petiole elongate and pedunculate.
Antennal club 2-jointed.
Subgenus **Rhachiocrema** Mann. (Type: *C. (Rhachiocrema) wheeleri* Mann).
Epinotal spines of normal size.c.
- c. Frontal carinæ short. Terminal border of mandibles of the female very oblique.d.
Frontal carinæ well developed. Mandibles of female of the usual shape. . .e.
- d. Antennal club 3-jointed. Postpetiole of female much broader than long.
Subgenus **Oxygyne** Forel. (Type: *C. (Oxygyne) daisyi* Forel).
Antennal club of more than 3 joints in the worker, filiform in the female;
postpetiole narrow.
Subgenus **Nematocrema** Santschi. (Type: *C. stadelmanni* Mayr).
- e. Pronotum armed with spines.
Subgenus **Xiphocrema** Forel. (Type: *C. tetracantha* Emery).
Pronotum unarmed.f.
- f. Epinotum dilated.
Subgenus **Physocrema** Forel. (Type: *C. inflata* F. Smith).
Epinotum not dilated, of the usual form.g.
- g. Petiole with parallel sides, usually straight or scarcely arcuate, rarely broader posteriorly than anteriorly.h.
Petiole broadened in front, trapezoidal, sometimes truncated or rounded at the anterior angles, sometimes oval.j.
- h. Antennal club 2-jointed.i.
Antennal club 3-jointed; postpetiole more or less impressed.
Subgenus **Eucrema** Santschi. (Type: *Formica acuta* Fabricius).
- i. Postpetiole entire.
Subgenus **Orthocrema** Santschi. (Type: *Myrmica sordidula* Nylander).
Postpetiole incised or impressed. Petiole often with slightly blunt or rounded posterior angles.
Subgenus **Neocrema** Santschi. (Type: *C. distans* Mayr).
- j. Postpetiole entire, without a median furrow.
Subgenus **Sphærocrema** Santschi. (Type: *C. kneri* Mayr).
Postpetiole grooved or impressed.k.
- k. Antennal club 4-jointed or indistinct.
Subgenus **Paracrema** Santschi. (Type: *C. spengeli* Forel).
Antennal club 3-jointed.l.
- l. Postpetiole merely impressed behind. Promesonotal suture impressed; mesonotum carinate in front. Epinotal spines often curved downward. Basic sculpture densely striate.
Subgenus **Atopogyne** Forel. (Type: *Formica depressa* Latreille).
Postpetiole grooved, or if merely impressed the body is shaped differently.
Subgenus **Crematogaster**, *sensu stricto*. (Type: *Formica scutellaris* Olivier).

9. Solenopsidini Forel

(Including the Pheidologetini Emery)

This tribe contains the following genera: *Vollenhovia* Mayr; *Heteromyrmex* Wheeler; *Huberia* Forel; *Monomorium* Mayr; *Epixenus* Emery; *Trichomyrmex* Mayr, *Hagioxenus* Forel; *Wheeleriella* Forel; *Phacota*

- b. Epinotal spines enormously developed. Petiole elongate and pedunculate.
Antennal club 2-jointed.
Subgenus **Rhachiocrema** Mann. (Type: *C. (Rhachiocrema) wheeleri* Mann).
Epinotal spines of normal size.c.
- c. Frontal carinæ short. Terminal border of mandibles of the female very oblique.d.
Frontal carinæ well developed. Mandibles of female of the usual shape. .e.
- d. Antennal club 3-jointed. Postpetiole of female much broader than long.
Subgenus **Oxygyne** Forel. (Type: *C. (Oxygyne) daisyi* Forel).
Antennal club of more than 3 joints in the worker, filiform in the female;
postpetiole narrow.
Subgenus **Nematocrema** Santschi. (Type: *C. stadelmanni* Mayr).
- e. Pronotum armed with spines.
Subgenus **Xiphocrema** Forel. (Type: *C. tetracantha* Emery).
Pronotum unarmed.f.
- f. Epinotum dilated.
Subgenus **Physocrema** Forel. (Type: *C. inflata* F. Smith).
Epinotum not dilated, of the usual form.g.
- g. Petiole with parallel sides, usually straight or scarcely arcuate, rarely broader posteriorly than anteriorly.h.
Petiole broadened in front, trapezoidal, sometimes truncated or rounded at the anterior angles, sometimes oval.j.
- h. Antennal club 2-jointed.i.
Antennal club 3-jointed; postpetiole more or less impressed.
Subgenus **Eucrema** Santschi. (Type: *Formica acuta* Fabricius).
- i. Postpetiole entire.
Subgenus **Orthocrema** Santschi. (Type: *Myrmica sordidula* Nylander).
Postpetiole incised or impressed. Petiole often with slightly blunt or rounded posterior angles.
Subgenus **Neocrema** Santschi. (Type: *C. distans* Mayr).
- j. Postpetiole entire, without a median furrow.
Subgenus **Sphærocrema** Santschi. (Type: *C. kneri* Mayr).
Postpetiole grooved or impressed.k.
- k. Antennal club 4-jointed or indistinct.
Subgenus **Paracrema** Santschi. (Type: *C. spengeli* Forel).
Antennal club 3-jointed.l.
- l. Postpetiole merely impressed behind. Promesonotal suture impressed; mesonotum carinate in front. Epinotal spines often curved downward. Basic sculpture densely striate.
Subgenus **Atopogyne** Forel. (Type: *Formica depressa* Latreille).
Postpetiole grooved, or if merely impressed the body is shaped differently.
Subgenus **Crematogaster**, *sensu stricto*. (Type: *Formica scutellaris* Olivier).

9. Solenopsidini Forel

(Including the Pheidologetini Emery)

This tribe contains the following genera: *Vollenhovia* Mayr; *Heteromyrmex* Wheeler; *Huberia* Forel; *Monomorium* Mayr; *Epixenus* Emery; *Trichomyrmex* Mayr, *Hagioxenus* Forel; *Wheeleriella* Forel; *Phacota*

Roger; *Paraphacota* Santschi; *Xenomyrmex* Forel; *Allomerus* Mayr; *Megalomyrmex* Forel; *Liomyrmex* Mayr; *Epæcus* Emery; *Anergates* Forel; *Anergatides* Wasmann; *Tranopelta* Mayr; *Carebarella* Emery; *Diplomorium* Mayr; *Bondroitia* Forel; *Solenopsis* Westwood; *Lophomyrmex* Emery; *Trigonogaster* Forel; *Pheidologeton* Mayr; *Aneleus* Emery; *Aëromyrma* Forel; *Oligomyrmex* Mayr; *Erebomyrma* Wheeler; *Carebara* Westwood; *Pædalagus* Forel. (See p. 670).

10. **Myrmecini** Ashmead

This tribe contains the following genera: *Podomyrma* Smith; *Lordomyrma* Emery; *Atopomyrmex* Ern. André; *Dilobocondyla* Santschi; *Terataner* Emery; *Atopula* Emery; *Brunella* Forel; *Paratopula* Wheeler; *Myrmecina* Curtis; *Pristomyrmex* Mayr; *Acanthomyrmex* Emery; *Dacryon* Forel. (See p. 670).

11. **Archæomyrmecini** Mann

Archæomyrmex Mann. (Fiji Islands).

12. **Meranoplini** Emery

♀

1. Eyes prolonged downward into a point. Antennal scrobes deep, capable of containing the scape. Antennæ 12-jointed, with a rather distinct, 2-jointed club. Mesonotum not overlapping the epinotum, the latter oblique. Body with feeble, simple pilosity. Minute. Female and male unknown. (Australian).
Mayriella Forel.
- Eyes of the normal shape, rounded or oval. 2.
2. Pro- and mesonotum more or less fused into a single disc, the posterior margin of which is more or less toothed and overlaps the epinotum; the latter vertical, or very steep, without basal face. Pilosity rather long, abundant, simple, often woolly. 3.
Pro- and mesonotum not or more or less fused, but unarmed behind and not overlapping the epinotum; the latter oblique, with a short basal face. Antennal scrobes more or less pronounced. 4.
3. Antennæ 12-jointed, with 3-jointed club. Frontal carinæ short and narrow, not forming scrobes. Epinotum bispinose. Scale of the petiole bispinose. Male and female unknown: (New Caledonia). **Promeranoplus** Emery.
- Antennæ 9-jointed, with 3-jointed club. Antennal scrobes deep, placed along the sides of the head above the eyes and capable of containing the scape or the whole of the folded antennæ.

17. **Cataulacini** Emery

Cataulacus F. Smith. (Ethiopian, Malagasy, Indomalayan, Papuan). I cannot recognize *Otomyrmex* Forel as a valid subgenus since it was based merely on the pointed, elongate occipital angles of the head, a character which is found, more or less pronounced, among many species of *Cataulacus*.

18. **Cryptocerini** F. Smith

♂

1. Antennal scrobes approximated in front, diverging strongly behind, not reaching the sides of the head except at their extremities. Monomorphic. (Neotropical).....**Procryptocerus** Emery.
Antennal scrobes covered throughout their length by the lateral border of the head.....2.
2. Much flattened. Sides of the head, the thorax, the epinotum and the first tergite of the gaster excessively expanded into broad, translucent lamellæ; the eyes almost stalked above the very deep scrobes. Monomorphic. (Neotropical).

Zacryptocerus Ashmead.

- Sides of the body not with extremely expanded, translucent lamellæ.....3.
3. Eyes more prominent, exposed when the head is seen from above. Posterior angles of the head, pronotum, and epinotum with long, erect spines. Black, monomorphic, moderately flattened species. (Neotropical).....**Cephalotes** Latreille.
Eyes less prominent, usually hidden by the lateral carinæ when the head is seen from above. Body flattened, the spines usually broad and short, directed sidewise. (Neotropical, southern Nearctic).....**Cryptocerus** Fabricius.
 - a. Monomorphic. Pronotum without transverse crest. Spines of the epinotum long and sharp...Subgenus **Hypocryptocerus** Wheeler.
(Type: *Formica hæmorrhoidalis* Latreille; Haiti).
Strongly dimorphic. Pronotum usually with a more or less distinct crest..b.
 - b. Head surmounted by a concave, saucer-shaped structure in the soldier...c.
Head of the soldier without saucer-shaped structure, distinctly convex above.....Subgenus **Paracryptocerus** Emery.
 - c. Saucer-shaped structure of the head of soldier more complete, bordered by a continuous raised lamella in front and behind; the head concave above. Gaster more elongate...Subgenus **Cyathocephalus** Emery.
Saucer-shaped structure of the head of soldier much less pronounced, incompletely margined; the head still convex above. Gaster more oval.
Subgenus **Cryptocerus**, *sensu stricto*.

19. **Dacetonini** Forel

♂

1. Antennæ 12-jointed. Antennal scrobes as long as the scape, placed at the lateral side of the eyes. Mandibles narrowly triangular, with numerous fine teeth along the apical margin. Body hairs partly scale-like. (Neotropical).

Basiceros Schulz (= *Ceratobasis* F. Smith).

Antennæ 11-jointed. Antennal scrobes short. 2.

Antennæ 4- to 8-jointed. 3.

2. Only the last joint of the funiculus longer than the preceding joint. (Neotropical). **Daceton** Partz.

The two last joints of the funiculus longer than the preceding. Mandibles elongate, slender, parallel and porrect, with three hook-like, curved teeth at the apex; with a very long tooth directed inward at the under side near the base. Pedicel without spongiform appendages. Body hairs not scale-like. (Neotropical). **Acanthognathus** Mayr.

3. Antennæ 4-jointed; the terminal joint of the funiculus as long as, or longer than, the two basal joints. Mandibles slender, porrect, subparallel. Pedicel often with spongiform appendages. (Mediterranean, Ethiopian, Papuan, Australian, Neotropical).

Epitritus Emery.

Antennæ 5-jointed. 4.

Antennæ 6- to 8-jointed. 5.

4. Antennal scrobes shallow, placed at the dorsal or medial side of the eyes. Second joint of the funiculus much elongate, longer than the apical joint. Mandibles slender, porrect, parallel. Pedicel without spongiform appendages. (New Zealand, Australian, Papuan). **Orectognathus** F. Smith.

Antennal scrobes deep, placed at the dorsal side of the eyes. The three basal joints of the funiculus subequal, together not longer than the apical joint. Mandibles short, narrowly subtriangular, with small teeth along their apical margin. Pedicel with spongiform appendages. (Formosa). **Pentastruma** Forel.

5. Antennæ 7- or 8-jointed, the apical joint of the funiculus the largest. Mandibles denticulate along the inner or apical margin; either long, porrect and with curved apex; or narrowly triangular. Antennal scrobes placed at the lateral side of the eyes. Body hairs partly scale-like or clavate. (Neotropical, Indomalayan, Papuan, Australian). **Rhopalothrix** Mayr.

- a. Antennæ 7-jointed. Subgenus **Rhopalothrix**, *sensu stricto*.
 Antennæ 8-jointed. Subgenus **Octostruma** Forel.
 Antennæ 6-jointed. 6.
6. No antennal scrobes. The frontal carinæ form two anterior lobes which cover the base of the scape, but are not prolonged behind. The scape lies against the head at the dorsal side of the eye. Occipital angles of the head with 3 spines on the upper face. Mandibles slender, porrect, parallel, with three apical teeth. Petiole spinose above; postpetiole very broad. No spongiform appendages. (Ethiopian). **Microdaceton** Santschi.
 Antennal scrobes more or less developed, often very strongly so. Occipital angles of the head unarmed. 7.
7. Antennal scrobes situated at the lateral side of the eyes; the latter being placed upon or above the upper margin of the scrobes. (Papuan, Australian). **Epopostruma** Forel.
 Antennal scrobes placed at the dorsal or medial side of the eyes. . . . 8.
8. Antennal scrobes very deep, bordered also over their whole length by a strong lower ridge immediately above the eyes, and accommodating both scape and funiculus. Lateral margins of the head forming with the expanded frontal carinæ and the external borders of the clypeus a translucent plate overarching the scrobe on each side. Mandibles short and broad, the apical margin broad, with a regular row of acute teeth. Anterior margin of the clypeus excised. Funiculus with 2-jointed club; the apical joint nearly as long as the remainder of the funiculus. Abdomen with fungiform appendages. Body hairs not clavate nor scale-like. Antennæ 13-jointed in the male. Wing venation much reduced in both sexes. (Neotropical).
Glamyromyrmex Wheeler.
 Antennal scrobes usually not so pronounced or of different shape. Head, clypeus, and mandibles also different. 9.
9. Head subtriangular, with convexly swollen vertex, not strongly narrowed in front. Clypeus projecting over the base of the mandibles. Antennal scrobes broad, overarched by the much expanded frontal carinæ which continue backward as far as the posterior corners of the head. Mandibles large, swollen, subtriangular; their apical margin with numerous, regular, acute teeth. Spongiform appendages of the abdomen well developed. Squamiform or clavate hairs absent. (Trinidad).
Codiomyrmex Wheeler.

Head usually with narrowed, snout-like anterior portion. Frontal carinæ not reaching the posterior corners of the head. Mandibles slender and porrect, or narrowly subtriangular and flattened. Spongiform appendages of the abdomen present or absent. Body hairs often partly scale-like or clavate. (Mediterranean, Japan, Ethiopian, Malagasy, Indomalayan, Papuan, Polynesian, New Zealand, Neotropical, Nearctic).

Strumigenys F. Smith.

- a. Mandibles slender, porrect, subparallel; with two or three teeth at the apex; approximate at their base, which is not covered by the short clypeus. Subgenus **Strumigenys**, *sensu stricto*.
Mandibles rather short and flattened, narrowly subtriangular; with numerous small teeth along their apical margin; remote at their base, which is covered by the projecting clypeus.

Subgenus **Cephaloxys** F. Smith (= *Trichoscapa* Emery).

20. **Stegomyrmicini**, new tribe

Stegomyrmex Emery. (Neotropical).

21. **Proattini** Forel

Proatta Forel. (Sumatra).

22. **Attini** F. Smith¹

♀

1. Antennæ with a well-defined 2-jointed club, which is longer than the remainder of the funiculus. A deep antennal scrobe extends the full length of the head, bordered above by the frontal carinæ and below by a ridge as long as the frontal carinæ and running just above the eye. Frontal carinæ very far from each other, expanded, lobulate in front. Body hairs very sparse, long, stiff and blunt. Mandibles 4-toothed. Monomorphic. Male and female unknown. (Neotropical).

Blepharidatta Wheeler.

Antennæ without distinct 2-jointed club. Antennal scrobes indistinct or short. 2.

2. Frontal carinæ very close to each other and dilated at the anterior extremity. Clypeus not distinctly prolonged between them. Monomorphic 3.

¹*Pseudoatta* Gallardo (1916, An. Mus. Nac. Buenos Aires, XXVIII, p. 320), for *Pseudoatta argentina* Gallardo, is only known in the female and male sex; there are probably no workers, this ant thus being a possible social parasite of some other Attini. Antennæ 11-jointed in female and male; frontal carinæ separated, broadened at the anterior extremity into lobes which cover the insertion of the antennæ; mandibles subtriangular, many-toothed; integument even, shining, almost without sculpture, with short, thick hairs. Argentina.

- Frontal carinae separated, embracing the posterior extremity of the clypeus.....5.
3. Integument bristling with tubercles and spines, with hooked and scale-like hairs. (Neotropical).
Myrmicocrypta F. Smith (= *Glyptomyrmex* Forel).
 Integument opaque and even.....4.
4. Body slender and elongate, covered with long soft, fine, woolly hairs. (Neotropical)..... **Apterostigma** Mayr.
 Body not slender, with very poorly developed pilosity. (Neotropical)..... **Mycocepurus** Forel.
5. Hairs of the body appressed, rather scale-like. Antennal foveae usually prolonged to the posterior corners of the head. Body with few spines. Monomorphic. (Neotropical, Nearctic).
Cyphomyrmex Mayr.¹
 Body bearing erect hairs, which are often coarse.....6.
6. Integument even, bearing only delicate, oblique, flexuous hairs. Body with very few spines. Monomorphic. (Neotropical).
Sericomyrmex Mayr.
 Integument rough, bearing stiff or hooked hairs. Body often with spines or tubercles.....7.
7. Monomorphic. Fungus gardens pendant in the nest. (Neotropical, Nearctic)..... **Trachymyrmex** Forel.
 a. Anterior lobes of the frontal carinae moderately broad. Larger species. Subgenus **Trachymyrmex**, *sensu stricto*.
 Frontal carinae ending in very broad, anterior lobes. Smaller species. (Texas)..... Subgenus **Mycetosoritis** Wheeler.
 Polymorphic. Fungus gardens sessile on the floor of the chambers of the nest. (Neotropical, southern Nearctic).. **Atta** Fabricius.
 a. Strongly polymorphic. Very large species.. Subgenus **Atta**, *sensu stricto*.
 Feebly polymorphic. Smaller species..... b.
 b. No postocular tubercles or spines. Head broadly, strongly cordate, with the occipital lobes prominent and rounded, often spinose. Mandibles short, feebly curved on the plate and with their lateral margin not distinctly sinuate..... Subgenus **Möllerius** Forel.
 Postocular spines well developed or at least represented by a tubercle. Subgenus **Acromyrmex** Mayr.

¹Emery's subgenera *Mycetarotes* and *Mycetophylax* (1913, Ann. Soc. Ent. Belgique, LVII, p. 231, have not yet been characterized.

**Pheidolini, Myrmecini, Solenopsidini, Leptothoracini,
and Tetramoriini**

As may be seen from the key, p. 659, the characters used by Emery to separate these five tribes are to a very large extent taken from the winged forms. Since the workers are more frequently met with, I have combined the genera of these five tribes into one synoptical table based on the worker phase.

In the following genera social parasitism is so advanced that the worker has disappeared and only the female and male have remained; in a few cases the male is unknown: *Anergates* Forel, *Anergatides* Wasmann, *Epipheidole* Wheeler, *Epixenus* Emery, *Epæcus* Emery, *Hagioæxenus* Forel, *Parapheidole* Emery, *Sifolinia* Emery, *Sympheidole* Wheeler, *Trichomyrmex* Mayr, and *Wheeleriella* Forel. These genera do not appear in the key. Other parasitic forms (*Strongylognathus*, *Harpagoæxenus*, *Formicoæxenus*, *Epimyrma*), where workers are still present, have been included here.

The worker of *Trichomyrmex* Mayr (Ceylon) is unknown; this genus has been omitted from the key.

♂, ♀ (when present).

- | | |
|---|-----|
| 1. Antennæ 12-jointed..... | 2. |
| Antennæ 11-jointed..... | 36. |
| Antennæ 7- to 10-jointed..... | 60. |
| 2. Club of the antennæ 2-jointed, the last joint much larger than the
others. Epinotum bispinose. Hind tibiæ without spurs.... | 3. |
| Antennal club indistinct or shaped differently..... | 5. |
| 3. Anterior margin of the clypeus broadly rounded. Head with deep
lateral scrobes, large enough to enclose the whole antennal
scape. Mesoëpinotal constriction pronounced. Inferior
pronotal angles rounded. Body covered with long, flexuous
hairs. Male and wings of female unknown. Antennæ 12-
jointed in the female. (Neotropical) Lachnomyrmex Wheeler. | |
| Anterior margin of the clypeus with a projecting, median piece.
Head without deep, lateral scrobes. Mesoëpinotal constrict-
ion feeble..... | 4. |
| 4. Clypeus strongly projecting into a median, truncate lobe, which is
distinctly separated from the frontal carinæ. Inferior angles
of the epinotum pointed or rounded. Antennæ 12-jointed in
the female; wings unknown. Male unknown. (Papuan). | |
- Adelomyrmex** Emery.

- a. Inferior angles of the epinotum pointed. Clypeus with a bidentate median lobe.....Subgenus **Adelomyrmex**, *sensu stricto*.
 Inferior angles of the epinotum rounded. Clypeus with a quadridentate median lobe.

Subgenus **Arctomyrmex** Mann. (Type: *Arctomyrmex hirsutus* Mann).

Clypeus elevated in the middle to form a narrow, bidentate plate, which is fused with the frontal carinae. Inferior angles of the epinotum rounded. Male and female unknown. (Neotropical).

Apsychomyrmex Wheeler.

5. Erect hairs of the body usually trifold or multifold. Antennal club 3-jointed. Distinct antennal scrobes divided by a longitudinal carina into two halves for the reception of the folded scape and funiculus. Thoracic sutures obsolete. Epinotum armed. Petiole and postpetiole (or at least the latter) much wider than long, the petiole never squamiform. Fore wings with one closed cubital and a closed radial cell. Antennae 12-jointed in the female, 10-jointed in the male. (Ethiopian, Malagasy, Indomalayan, Papuan).....**Triglyphothrix** Forel.
 Hairs of the body simple, rarely clavate.....6.
6. Eyes prolonged obliquely downwards. Antennal club 4-jointed. Thoracic sutures distinct. Petiole pedunculate in front. Epinotum spinose. Workers monomorphic. Fore wings with two closed cubital cells. Antennae 12-jointed in the female, 13-jointed in the male. (Mediterranean)....**Goniomma** Emery.
 Eyes round or oval.....7.
7. Posterior margin of the clypeus raised laterally in the form of trenchant ridges which border the antennal foveae in front..8.
 Posterior border of the clypeus not forming ridges.....15.
8. Mandibles narrow and pointed, without distinct basal and apical border. Antennal club 3-jointed. Most other characters of all phases as in *Tetramorium*, with which genus these ants form mixed colonies. (Central and southern Europe).
Strongylognathus Mayr.
 Mandibles subtriangular, with dentate apical border.....9.
9. Portion of the clypeus in front of the antennal insertion narrow, but not reduced to a mere ridge. Antennae of the male usually 10-jointed (12- or 13-jointed in a few *Tetramorium*).....10.
 Portion of the clypeus in front of the antennal insertion reduced to a trenchant ridge.....13.
10. Antennal foveae small, never forming scrobes, the frontal carinae short. Head wider behind than in front, the sides convex..11.

- Frontal carinae either short or long, often bordering distinct antennal scrobes. Head with subparallel or feebly convex sides.....12.
11. Epinotum with long, diverging spines. (Indomalayan).
Acidomyrmex Emery.
 Epinotum unarmed. First joint of petiole usually laterally compressed. (Ethiopian).....**Rhoptromyrmex** Mayr.
12. Antennal club 4-jointed. Clypeus bidentate. (Neotropical).
Lundella Emery.
 Antennal club 3-jointed. Clypeus usually unarmed. Antennae as a rule 10-jointed in the male, the second funicular joint greatly lengthened. (Tropics and warm temperate regions, especially of the Old World).....**Tetramorium** Mayr.
13. Petiole not pedunculate in front. Workers without appreciable dimorphism. (Holarctic, Indomalayan, Papuan, Australian).
Myrmecina Curtis.
 Petiole pedunculate in front.....14.
14. Worker caste very markedly dimorphic. In soldier and worker, the petiole is strongly bidentate above and the epinotum is armed with two spines. Worker also with two spines on the pronotum. (Indomalayan, Papuan).....**Acanthomyrmex** Emery.
 Worker caste monomorphic. Pronotum not spinose (see below).
Eutetramorium Emery.
15. Workers monomorphic or dimorphic, in the latter case the extreme forms are usually connected by intermediates and the antennal club is either 4- or 5-jointed, or shorter than the remainder of the funiculus; or the antennal club indistinct.....16.
 Workers with very pronounced dimorphism, in very few cases with intermediates between workers and soldiers. Antennal club distinct, 3- or 4-jointed, longer than the remainder of the funiculus. Sting very feeble. Soldier: head very large; mandibles convex, large, their apical margin usually with one basal and two terminal teeth, without teeth in the middle. Fore wings with two closed cubital cells. Antennae 12-jointed in the female, 13-jointed in the male; in the latter the first joint of the funiculus very short, globose. (Tropicopolitan, southern Palearctic, Nearctic).....**Pheidole** Westwood.
- a. Mesonotum produced behind as a short, lamellate plate. Epinotal spines long and erect, obliquely truncate or bifurcate at tips. Head distinctly margined. (Papuan).....Subgenus **Electropheidole** Mann.

- Mesonotum of ordinary form. Epinotal spines not truncate or bifurcate at tips.....b.
- b. Pronotum of soldier and worker with a pair of spines. (Indomalayan, Papuan, Australian).....Subgenus **Pheidolacanthinus** Smith.
- Pronotum unarmed.....c.
- c. Club of the antennæ much shorter than the remainder of the funiculus. Head of the male rounded behind, the ocelli placed on the vertex, which does not overarch the occiput. (Neotropical).

Subgenus **Maciopheidole** Emery.

- Club of the antennæ not much shorter, sometimes even longer, than the remainder of the funiculus.....d.
- d. Club of the antennæ thick and compressed, its terminal joint much larger than the others. Promesonotum depressed, the promesonotal suture obsolete. Large soldiers and minor (true) workers very different, but intermediates also present. (Australian).

Subgenus **Anisopheidole** Forel.

- Not agreeing in all these characters.....e.
- e. Frontal carinæ of the soldier remote, but not divergent, with a lateral lobe covering the insertion of the scape. Back of the head without transverse wrinkles. Scape of the worker reaching considerably beyond the occipital border. Terminal joint of the antennal club much shorter than the two preceding joints together. (Indomalayan).

Subgenus **Stegapheidole** Emery.

- Frontal carinæ of the soldier remote and divergent, not broadened laterally, extending at least to the tip of the scape. Scape of the worker not reaching beyond the occipital border. (Neotropical, Nearctic)...f.
- Not agreeing in all these characters.....g.
- f. Head of the soldier shining, at least for the greater part; with one or more transverse wrinkles which separate the vertex from the occiput. Terminal joint of the antennæ longer than the two preceding together.

Subgenus **Elasmopheidole** Emery.

- Head of the soldier dull, densely sculptured all over. Last joint of the antennæ not longer than the two preceding together.
- Subgenus **Scrobopheidole** Emery.
- g. Head of the soldier covered with a rough, vermiculate sculpture. Scape very thick, strongly bent at the base.

Subgenus **Trachypheidole** Emery.

Not agreeing in all these characters.

Subgenus **Pheidole**, *sensu stricto*.

Forel has also proposed a subgenus *Allopheidole* (type: *Pheidole kingi* Ern. André) and Wheeler a subgenus *Cardiopheidole* (type: *Pheidole vasliti* Pergande) both of which are rejected by Emery.

16. Petiole armed above with one or two spines (in a few species the node is merely angular in front).....17.
- Petiole unarmed, not angular above.....19.

17. Petiole with a single spine or erected tooth or merely angular. Clypeus bicarinate. Frontal carinæ often as long as the scape, the antennal foveæ deep or scrobe-like. Dorsal sutures of the thorax obsolete; epinotum bispinose. Female unknown. (Papuan, Australian).....**Lordomyrma** Emery.
Petiole as a rule with two spines or teeth above. Fore wings with one closed cubital and a closed radial cell.....18.
18. Monomorphic. Frontal carinæ as long as the antennal scape, subparallel, bordering feeble scrobes. Head often angulated behind. Angles of the pronotum pointed. Epinotum unarmed or with two spines. Mesoëpinotal suture usually deeply impressed. Male: antennæ 13-jointed; fore wings without intercubitus (type of *Formica*). Female unknown. (Ethiopian, Malagasy).....**Terataner** Emery.
Polymorphic. Posterior angles of the head and humeral angles rounded. Epinotum bispinose. Frontal carinæ much shorter than the antennal scape in the small worker; about as long in the worker major where they border feeble scrobes. Female and male: antennæ 12-jointed; fore wings with intercubitus (*Solenopsis* type). (Ethiopian)..**Atopomyrmex** Ern. André.
19. Middle of the clypeus slightly projecting in an angle¹.....20.
Clypeus not angular in front (feebly so in *Heteromyrmex*), sometimes bidentate, or with a median, projecting, truncate lobe..21.
20. Epinotum unarmed, with a median posterior impression which can receive the petiole. Antennæ with a 3-jointed club. Integument in great part shining. Female and male unknown. (Neotropical).....**Megalomyrmex** Forel.
Epinotum bispinose. Antennæ thick, with indistinct club. Wings of the female unknown. Male unknown. (Malagasy).
Eutetramorium Emery.
21. Clypeus usually armed with two longitudinal ridges (sometimes rather feeble), which often project forward in the form of teeth. Rarely the anterior margin of the clypeus has no teeth, but then the epinotum is unarmed. Mesoëpinotal suture marked. Club of the antennæ 3-jointed, about as long as the remainder of the funiculus; rarely 4-jointed.....22.

¹In *Heteromyrmex* the clypeus is very feebly projecting in the middle, but in this genus the epinotum is unarmed, though not impressed in the middle behind.

Clypeus not bicarinate, rarely toothed; if so the mesoëpinotal suture is usually indistinct. When with longitudinal clypeal ridges and distinct thoracic sutures, the club of the antennæ is 4- or 5-jointed or indistinct, and the last three joints are much shorter than the remainder of the funiculus. 24.

22. Head and thorax more or less sculptured, usually with series of punctures. Clypeus bicarinate, with a median, rather broad, longitudinal groove. Epinotum unarmed or bispinose. Thorax somewhat depressed and flat above. Antennæ 12-jointed in the female, 13-jointed in the male. Mandibles of the female normally dentate along the apical margin. Fore wings with one closed cubital and an open radial cell. (Indomalayan, Papuan, Malagasy, southern Japan).

Vollenhovia Mayr.

Head and thorax smooth and shining, or very feebly sculptured. 23.

23. Worker: clypeus only bicarinate in its basal portion; its anterior margin feebly projecting in the middle; femora much swollen; head and thorax depressed; epinotum unarmed; smooth and shining. Female: much larger than the worker; postpetiole with a prominent spine on the ventral surface; femora much thickened; mandibles large, their apical margin broadly excised and toothless in the middle; antennæ 12-jointed; fore wings with one closed cubital and an open radial cell. Male unknown. (Borneo, Simalur).

Heteromyrmex Wheeler. (Genotype: *Vollenhovia rufiventris* Forel).

Worker: clypeus usually bicarinate throughout; femora moderately swollen; head and thorax not depressed; epinotum unarmed or bispinose. Female: mandibles normal, with the apical margin dentate throughout; antennæ 12-jointed; fore wings with one closed cubital and a closed radial cell. Male: antennæ 13-jointed.¹ (Tropicopolitan; also in warm temperate regions, especially in the Old World; in the Nearctic Region to southern New England).

Monomorium Mayr (part).

- a. Eyes absent. Antennæ 10-jointed. Clypeus unarmed. (Ceylon).
Subgenus **Anillomyrma** Emery. (Type: *Monomorium decamerum* Emery).
Eyes present, rarely vestigial. Antennæ 11- or 12-jointed. b.

¹Viehmeyer has recently described a subgenus *Corynomyrmez* (type: *Monomorium* (*Corynomyrmez* *hospitum* Viehmeyer, from Singapore) of which only female and male are known; in the male the antennæ are 12-jointed with a 3-jointed club, the scape long, the first funicular joint longer and thicker than the succeeding; the author believes that this is a parasitic form without worker. This subgenus is not included in the key.

- b. Antennæ 11-jointed. c.
- Antennæ 12-jointed. e.
- c. Clypeus strongly dentate. Epinotum more or less armed.
- Subgenus **Martia** Forel. (Type: *Monomorium* (*Martia*) *vezényii* Forel).
- Clypeus and epinotum unarmed. d.
- d. Head, pro- and mesonotum sculptured.
- Subgenus **Adlerzia** Forel. (Type: *Monomorium* (*Adlerzia*) *froggatti* Forel).
- Head, pro- and mesonotum smooth. . . . Subgenus **Lampromyrmex** Mayr
- (= *Mitara* Emery). (Type: *Lampromyrmex gracillimus* Mayr = *Monomorium mayrianum* Wheeler, of the Baltic amber).
- e. Antennal club with indeterminate number of joints, the joints of the funiculus gradually increasing in length and in width from the fifth to the tenth. Mesonotum of male with Mayrian furrows.
- Subgenus **Chelaner** Emery. (Type: *Monomorium* (*Chelaner*) *forcipatum* Emery).
- Antennal club 3- or 4-jointed. f.
- f. Eighth funicular joint distinctly larger than the seventh but much smaller than the ninth so that the club is doubtfully 4-jointed. Fore wings with a discoidal cell.
- Subgenus **Notomyrmex** Emery. (Type: *Myrmica antarctica* F. Smith).
- Antennal club indistinct or distinctly 3- or 4-jointed. g.
- g. Antennal club 3-jointed; the first joint being very short and smaller than the second; the terminal at least as long as the two preceding together.
- Subgenus **Monomorium**, *sensu stricto*. (Type: *Monomorium minutum* Mayr).
- The two basal joints of the club subequal. h.
- h. Antennal club much shorter than remainder of funiculus, often indistinct.
- Workers strongly dimorphic. Scape of male antennæ short; first funicular joint globular; remainder of funiculus growing more tenuous towards its tip
- Subgenus **Holcomyrmex** Mayr. (Type: *Holcomyrmex scabriceps* Mayr).
- Antennal club not much shorter than the remainder of the funiculus; or the worker not at all dimorphic. i.
- i. Clypeal carinæ feeble and converging behind, fused in front, lobes of the frontal carinæ closely approximated. Eyes vestigial. Antennal club 3-jointed; terminal joint much larger than the two preceding joints together. Epinotum unarmed. Peduncle of petiole long.
- Subgenus **Syllophopsis** Santschi. (Type: *Monomorium modestum* Santschi).
- Carinæ of clypeus and lobes of the frontal carinæ shaped differently.
- Eyes usually distinct. j.
- j. Workers slightly dimorphic. Antennal club 3-jointed with the two first joints equal or subequal. Male antennæ as in *Holcomyrmex*.
- Subgenus **Parholcomyrmex** Emery. (Type: *Myrmica gracillima* F. Smith).
- Workers not at all dimorphic; antennal club 3- or 4-jointed. k.
- k. Antennal club 3-jointed. l.
- Antennal club 4-jointed.
- Subgenus **Isolcomyrmex** Santschi. (Type: *Monomorium santschii* Forel).
- l. Clypeus of the worker more truncated anteriorly. Scape of male antennæ short. Fore wings with a discoidal cell. Diet exclusively granivorous.

Subgenus **Equestrimessor** Santschi. (Type: *Monomorium chobauti* Emery).

Clypeus of the worker less truncated. Scape of male antennæ longer than in *Parholcomyrmer*; the first funicular joint globular; the remaining joints not growing more tenuous towards the tip. Fore wings without a discoidal cell. Diet partly carnivorous.

Subgenus **Xeromyrmex** Emery. (Type: *Formica salomonis* Linnæus).

24. Inferior angles of the pronotum pointed. Club of the antennæ 3-jointed, about as long as the remainder of the funiculus. Hind tibiæ with small spurs. Epinotum bispinose. Body hairs simple. Male and wings of the female unknown. (Neotropical and Papuan)¹. **Rogeria** Emery.

a. Petiole clavate. Episternal angles spinose. First two joints of the antennal club subequal. Subgenus **Irogera** Emery.

Petiole not clavate. Episternal angles blunt. First two joints of the antennal club unequal. Subgenus **Rogeria**, *sensu stricto*.

Inferior angles of the pronotum rounded (except in certain *Aphænogaster* where they are spinose, but then the antennal club is not 3-jointed nor as long as the rest of the funiculus; in certain *Leptothorax* the humeri are pointed, but then the body hairs are clavate). 25.

25. Postpetiole campanulate, attached throughout by means of its whole posterior surface to the following segment. Thoracic dorsum usually without sutures or impressions. (Neotropical).

Macromischa Roger.

a. Head quadrate. Pedicel short and stout. Hypogæic. (Cuba).

Subgenus **Antillæmyrmex** Mann. (Type: *M. (Antillæmyrmex) terricola* Mann).

Head not quadrate, or the pedicel more slender. b.

b. Thorax elongate. Epinotum unarmed. (Cuba).

Subgenus **Cræsomyrmer** Mann. (Type: *M. (Cræsomyrmer) wheeleri* Mann).

Thorax shorter, or the epinotum spinose.

Subgenus **Macromischa**, *sensu stricto*.

Postpetiole distinctly constricted posteriorly. 26.

26. Frontal carinæ as long as the antennal scape, strongly diverging behind. Epinotum unarmed. Female and male unknown. (Indomalayan, Papuan).

Dilobocondyla Santschi (= *Mesomyrma* Stitz).

¹*Theryella* Santschi (1921, Bull. Soc. Hist. Nat. Afr. Nord, XII, p. 68) is allied to *Rogeria*. Worker: clypeus very narrow in front of the insertion of the antennæ and deeply wedged between the frontal lobes, which are deflected to partly cover the base of the scape; antennæ 12-jointed, with a 4-jointed club as long as the remainder of the funiculus; mandibles triangular, dentate; eyes minute; promesonotal suture obsolete; metanotal groove present; opinotum bispinose; petiole and postpetiole as in *Pheidole*; gaster short. (North Africa; type: *Theryella myops* Santschi).

- Frontal carinæ much shorter than the antennal scape¹. 27.
27. The last three joints of the antennæ form together a club, as a rule about as long as the rest of the funiculus. Erect hairs of the body often more or less clavate. Epinotum usually bispinose. 28.
- The last three joints of the antennæ are much shorter than the funiculus; club 4- or 5-jointed, or not very distinct. Hairs of the body not clavate. 30.
28. Clypeus with a fine longitudinal carina. Body hairs feebly clavate. Postpetiole with a small tooth below. Female winged, with 12-jointed antennæ. Male: antennæ 13-jointed. Fore wings with one closed cubital, an open radial and no discoidal cell. (Siberia; parasite of *Leptothorax*) . . . **Myrmoxenus** Ruzsky.
- Clypeus not carinate. Postpetiole not toothed ventrally. Fore wings with one closed cubital and a closed discoidal cell. . . 29.
29. Antennæ long and slender, the 3-jointed club much shorter than the remainder of the funiculus. Legs long and slender. Thorax elongate; pronotum on each side above with a bluntly angular elevation. Peduncle of petiole long and slender; the node compressed antero-posteriorly. Erect hairs of the body simple, pointed. Male with 11-jointed antennæ, the third funicular joint often incompletely separated from the second. Fore wings with a closed radial cell. (Ethiopian).

Macromischoides Wheeler.

- Antennæ shorter, the 3-jointed club about as long as the rest of the funiculus. Pronotum without blunt elevation above on the sides. Erect hairs of the body often clavate and microscopically denticulate. Male with 12- or 13-jointed antennæ. Fore

¹The following two genera should be considered here; they are very imperfectly defined and without a study of specimens it seems impossible to include them in the key in a satisfactory manner.

Brunella Forel includes only a Malagasy species described originally as *Aphanogaster belti* Forel: "this genus differs from *Aphanogaster* in its 3-jointed club and in the flattened thorax of the female; from *Atopula* in the very long anterior peduncle and the rounded node of the petiole, also in the more convex thorax of the worker. In many respects it resembles the American *Macromischia*." (Forel, 1917, Bull. Soc. Vaudoise Sc. Nat., LI, p. 234).

Atopula Emery. "Worker: much like *Vollenhovia* in habitus and sculpture; varies little in size; head lengthened; posterior angles rounded; frontal carinæ much shorter than the scape; thorax elongate, the promesonotal suture obsolete; pronotum with blunt humeral angles; epinotum with two strong but blunt teeth; petiole pedunculate anteriorly, with a raised node behind; gaster elongate, oval; femora feebly swollen. Female: slightly larger than the worker; head and thorax about as in the latter; wings with a closed radial cell; cubital vein connected with the radial by means of a long transverse nervure; discoidal cell present; the wings are described after *A. ceylonica*. Male unknown." (Emery, 1912, Ann. Soc. Ent. Belgique, LVI, p. 104). Emery included originally two species: *nodifera* Emery of Cameroon and *ceylonica* Emery of Ceylon and Malay Archipelago; but Forel wants *Atopula* restricted to the Ethiopian *nodifera* Emery.

The species *ceylonica* Emery was originally described as *Atopomyrmex*. Emery transferred it to *Atopula* and more recently Forel considers it to be a *Leptothorax*. Since I cannot agree with this allocation, I have recently proposed a new genus, *Paratopula*, for this species.

- Frontal carinæ much shorter than the antennal scape¹. 27.
27. The last three joints of the antennæ form together a club, as a rule about as long as the rest of the funiculus. Erect hairs of the body often more or less clavate. Epinotum usually bispinose. 28.
- The last three joints of the antennæ are much shorter than the funiculus; club 4- or 5-jointed, or not very distinct. Hairs of the body not clavate. 30.
28. Clypeus with a fine longitudinal carina. Body hairs feebly clavate. Postpetiole with a small tooth below. Female winged, with 12-jointed antennæ. Male: antennæ 13-jointed. Fore wings with one closed cubital, an open radial and no discoidal cell. (Siberia; parasite of *Leptothorax*) . . . **Myrmoxenus** Ruzsky.
- Clypeus not carinate. Postpetiole not toothed ventrally. Fore wings with one closed cubital and a closed discoidal cell. . . 29.
29. Antennæ long and slender, the 3-jointed club much shorter than the remainder of the funiculus. Legs long and slender. Thorax elongate; pronotum on each side above with a bluntly angular elevation. Peduncle of petiole long and slender; the node compressed antero-posteriorly. Erect hairs of the body simple, pointed. Male with 11-jointed antennæ, the third funicular joint often incompletely separated from the second. Fore wings with a closed radial cell. (Ethiopian).

Macromischoides Wheeler.

- Antennæ shorter, the 3-jointed club about as long as the rest of the funiculus. Pronotum without blunt elevation above on the sides. Erect hairs of the body often clavate and microscopically denticulate. Male with 12- or 13-jointed antennæ. Fore

¹The following two genera should be considered here; they are very imperfectly defined and without a study of specimens it seems impossible to include them in the key in a satisfactory manner.

Brunella Forel includes only a Malagasy species described originally as *Aphanogaster belti* Forel: "this genus differs from *Aphanogaster* in its 3-jointed club and in the flattened thorax of the female; from *Atopula* in the very long anterior peduncle and the rounded node of the petiole, also in the more convex thorax of the worker. In many respects it resembles the American *Macromischia*." (Forel, 1917, Bull. Soc. Vaudoise Sc. Nat., LI, p. 234).

Atopula Emery. "Worker: much like *Vollenhovia* in habitus and sculpture; varies little in size; head lengthened; posterior angles rounded; frontal carinæ much shorter than the scape; thorax elongate, the promesonotal suture obsolete; pronotum with blunt humeral angles; epinotum with two strong but blunt teeth; petiole pedunculate anteriorly, with a raised node behind; gaster elongate, oval; femora feebly swollen. Female: slightly larger than the worker; head and thorax about as in the latter; wings with a closed radial cell; cubital vein connected with the radial by means of a long transverse nervure; discoidal cell present; the wings are described after *A. ceylonica*. Male unknown." (Emery, 1912, Ann. Soc. Ent. Belgique, LVI, p. 104). Emery included originally two species: *nodifera* Emery of Cameroon and *ceylonica* Emery of Ceylon and Malay Archipelago; but Forel wants *Atopula* restricted to the Ethiopian *nodifera* Emery.

The species *ceylonica* Emery was originally described as *Atopomyrmex*. Emery transferred it to *Atopula* and more recently Forel considers it to be a *Leptothorax*. Since I cannot agree with this allocation, I have recently proposed a new genus, *Paratopula*, for this species.

wings with an open or closed radial cell. (Palearctic, Ethiopian, Malagasy, Nearctic, Neotropical, Indomalayan).

Leptothorax Mayr (part).

- a. Worker and female with pronounced humeral angles. Radial cell of fore wings short and closed. b.
Worker and female with the humeri rounded. Radial cell of the fore wings either short and closed or elongate and open. c.
- b. Antennæ 11-jointed in female and worker; 12-jointed in the male. (Neotropical) . . . Subgenus **Nesomyrmex** Wheeler (= *Caulomyrma* Forel).
Antennæ 12-jointed in female and worker; 13-jointed in the male. (Neotropical, Ethiopian, Malagasy).¹ . . . Subgenus **Goniothorax** Emery.
- c. Antennæ 11-jointed in female and worker; 12-jointed in the male. Erect hairs of the body stiff, thickened, truncate at the apex. (Holarctic).
Subgenus **Mychothorax** Ruzsky.
Antennæ 12-jointed in female and worker; 13-jointed in the male. . . . d.
- d. No mesoepinotal constriction. Erect hairs of the body thick, stiff, truncate at the apex. (Holarctic) . . Subgenus **Leptothorax**, *sensu stricto*.
Mesoepinotal constriction present. e.
- e. Erect hairs of the body soft, long and simple. Fore wings of female and male with a short, closed radial cell. (Mediterranean).

Subgenus **Temnothorax** Mayr.

Erect hairs of the body slightly thickened, obtuse. Fore wings of male and female with an elongate, open radial cell. (Nearctic).

Subgenus **Dichothorax** Emery.

- 30. Median area of the clypeus somewhat produced in front, the anterior margin straight, with a longitudinal, shallow impression in the middle. Antennal club 3- or 4-jointed. Thorax unarmed, with feeble sutures; deeply depressed at the mesoepinotal suture. Petiole pedunculate. Female wingless, ergatoid, with 12-jointed antennæ. Male unknown. (South Africa) **Tetramyrma** Forel.

Clypeus of different shape. 31.

- 31. Antennæ distinctly thickened, but the club not separated; the last four joints together not much shorter than the remainder of the funiculus. Eyes much reduced. Petiole with a long peduncle and a small node. Worker small, monomorphic. Fore wings with one closed cubital cell. (Holarctic).

Stenamma Westwood.

Antennæ usually filiform, the four last joints together much shorter than the remainder of the funiculus; or with a more or less distinct club. 32.

¹*Pacilomyrma* Mann, of the Fiji Islands, is evidently related to *Goniothorax*, having the humeral angles spinose and the antennæ 12-jointed; only the worker is known. The inferior angles of the epinotum are very elongate and spinose. It may be regarded as a subgenus of *Leptothorax* (type: *Pacilomyrma senirewæ* Mann).

32. Antennæ with a distinct 4-jointed club. Strongly dimorphic; much as in *Pheidole*. (Neotropical, Indomalayan).

Ceratopheidole Pergande.

Antennæ without a club or with a 5-jointed club; or else the workers are monomorphic.....33.

33. Workers monomorphic or without pronounced dimorphism....34.

Workers dimorphic or polymorphic; soldiers with broad head..35.

34. Head elongate. Psammophore vestigial. Fore wings with one closed cubital cell. (Sonoran in North America).

Novomessor Emery.

Head elongate or rectangular or constricted behind. Psammophore rarely well developed. Mandibles with their external margin feebly convex. Male: antennæ with a 5-jointed club. Fore wings as a rule with two closed cubital cells. (Mediterranean, Malagasy, Indomalayan, Papuan, Australian, Nearctic, Neotropical).....**Aphænogaster** Mayr.

- a. Worker: head constricted behind, neck-like. Male and female: fore wings of the *Solenopsis* type, with one closed cubital cell.....b.

Worker: head not constricted into a neck; pronotum unarmed. Fore wings usually with two closed cubital cells. Antennæ of the male 13-jointed.....c.

- b. Male: antennæ 12-jointed; a pair of spines on the mesonotum. Worker: thorax usually with four spines. (Papuan).

Subgenus **Planimyrmex** Viehmeier.

Male: antennæ 13-jointed; mesonotum unarmed. Worker: pronotum not spinose.....Subgenus **Deromyrmex** Forel.

- c. Female of very large size in proportion to the worker. Fore wings with one closed cubital cell. Nocturnal habits. (Australian).

Subgenus **Nystalomyrmex** Wheeler.

Female not much larger than the largest worker form. Fore wings with one or two closed cubital cells. (Including the subgenus *Attomyrmex* Emery).....Subgenus **Aphænogaster**, *sensu stricto*.

35. Worker minor: psammophore not developed; head much contracted behind, neck-like. Soldier: head angularly excised behind. Two closed cubital cells. (Indomalayan).

Ischnomyrmex Mayr (= *Isopheidole* Forel).

Worker: psammophore well developed. Fore wings with one cubital cell. (Sonoran in North America)..**Veromessor** Forel.

Worker: psammophore often well developed; mandibles broad, with their external margin strongly convex. Male: antennæ without distinct club. Fore wings with two closed cubital cells. (Palearctic, Ethiopian, northern India)..**Messor** Forel.

36. Abdomen viewed from the side triangular, flat above, the apex of the triangle below. Epinotum with two strong spines recurved upwards. Thoracic sutures indistinct. Petiole with a long basal peduncle and a squamiform node; postpetiole articulated to the gaster by the whole of its posterior face. Head viewed from the side truncate anteriorly. Mandibles narrow, the apical margin with 4 teeth. Clypeus vertical, with two longitudinal ridges. Antennæ with a 3-jointed club. Female and male unknown. (Indomalayan).....**Trigonogaster** Forel.
Abdomen not triangular viewed from the side.....37.
37. Eyes drawn into a point below. Antennæ with a 3- or 4-jointed club. Frontal carinæ short, straight. Thoracic sutures distinct. Epinotum spinose. Workers monomorphic. Antennæ 11-jointed in the female; 12-jointed and with a fairly distinct 4-jointed club in the male. Fore wings of the *Solenopsis* type, with one closed cubital cell. (Mediterranean).
Oxyopomyrmex Ern. André.
Eyes, when present, round or oval, not prolonged obliquely downwards.....38.
38. Club of the antennæ 2-jointed, the last joint much larger than the others.....39.
Antennal club indistinct or 3- to 5-jointed.....43.
39. Thoracic sutures obsolete; a very feeble depression in front of the epinotum. Epinotum unarmed. Hind tibiæ without spurs. Eyes present. Monomorphic and probably parasitic. Female and male unknown. (Mediterranean)¹.....**Phacota** Roger.
Mesoëpinotal suture strongly marked.....40.
40. Epinotum unarmed, or at most feebly bituberculate. Clypeus without carinæ. Eyes present. Ninth antennal joint conspicuously longer than the eighth, though much shorter and especially narrower than the tenth. Workers monomorphic. Antennæ 11-jointed with 3-jointed club in the female, 12-jointed in the male. Wings with one closed cubital and an open radial cell. (Ethiopian).....**Diplomorium** Mayr.
Epinotum usually bidentate; rarely unarmed, but then the workers are strongly dimorphic.....41.
41. Worker monomorphic. Eyes very small; ocelli absent. Female of enormous size compared with the worker, with 11-jointed

¹*Paraphacota* Santschi, of Tunis, is known only from the male and perhaps related to *Phacota*, though the male of the latter has never been described.

antennæ. Male with 13-jointed antennæ. Fore wings with one closed cubital and a closed radial cell, of the *Solenopsis* type. (Nearctic, Neotropical; fossil in Baltic amber).

Erebomyrma Wheeler.

Worker strongly dimorphic or polymorphic; soldier with very large head.....42.

42. Head of the soldiers very broad. Ninth joint of the antennæ not distinctly longer than the eighth. Antennæ 11-jointed in the female, 13-jointed in the male. Largest soldiers and minor workers connected by intermediate forms. Fore wings with one closed cubital cell. (Indomalayan, Papuan, Australian; doubtfully Ethiopian).....**Pheidologeton** Mayr.

- a. Soldier and female: frontal carinæ very pronounced, overlapping the deep antennal scrobes and passing into each other on the vertex. Worker minor: head of more normal shape. (India).

Subgenus **Lecanomyrma** Forel.

Head of the soldier and female with feeble frontal carinæ, without scrobes.

Subgenus **Pheidologeton**, *sensu stricto*.

Soldiers with elongate head, which is more or less abruptly truncate behind. Eyes very small or absent. Clypeus usually more or less distinctly bicarinate. Soldiers and workers not connected by intermediate forms. (Indomalayan, Ethiopian).

Aneleus Emery.

43. Posterior lateral border of the clypeus raised in form of trenchant ridges, which border the antennal foveæ in front.....44.
Antennal foveæ not bordered in front by ridges of the clypeus..46.
44. Portion of the clypeus in front of the antennal insertions reduced to a trenchant ridge. Antennæ thick, with 3-jointed club. Epinotum bispinose. Mesoëpinotal suture marked by a transverse carina, feebly or not impressed. Petiole pedunculate in front. (Japan, China, Indomalayan, Papuan, Australian).

Pristomyrmex Mayr.

- a. Humeri of the pronotum unarmed. Subgenus **Pristomyrmex**, *sensu stricto*.
Humeri of the pronotum with spines... Subgenus **Odontomyrmex** Forel.

Portion of the clypeus in front of the antennal insertion narrow, but not reduced to a mere ridge.....45.

45. Thoracic dorsum deeply impressed at the mesoëpinotal suture. Antennæ slender. Petiole pedunculate in front. (Papuan, Australian).....**Dacryon** Forel.

Thoracic dorsum feebly or not impressed at the mesoëpinotal suture, which however is distinct. Antennal scrobes usually

- well defined. Antennæ 11-jointed in the female, 10-jointed in the male. (Ethiopian, Malagasy, Indomalayan, Papuan, Australian, Nearctic).....**Xiphomyrmex** Forel.
46. Eyes absent. Antennæ with a 3-jointed club. Epinotum unarmed. 47.
Eyes sometimes small, but quite distinct.....48.
47. Postpetiole armed with a ventral spine. Monomorphic. Female much larger than the worker, with 11-jointed antennæ, wings with one closed cubital cell. Male unknown. (Indomalayan, Papuan).....**Liomyrmex** Mayr (= *Promyrma* Forel).
Postpetiole not spinose ventrally. Monomorphic. Female moderately larger than the worker, with 11-jointed antennæ. Male: antennæ 12-jointed. Front wings with one closed cubital and an open radial cell. (Ethiopian¹).
Bondroitia Forel.
48. Thorax and petiole without any trace of teeth or spines; humeri of the pronotum never angular. Mesoëpinotal suture strongly impressed. Clypeus often bidentate in front. Antennal club 3-jointed.....49.
Epinotum nearly always armed with teeth or spines at least in the worker major; when they are absent, the pronotum has angular humeri.....51.
49. Monomorphic. Petiole not pedunculate in front. Clypeus projecting into a bidentate median lobe. Arboreal. Female and male unknown. (Neotropical).....**Xenomyrmex** Forel.
Often polymorphic. Petiole distinctly pedunculate in front. Fore wings with one closed cubital and an open or closed radial cell. Antennæ 13-jointed in the male, 11-jointed in the female.. 50.
50. Clypeus bicarinate or at least with faintly indicated carinæ. Eyes usually well developed. Female and worker moderately different in size (see key to subgenera above, p. 675).
Monomorium Mayr (part).
Clypeus convex, without carinæ. Eyes small. Hypogæic. Great difference in size between worker and female. (Neotropical).
Tranopelta Mayr.
51. Frontal carinæ parallel, as long as the antennal scape, bordering scrobe-like depressions. Mandibles strongly curved, without teeth. Antennal club 4-jointed. Petiole and postpetiole each

¹Forel has described as *Bondroitia cæca* a single worker supposedly collected near Geneva, Switzerland, which is hardly different from the African *Bondroitia tujæ* (Forel). It is very probable that the locality Geneva is erroneous and due to some mistake in labelling specimens.

with a ventral spine; petiole not pedunculate. Mesoëpinotal suture feebly impressed. Epinotum spinose. Fore wings with one closed cubital and a long, open radial cell, of the *Formica* type. Female: winged or apterous and ergatoid, with ocelli and 11-jointed antennæ. Male: with 12-jointed antennæ. In mixed colonies with *Leptothorax*. (Northern and Central Europe, Nearctic).

Harpagoxenus Forel (= *Tomognathus* Mayr).

- Frontal carinæ much shorter than the scape. Mandibles usually toothed at the apical margin. Petiole and postpetiole rarely both with a ventral spine. 52.
52. Thoracic dorsum distinctly or profoundly impressed at the mesoëpinotal suture. Monomorphic. 53.
- Thoracic dorsum little or not at all impressed at the mesoëpinotal suture; if with a deep suture, the worker caste is polymorphic. 57.
53. Humeri of the pronotum angular or toothed. 54.
- Humeri of the pronotum rounded. 55.
54. Antennal club 3-jointed, at least as long as the remainder of the funiculus. Femora slender. Small species. Female and male unknown. (Indomalayan). **Lophomyrmex** Emery.
- Antennal club indistinct, the last three joints much shorter than the remainder of the funiculus. Femora much swollen in the middle. Arboreal, of medium or large size. (Australian, Papuan). **Podomyrma** F. Smith.
55. Clypeus with two longitudinal ridges which terminate in strong teeth at the anterior margin. Petiole pedunculate at the base. (see above p. 675). **Monomorium** (part).
- Clypeus not bicarinate nor bidentate. 56.
56. Front margin of the clypeus slightly emarginate in the middle. Petiole pedunculate at the base. Body hairs simple. Antennæ 11-jointed in the female, 12-jointed in the male. Female and male winged; fore wings with one closed cubital and an open radial cell. Nesting habits as in *Monomorium*. (New Zealand). **Huberia** Forel.
- Front margin of the clypeus broadly rounded, entire. Petiole not pedunculate. Body hairs robust, frayed at their tips into several acute, microscopic processes. Female winged, with 11-jointed antennæ; venation unknown. Male ergatoid, wingless, with 12-jointed antennæ. Parasitic in *Myrmica* nests. (Nearctic). **Symmyrmica** Wheeler.

57. Erect body hairs usually clavate and denticulate; the body in great part opaque. Antennal club 3-jointed, longer than the remainder of the funiculus. Monomorphic.¹ 58.
- Erect body hairs simple. Humeri of the pronotum rounded. Integument smooth and shining 59.
58. Petiole usually with a short peduncle, not expanded ventrally; postpetiole unarmed below. Humeri of the pronotum sometimes angular. Antennæ 12-jointed in the male (see p. 679).

Leptothorax Mayr (part).

Petiole scarcely pedunculate in front, with a compressed expansion ventrally; postpetiole with an obtuse tooth below. Humeri of the pronotum rounded. Female winged, as in *Formicoxenus*. Male unknown. In mixed colonies with *Leptothorax*. (Mediterranean) **Epimyrmex** Emery.

59. Workers strongly dimorphic. Petiole pedunculate, unarmed ventrally. Antennæ 11-jointed in the female, 12-jointed in the male. Fore wings with two closed cubital cells. (Australian).

Machomyrmex Forel.

Workers monomorphic. Petiole scarcely pedunculate in front. Postpetiole armed with a spine below. Female: 11-jointed antennæ; usually winged; fore wings with an open radial and one closed cubital cell, of the *Formica* type. Male ergatoid, wingless, with 12-jointed antennæ. In mixed colonies with *Formica*. (Northern and Central Europe).

Formicoxenus Mayr.

60. Antennæ 10-jointed. 61.
- Antennæ 7- to 9-jointed. Antennal scrobes absent. 66.
61. A deep and smooth antennal scrobe on each side of the face. Tibiæ and femora very strongly swollen. Lateral ridges of the clypeus obsolete. Much as *Tetramorium*. Antennæ 10-jointed in female and male. (Ethiopian). . . **Decamorium** Forel.
- Antennal scrobes absent; the frontal carinæ short. 62.
62. Antennæ 7- to 10-jointed, with the last joint very large; without 2-jointed club. Thorax without spines or teeth. Eyes present. Small, yellow. Nests in swellings of plants. (Neotropical).

Allomerus Mayr.

Antennæ always 10-jointed. Usually a distinct 2-jointed club, or the eyes are wanting, or the epinotum bispinose. 63.

¹The parasitic *Leptothorax emersoni* Wheeler is very feebly dimorphic but it has the clavate hairs and sculptured integument of *Leptothorax*.

63. Worker caste monomorphic or but slightly dimorphic; or else the head of the worker major is subquadrate or broader than long and the club of the antennæ is 2-jointed. 64.
 Worker caste with very pronounced dimorphism. When the antennal club is 2-jointed, the head of the soldier is much longer than wide. 65.
64. Monomorphic. Antennal club 3-jointed. Eyes absent. Clypeus unarmed. (See p. 675).

Monomorium subgenus **Anillomyrma** Emery.

Antennal club 2-jointed, the last joint very long. Clypeus bicarinate, and usually with two apical teeth. Epinotum unarmed. Fore wings with one closed cubital and an open radial cell. Antennæ 11-jointed (exceptionally 10-jointed) in the female; 12-jointed in the male. (Cosmopolitan; often cleptobiotic).¹

Solenopsis Westwood.

65. Antennal club 2-jointed. Soldier: head much longer than wide; mandibles with about 6 teeth. Fore wings with a closed radial and one closed cubital cell. Antennæ 11-jointed in the female, 13-jointed in the male. (Ethiopian, Malagasy, Sumatra).²

Aëromyrma Forel.

Antennal club 3- or 4-jointed. The other characters as in *Pheidole*. (Neotropical) **Decapheidole** Forel.

66. Antennæ 7- to 10-jointed, the last joint very large; no 2-jointed club. Thorax without spines or teeth. Eyes present. (Neotropical) **Allomerus** Mayr.
- Antennæ 8- or 9-jointed, with 2-jointed club. Eyes often wanting. 67.

67. Monomorphic, without eyes or ocelli. Clypeus without carinæ. Antennæ 9-jointed, the last joint very long. Fore wings with one closed cubital and a closed radial cell. Female enormously larger than the worker, with 10-jointed antennæ. Male: antennæ 13-jointed. (Ethiopian, Indochinese, Neotropical).³

Carebara Westwood.

Clypeus bicarinate. Female considerably larger than the worker, though less so than in *Carebara*. 68.

¹Forel (1918, Bull. Soc. Vaudoise Sc. Nat., LII, p. 155) has suggested a new subgeneric name *Synsolenopsis*, for *Solenopsis bruchi* Forel, on the supposition that this species is "probably parasitic" though it does not differ from the other *Solenopsis*. Although ethological peculiarities are valuable when taken with other characters in the definition of genera and subgenera, no value can be attached to mere surmises as to peculiar habits which are not accompanied by morphological differences.

²In *Oligomyrmez debilis* Santschi the worker has 9-jointed and the soldier 10-jointed antennæ; the female is unknown.

³The Neotropical genus *Carebarella* Emery probably should come here; the worker is unknown. The female has 10-jointed, the male 13-jointed antennæ. Fore wings with one closed cubital and an open radial cell.

68. Monomorphic. Antennæ 9-jointed. Humeri of the pronotum rather angular. Wings unknown. Female with 10-jointed antennæ. Male unknown. (Ceylon, Ethiopian).

Pædalagus Forel.

Strongly dimorphic; the soldier with small eyes; the worker blind. Antennæ 8- or 9-jointed. Fore wings with one closed cubital cell. Female with 9-jointed, male with 13-jointed antennæ. (Palearctic, Ethiopian, Malagasy, Indo-malayan, Papuan, Australian).¹ **Oligomyrmex** Mayr.

- a. Antennæ 9-jointed. Subgenus **Oligomyrmex**, *sensu stricto*.
 Antennæ 8-jointed. Eyes present, small. Female and male unknown.
 (Australian). Subgenus **Octella** Forel.

DOLICHODERINÆ Forel

Key to the Tribes

♂, ♀

1. Worker with well-developed sting. Petiole with a long peduncle in front. Clypeus large, with emarginate front margin. Mandibles triangular, toothed. Eyes present; ocelli absent. Claws simple. Spurs of tibiæ feebly denticulate. Female: clypeus feebly emarginate; ocelli developed; wings unknown. Male unknown. **ANEURETINI** Emery.
 Sting of worker and female vestigial (less so in *Froggattella*).
 Petiole squamiform or nodiform, not pedunculate in front. . . 2.
2. Chitinous integument stiff and more or less brittle, often strongly sculptured. Mandibles triangular, toothed. Gizzard without a calyx and with delicate cuticle, not furnished with cilia at the entrance. Fore wings of female and male with two closed cubital cells and one discoidal cell. . . . **DOLICHODERINI** Emery.
 Chitinous integument thin and flexible, finely and feebly sculptured. 3.
3. Worker: gizzard without calyx, furnished with cilia at the entrance. Body very slender. Legs and antennæ much elongated. Antennal fossæ distinctly separated from the clypeal fossa. Mandibles triangular, toothed. Female probably highly ergatoid. Male with very peculiar venation of the fore wing: pterostigma vestigial; radial cell very narrow and long; no closed cubital nor discoidal cell. **LEPTOMYRMICINI** Emery.

¹This genus contains the smallest ant known. *Oligomyrmex brunii* Forel, of Ceylon, the worker of which measures 0.8 to 0.9 mm. and the soldier 1.5 mm. in total length.

Worker and female: gizzard with a reflected calyx. Body less slender, the legs not so elongated. Antennal fossa more or less fused with the clypeal fossa. **TAPINOMINI** Emery.

1. **Aneuretini** Emery

Aneuretus Emery. (Ceylon).

2. **Dolichoderini** Emery

Dolichoderus Lund. (Palearctic, Nearctic, Indomalayan, Papuan, Australian, Neotropical except Chile).

♂

- a. Mesonotum longer than broad. (Neotropical).

Subgenus **Dolichoderus**, *sensu stricto*.

Mesonotum at most as long as broad. b.

- b. Scale of the petiole ending above in an angle or a single spine. Pronotum almost always with two spines or angles. (Neotropical).

Subgenus **Monacis** Roger.

Scale of the petiole never ending in an angle or a single spine. Pronotum seldom bispinose. (Same distribution as the genus).

Subgenus **Hypoclinea** Mayr.

The genus *Linepithema* Mayr (Neotropical) is only known in the male; it comes very close to *Dolichoderus*, with which it may be congeneric.

3. **Leptomyrmicini** Emery

Leptomyrmex Mayr. (Australian, Papuan).

4. **Tapinomini** Emery

♀ (♀ as far as known)

1. Worker and female: antennæ 11-jointed. Clypeus entire. Cloacal orifice inferior. Gizzard as in *Technomyrmex*, the calyx without cilia, areolate. Female: fore wings with one cubital cell. (South Africa¹). **Semonius** Forel.

Worker and female: antennæ 12-jointed. 2.

2. Gizzard much longer than broad, the calyx entirely covered with long hairs. Cloacal orifice inferior. Worker monomorphic; thorax not impressed at the mesoëpinotal suture; ocelli present. Female: fore wing with a closed radial, two closed cubital cells and one discoidal cell. (Mediterranean, Burma, Assam, China, Nearctic, northern Mexico).

Liometopum Mayr.

¹Viehmeier has recently (1916) described a *Semonius* from Singapore.

- Gizzard shorter, with different structure. Ocelli often absent in the worker; when present, the thorax is impressed at the meso-epinotal suture.....3.
3. Epinotum with two teeth or spines in the worker; female unknown..4.
Epinotum not bidentate nor bispinose. Eyes never very large..5.
4. Petiole with a feebly inclined scale. Eyes placed before the middle; usually very large, occupying one third of the side of the head. Cloacal orifice apical. (Australian, Papuan).. **Turneria** Forel.
Petiole with a strongly oblique scale, which is produced behind into a kind of peduncle. Eyes much smaller. (Australian).
Froggattella Forel.
5. Maxillary palpi very long, 6-jointed; the third joint much longer than the second or the following ones. Epinotum of the worker with a small tubercle or produced into a blunt cone or a single spine. Scale of petiole well developed. Cloacal orifice inferior.....6.
Not presenting all these characters.....7.
6. Epinotum of the worker with a small tubercle. Female: fore wing with a discoidal and two closed cubital cells. (Argentina).
Araucomyrmex Gallardo.
Epinotum of the worker produced into a blunt cone or a single spine. Female: fore wing with a narrow, open radial cell, one or two closed cubital cells, and no discoidal cell. (Neotropical, Nearctic)..... **Dorymyrmex** Mayr.
- a. Petiole nodiform.
Subgenus **Dorymyrmex**, *sensu stricto* (= *Psammomyrma* Forel).
Petiole not nodiform.....Subgenus **Conomyrma** Forel.
7. Scale of the petiole more or less inclined, sometimes very low but still distinct. Cloacal orifice inferior.....8.
Scale of the petiole rudimental or none.....11.
8. Gizzard very short, with a broad, reflected calyx which surrounds all other parts. Worker: monomorphic, though of variable size; no ocelli; thorax more or less impressed in front of the epinotum. (Including *Doleromyrma* Forel). (Neotropical, Indomalayan, Papuan, Australian)..... **Iridomyrmex** Mayr.
Gizzard differently shaped.....9.
9. Maxillary palpi 2- or 4-jointed; labial palpi 2- or 3-jointed. Worker monomorphic; thorax not impressed in front of the epinotum. Female: fore wing with one closed cubital and a discoidal cell. (Nearctic, Mediterranean, Indomalayan, Papuan, Australian).
Bothriomyrmex Emery.



The male of *Turneria* Forel, *Froggattella* Forel, and *Ecphorella* Forel is unknown.

1. Radial cell narrow and open; no discoidal cell.....2.
Radial cell broad and closed.....3.
2. Third joint of the maxillary palpi much longer than the second,
about as long as the following together....**Dorymyrmex** Mayr.
Third joint of the maxillary palpi about as long as the second,
much shorter than the following together....**Forelius** Emery.
3. Fore wings with two closed cubital cells.....4.
Fore wings with one closed cubital cell.....6.
4. Scape about as long as the three first joints of the funiculus.
Genitalia very large, taking about one third of the gaster.
Liometopum Mayr.
Scape much shorter than the three first joints of the funiculus..5.
5. Mandibles long, with numerous small teeth, crossing each other
broadly.....**Technomyrmex** Mayr.
Mandibles short, at most with a few teeth.
Iridomyrmex Mayr (part).
6. Scape at most as long as the second joint of the funiculus.
Mandibles as a rule narrow and with few teeth.....7.
Scape at least as long as the two or three first joints of the funi-
culus together.....8.
7. Antennæ filiform.....**Iridomyrmex** Mayr.
Antennæ moniliform.....**Azteca** Forel.
8. Scape half as long as the funiculus. Mandibles elongate, with
numerous small teeth.....**Semonius** Forel.
Scape usually as long as the three or four first joints of the funiculus.
Maxillary palpi 6-jointed.....**Tapinoma** Förster.
Scape shorter, as long as the two first joints of the funiculus. Maxil-
lary palpi 4-jointed.....**Engramma** Forel.

FORMICINÆ Lepeletier

Key to the Tribes

♂, ♀

1. Worker: head much broader than the thorax; eyes very large,
occupying nearly the whole side of the head; no frontal carinæ;
mandibles very long, linear and slender, parallel, bent at right
angles and dentate at apex, denticulate along their inner
margin; antennæ 12-jointed, filiform, inserted some distance

behind the clypeus; gizzard with very short calyx; the four sepals strongly diverging and heavily chitinized from their base on, short and recurved. Female: similar; fore wings with a small closed discoidal, one closed cubital, and a closed radial cell. Male: head broader than the thorax, with very large eyes, mandibles small, vestigial; antennæ 13-jointed; wings as in the female MYRMOTERATINI Forel.

Mandibles subtriangular, of a different conformation. The eyes usually medium-sized 2.

2. Antennæ 12-jointed in worker and female; 13-jointed in the male. 3.
Antennæ 8- to 11-jointed 9.

3. Worker: eyes very large, occupying nearly the whole of the sides of the head; frontal carinæ almost absent; clypeus prolonged between the antennæ; temples strongly toothed behind; epinotum bispinose; node of the petiole thick, bidentate behind. Male and female unknown . . . SANTSCHIELLINI Forel.

Worker: eyes usually of medium size; in *Gigantiops* very large, but in this the temples and epinotum are unarmed and the other characters given above do not agree 4.

4. Eyes very large, occupying nearly the whole of the sides of the head. Gizzard long and narrow, with a rather straight calyx. Antennæ inserted some distance behind the frontal area, but near the extremities of the frontal carinæ. Maxillary palpi 6-jointed; labial palpi 4-jointed. Clypeus much produced and truncate in front GIGANTIOPINI Ashmead.

Eyes occupying less than one-half of the sides of the head 5.

5. Gizzard very short, with the sepals extremely short or with the calyx reflected and surrounded by a muscular ring. Ocelli present. Front wings with or without a closed discoidal cell. Cocoons present. (Australian, New Zealand, Chilean).

MELOPHORINI Forel.

Gizzard with the calyx straight or feebly curved, little or not at all reflected, with distinct sepals 6.

6. Clypeal fovea distinctly separated from the antennal fovea. Antennæ filiform, inserted very near the posterior edge of the clypeus and close to the frontal area. Gizzard with the calyx more or less curved or reflected. Ocelli absent. No cocoons.

PRENOLEPIDINI Forel.

Clypeal fovea confluent with the antennal fovea, or else the antennæ are inserted some distance behind the clypeus. Gizzard with rather straight calyx (except in *Overbeckia*) 7.

7. Antennæ inserted very near the posterior edge of the clypeus and close to the frontal area. Antennæ filiform. Ocelli present, vestigial, or absent. FORMICINI Forel.
Antennæ inserted some distance behind the clypeus. 8.

8. Antennæ inserted a short distance behind the frontal area but near the extremities of the frontal carinæ; funiculus slender at the base, slightly incrassate at the apex. Ocelli absent. Clypeal fovea more or less distinct from the antennal fovea. Maxillary palpi 5-jointed. Mandibles long and broad, with acute, curved apex, denticulate along the masticatory margin. Petiole elongate, narrow, nodose, unarmed. Stature variable, but not dimorphic in the form of the head. Fore wings with one closed cubital, a closed radial, and no discoidal cell. Male without distinct tarsal claws. Arboreal, silk-weaving ants. No cocoons.

ÆCOPHYLLINI Forel.

Antennæ inserted on the sides of the frontal carinæ, very far from the clypeus and the frontal area; funiculus as a rule filiform. Clypeal and antennal foveæ distinctly separated. Maxillary palpi 6-jointed. Petiole short, squamiform or nodiform, often spinose or dentate. Ocelli absent. Cocoons present.

CAMPONOTINI Forel.

9. Antennæ 8-jointed. Eyes lateral, very large, more or less reniform. Clypeus produced behind between the frontal carinæ. 10.
Antennæ 8- to 11-jointed. Eyes oval, of medium size. Fore wings without discoidal cell. 11.

10. Strongly dimorphic. Clypeus not projecting forward above the mandibles. Female: antennæ 10-jointed; fore wings with a closed discoidal, one closed cubital, and a closed radial cell. Male unknown. DIMORPHOMYRMICINI Wheeler.

Feebly dimorphic. Clypeus projecting forward above the mandibles. Female unknown. Male doubtful. GESOMYRMICINI Forel.

11. Antennæ 11-jointed (except in some *Rhizomyrmæ*). Gizzard rather long, with reflected sepals. Male with 12-jointed antennæ. Fore wings with one closed cubital, a closed radial, and no discoidal cell. Cocoons present. PLAGIOLEPIDINI Forel.
Antennæ 8- to 10-jointed. Gizzard short. Male with 11- or 10-jointed antennæ. Venation as in the Plagiolepidini.

MYRMELACHISTINI Forel.

1. **Myrmoteratini** Forel**Myrmoteras** Forel. (Burma, Philippines, Borneo).2. **Dimorphomyrmicini** Wheeler**Dimorphomyrmex** Ern. André. (Philippines, Borneo).3. **Santschiellini** Forel**Santschiella** Forel. (Ethiopian).4. **Melophorini** Forel

♂, ♀

1. Prothorax with an angular crest on either side. Metanotum prominent in the form of a boss or spine which is sometimes forked. Petiole more or less bidentate. Antennal and clypeal foveæ non-confluent. No psammophore. Monomorphic. (Australian).....**Notoncus** Emery.

Prothorax not crested on the sides. Metanotum not boss- or spine-shaped.....2.

2. Funiculus of the antennæ distinctly swollen into a 4- or 5-jointed club. Antennæ placed very close to the hind border of the clypeus and at the anterior extremities of the frontal carinæ. Clypeal and antennal foveæ confluent. No ocelli. No psammophore. Mandibles very convex, with numerous teeth along their apical border. Thorax, epinotum and petiole unarmed. Polymorphic, without repletes acting as honey-pots. Female and male unknown. (Australian).

Myrmecorhynchus Ern. André.

Funiculus of the antennæ not forming a distinct club; when feebly club-shaped the other characters do not all agree.....3.

3. Scale of the petiole with two distinct spines above. No psammophore. Clypeal and antennal foveæ not confluent. Monomorphic, large and slender. Fore wings without discoidal cell. (Australian)....**Diodontolepis** Wheeler. (Type: *Melophorus spinisquamis* Ern. André).

Scale of the petiole not bispinose, at most feebly emarginate above.....4.

4. Polymorphic, often with replete workers acting as honey-pots. Psammophore and clypeal bristles more or less developed. Clypeal and antennal foveæ separated. Fore wings without discoidal cell. (Australian).....**Melophorus** Lubbock.

1. **Myrmoteratini** Forel**Myrmoteras** Forel. (Burma, Philippines, Borneo).2. **Dimorphomyrmicini** Wheeler**Dimorphomyrmex** Ern. André. (Philippines, Borneo).3. **Santschiellini** Forel**Santschiella** Forel. (Ethiopian).4. **Melophorini** Forel

♂, ♀

1. Prothorax with an angular crest on either side. Metanotum prominent in the form of a boss or spine which is sometimes forked. Petiole more or less bidentate. Antennal and clypeal foveæ non-confluent. No psammophore. Monomorphic. (Australian).....**Notoncus** Emery.

Prothorax not crested on the sides. Metanotum not boss- or spine-shaped.....2.

2. Funiculus of the antennæ distinctly swollen into a 4- or 5-jointed club. Antennæ placed very close to the hind border of the clypeus and at the anterior extremities of the frontal carinæ. Clypeal and antennal foveæ confluent. No ocelli. No psammophore. Mandibles very convex, with numerous teeth along their apical border. Thorax, epinotum and petiole unarmed. Polymorphic, without repletes acting as honey-pots. Female and male unknown. (Australian).

Myrmecorhynchus Ern. André.

Funiculus of the antennæ not forming a distinct club; when feebly club-shaped the other characters do not all agree.....3.

3. Scale of the petiole with two distinct spines above. No psammophore. Clypeal and antennal foveæ not confluent. Monomorphic, large and slender. Fore wings without discoidal cell. (Australian)....**Diodontolepis** Wheeler. (Type: *Melophorus spinisquamis* Ern. André).

Scale of the petiole not bispinose, at most feebly emarginate above.....4.

4. Polymorphic, often with replete workers acting as honey-pots. Psammophore and clypeal bristles more or less developed. Clypeal and antennal foveæ separated. Fore wings without discoidal cell. (Australian).....**Melophorus** Lubbock.

Monomorphic, without repletes. Clypeal and antennal foveæ confluent. 5.

5. Fore wings without discoidal cell. (New Zealand) . . **Prolasius** Forel.
Fore wings with a closed discoidal cell. (Chile). **Lasiophanes** Emery.

5. **Plagiolepidini** Forel

♀ (♀ as far as known)

1. Maxillary palpi 2-jointed; labial palpi 3-jointed. Worker small, hypogaëic, pale-colored, with minute eyes; ocelli absent. . . . 2.
Maxillary palpi 6-jointed; labial palpi 4-jointed. Antennæ always 11-jointed. Fore wings without discoidal cell. 4.
2. Apical margin of the mandibles with a heavy, blunt, basal tooth, remote from the four other apical teeth and somewhat curved forward; the mandibles continue directly the inferior edges of the head. Head rectangular. Antennæ 11-jointed. (Indomalayan) **Atopodon** Forel.
Mandibles not continuing the inferior edges of the head, but somewhat more toward the middle line; without basal, blunt tooth at the apical margin. 3.
3. Antennæ 11-jointed, with filiform funiculus. Mandibles narrowly triangular; the apical margin oblique, 5-toothed. (Ethiopian, India, Ceylon, Burma, Papuan, Australian). **Acropyga** Roger.
Antennæ 8- to 11-jointed. Mandibles narrow, rather long, almost straight; the apical margin very oblique, with 3 or 4 narrow and sharp teeth, passing gradually into the inner margin. (Neotropical, Indomalayan, Papuan) . . . **Rhizomyrma** Forel.
4. Female: head oblong; eyes large, placed in front of the middle and at the sides of the head; ocelli present; mandibles broad, convex, with 6 teeth; clypeus short and convex, not extending back between the frontal carinæ; frontal area obsolete; frontal carinæ straight, very short, as far or farther apart than their distance from the side of the head; antennæ 11-jointed,¹ the funiculus short, gradually thickened, without club; thorax small and narrow, not broader than the head; epinotum and scale of the petiole unarmed; fore wings without discoidal cell; of small size (under 3 mm.). Worker and male unknown. (Philippines) **Pseudaphomomyrmex** Wheeler. (Type: *Aphomyrmex emeryi* Ashmead).

¹Ashmead describes the antennæ of *Aphomyrmex emeryi* as "apparently 10-jointed"; they are distinctly 11-jointed in the specimen before me.

Not answering the above description. Female usually over 3 mm. in length.....5.

5. Worker: small; clypeus carinate; thorax slender, often saddle-shaped at the mesonotum; epinotum excavated, its lateral angles spinose; scale of the petiole more or less bispinose or bidentate; ocelli distinct. Female large in proportion to the worker (over 4 mm.), with bifid petiolar scale. Male as in *Plagiolepis*.....6.

Worker: small or medium-sized; clypeus convex or carinate; thorax rather short, not or feebly saddle-shaped at the mesonotum, epinotum rounded, unarmed; scale of the petiole inclined in front, not emarginate above, either acute, or flat, or rounded above; ocelli absent. Female much larger than the worker (rarely less than 3 mm.), with entire scale of the petiole. (Palearctic, Ethiopian, Malagasy, Indomalayan, Papuan, Australian).....**Plagiolepis** Mayr.

- a. Metanotum very prominent and distinctly separated from a short and convex epinotum. Small species.....Subgenus **Anacantholepis** Santschi.
Metanotum not very prominent.....b.

- b. Mesonotum not constricted nor impressed in front of the stigmata which are low. Epinotum more or less raised. As a rule medium-sized species.....Subgenus **Anoplolepis** Santschi.
Mesonotum constricted or impressed in front of the stigmata which are raised. Small species.....Subgenus **Plagiolepis**, *sensu stricto*.

6. Worker and female: epinotum quadridentate; scale of the petiole not oblique, the gaster without anterior impression to receive the scale. (Australian) **Stigmacros** Forel (= *Acrostigma* Forel).

Worker and female: epinotum bidentate; scale of the petiole oblique; the gaster with an anterior impression. (Mediterranean, Central Asia, Ethiopian, Malagasy, Indomalayan).

Acantholepis Mayr.

6. **Myrmelachistini** Forel

♂, ♀

1. Last joints of the antennæ forming a differentiated club. Antennæ 9- or 10-jointed. Small, arboreal ants. (Neotropical).

Myrmelachista Roger.

- a. Antennæ 9-jointed.....Subgenus **Myrmelachista**, *sensu stricto*.
Antennæ 10-jointed.....Subgenus **Decamera** Roger.

Antennæ without differentiated club.....2.

2. Worker: polymorphic; antennæ 8-jointed; frontal carinæ closer together than in *Aphomomyrmex*; mandibles with 4-toothed apical margin and a bluntish tooth near the external base; eyes lateral. Female: antennæ 8-jointed; 6 to 7 mm. long. Male unknown. (Borneo)... **Cladomyrma** Wheeler. (Type: *Aphomomyrmex hewitti* Wheeler. Includes also *Dimorphomyrmex andrei* Emery, only known from the female, with 8-jointed antennæ).

Antennæ of worker and female 9- or 10-jointed. Mandibles without blunt tooth externally.....3.

3. Worker: polymorphic; antennæ 9-jointed; frontal carinæ feeble, remote from each other; eyes placed at the upper side of the head. Female and male with 10-jointed antennæ. Arboreal, medium-sized. (Ethiopian)..... **Aphomomyrmex** Emery.

Worker: monomorphic; antennæ 9-jointed; frontal carinæ more approximated; thorax short and thick-set. Female: antennæ 9-jointed. Hypogaëic, minute. (Nearctic, Neotropical; one species has been introduced into the Malagasy Region).

Brachymyrmex Mayr.

7. **Gesomyrmicini** Forel

Gesomyrmex Mayr. (Borneo, China; fossil in Baltic amber).

8. **Prenolepidini** Forel

Prenolepis Forel. (Cosmopolitan).

- a. Worker: thorax strongly constricted and subcylindric at the mesothorax, swollen in front and behind the constricted portion; scape and tibiæ without erect setæ, with a long, obliquely raised pilosity. Female and male with the same pilosity of the tibiæ. Male with well-developed cerci.....Subgenus **Prenolepis**, *sensu stricto*.

Worker: thorax not strikingly constricted at the mesothorax and not swollen in front and behind.....b.

- b. Female, male and worker: scape and tibiæ with a short pilosity which is adherent or hardly raised; also as a rule with strong, erect setæ, which are simple or thick and obtuse. Male without cerci.

Subgenus **Nylanderia** Emery.

Worker: scape and tibiæ with long, erect, stiff, pointed setæ, without adherent pilosity. Male and female unknown.

Subgenus **Euprenolepis** Emery.

9. **Formicini** Forel

♂

1. Joints 2 to 5 of the funiculus shorter or not longer than the succeeding joints. Ocelli usually absent. 2.
 Joints 2 to 5 of the funiculus longer than the succeeding joints.
 Ocelli distinct. 3.
2. Mandibles long, with oblique, dentate blades. Eyes small or vestigial. Dimorphism very marked; head large in the worker major, with convex sides and more or less excised behind. Clypeal fovea slightly separated from the antennal fovea. Hypogæic. Fore wing without discoidal cell. (Ethiopian, Indomalayan, Papuan, Australian). . . . **Pseudolasius** Emery.
 Mandibles shorter, with less oblique blades. Dimorphism scarcely or not at all perceptible. Fore wing normally with closed discoidal cell. (Holarctic).
 Lasius Fabricius. (= *Donisthorpea* Morice and Durrant).
 - a. Large, black, shining, arboreal species, very feebly or not pubescent. Eyes well developed. Ocelli small, but distinct. Temporary social parasite of *L. umbratus* which is itself a temporary parasite of *L. niger*. (Palearctic). Subgenus **Dendrolasius** Ruzsky.
 Integument not black and shining, with more or less distinct pilosity. Ocelli usually absent or indistinct. Epigæic or hypogæic. b.
 - b. Maxillary palpi 4-jointed. Eyes vestigial. Small, hypogæic, yellow. (Nearctic). Subgenus **Acanthomyops** Roger.
 Maxillary palpi 6-jointed. c.
 - c. Terminal joints of the maxillary palpi long, subequal. Eyes medium-sized. Epigæic, dark-colored. (Holarctic). Subgenus **Lasius**, *sensu stricto*.
 Terminal joints of the maxillary palpi gradually diminishing towards the apex. Eyes minute. Hypogæic, pale-colored. (Holarctic).
 Subgenus **Chthonolasius** Ruzsky.¹
3. Fourth joint of the maxillary palpi nearly twice as long as the fifth. Fore wings with discoidal cell present in the female, absent in the male. 4.
 Fourth joint of the maxillary palpi a little longer than the fifth (much longer in *Paraformica*). 5.
4. Male much smaller than the female, not larger than the largest worker. Psammophore of the usual form, at the posterior

¹Donisthorpe has pointed out that, as I had previously designated *Formica rufa* as the type of *Formicina* Shuckard, and as therefore this name becomes a synonym of *Formica* Linnæus, it is necessary to use Ruzsky's *Chthonolasius* for this subgenus. It may also be noted that the name *Formicina* has been used by Canestrini for a genus of ant-like spiders in 1868.

surface of the gula. Some workers functioning as repletes (honey ants). (Sonoran parts of the Nearctic Region).

Myrmecocystus Wesmael.

Male slightly smaller than the female. Psammophore at the anterior surface of the gula. No repletes; highly predatory. (Mediterranean, Central Asia, Ethiopian).

Cataglyphis Förster.

- a. A specialized soldier form with huge, sabre-shaped mandibles. Basal joints of maxillary palpi with a fringe of long, recurved setæ. Body covered with silvery pubescence... Subgenus **Machæromyrma** Forel.
No specialized soldier form with huge mandibles. Pubescence not silvery.
Subgenus **Cataglyphis**, *sensu stricto*.

5. Mandibles narrow and pointed, falcate, toothless but minutely serrulate. Petiole very thick, rounded above. Maxillary palpi 4-jointed; labial palpi 2-jointed. Frontal carinæ short, straight, parallel. Male much smaller than the female, with the scape much shorter than in *Formica*. Female usually winged, rarely ergatoid. Slave-making (dulotic), permanent social parasite of *Formicæ* of the *fusca* group and the species of *Neoformica*. (Holarctic)..... **Polyergus** Latreille.

Mandibles subtriangular, with the apical margin broad and denticulate. Maxillary palpi 6-jointed; labial palpi 4-jointed. Male somewhat smaller than the female. (Holarctic).¹

Formica Linnæus.

- a. Median joints of the maxillary palpi elongate, somewhat as in *Cataglyphis*. Mesoëpinotal constriction pronounced, saddle-shaped. (North Africa)..... Subgenus **Paraformica** Forel.
Fourth joint of the maxillary palpi only a little longer than the fifth. Mesoëpinotal constriction less pronounced..... b.
b. First funicular joint about as long as the second and third joints taken together, the latter shorter or at least not longer than the penultimate joints. Frontal carinæ short, subparallel, not diverging behind. Stipes of the male genitalia much longer than the volsellæ and sagittæ. Small, mostly smooth, shining, dark-colored. (Mediterranean, Nearctic)..... Subgenus **Proformica** Ruzsky.
First funicular joint distinctly shorter than the second and third joints taken together, the latter longer than the penultimate joints of the antennæ. Frontal carinæ longer and divergent..... c.

¹The two subgenera *Raptiformica* Forel and *Serviformica* Forel are regarded as utterly untenable. *Raptiformica* is based on the presence of a notch in the anterior margin of the clypeus; but this is present in several North American species (*F. munda*, *F. manni*, etc.) which do not make slaves like the Holarctic *sanguinea*. Moreover, some of the forms allied to *F. subpolita* which should belong to *Serviformica* Forel, have a slight but distinct notch in the outer border of the clypeus.

- c. Scape slender, scarcely curved at the base. Thorax longer. Stipes of male genitalia much longer than the volsellæ and sagittæ. (Nearctic).

Subgenus **Neoformica** Wheeler.

- Scape more or less curved. Thorax stouter. Stipes of male genitalia but slightly longer than the volsellæ and sagittæ. (Holarctic).

Subgenus **Formica**, *sensu stricto*.

10. **Gigantiopini** Ashmead

Gigantiops Roger. (Neotropical).

11. **Æcophyllini** Forel

Æcophylla F. Smith. (Ethiopian, Indomalayan, Papuan, Australian).

12. **Camponotini** Forel

♂, ♀

1. Worker: eyes large and prominent, placed towards the posterior angles of the head; ocelli usually absent; clypeus well developed, carinate or subcarinate, its anterior border entire, broadly rounded and projecting over the base of the mandibles; thorax, epinotum and petiole unarmed; monomorphic or feebly dimorphic. Female similar but with ocelli and wings. Male as in *Camponotus*. Fore wings with a small, triangular discoidal cell sometimes wanting in the male. (Australian, Papuan)..... **Opisthopsis** Emery.
Eyes on the sides of the head..... 2.
2. Thorax and petiole without spines or teeth..... 3.
Thorax and petiole, or the latter alone, more or less spinose or dentate..... 6.
3. No marked dimorphism in the worker..... 4.
Dimorphism more or less clearly marked in the size, form, and often in the sculpture of the head. Stature usually very variable.. 7.
4. Funiculus slender at the base, slightly thickened towards the apex. Gizzard as in the Prenolepidini, with a short, more or less recurved calyx. (Singapore)..... **Overbeckia** Viehmeyer.
Funiculus filiform. Gizzard with rather straight calyx..... 5.
5. Body thick-set. Head rounded behind. (Indomalayan, Papuan, Australian)..... **Calomyrmex** Emery.
Body slender. Head narrowed behind. (Neotropical).
Dendromyrmex Emery.

Large. Head rectangular, with rounded posterior angles. Clypeus flat, without carina or lobe, broadly notched in the middle of its anterior margin. Dorsum of the thorax flat, obtusely margined, with three sutures; pronotum with projecting humeral angles; epinotum truncate behind. Scale of the petiole very thick, angulate on the sides of its dorsal face. (Ethiopian).

Phasmomyrmex Stitz.

6. Body thick-set. Thorax without spines, its anterior angles rounded. Petiole prolonged into a point on either side. (Indomalayan, Australian, Papuan).¹ **Echinopla** F. Smith.

Body less thick-set. Thorax usually dentate or spinose; when this is not the case the body is shining jet black and the scale of the petiole is quadridentate. (Ethiopian, Syria, Indomalayan, Papuan, Australian) **Polyrhachis** F. Smith.

- a. Eyes truncate or incised posteriorly, supported laterally by a lobe of the head in the form of a blinder. Meso- and epinotum separated by a deep transverse furrow. Thorax unarmed. (Indomalayan).

Subgenus **Hemioptica** Roger. (Type: *Hemioptica scissa* Roger).

Eyes entire, round or oval; usually free, rarely with a distinct blinder. .b.

- b. Dorsal face of the thorax convex, more or less rounded at the sides which are not margined along their whole length.c.

Dorsal face of the thorax with a continuous carina extending full length of the sides of pro- and mesonotum, and continuing on the epinotum. .f.

- c. Spines of the petiole united at the base, long, diverging and hook-shaped at the apex. Pro- and mesonotum with a pair of spines, which are often hooked. (Indomalayan).

Subgenus **Polyrhachis**, *sensu stricto*. (Type: *Formica bihamata* Drury).

Spines of the petiole not ending in recurved hooks.d.

- d. Thorax very convex, shining, either wholly unarmed, or with small teeth at the epinotum. Petiole armed above with subequal, acute teeth. Arboreal; spinning vegetable débris together with silk. (Ethiopian, Indomalayan, Papuan, Australian).

Subgenus **Cyrtomyrma** Forel. (Type: *Formica rastellata* Latreille).

Thorax with spines on pro- or epinotum, or on both. Petiole also with a pair of long spines.e.

- e. Spines of the epinotum longer than those of the pronotum; the latter sometimes lacking. Mesonotum unarmed. Petiole with two long spines more or less diverging and embracing the base of the abdomen. Arboreal and often silk-spinning. (Syria, Indomalayan, Papuan, Australian).

Subgenus **Myrmhopla** Forel. (Type: *Formica armata* Le Guillou).

¹The genus *Mesozena* F. Smith, of New Guinea, has not been seen since Frederick Smith's time; according to Emery, it is related to *Echinopla*.

Pronotum unarmed or with feeble crests or spines. Mesonotum with a pair of raised lateral crests or tubercles. Petiole with two erect, long spines. (Papuan, Indonesian).

Subgenus **Myrmatopa** Forel. (Type: *Polyrhachis schang* Forel).

- f. Petiole armed with 3 spines, the median one as long as, or longer than, the lateral ones. Pronotum with a short spine or tooth; mesonotum almost unarmed. Silk-spinning and arboreal.

Subgenus **Myrmothrinax** Forel. (Type: *Polyrhachis thrinax* Roger).

Petiole not three-spinose. Pro- or mesonotum, or both armed with spines.

- g. Petiole high, flattened above, with two horizontal diverging spines which surround the base of the gaster. Pronotum convex, with strong humeral spines; epinotum also strongly bispinose. Arboreal. (Australian).

Subgenus **Hedomyrma** Forel. (Type: *Polyrhachis ornata* Mayr).

Petiole differently shaped, not flattened above.h.

- h. Pronotal angles more or less rounded, not spinose. Thorax narrow and elongate, rather flattened above. Epinotum with two long, horizontal spines. Petiole with two horizontally diverging spines which embrace the base of the gaster. Terrestrial, nesting in the ground or in old logs. (Australian).

Subgenus **Hagiomyrma** Wheeler. (Type: *Formica ammon* Fabricius).

Pronotal angles sharp, toothed or spinose. Epinotum either unarmed, or with short teeth, or with two long spinesi.

- i. Pronotum angular or shortly toothed. Epinotum unarmed or with small teeth. Thorax feebly convex or flattened. Petiole usually with short, tooth-like spines. Terrestrial, nesting in the ground. (Indomalayan, Papuan, Australian).

Subgenus **Campomyrma** Wheeler. (Type: *Polyrhachis clypeata* Mayr).

Pronotum with spines or long teeth.j.

- j. Epinotal spines usually very short and directed upward. Thorax rather short and convex above. Petiole with long, diverging spines. (Ethiopian, Indomalayan, Papuan).

Subgenus **Myrma** Billberg. (Type: *Formica militaris* Fabricius).

Epinotal spines long and horizontal or oblique.k.

- k. Body broad and flattened. Petiole with a pair of long, horizontally diverging spines which embrace the base of the gaster. Small, terrestrial, nesting in the ground. (Indomalayan, Papuan, Australian).

Subgenus **Chariomyrma** Forel. (Type: *Polyrhachis guerini* Roger).

Body long and slender. Petiole with a pair of suberect, oblique spines. (Indomalayan, Papuan).

Subgenus **Dolichorhachis** Mann. (Type: *P. (Dolichorhachis) malaënsis* Mann).

7. Worker: Head more or less elongate, rounded and narrowed behind in the worker minor, broadened behind in the worker major; eyes placed much behind the middle, ocelli distinct in the worker major; mandibles projecting, multidentate; clypeus carinate, with a rounded lobe, somewhat emarginate in

the middle; frontal carinæ close together, almost straight, very slightly diverging behind; antennal scape very long, extending beyond the occipital margin for over half its length, even in the worker maxima; thorax elongate, with saddle-shaped dorsum; its lowest and narrowest portion consisting of the metanotum, which is broadly exposed, limited by sutures in front and behind, with its spiracles close together on the dorsum; epinotum rounded tuberculate; scale of the petiole thick and obtuse. Female: winged; head and antennæ as in the worker major; scale of the petiole higher and slightly emarginate at the top. Male: body slender; head elongate; eyes larger, placed much behind the middle of the sides; mandibles with the masticating border broad and multidentate; clypeus with anterior margin rounded and emarginate in the middle; thorax comparatively low and long; scale of the petiole nodiform; genitalia much larger and stronger than in *Camponotus*, the stipes triangular. (Australian).

Notostigma Emery.

Not agreeing in all these characters. (Cosmopolitan).

Camponotus Mayr.

Emery in 1896¹ divided the numerous species of *Camponotus* into more or less natural groups (twenty-six *manipuli*, arranged into three *cohortes*). Building further in this direction, Forel in 1912² proposed to subdivide the genus into twenty subgenera; later³ he published a list of all the species known at that time, adding several new subgeneric divisions. Quite recently Emery⁴ has published a revised classification of the genus, taking also into account the geographic distribution of the species. The characters of the various subgenera given below are merely translated from Forel's and Emery's papers. Since both these authors recognize many transitions between the several groups, it has not seemed worth while to tabulate them in the regular key form.

In his paper of 1912 Forel failed to designate any subgenotypes, although he cited a number of species under each of his subgenera. The following year I undertook to supply this omission.⁵ Later, in his more extensive account of the subgenera of *Camponotus*, Forel cited a type for each of them, but apparently without consulting my previous designations. It happened, however, that in all but eight cases we selected the same species. In his recent paper, Emery evidently also overlooked my

¹Emery, C. 1896. 'Saggio di un catalogo sistematico dei generi *Camponotus*, *Polyrhachis* e affini.' Mem. Accad. Sc. Bologna, (5) V, pp. 761-780.

²Forel, A. 1912. 'Formicides néotropiques. Part. VI. 5^{me} sous-famille Camponotinae Forel.' Mém. Soc. Ent. Belgique, XX, pp. 59-92.

³Forel, A. 1914. 'Le genre *Camponotus* Mayr et les genres voisins.' Rev. Suisse Zool., XXII, pp. 257-276.

⁴Emery, C. 1920. 'Le genre "*Camponotus*" Mayr. Nouvel essai de sa subdivision en sous-genres.' Rev. Zool. Afr., VIII, 2, pp. 229-260.

⁵1913. 'Corrections and additions to the "List of type species of the genera and subgenera of Formicidae."' Ann. New York Ac. Sci., XXIII, pp. 77-83.

designations of the types of Forel's subgenera, thus bringing about a certain amount of confusion, to overcome which I have been obliged to propose a number of new subgeneric names.¹

Subgenus **Camponotus**, *sensu stricto*

Large species. Clypeus without carina or the carina is little apparent, without anterior lobe or the anterior lobe feebly projecting, more or less rectangular (*japonicus*) or rounded (*sansabeanus*); its anterior margin not notched in the middle. Head of worker major and female not truncate or obtuse in front; but little broader behind than in front. Mandibles strongly arched, with 4 or 5, sometimes 6 teeth. Dorsum of the thorax convex, continuous in profile; dorsum of the pronotum rounded or sometimes depressed in the worker major, with slightly projecting humeri. *C. ocreatus* and *C. sansabeanus* connect this subgenus with the next. Nests as a rule in wood. (Holarctic, especially in North America; one species in Madagascar).

Type: *Formica herculeana* Linnæus subspecies *ligniperda* (Latreille).

Subgenus **Myrmoturba** Forel

Clypeus carinate, with a very pronounced lobe at its anterior margin, as a rule rectangular, rarely of another shape. Head of the worker major as a rule much broader behind than in front, often emarginate at its posterior border; that of the worker minor with parallel lateral margins or narrowed behind, so that the posterior border is much reduced. Mandibles as a rule with 6 or 7 teeth. Dorsum of the thorax arched as in the preceding subgenus; rarely the epinotum in profile is slightly depressed, saddle-shaped. Sculpture variable, in certain South American species (such as *C. chilensis*) the gaster is covered with an abundant fur of pubescence. Nests as a rule in the ground or underneath stones. Numerous transitions to other subgenera. (Cosmopolitan).....Type: *Formica maculata* Fabricius.

Subgenus **Dinomyrmex** Ashmead (= *Myrmogigas* Forel)

Large or very large species. Head of the worker minor narrowed behind into a neck, or at least without distinct posterior border, save for its articulation with the thorax. The remainder as in *Myrmoturba* to which this subgenus is closely connected. Nests in rotten wood. (Ethiopian, Malagasy, Indomalayan, Australian, Papuan, Neotropical).....Type: *Formica gigas* Latreille.

Subgenus **Myrmosericus** Forel

As in *Myrmoturba*, but the integument entirely opaque, very finely sculptured, silky and more or less covered with a rather abundant pilosity, especially on the gaster. Nests in earth or sand. (Mediterranean, Ethiopian, Oriental).

Type: *Formica rufoglauca* Jerdon.

Subgenus **Myrmothrix** Forel

As in *Myrmoturba*, but the head of the worker major is, as a rule, massive and rather rounded; that of the worker minor not narrowed behind. Large or medium-sized species, with abundant pilosity on the body and, with few exceptions, on the

¹Wheeler, Wm. M. 1921. 'Professor Emery's subgenera of the genus *Camponotus* Mayr.' *Psyche*, XXVIII, pp. 16-19. Santschi has recently proposed four additional subgenera of *Camponotus*: *Myrmisolepis*, *Myrmopelta*, *Myrmoplatypus*, and *Myrmepinotus* (1921, 'Retouches aux sous-genres de *Camponotus*,' *Ann. Soc. Ent. Belgique*, LXI, pp. 310-312). This paper came too late for the new subgenera to be included in the present account.

scapes and legs. The integument is almost always opaque and sometimes silky. Tarsi not compressed. One species in Brazil (*C. femoratus*) forms gardens in epiphytes; others build carton nests or nest in the ground or in rotten wood. (Neotropical).

Type: *Formica abdominalis* Fabricius (Wheeler, 1913); *F. rufipes* Fabricius (Forel, 1914).

Subgenus **Myrmaphænus** Emery

Head of worker major longer than broad, with almost parallel lateral margins, rather depressed; its posterior margin emarginate. Clypeus, as a rule, without lobe, even sometimes with emarginate anterior border, with or without carina. Head of worker minor broadened behind. Integument opaque, finely sculptured, with coarse and short or longer and finer pilosity, in one species (*C. blandus*) silky. Thorax as in the preceding subgenera. Tibiæ and tarsi, as a rule, compressed. (Neotropical).

Type: *Camponotus leydigii* Forel.

Subgenus **Myrmepomis** Forel (= *Myrmolophus* Emery)

Worker with the humeral angles of the pronotum dentiform; median crest of mesonotum and epinotum and the tarsi much compressed. (One Neotropical species).

Type: *Formica sericeiventris* Guérin.

Subgenus **Myrmotarsus** Forel

Species analogous to *Myrmothrix* and *Myrmaphænus*. Head, as a rule, depressed in its anterior portion; mandibles projecting; clypeus, as a rule, without carina. Fore tarsi with a dense brush; tibiæ and tarsi compressed. Legs and scapes more or less villose. (Malayan).

Type: *Formica mistura* F. Smith (Wheeler, 1913); *F. irritabilis* F. Smith (Forel, 1914).

Subgenus **Myrmoplatys** Forel

Head still more depressed in front than in the preceding subgenus, which the species of the present group resemble. Legs not pilose; tibiæ and tarsi not compressed. In myrmecophilous plants. (Indomalayan) Type: *Camponotus korthalsiæ* Emery.

Subgenus **Myrmosaulus** Wheeler (= *Myrmosphincta* Emery, 1920; not of Forel, 1912)

Head of the worker major heart-shaped; that of the worker minor rounded and narrowed behind, in certain species, so as to have no posterior margin or even (*C. camelinus*) to form a neck as in certain species of *Dinomyrmex*. Thorax, as a rule, slender; pronotum rounded, not margined; a more or less pronounced depression on the dorsum in front of the epinotum which is more or less raised as a rounded protuberance (very distinctly in *C. cinerascens* and *C. camelinus*). Spiracles of the metanotum visible dorsally. Scale of the petiole more or less nodiform. Legs villose (except in *C. aurocinctus*). In *C. batesi* of Madagascar, the dorsum of the thorax is scarcely depressed in front of the epinotum; only the worker minor was known to Emery. (Indomalayan, Australian; one species of Madagascar doubtfully placed here) Type: *Formica cinerascens* Fabricius.

Subgenus **Myrmophyma** Forel (including *Myrmocamelus* Forel, in part)

Head in the small worker, as a rule, with parallel lateral margins; in most cases it is compressed laterally; the eyes are usually placed much behind the middle. In the worker maxima and female the head is broad, often with the vertex strongly swollen. Clypeus variable, without or with a lobe, which may be rounded or square, sometimes toothed or emarginate; often the lobe is distinct in the worker minor and disappears in the worker major. Mandibles strongly arcuate. The thorax is variable in profile: either uniformly arched, with the sloping face of the epinotum more or less abrupt; or the promesonotum protuberant, the epinotum is little arched or even feebly saddle-shaped (character of the subgenus *Myrmocamelus*); or the concavity of the epinotum is more pronounced (subgenus *Myrmosaga*). Pronotum sometimes more or less obtusely margined (*C. innexus*, *C. xeneopilosus*, *C. inflatus*, etc.). Scale of the petiole more or less thickened; in *C. hoplites* armed with a spine. This subgenus passes into *Myrmoturba* through *C. testaceipes* and *C. claripes*, and into the next subgenus through the species with short and uniformly arched thorax. Nests in the ground; sometimes in termitaria. (Australian, Papuan).

Type: *Camponotus capito* Mayr (Wheeler, 1913; Emery, 1920).

Subgenus **Myrmogonia** Forel

Characterized by the thorax of the worker, which in profile is strongly curved, convex and not interrupted. Epinotum compressed and reduced to a ridge on the dorsum. The remainder as in the species with short and high thorax of the preceding subgenus. Nests in the ground. (Australian) . . Type: *Camponotus laminatus* Mayr.

Subgenus **Myrmosaga** Forel

Head of the worker major broad and emarginate behind; that of the worker minor truncate behind, with rounded posterior angles and parallel sides. Clypeus generally with a short, rounded lobe, sometimes truncate, the lateral portions, as a rule, very distinct. Thorax in profile with the same three characteristics as in the subgenus *Myrmophyma*. Pronotum never margined. Scale of the petiole more or less thickened. Integument always shining and finely sculptured. In the male of *C. gibber* the ocelli are placed on the protuberance of the vertex. (Malagasy).

Type: *Camponotus kelleri* Forel (Wheeler, 1913); *C. quadrimaculatus* Forel (Forel, 1914).

Subgenus **Mayria** Forel

Differs from the other subgenera in the low, short, and narrow first segment of the gaster. Small, smooth, with the thorax as in *Myrmoturba*, and 6-toothed mandibles. Habits unknown. Emery is inclined to unite this with *Myrmosaga*. (Malagasy) Type: *Mayria madagascariensis* Forel (= *Camponotus repens* Forel).

Subgenus **Myrmonesites** Emery

No great difference between the worker major and the worker minor. Head rounded trapezoidal, broader behind, obtuse in front. Clypeus strikingly short, its anterior margin rounded; in *C. mocquerysi* narrowly notched in the middle. Mandibles short. Thorax with pronounced sutures; pronotum depressed and, as a rule, obtusely margined; a more or less pronounced notch on the dorsum in front of the

epinotum, which is differently shaped in the several species. Metanotum not apparent on the dorsum, but its spiracles are visible from above. Scale of the petiole more or less thickened and low. (Malagasy).....Type: *Camponotus putatus* Forel.

Subgenus **Myrmopytia** Emery

Includes only *C. imitator* Forel, of Madagascar, which is quite distinct especially in the structure of the thorax of the worker.

Subgenus **Myrmentoma** Forel

Body shining. Clypeus narrow, with deep foveæ, extending almost over the whole of its lateral portions; the anterior margin with a median, very distinct notch. Dorsum of the thorax either continuous or interrupted in profile. Head of the male short, the funiculus with short joints. (Holarctic)....Type: *Formica lateralis* Olivier.

Subgenus **Orthonotomyrmex** Ashmead (= *Orthonotus* Ashmead)

Species, as a rule, of heavy build, with opaque integument, sometimes silky, or with a few short, coarse and obtuse hairs. The size of the workers varies but little, as a rule. Head of the worker major very broad behind, never truncate in front; that of the worker minor trapezoidal, broadened behind. Clypeus with or without lobe. Dorsum of the thorax more or less interrupted by a notch in front of the epinotum; sometimes the dorsum is even and the mesoepinotal suture alone is deeply marked, the epinotum itself being margined on the sides and behind (as in *C. robustus*); the epinotum is usually margined, rarely forming a rounded protuberance (*C. dofleini*; *C. wasmanni*). Pronotum margined or not margined, sometimes with projecting humeral angles; in *C. wasmanni* it is armed with a pair of short spines. Scale of the petiole squamiform or nodiform. (Ethiopian, Malagasy, Mediterranean, Indo-malayan)....Type: *Formica sericea* Fabricius (Ashmead, 1905; Wheeler, 1913; Emery, 1920).

Subgenus **Myrmotrema** Forel

Size and head of the worker as in the preceding subgenus. Thorax with or without dorsal notch. In the worker major and female the anterior part of the head is covered with round pits, deeply cut in as though made with a punch. (Ethiopian, Malagasy, one species in India).....Type: *Camponotus foraminosus* Forel.

Subgenus **Myrmopiromis** Wheeler (= *Myrmepomis* Emery, 1920; not of Forel, 1912)

Head as in the preceding subgenus, but without the deep pits on the cheeks of the worker major and female; pronotum often margined and sometimes with raised humeri (*C. fulvopilosus*, *C. ellioti*, *C. themistocles*). Most of the species have coarse, obtuse hairs, pale colored (white, yellow, or russet), more or less abundant, sometimes forming a fur-coating on the gaster or on the dorsum of the thorax (Ethiopian, Malagasy).....Type: *Formica fulvopilosa* De Geer.

Subgenus **Myrmorhachis** Forel (= *Myrmacantha* Emery)

Head obtusely truncate in front. Thorax broad and with humeral angles; or the pronotum rounded (*C. aberrans*), in which case the scale of the petiole bears lateral appendages. Petiole variable, nodiform or squamiform, always at least angulose on the sides. Epinotum very variously shaped. (Ethiopian, Malagasy, Indomalayan).....Type: *Camponotus polyrhachioides* Emery.

Subgenus **Myrmopsamma** Forel

Mandibles 5-toothed. Clypeus without carina. Anterior margin of the head below and above, and often also the upper third of the clypeus, with transversal rows of long, psammophorous setæ. Size and shape of the body as in *Myrmoturba* and *Camponotus*, *sensu stricto*. Sometimes the scape has an anterior tooth-like edge at the base. Arenicolous. (Ethiopian) Type: *Camponotus mystaceus* Emery.

Subgenus **Myrmamblys** Forel (= *Myrmotemnus* Emery, in part)

Differs from the Neotropical *Neomyrmamblys* in the integument which is, as a rule, shining, even on the head of the worker minor, more or less sculptured on that of worker major, soldier and female; in the thorax of the worker being more or less depressed on the dorsum, especially in the species of Malasia. The dimorphism is variously shown in the head, which is more or less truncate in front, the clypeus being always entirely included in the truncation. The antennæ are inserted much in front of the middle of the frontal carinæ (as in *Colobopsis*). There are no transitional forms between worker major and minor. This group is very heterogeneous. (Ethiopian, Asiatic, Indomalayan, Australian) Type: *Camponotus reticulatus* Roger.

Subgenus **Myrmosphincta** Forel

I retain in this group the Neotropical forms which Emery proposed transferring to his subgenus *Myrmotemnus* (= *Myrmamblys* Forel), but which do not seem to fit well there, though agreeing with it in most of their characters.

Type: *Formica sexguttata* Fabricius.

Subgenus **Rhinomyrmex** Forel

Clypeus strongly vaulted and carinate, always forming a beak or nose in front. The single species is imperfectly known. (Sumatra) Type: *Rhinomyrmex klæsi* Forel.

Subgenus **Colobopsis** Mayr

Soldier or worker major and female with the head decidedly truncate in front, the flattened portion often sharply margined; the lower part of the clypeus is left out of the truncation so as to make an angle with its posterior narrow portion. Frontal carinæ diverging, comparatively short, straight or feebly sigmoid; the articulation of the antennæ placed in the middle or behind the middle of these carinæ. In most cases there is no transition between the soldier and the worker minor. Nest in tree-trunks, branches, empty galls, and hollow thorns. (Palearctic, Nearctic, Neotropical, Indomalayan, Australian; the Malagasy species is doubtful).

Type: *Formica truncata* Spinola.

Subgenus **Neomyrmamblys** Wheeler (= *Myrmamblys* Emery, 1920; not of Forel, 1912)

Dimorphism of the workers generally well pronounced in the shape of the head, which is often broad and rounded on the sides, truncate or emarginate behind and more or less obtuse in front in the worker major (*C. punctulatus*, *C. fastigatus*, etc.), or long with the sides more or less parallel and sometimes subtruncate in front (*C. novogranadensis*, *C. personatus*, etc.). Clypeus of the worker minor usually with rounded anterior margin; that of the worker major without lobe. Dorsum of the thorax continuous, without notch. Integument usually opaque. (Neotropical).

Type: *Camponotus fastigatus* Roger.

Subgenus **Paracolobopsis** Emery

Head of the worker minor rectangular, with the sides compressed as in several *Myrmobrachys*; that of the worker major with the sides parallel or converging in front, obtusely truncate, as in *Colobopsis*, so that the carinate clypeus, protuberant in profile, is only partly comprised in the truncation. Frontal carinæ sigmoid, with the articulation of the antennæ placed much before their middle. Thorax in profile making a continuous curve; pronotum depressed, more or less margined in front. Integument sculptured and at least partly opaque; the head of the worker major is entirely opaque. There are transitions between the worker major and minor. (Neotropical).

Type: *Camponotus salvini* Forel.

Subgenus **Pseudocolobopsis** Emery

Head of the worker minor elongate, rounded behind, with nearly parallel lateral sides, shining; that of the worker major more or less rectangular, obtuse or truncate in front; sometimes the truncation has a well-defined margin and then includes the entire clypeus. Integument of the head of the worker major and female more or less sculptured, at least in its anterior portion. Dorsum of the thorax arched and continuous. (Neotropical).....Type: *Camponotus macrocephalus* Emery.

Subgenus **Myrmostenus** Emery

Only the female is known. Body extremely lengthened; head very long, narrow, and depressed. The workers may prove to be like those of the preceding subgenus. (Neotropical).....Type: *Camponotus mirabilis* Emery.

Subgenus **Hypercolobopsis** Emery

In the type species the head of the soldier and female is excessively truncate: the oblique anterior face is flat, enclosed by a distinct margin, and contains the entire clypeus and part of the frontal carinæ, so that the articulation of the antennæ is placed just at the limit of the truncation; the head of the worker is narrowed behind as in certain species of *Myrmoturba* and *Dinomyrmex*. The soldier of *C. burtoni* Mann is much as in the type; its worker is unknown. *C. tonduzi*, which is also included by Emery, has the head of the worker shaped as in the type species, but that of the soldier has no distinctly truncate face. (Neotropical).

Type: *Colobopsis paradoxa* Mayr.

Subgenus **Myrmobrachys** Forel

Similar to *Myrmotrema*, but without fossæ on the cheeks and with the thorax generally broader at the epinotum, often subdepressed, though not margined or only submargined. As a rule, small and thick-set, often pilose or pubescent. Often living in dry and hollow branches; sometimes in the ground; some species use their larvæ to spin silk nests. (Neotropical).....Type: *Formica senex* F. Smith.

Subgenus **Myrmocladæcus** Wheeler (= *Myrmorhachis* Emery, 1920; not of Forel, 1912)

Thorax usually margined, often bidentate or bispinose. Scale of petiole often spinose or mucronate. Usually small and somewhat like *Polyrhachis*. Thorax sometimes with a dorsal depression. In one species, pronotum dentate. Nests in hollow twigs. (Neotropical).....Type: *Camponotus latangulus* Roger.

Subgenus **Myrmeurynota** Forel

Pronotum very broad, with a lateral, lamelliform margin, often vaulted. Thorax rapidly narrowing behind. Epinotum very narrow at its sloping face, which often has a peculiar appendage. Gaster broad, short, and small, sometimes more or less spherical. Probably arboreal. (Neotropical).

Type: *Camponotus eurynotus* Forel (Wheeler, 1913); *C. gilviventris* Roger (Forel, 1914).

Subgenus **Manniella** Wheeler

In the maxima worker the anterior truncated portion of the head is strongly carinate at the sides and posteriorly depressed; the front is strongly depressed between the carinæ, the depression margined behind with an elevated ridge. The remainder much as in *Myrmeurynota*. Nest in stalks or twigs. (Neotropical).

Type: *Camponotus sphæricus* Roger.

Subgenus **Myrmomalis** Forel

The entire body depressed in the worker and female, especially in the worker of *C. obtritatus* which is completely flattened. Head rectangular in the worker major; elongate, trapezoidal in the worker minor; eyes placed laterally and behind the middle. Dorsum of the thorax flat; scale of the petiole low and thick. Integument black, opaque and pilose. Legs long, compressed, hirsute. (Neotropical).

Type: *Camponotus depressus* Mayr.