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A Generic and Subgeneric Synopsis of the Male Ants of the United States

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Although not remarkably numerous in species, ants are among the most abundant of insects in individuals. Their widespread distribution, their adaptation to many types of food and environments, and their extreme activity have given them an important rank among insects that affect man's welfare. There are species that infest man's food, that bite, sting, or annoy him, gnaw into his plants or clothing, steal seeds from seed beds, remove the rubber insulation from telephone wires, kill newly hatched birds and poultry, distribute or foster other injurious insects, and possibly transmit on their bodies or otherwise the germs of such easily communicable diseases as dysentery and typhoid fever. Recently Dr. Sophie D. Griffitts, of the School of Tropical Medicine, at San Juan, Puerto Rico, has demonstrated that the fire ant, *Solenopsis geminata* (F.), which is so common in the West Indies, can carry dysentery germs on its body at least 24 hours after having crawled over infected material; and other investigators have incriminated certain species of ants as intermediate hosts in the development of internal poultry parasites. No group of insects appears to be more easily distributed by commerce than ants; thousands are intercepted each year in shipments from other countries reaching the United States by boat, plane, or other means of transportation. Moreover, the Bureau of Entomology and Plant Quarantine continually receives requests for the identification of injurious or annoying ants and for means of controlling them. As the same control measures are not applicable for all species of ants, specific determination is required before proper combative methods can be recommended. When ants are submitted for identification they may be represented by either workers, soldiers, females (queens), or males, or by any combination of these castes. The lack of adequate descriptions, and especially keys, has made the determination of males extremely difficult when specimens of this caste alone are submitted. The primary purpose of this paper, therefore, is to present a comprehensive synoptic key, supported by illustrations, for the generic and subgeneric determination of the males of the ants known to occur within the United States.

The first generic key for the identification of North American male ants was published by Cresson (1887). Although this has been of invaluable aid to taxonomists, it is now very much out of date owing to changes in nomenclature and the discovery of other genera. It includes approximately only half of the genera now recognized.

Emery in Wytsman's Genera Insectorum (1910, 1911, 1912, 1921, 1922, 1925) has furnished excellent keys (in French) for the generic and subgeneric determination of the male ants of the world. The keys, however, are not available to most workers and have the additional disadvantage of not being entirely applicable to the ants of the United States. In the appendix to the Ants of the Belgian Congo, Wheeler (1922) has offered a similar key largely adapted from that of Emery. It is primarily intended, however, for the identification of workers and females, and those sections dealing with males are not always distinctly set apart from the sections pertaining to workers and females; moreover, some genera have not been adequately treated.

That male ants have been studied so little is probably due to the fact that they are not so easily recognized as are worker ants, and also because they are present in a colony only a very short time during the course of the year. Unless males are collected in association with workers it is extremely difficult to place most of them specifically.

Males, like the other castes of ants, are distinguished from the remainder of the Hymenoptera by the presence of a pedicel, between the thorax and abdomen, which bears one or two dorsal enlargements, called nodes. When the pedicel is single-segmented, the node is called the petiole; if the pedicel is two-segmented, the two nodes are respectively known as the petiole and postpetiole. The other Hymenoptera which approach this condition can usually be distinguished from male ants by the presence of a second recurrent vein in the front wing. This vein seems to be absent in all our North American male ants, except a few of the rare Cerapachyinae.

Male ants can be distinguished from female ants by their genitalia, smaller size, and more slender form, larger eyes in proportion to the size of the head, usually much reduced or vestigial mandibles, and their 13-segmented antenna (with exceptions as noted below). Although a female ant may bear a striking resemblance to a worker of the same species, the male has a habitus so decidedly different from either that there is nothing very suggestive of relationship. In no group are the workers and males more unlike than in the legionary ants, species of *Eciton,* in which the male is unusually large and wasplike, with prominent eyes and ocelli and one-segmented petiole, whereas the worker is much smaller and has exceedingly small eyes, no ocelli, and a two-segmented petiole.

The male antenna is composed of from 10 to 13 segments, 13 being the most common number. Apparently all males belonging to the subfamilies Ponerinae, Cerapachyinae, Dorylinae, Dolichoderinae, and Formicinae have 13-segmented antennae except those of the genus *Brachymyrmex* (Formicinae). Males of Pseudomyrminae apparently always have 12-segmented antennae, while in males of Myrmicinae the number ranges from 10 to 13, although it is usually 13. The length of the male scape is so reduced in certain species that the antenna, so characteristically elbowed in the worker or female, is not at all elbowed or not noticeably so. Usually the wings are retained throughout life although some Dorylinae may lose their wings before death, and abnormal, wingless males occur in a few genera such as *Ponera, Anergates, Leptothorax,*

Cardiocondyla, and *Symmyrmica.* The male is distinctly workerlike in all these genera except *Anergates,* where it is distinguished by its pupoid form.

The key offered here is based on the ants of the United States. Efforts were made to obtain for study males of every species, and although this aim could not be realized it is believed that the large number of forms examined has provided a sound basis for determining the variational ranges in most genera. In some instances, especially with the rare parasitic species, it was necessary to rely upon published descriptions when no specimens were available. Since it was desired to make the keys as simple and practical as possible, no characters were used whose presence could be detected only through a great deal of laboratory preparation or technique. The keys are, therefore, largely based on external characters which are easily seen. Unfortunately, at times, some of the appendages on the gaster may be partly or entirely obscured by the strong contraction that has taken place there.

Detailed studies have shown considerable variation in wing venation, in the development of Mayrian furrows, in the relation of the length of the scape to the combined lengths of certain funicular segments, and in other characters. Not only does such variation occur in the same genus or species, but with respect to the wings it may occur in the same individual. There are specimens of *Stenamma,* for instance, with one discoidal cell in one wing and two discoidal cells in the other. Because of such variation it has often been necessary to use qualified statements and also to fortify the keys with numerous supplementary supporting characters, helpful figures, indication of approximate sizes, statements on distribution and rareness, and, finally, to furnish summaries of what are considered to be the best generic characters. It is true that the males of most genera have a distinctive habitus, but this habitus often defies accurate description. Most generic and subgeneric determinations should be comparatively easy and certain with the keys presented here. In a few genera, however, there are males with such unstable characters that considerable difficulty is encountered in attempting identification. Especial reference is made to *Stenamma* and to some species of *Leptothorax.* For accurate results every character mentioned in the key should be examined and the specimen finally checked against the generic summary. It will be noted that adequate characters have not been found for separating some of the subgenera. There seem to be no dependable characters for separating the males of the Dolichoderinae and Formicinae;* accordingly, the genera composing them are all grouped together in a common key.

Where possible, measurements have been given of the males of the smallest and largest species in a genus to indicate range in size. Often only the male of a single species or the males of a very few species in a genus were available; hence, the measurements should be considered as only approximate. Measurements of the comparative length and breadth of the head or of the length of the scape in relation to the combined lengths of certain funicular segments

* Forel (1874) states that the males of the Dolichoderinae in Switzerland can be separated from those of the Formicinae by the presence of pectinate spurs of the middle and hind legs and by the extension of the clypeus between the frontal carinae.

should be interpreted as follows: The length of the head is the median length from the anterior border of the clypeus to the posterior border of the head. The breadth of the head is the greatest width between the external borders of the eyes. The length of the scape with relation to the combined lengths of certain funicular segments refers to the greatest length of all these parts when fully extended. The bulblike base of the scape is not included in its length because the bulb is more or less buried in the head and therefore cannot be accurately measured.

All discussions of venation apply only to the front wing. Areas on the wing are not considered as definite cells unless completely enclosed by veins. The expression "no radial cell" may therefore mean that the area in which the radial cell should occur is entirely without veins or that, if the veins are present, they do not completely enclose the cell.

The 61 genera treated in this article are divided among the 7 subfamilies as follows: Ponerinae 11, Cerapachyinae 2, Dorylinae 1, Pseudomyrminae 1, Myrmicinae 32, Dolichoderinae 6, and Formicinae 8. Of the 726 species known to occur in the United States the Ponerinae contains 30, the Cerapachyinae 3, the Dorylinae 19, the Pseudomyrminae 5, the Myrmicinae 384, the Dolichoderinae 26, and the Formicinae 259.

Specimens used in this study are largely from the collections of the United States National Museum and that of Dr. W. M. Mann. Mr. Wm. F. Buren supplied a few specimens not otherwise available and Dr. A. C. Cole, Jr., made some helpful suggestions and criticisms of the keys. The illustrations from the "Bulletin of the American Museum of Natural History," "Biological Bulletin," and from Wheeler's "Ants" are published with the permission of Mrs. W. M. Wheeler and the editors of these publications. All the other illustrations were made by Mrs. Mary F. Benson with the exception of that of *Leptothorax diversipilosus* M. R. Smith, which was drawn by Arthur Cushman.

KEY TO SUBFAMILIES

1. Pedicel composed of 2 segments, the petiole and postpetiole 2
   Pedicel composed of a single segment, the petiole 3
2. (1) Clypeus not extending back between frontal carinae (fig. 1, *E*); eyes large, elongate subreniform; elongate, slender ants; antenna 12-segmented; no Mayrian furrows; (usually a radial, 2 cubital cells and a discoidal cell; Southern and Southwestern) ..... PSEUDOMYRMINAE Emery (one genus, *Pseudomyrma* Guérin, p. 291
   Clypeus extending back between frontal carinae (fig. 1, *C*); eyes not as described above; not especially elongate, slender ants; antenna 10- to 13-segmented; Mayrian furrows present or absent..MYRMICINAE Lepeletier, p. 291
3. (1) A pronounced constriction between the first and second gastric segments (fig. 3, *A*) 4
   No pronounced constriction between the first and second gastric segments* (fig. 3, *C*) 5
4. (3) Hypopygium strongly forked (fig. 6, *C*); no cerci; genital appendages entirely retractile; mandibles well developed; (rare; Texas and Arizona) ..... CERAPACHYINAE Forel, p. 288

* The male of *Eciton (Labidus) esenbecki* (Westwood) has a pronounced constriction between the first and second gastric segments.

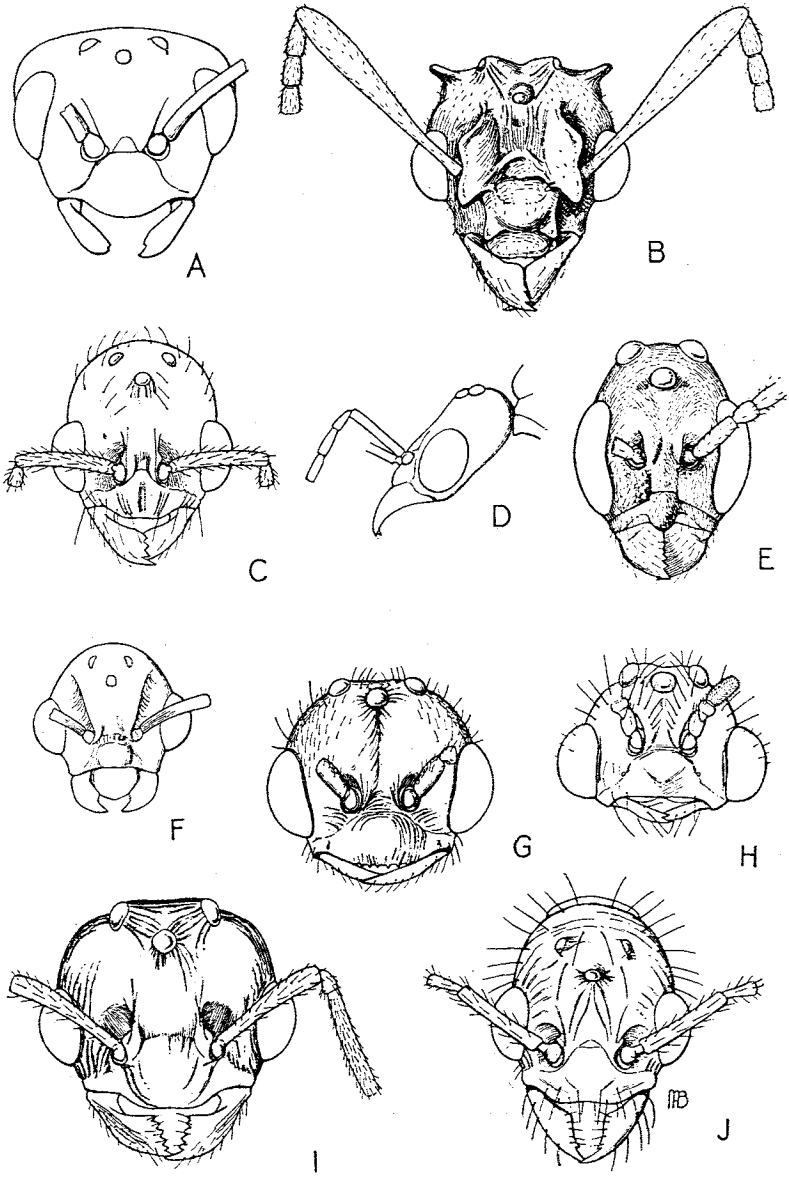

Fig. 1.—Head: *A*, *Formica truncicola integra* Nylander; *B*, *Cyphomyrmex* sp.; *C*, *Stenamma* sp.; *D*, *Aphaenogaster fulva aquia* (Buckley); *E*, *Pseudomyrma brunnea* F. Smith; F, *Harpagoxenus americanus* (Emery); G, *Stigmatomma pallipes* (Haldeman); *H*, *Solenopsis geminata rufa* (Jerdon); *I*, *Tetramorium caespitum* (Linnaeus); *J*, *Novomessor cockerelli* André.

Hypopygium entire or at most not strongly forked; cerci present but not always clearly visible; genital appendages usually nonretractile; mandible often poorly developed ..... PONERINAE Lepeletier, p. 278

5. (3) Hypopygium with 2 or 3 apical teeth (fig. 4, *E*); (genital appendages entirely retractile); frontal carinae not covering antennal insertions; antenna 13-segmented; eyes and ocelli well developed; a radial, 2 cubital, and 2 discoidal cells (fig. 5, *A*); large, wasplike ants; (mainly Southern and Southwestern) ..... DORYLINAE Leach (one genus *Eciton* Latreille), p. 290

Hypopygium not as described above; frontal carinae usually covering the antennal insertions; not unusually large, wasplike ants ..... DOLICHODERINAE Forel, p. 309, and FORMICINAE Lepeletier, p. 309

Subfamily PONERINAE Lepeletier

1. Wingless; ergatandrous; (rare) ..... *Ponera* Latreille (part), p. 286
1. Winged; normal 2
2. (1) Tarsal claws comblike (fig. 2, *K*); antenna very long subfiliform (fig. 2, *A*); Mayrian furrows present; no spine on pygidium; (Florida, Georgia, and Texas) ..... *Leptogenys*, subgenus *Lobopelta* Mayr, p. 286

Tarsal claws simple (fig. 2, *M*) or toothed (fig. 2, *L*), never comblike 3

3. (2) No discoidal or radial cells, but a large cubital cell; (Mayrian furrows absent; metanotum with a distinct spine (fig. 3, *D*); petiole scalelike); probably confined to the eastern half of the United States; (uncommon) ..... *Proceratium* Roger, p. 282

One or 2 discoidal cells, 2 cubital cells, or else 1 cubital cell and an indication of another cell, and a radial cell 4

4. (3) Tarsal claws weakly to strongly toothed (the teeth sometimes very indistinct) 5

Tarsal claws simple (fig. 2, *M*) 9

5. (4) Mayrian furrows distinct (fig. 3, *F*) 6

Mayrian furrows absent or obsolescent 8

6. (5) Mandible large (subtriangular), toothed (fig. 2, *F*); tarsal claws distinctly toothed; pygidium spineless; (Texas) ..... *Ectatomma*, subgenus *Ectatomma* F. Smith, p. 280

Mandible usually small, toothless 7

7. (6) Length 8 mm.; sculpture on epinotum forming somewhat of an inverted V; (petiolar node higher than long; pygidium spined (fig. 3, *A*)); Texas and Louisiana ..... *Pachycondyla*, subgenus *Pachycondyla* F. Smith, p. 282

Length 12 mm.; sculpture on epinotum not forming an inverted V; Texas ..... *Neoponera*, subgenus *Neoponera* Emery, p. 284

8. (5) Petiolar node bluntly pointed above, not forming a spine; mandible extremely small; (antenna subfiliform; eyes subreniform; pygidium spined); Florida, Georgia, Texas, Louisiana, and Arizona ..... *Odontomachus* Latreille, p. 286

Petiolar node not as described above, the posterior border bisinuate, forming 3 toothlike projections; mandible large (subtriangular); (body covered with coarse pitlike punctures; uncommon); Texas ..... *Platythyrea* Roger, p. 280

9. (4) Anterior border of clypeus with small but distinct denticulae (fig. 1, *C*); mandible long and narrow, tapering apically to a sharp point (fig. 2, *J*); (Mayrian furrows present; petiole of somewhat similar conformation to that of worker; entire United States) ..... *Stigmatomma* Roger, p. 280

Anterior border of clypeus not as described above; mandible of a different shape 10

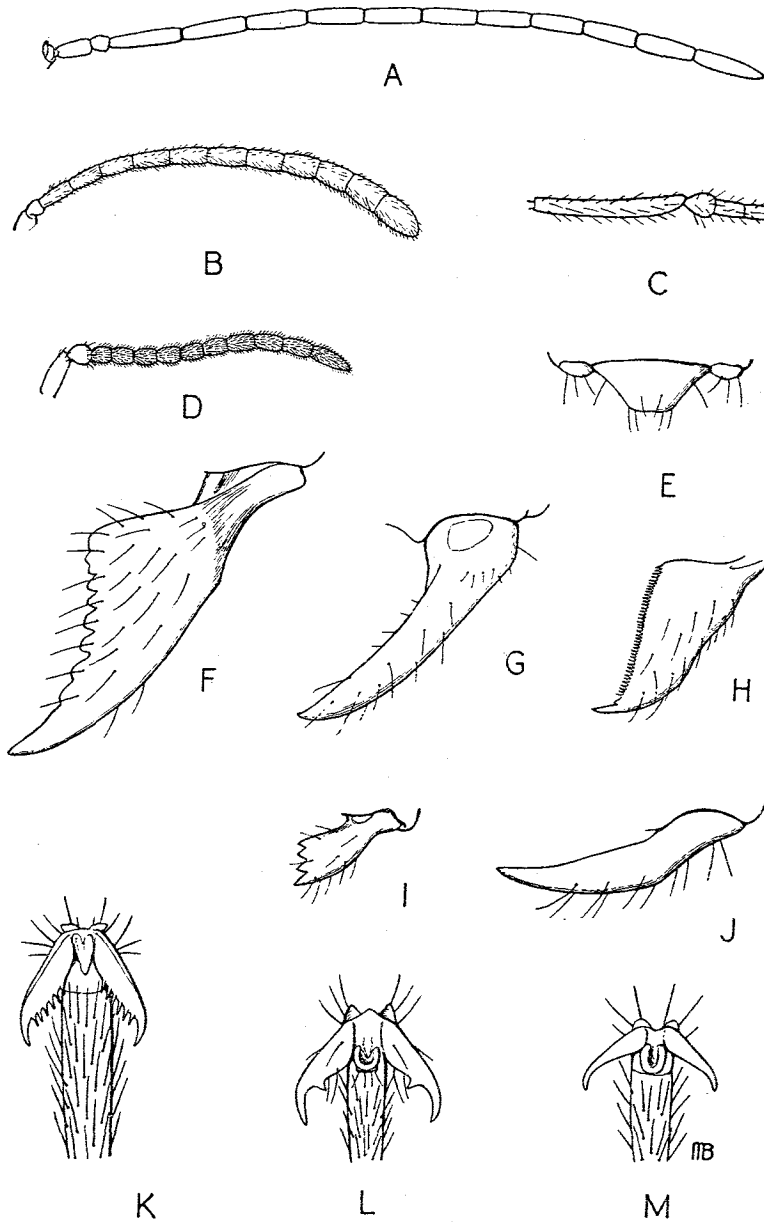

Fig. 2.—Antenna: *A*, *Leptogenys (Lobopelta) elongata* (Buckley); *B*, *Cryptocerus* sp.; *C*, *Lasius sp.*; *D*, *Crematogaster atkinsoni* Wheeler. Mandible: *E*, *Myrmecina graminicola americana* Emery; *F*, *Atta texana* Buckley; *G*, *Polyergus lucidus* Mayr; *H*, *Tapinoma sessile* (Say); *I*, *Monomorium minimum* (Buckley); *J*, *Stigmatomma pallipes* (Haldeman); Tarsal claw: *K*, *Leptogenys (Lobopelta) elongata* (Buckley); *L*, *Eciton (Labidus) coecum* (Latreille); *M*, *Sysphincta pergandei* Emery.

10. (9) Metanotum extended posteriorly as a prominent spine or tubercle (fig. 3, *D*); (rare; eastern half of United States).....*Sysphincta* Roger, p. 284
Metanotum not extended posteriorly as a prominent spine or tubercle 11

11. (10) Hind tibia with a single spur; entire United States, more common in the southern half .....*Ponera* Latreille (part), p. 286
Hind tibia with 2 spurs (fig. 4, *G*), the smaller of these sometimes very difficult to see; Gulf and Southeastern States .....*Euponera*, subgenera *Brachyponera* Emery, p. 282, and *Trachymesopus* Emery, p. 284

STIGMATOMMA Roger

Stigmatomma Roger, 1859, Berlin Ent. Ztschr. 3:250.
Genotype, *Stigmatomma denticulatum* Roger (by designation of Bingham, 1903).

Length 3-4.5 mm. Antenna 13-segmented; scape short, approximating length of second funicular segment; all funicular segments except the first distinctly longer than broad. Mandible elongate, slender, ending in a sharp, apical point (Fig. 2, *J*). Anterior border of clypeus minutely denticulate (Fig. 1, *G*.) Antennal fossa almost touching posterior border of clypeus. Eye placed close to base of mandible. Thorax with Mayrian furrows and parapsidal sutures. Wing with prominent stigma; a radial, 2 cubital, and 2 discoidal cells. Petiole of a conformation somewhat similar to that of worker. Constriction between petiole and first gastric segment very strong, that between first and second gastric segments less pronounced. Posterior surface of thorax with margined, subcircular area. Hind tibia with 2 spurs. Genital appendages not large. Cerci present.

S. pallipes (Haldeman) and its 3 subspecies. One or more of these occur in nearly every section of the United States; *pallipes* is the most common in the eastern half of the country. Species examined, *S. pallipes*.

PLATYTHYREA Roger

Platythyrea Roger, 1863, Berlin Ent. Ztschr. 7: 172.
Genotype, *Pachycondyla punctata* F. Smith (by designation of Bingham, 1903).

Length 7.3 mm. Antenna 13-segmented; scape a little shorter than second funicular segment. Mandible well developed, subtriangular. Eyes and ocelli not large. Pronotum large, not covered by mesonotum. Mayrian furrows present. Wing with 2 cubital cells. Petiole similar to that of worker. Hind tibia with 2 spurs. Pygidium rounded. Cerci present. Body covered with a pruinose pubescence.

One species, *punctata* (F. Smith) of extreme southern Texas. Uncommon. I have not been able to examine any males of this genus. The description above is adapted from Emery, 1911, in Wytsman's Genera Insectorum (fasc. 118: 28). The measurement is that of F. Smith, 1858 (Cat. Hymen. Brit. Mus. 6: 108).

ECTATOMMA, subgenus ECTATOMMA F. Smith

Ectatomma F. Smith, 1858, Catalogue of Hymenopterous Insects in the Collection of the British Museum, pt. 6, p. 102.

Subgenotype, *Formica tuberculata* Olivier (by designation of Bingham, 1903).

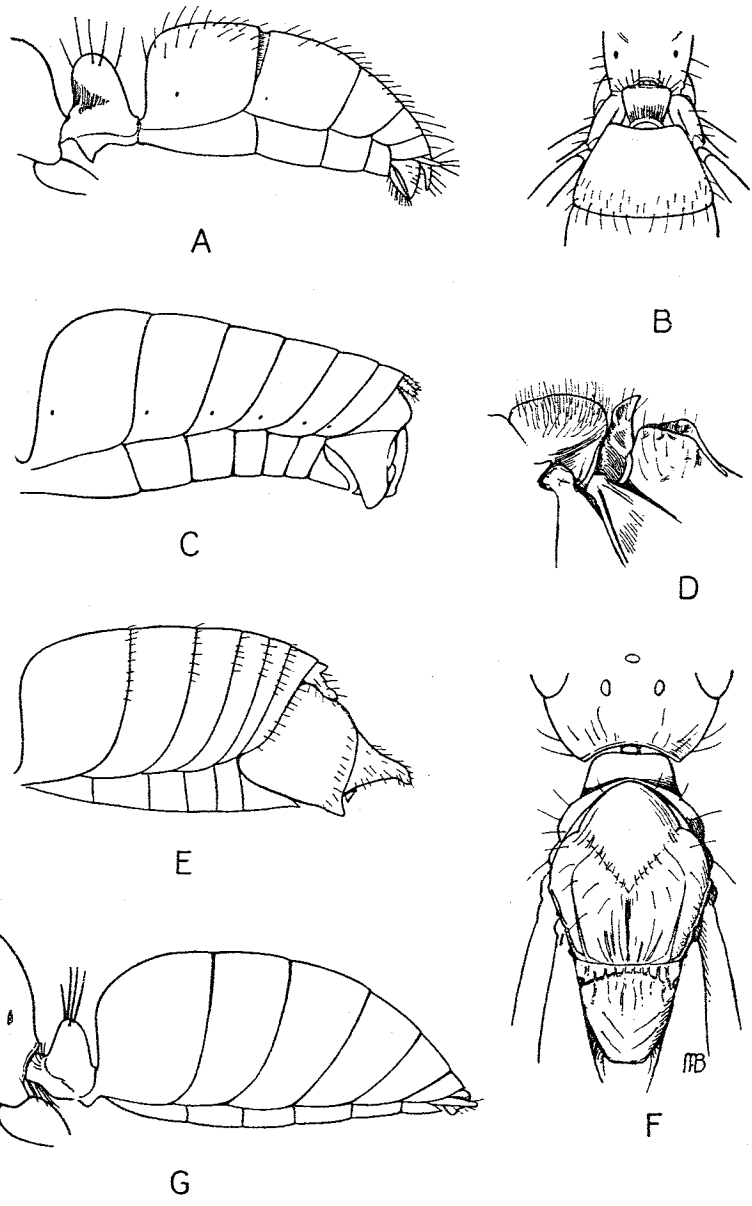

Fig. 3.—Petiole and gaster: *A*, *Pachycondyla harpax* (Fabricius); *B*, *Prenolepis imparis* (Say); *C*, *Camponotus castaneus* (Fabricius). Gaster: *C*, *Formica truncicola integra* Nylander; *E*, *Liometopum apiculatum luoluosum* Wheeler. Thorax: D, *Proceratium croceum* Roger; *F*, *Myrmica punctiventris* Roger.

Length 10-11 mm. Antenna 13-segmented, unusually long; scape extremely short; funiculus subfiliform, with first segment distinctly broader than long. Mandible large, subtriangular, toothed. Mayrian furrows distinct. Wing with a radial, 2 cubital, and 2 discoidal cells. Tarsal claws clearly toothed. A strong constriction between petiole and first gastric segment, and also between first and second gastric segments. Pygidium without a spine. Cerci present.

Only one species, the introduced *tuberculatum* (Olivier), of Texas. Species examined, *tuberculatum*.

ECTATOMMA, subgenus PARECTATOMMA Emery

Ectatomma (Parectatomma) Emery, 1911, Wytsman's Gen. Insect., Fasc. **118**:44.
Subgenotype, *Ectatomma (Gnamptogenys) triangulare* Mayr (by original designation).

This subgenus is represented by only one species, the native *hartmanni* Wheeler of Texas, the male of which is unknown.

PROCERATIUM Roger

Proceratium Roger, 1863, Berlin Ent. Ztschr. 7: 171.
Genotype, *Proceratium silaceum* Roger (monobasic).

Length 3-4.25 mm. Antenna 13-segmented. Frontal carinae not covering antennal insertions. Mandible large, subtriangular. Thorax without Mayrian furrows but with parapsidal sutures. Metanotum spined (Fig. 3, *D*). Wing without radial or discoidal cell but with a very large cubital cell. Tarsal claws simple (Fig. 2, *M*). Petiole, in profile, scalelike, very much smaller than first gastric segment. A very pronounced constriction between first and second gastric segments. Pygidium without a spine. Cerci present.

Three species, 1 subspecies, and a variety which are confined to the southeastern fourth of the United States. Uncommon. Species examined, *croceum* (Roger), *silaceum* Roger, and *crassicorne* Emery.

PACHYCONDYLA, subgenus PACHYCONDYLA F. Smith

Pachycondyla F. Smith, 1858, Catalogue of Hymenopterous Insects in the Collection of the British Museum, pt. 6, p. 105.
Subgenotype, *Formica crassinoda* Latreille (by designation of Emery, 1901).

Differing from *Neoponera*, subgenus *Neoponera*, as follows: Smaller (8 mm.); mandible sometimes less elongate; sculpture on epinotum somewhat in the shape of an inverted V; constriction between first and second gastric segments distinct but not so pronounced.

One species, *harpax* (Fabricius) of Texas and Louisiana. Species examined, *harpax*.

EUPONERA, subgenus BRACHYPONERA Emery

Euponera (Brachyponera) Emery, 1901, Soc. Ent. de Belg. Ann. **45**:43.
Subgenotype, *Ponera sennaarensis* Mayr (by original designation).

Length 3-4 mm. Characters same as for *Ponera* except for the following: Middle and hind tibiae each with 2 spurs (Fig. 4, *G*), one of which is small

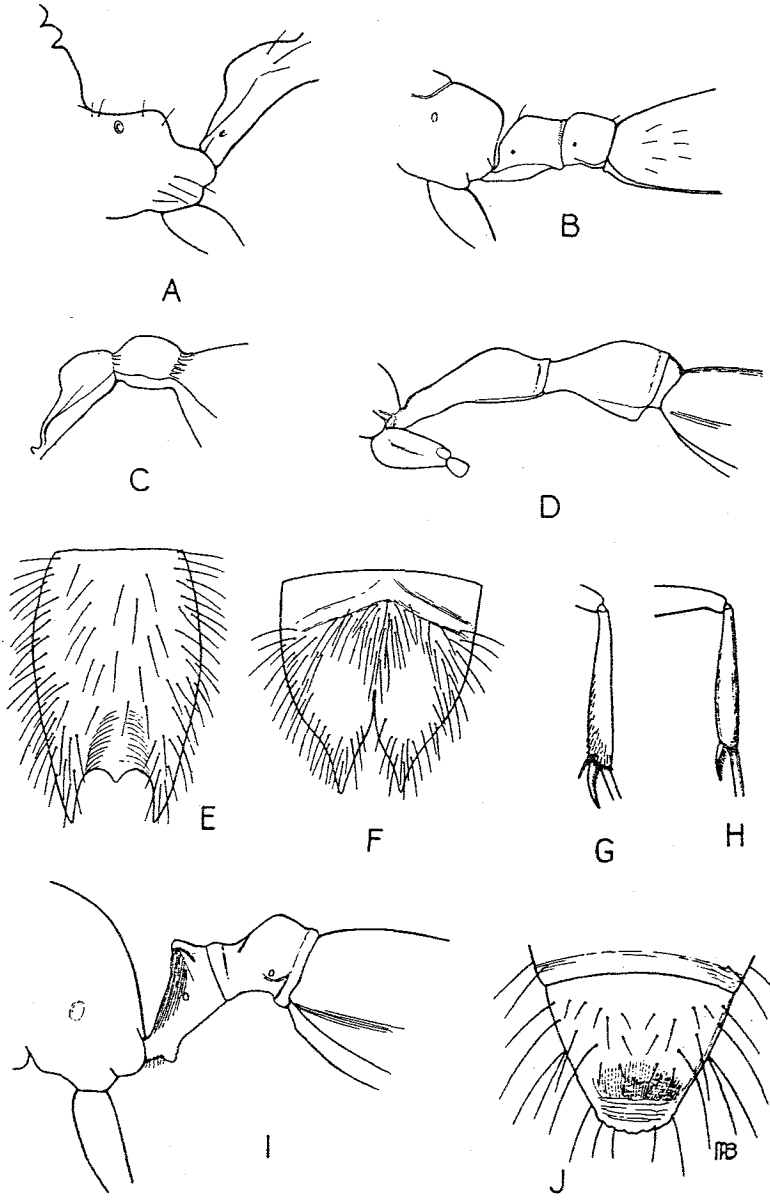

Fig. 4.—Posterior part of thorax: *A*, *Stenamma brevicorne* (Mayr). Petiole and postpetiole: *B*, *Xenomyrmex stolli floridanus* Emery; *C*, *Stenamma* sp.; *D*, *Pseudomyrma brunnea* F. Smith; *I*, *Solenopsis geminata rufa* (Jerdon). Hypopygium: *F*, *Eciton (Labidus) coecum* (Latreille); *E*, *Eciton (Neivamyrmex) harrisii* (Haldeman). Pygidium: *J*, *Acanthostichus (Ctenopyga) townsendi* Ashmead. Hind tibia: *G*, *Euponera (Trachymesopus) gilva* (Roger); *H*, *Myrmica punctiventris* Roger.

and difficult to see; Mayrian furrows present or absent, and spine present or lacking on pygidium.

A single, introduced species, *solitaria* (F. Smith), which is present in several towns in Georgia, North Carolina, and Virginia, especially the coastal towns. Species examined, *solitaria*.

EUPONERA, subgenus TRACHYMESOPUS Emery

Euponera (Trachymesopus) Emery, 1911, Wytsman's Genera Insect., Fasc. **118**, p. 84.
Type of subgenus, *Formica stigma* Fabricius (by original designation).

Characters similar to those of *Euponera*, subgenus *Brachyponera*.

Two species, *stigma* (Fabricius) of Florida and *gilva* (Roger) of Alabama, Mississippi, Tennessee, and Texas. Species examined, *stigma* and *gilva*.

SYSPHINCTA Roger

Sysphincta Roger, 1863, Berlin. Ent. Ztschr. **7**: 175.
Genotype, *Sysphincta micrommata* Roger (monobasic).

Length 3-4mm. Antenna 13-segmented; scape approximately as long as combined lengths of first 3 funicular segments. Mandible well developed, subtriangular, with a long apical tooth. Frontal carinae very close to each other basally, not covering antennal insertions. Posterior border of head well rounded. Ocelli prominent, not on a protuberance at vertex of head. Eye moderately convex, not touching base of mandible. Parapsidal sutures but no Mayrian furrows. Metanotum with a prominent spine or tubercle (Fig. 3, *D*). Wing with a prominent stigma, a radial and a discoidal cell, and a large cubital cell which is partly divided by a longitudinal vein; brownish. Tarsal claws simple (Fig. 2, *M*). Petiole nodiform. An unusually strong constriction between first and second gastric segments. Pygidium without a spine. Genital appendages not prominent.

Rare. *Sysphincta pergandei* Emery, which occurs throughout the eastern half of the United States, is the only species. Species examined, *pergandei*.

NEOPONERA, subgenus NEOPONERA Emery

Neoponera Emery, 1901, Soc. Ent. de Belg. Ann. **45**: 40.
Subgenotype, *Formica villosa* Fabricius (by original designation).

Length 12 mm. Antenna 13-segmented, unusually long; scape exceedingly short but distinctly longer than first funicular segment. Mandible vestigial, very short, but longer than broad. Thorax with Mayrian furrows and parapsidal sutures (Fig. 3, *F*). Wing with a radial, 2 cubital, and 2 discoidal cells. Tarsal claws toothed (Fig. 2, *L*). Sculpture on epinotum not forming an inverted V. Middle and hind tibiae each with 2 spurs (Fig. 4, *G*). Petiole robust, higher than long, separated from first gastric segment by an unusually strong constriction. Pygidium with a spine (Fig. 3, *A*). Cerci present.

One species, *villosa* (Fabricius) of Texas. Species examined, *villosa*.

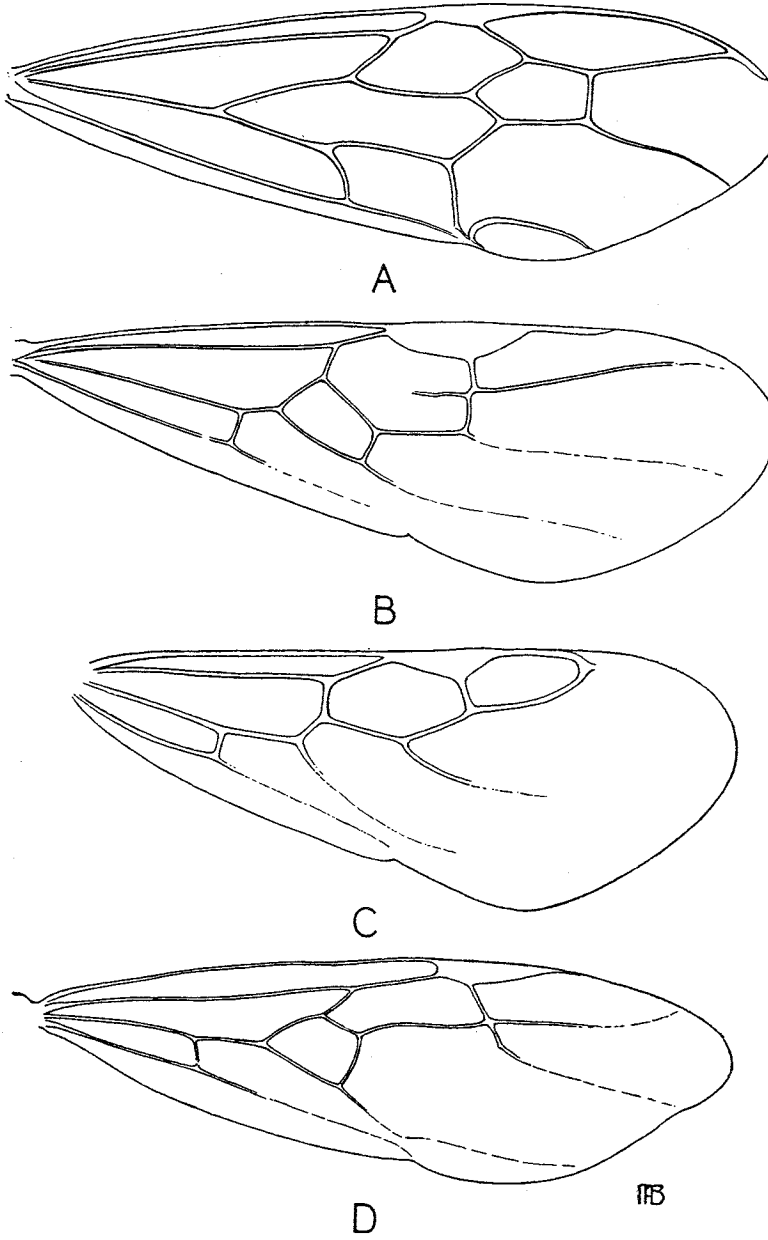

Fig. 5.—Wing: *A*, *Eciton (Labidus) coecum* (Latreille); *B*, *Myrmica punctiventris* Roger; *C*, *Myrmecina graminicola americana* Emery; *D*, *Veromessor pergandei* (Mayr).

PONERA Latreille

Ponera Latreille, 1802, Histoire Naturelle, Générale et Particulière des Crustacés et des Insectes, vol. 4, p. 128.

Genotype, *Formica coarctata* Latreille (monobasic).

Length 3-3.5 mm. Antenna 13-segmented; scape usually shorter than second funicular segment. Mandible vestigial. Eye placed close to base of mandible. Parapsidal sutures but no Mayrian furrows. Wing with a radial, 2 cubital, and a discoidal cell. Middle and hind tibiae each with a single spur. Constriction between first and second gastric segments pronounced. Pygidium with a spine (Fig. 3, *A*). Cerci present.

Entire United States. Four species, 1 subspecies, and a variety. *P. coarctata pennsylvanica* (Buckley) is the most common form in the eastern half of the United States. Ergatandrous males occur in at least 3 species, *ergatandria* Forel, *opaciceps* Mayr, and *oblongiceps* M. R. Smith. These workerlike males are characterized by their 12- (*ergatandria*) or 13-segmented (*opaciceps, oblongiceps*) antennae; wingless, workerlike thorax, and gaster bearing male genitalia. Species examined, *coarctata pennsylvanica, trigona* var. *opacior* Forel, and the ergatandrous males of *opaciceps* and *oblongiceps*.

LEPTOGENYS, subgenus LOBOPELTA Mayr

Lobopelta Mayr, 1862, Zool.-Bot. Gesell. Wien, Verh. **12**:733.
Subgenotype, *Ponera diminuta* F. Smith (by designation of Bingham, 1903).

Length 5-6 mm. Antenna 13-segmented; funiculus very long, subfiliform (Fig. 2, *A*). Mandible vestigial, consisting of a narrow, edentate stub. Eye large, subreniform. Thorax with distinct Mayrian furrows; parapsidal sutures weakly developed or absent. Wing with a radial, 2 cubital, and 2 discoidal cells. Tarsal claws distinctly comblike (Fig. 2, *K*). Cerci present. Pygidium without a spine. Stipes rather large.

One species, *elongata* (Buckley) of Florida, Georgia, and Texas, and its subspecies *manni* Wheeler of Florida. Species examined, *elongata*.

ODONTOMACHUS Latreille

Odontomachus Latreille, 1802, Histoire Naturelle, Générale et Particulière des Crustacés et des Insectes, vol. 4, p. 128.

Genotype, *Formica haematoda* Linnaeus (monobasic).

Length 6.5-8 mm. Antenna 13-segmented, unusually long; scape extremely short; funiculus subfiliform. Mandible vestigial, very short, stubby and edentate. Eye large, subreniform. Parapsidal sutures present but no Mayrian furrows. Wing with a radial, 2 cubital, and 2 discoidal cells. Tarsal claws weakly toothed. Summit of petiole bluntly pointed but not forming a distinct spine; ventral border with a pronounced tooth. Pygidium with a spine (Fig. 3, *A*). Cerci present. Genitalia large.

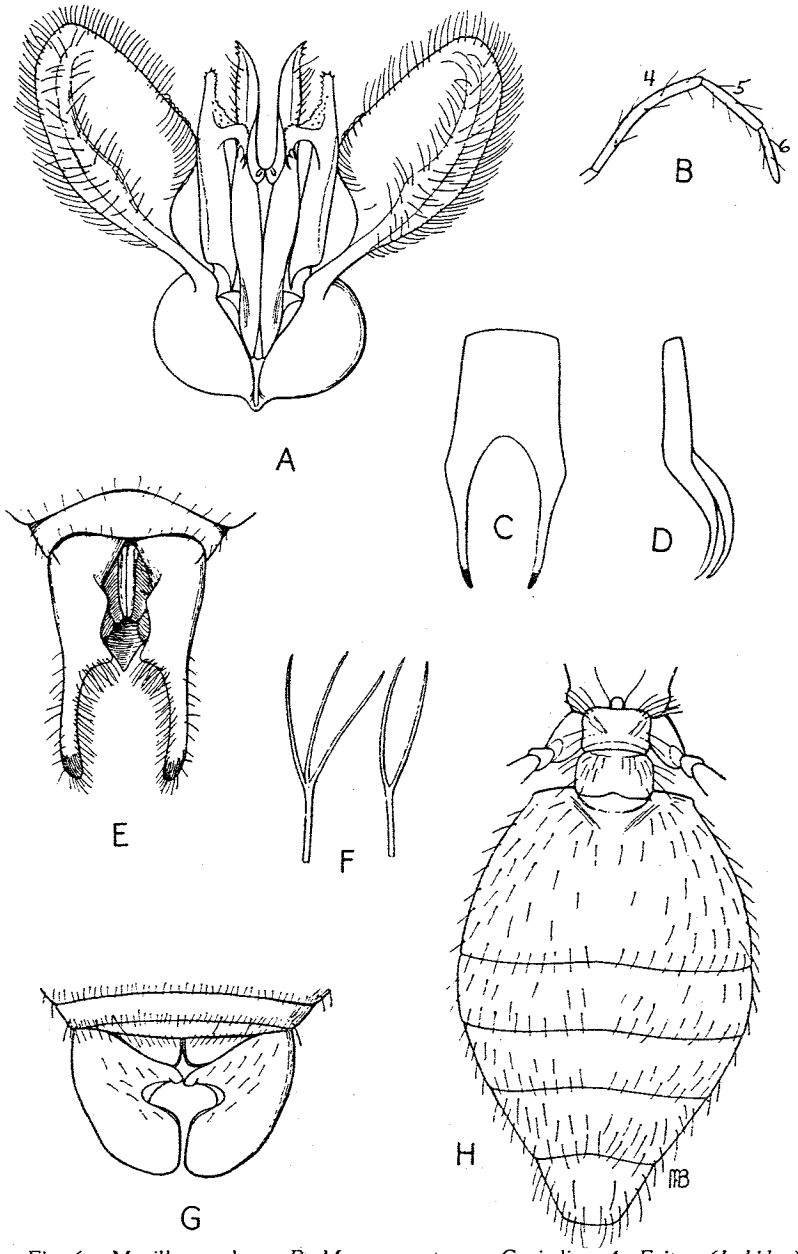

Fig. 6.—Maxillary palpus: *B*, *Myrmecocystus* sp. Genitalia: *A*, *Eciton (Labidus) coecum* (Latreille); *E*, *Wasmannia auropunctata* (Roger); *C*, *Acromyrmex (Moellerius) versicolor* (Pergande). Hypopygium: *C*, *D*, *Cerapachys (Parasyscia) augustae* Wheeler. Hairs: *F*, *Triglyphothrix striatidens* (Emery). Petiole, postpetiole, and gaster: *H*, *Crematogaster (Acrocoelia) atkinsoni* Wheeler.

Four subspecies of *haematoda* (Linnaeus), *insularis* Guérin of Florida and Georgia, *coninodis* Wheeler of Arizona, *desertorum* Wheeler of Arizona, and *clarus* Roger of Texas and Louisiana. The description above is based on males of *insularis*.

Subfamily CERAPACHYINAE Forel

1. Mayrian furrows absent; wing venation highly variable, often with only vestiges of cells but usually with a discoidal cell and sometimes a cubital cell; pygidium without an impressed or flattened area; hypopygium with a slender, forked process (fig. 6, *D*); rare; Texas and Arizona ..... *Cerapachys*, subgenus *Parasyscia* Emery, p. 288

Mayrian furrows present; wing venation variable, usually 2 to 3 cubital and discoidal cells; pygidium with an impressed or flattened area, the border of which is scalloped (fig. 4, *J*); hypopygium with a stout, forked process; rare; Texas ..... *Cerapachys*, subgenus *Parasyscia* Emery, p. 288

CERAPACHYS, subgenus PARASYSCIA Emery

Parasyscia Emery, 1882, André's Species des Hyménoptères d'Europe et d'Algerie, p. 235.

Subgenotype, *Parasyscia piochardi* Emery (monobasic).

Length 3.2-3.7 mm. Similar to *Acanthostichus* (*Ctenopyga*) except for the following: Funiculus not so strongly clavate; frontal carinae not covering antennal insertions; anterior border of clypeus with a distinct, median, toothlike projection; thorax without perceptible Mayrian furrows but with parapsidal sutures; venation highly variable, usually a discoidal cell, and sometimes a cubital cell; pygidium without a flattened or impressed area; hypopygium with a slender, forked process (Fig. 6, *D*).

Rare. Two species, *augustae* Wheeler of Texas and Arizona and *davisi* M. R. Smith of Texas. Males examined of both these species.

ACANTHOSTICHUS, subgenus CTENOPYGA Ashmead

Ctenopyga Ashmead, 1905, Canad. Ent. **37**: 382 (nomen nudum); 1906, Ent. Soc. Wash. Proc. **8**: 29.

Subgenotype, *Ctenopyga townsendi* Ashmead (by original designation).

Antenna 13-segmented; funiculus gradually enlarging from base to apex. Mandible large, subtriangular. Frontal carinae partly covering antennal insertions. Thorax with distinct Mayrian furrows and parapsidal sutures. Venation variable; stigma prominent, usually a partly closed radial cell, 2 to 3 cubital and discoidal cells, with one of the discoidal cells often partly closed. First gastric segment, in profile, subcylindrical, very much larger than petiole; a strong constriction between petiole and first gastric segment and also between first and second gastric segments. Gaster, from above, elongate, subelliptical, with pronounced constrictions between segments. Pygidium with an impressed or flattened area, which is strongly sculptured, and the border scalloped (Fig 4, *J*); hypopygium with a stout, forked process, each fork subtriangular. No cerci.

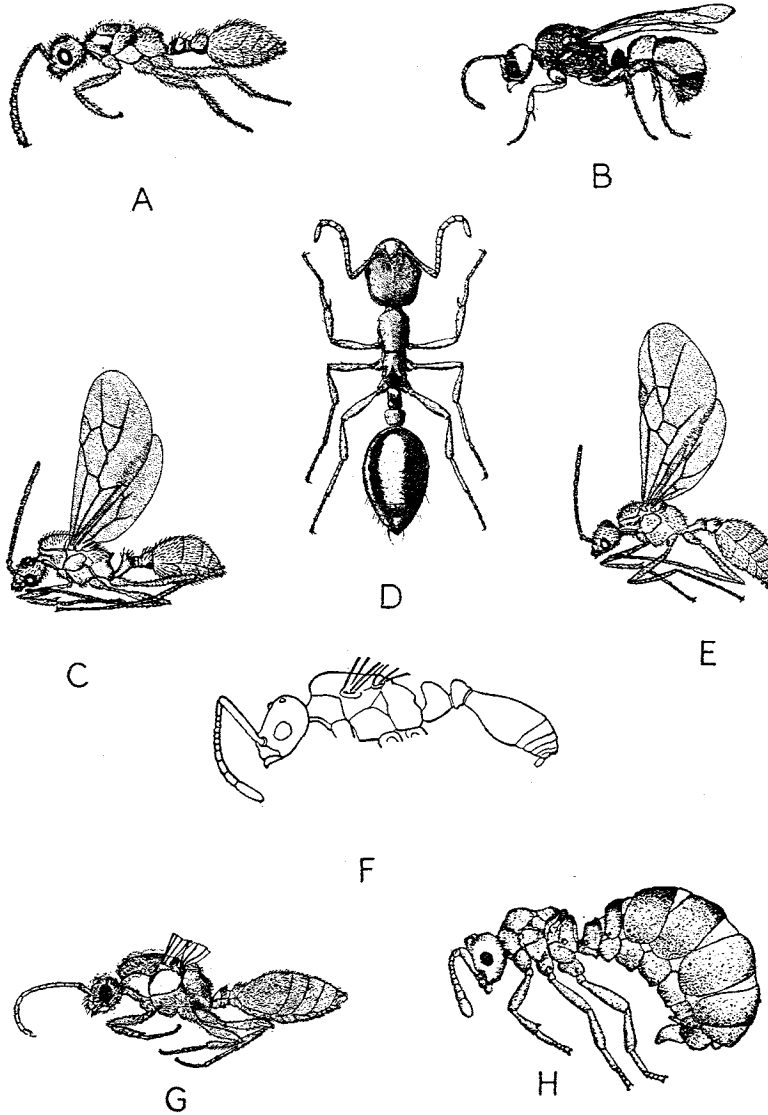

Fig. 7.—Lateral view: *A*, *Symmyrmica chamberlini* Wheeler (1904, Bull. Amer. Mus. Nat. Hist. 20, pl. 1, fig. 1); *B*, *Proceratium croceum* (Roger); *C*, *Epipheidole inquilina* Wheeler (1904, Bull. Amer. Mus. Nat. Hist. 20, pl. 3, fig. 15); *E*, *Sympheidole elecebra* Wheeler (1904, Bull. Amer. Mus. Nat. Hist. 20, pl. 3, fig. 9); *F*, *Epoecus pergandei* Emery (Ants, W. M. Wheeler, 1926, Columbia University Press, p. 498, fig. 278 a); *G*, *Erebomyrma longi* Wheeler (1903, Biol. Bull. 4: 144, fig. 5); *H*, *Anergates atratulus* (Schenck) (Ants, W. M. Wheeler, 1926, Columbia University Press, p. 499, fig. 279 d). Dorsal view: *D*, *Leptothorax diversipilosus* M. R. Smith.

Rare. One species, *texanus* Forel of Texas, the male of which is unknown. The above description is drawn from that of *townsendi* Ashmead, a Mexican species, the male of which measures approximately 4 mm.

Subfamily DORYLINAE Leach

1. Hypopygium with 2 apical teeth (fig. 4, *F*); stipes large, broad, and thin (lamelliform), with ciliated margins (fig. 6, *A*); tarsal claws distinctly toothed; mainly Southwestern.....*Eciton*, subgenus *Labidus* Jurine, p. 290

Hypopygium with 3 apical teeth (fig. 4, *E*); stipes seldom lamelliform; tarsal claws not toothed or weakly so; Southern and Southwestern .....*Eciton*, subgenus *Neivamyrmex* Borgmeier, p. 290

ECITON, subgenus LABIDUS Jurine

Labidus Jurine, 1807, Nouvelle Méthode de Classer les Hyménopteres et les Diptères, p. 282.

Subgenotype, (*Labidus latreillei* Jurine)=*Formica coeca* Latreille (by designation of Latreille, 1810).

Length 15-17 mm. Antenna 13-segmented. Mandible large, edentate. Frontal carinae not covering antennal insertions. A radial, 2 cubital, and 2 discoidal cells; first discoidal cell at least 3 times as long as broad (Fig. 5, *A*). Tarsal claws toothed (Fig. 2, *L*). Hypopygium with 2 teeth (Fig. 4, *F*). Stipes large, broad, thin (lamelliform), with ciliated margins (Fig. 6, *A*).

Two species, *coecum* (Latreille) and *esenbecki* (Westwood). The former occurs in Texas, Oklahoma, and Louisiana; the latter in southern Texas. *Eciton esenbecki* is very probably the male of *crassicorne* (F. Smith); if this should prove to be the case, then the name *crassicorne* will have to be synonimized. Species examined, *coecum* and *esenbecki*.

ECITON, subgenus NEIVAMYRMEX Borgmeier

Eciton (*Acamatus*) Emery, 1894, Soc. Ent. Ital. Bol. **26**: 181 (preoccupied by Schoenherr, 1833).

Neivamyrmex Borgmeier, 1940, Rev. de Ent. **11**: 606.

Subgenotype, (*Eciton (Acamatus) schmitti* Emery)=*Labidus nigrescens* Cresson (by designation of Wheeler, 1911).

Length 7-13 mm. Characters similar to those of *Eciton* (*Labidus*) except for the following: Tarsal claws not toothed or weakly so; hypopygium with 3 teeth (Fig. 4, *E*); stipes not large, seldom lamelliform.

Seventeen species. Southern half of United States with a slight northward extension in the Mississippi Valley. Species examined, *arizonense* Wheeler, *carolinense* Emery, *fuscipennis* Wheeler, *harrisii* (Haldeman), *melsheimeri* (Haldeman), *minus* (Cresson), *nigrescens* (Cresson), *opacithorax* Emery, *oslari* Wheeler, *pilosum* F. Smith, and *pilosum mandibulare* M. R. Smith.

Subfamily PSEUDOMYRMINAE Emery

PSEUDOMYRMA Guérin

Pseudomyrma Guérin, 1844, *in* Cuvier, Iconographie du règne animal, Insecte, 1844, p. 427.

Genotype, *Formica gracilis* Fabricius (by original designation).

Length 3.5-8 mm. Antenna 12-segmented; scape short, less than combined lengths of first 2 funicular segments; funiculus subfiliform, all segments except the first very much longer than broad. Antennal fossa remote from posterior border of clypeus (Fig. 1, *E*). Median area of anterior border of clypeus rounded or angular. Mandible well developed, subtriangular, with small but well-defined teeth. Eyes large, subreniform. Pronotum often unusually long. Parapsidal sutures present but no Mayrian furrows. Wing with prominent stigma; a radial, 1 or 2 cubital cells, and a discoidal cell. Petiole slender, broadest posteriorly. Gaster elongate. Cerci present. Stipes robust.

Four species and 1 subspecies; one or more of these occur throughout the region from at least South Carolina to California; *gracilis mexicana* Roger extends into Texas from Mexico. Species examined, *gracilis mexicana, brunnea* F. Smith, and *flavidula* F. Smith.

Subfamily MYRMICINAE Lepeletier

1. Antenna with 10 segments; (second funicular segment unusually long, approximating the length of the scape (fig. 1, *I*)) 2
   Antenna with more than 10 segments 4

2. (1) At least some of the hairs trifid or branched (fig. 6, *F*); (introduced species, present in a few towns or cities in several of the Southern States) ..... *Triglyphothrix* Forel, p. 305
   Hairs unbranched 3

3. (2) Native species, known only from the warm, dry, open regions of Texas and Arizona ..... *Xiphomyrmex* Forel, p. 305
   Introduced species, usually found in towns or cities.. *Tetramorium* Mayr, p. 305

4. (1) Antenna with 11 segments 5
   Antenna with more than 11 segments 9

5. (4) Winged; normal 6
   Wingless; ergatandrous or pupoid 7

6. (5) Gaster from above subcordate, not impressed at base; postpetiole attached to dorsal surface of base of gaster (fig. 6, *H*); scape not so long as the combined lengths of the first 7 or 8 funicular segments ..... *Crematogaster*, subgenus *Orthocrema* Santschi, p. 299
   Gaster from above not subcordate, impressed at base; postpetiole not attached to dorsal surface of base of gaster; scape unusually long, approximating the combined lengths of the first 7 or 8 funicular segments (fig. 7, *F*); (probably a parasitic species in colonies of *Monomorium minimum* (Buckley); extremely rare; District of Columbia).... *Epoecus* Emery (part), p. 301

7. (5) Pupoid; (clypeus emarginate; Mayrian furrows absent; gaster and genital

appendages large (fig. 7, *H*); parasitic in colonies of *Tetramorium caespitum* (Linnaeus); extremely rare; New Jersey, Delaware, and Virginia) ..... *Anergates* Forel, p. 302
Ergatandrous 8

8. (7) Clypeus bicarinate, anterior border with a median emargination; noninquilinous; rare; Florida ..... *Cardiocondyla* Emery (part) (*wroughtoni* var. *bimaculata* Forel), p. 299
Clypeus not bicarinate, or with a distinct emargination; inquilinous species in colonies of *Myrmica mutica* Emery; extremely rare; Utah (fig. 7, *A*) ..... *Symmyrmica* Wheeler, p. 304

9. (4) Antenna with 12 segments 10
Antenna with 13 segments 17

10. (9) Wingless; ergatandrous 11
Winged; normal 12

11. (10) Inquilinous in nests of *Formica obscuripes* Forel and its subspecies *melanotica* Emery (fig. 7, *D*) ..... *Leptothorax*, subgenus *Mychothorax* Ruzsky (part), p. 304
Noninquilinous; (rare; Florida) ..... *Cardiocondyla* Emery (part) (*nuda* var. *minutior* Forel), p. 299

12. (10) Postpetiole attached to dorsal surface of base of gaster; gaster from above subcordate (fig. 6, *H*); (scape very short; funicular segments usually with a somewhat beadlike appearance (fig. 2, *D*); no Mayrian furrows) ..... *Crematogaster*, subgenus *Acrocoelia* Mayr, p. 300
Postpetiole not attached to dorsal surface of base of gaster; gaster from above not subcordate 13

13. (12) Base of gaster with a prominent impression above; (scape unusually long, approximately as long as the combined lengths of the first 7 or 8 funicular segments; Mayrian furrows absent (fig. 7, *F*); extremely rare; probably parasitic in colonies of *Monomorium minimum* (Buckley); District of Columbia) ..... *Epoecus* Emery (part), p. 301
Base of gaster not impressed above 14

14. (13) Petiole non pedunculate (fig. 4, *B*); (scape approximately as long as the combined lengths of the first 2 funicular segments; Mayrian furrows distinct; venation of wings greatly reduced; no radial, cubital, or discoidal cells; rare; approximately 2 mm. in length; Florida) ..... *Xenomyrmex* Forel, p. 301
Petiole more or less pedunculate 15

15. (14) First funicular segment annular or globular (fig. 1, *H*); no Mayrian furrows; (scape very short; ocelli on high summitlike protuberance at vertex of head) ..... *Solenopsis* Westwood, p. 301
First funicular segment not annular or globular but sometimes noticeably wide; Mayrian furrows present but sometimes weakly indicated 16

16. (15) Antennal scrobe weakly to moderately well developed (fig. 1, *F*); slave-making forms on several species of *Leptothorax;* (Virginia and Ohio northward into Canada; uncommon) ..... *Harpagoxenus* Forel, p. 304
Antennal scrobe absent; mostly independent or free living forms; (the inquilinous species occur mostly, if not altogether, in the subgenus *Mychothorax* Ruzsky ..... *Leptothorax*, subgenera *Leptothorax* Mayr (part), p. 303, and *Mychothorax* Ruzsky (part) p. 304

17. (9) Scape very long, approximately as long as, or longer than, the combined lengths of the first 8 funicular segments 18
Scape shorter 23

18. (17) Veins well developed, a radial and a cubital cell but no discoidal cell 19
Veins almost obsolete, no radial, cubital, or discoidal cells; (uncommon); .....*Macromischa* Roger, p. 303

19. (18) Radial cell very narrow, at least 6 times as long as broad; Mayrian furrows absent or obsolescent; length 12 mm. or more; (Texas and Louisiana) .....*Atta* Fabricius, p. 308
Radial cell at most approximately 3 times as long as broad; Mayrian furrows present; length less than 12 mm. 20

20. (19) Length 8 mm.; (stipes large and stout, inwardly curved, with inner basal tooth and truncate apex (fig. 6, *C*); dorsal surface of first gastric segment with a lateral impression near the base and a median impression more posteriorly; Arizona and Texas) .....*Acromyrmex*, subgenus *Moellerius* Forel, p. 308
Length less than 8 mm. 21

21. (20) Antennal club 4-segmented; length of body approximately 3-5 mm.; (hairs hooked or curved) .....*Trachymyrmex* Forel, p. 307
No antennal club; length usually less than 3 mm.; (frontal carinae unusually large, greatly elevated (fig. 1, *B*)) 22

22. (21) Hairs of body not hooked or curved; Florida, Texas, Arizona, and California .....*Cyphomyrmex*, subgenus *Cyphomyrmex* Mayr, p. 307
Hairs of body hooked or curved; Texas .....*Cyphomyrmex*, subgenus *Mycetosoritis* Wheeler, p. 307

23. (17) Radial cell short, appendiculate (fig. 5, *C*), the appendix sometimes vestigial 24
Radial cell either absent or else not as described above (if appendiculate, the cell is long) 25

24. (23) Mandible well developed, subtriangular, toothed; scape as short as, or shorter than, second funicular segment; discoidal cell present; (funiculus strongly enlarging toward apex, clavate (fig. 2, *B*); Florida, Arizona, and Texas) .....*Cryptocerus*, subgenera *Cryptocerus* Fabricius, p. 306, and *Cyathomyrmex* Creighton, p. 306
Mandible vestigial, represented by a short, blunt, toothless stub (fig. 2, *E*); scape longer than second funicular segment; discoidal cell absent; (labrum usually exposed) .....*Myrmecina* Curtis, p. 302

25. (23) Spurs of middle and hind tibiae distinctly pectinate (fig. 4, *H*) 26
Spurs of middle and hind tibiae either simple or indistinctly pectinate 28

26. (25) Mayrian furrows well developed (fig. 3, *F*); (first and second cubital cells partly separated by a longitudinal vein (fig. 5, *B*)).....27
Mayrian furrows usually absent or else usually weakly developed; (hairs of body long and sometimes rather dense; western half of United States with the exception of one species, *badius* (Latreille), which ranges along the Coastal States from Louisiana into New Jersey).....*Pogonomyrmex*, subgenera *Pogonomyrmex* Mayr, p. 296, and *Ephebomyrmex* Wheeler, p. 296

27. (26) Antenna with a distinct club of 4 or 5 segments; entire United States.....*Myrmica*, subgenus *Myrmica* Latreille, p. 295
Antenna without a distinct club; Western States .....*Myrmica*, subgenus *Manica* Jurine, p. 295

28. (25) Stigma weakly developed or missing; (sides of head strongly converging anteriorly; scape short, funiculus long and subfiliform; Mayrian furrows present; veins poorly developed, indistinct in apical half of wing; uncommon) .....*Strumigenys*,

subgenera *Strumigenys* F. Smith, p. 306, and *Trichoscapa* Emery, p. 307
Stigma not weakly developed or missing, though sometimes pale 29

29. (28) Petiole scarcely pedunculate; (scape approximately as long as the combined lengths of the first 2 funicular segments; no definite Mayrian furrows; a radial, a cubital, and a discoidal cell; wings brownish at base and hyaline toward apex (fig. 7, *G*); rare; north Texas) ..... *Erebomyrma* Wheeler, p. 302
Petiole pedunculate 30

30. (29) Stigma at middle of anterior border of wing; (scape long, at least as long as the combined lengths of the first 5 funicular segments; prothorax with well-defined humeral angles; no Mayrian furrows; usually a cubital but no radial or discoidal cell; length approximately 2 mm.; uncommon; Florida) ..... *Cardiocondyla* Emery (part), p. 299
Stigma not at middle of anterior border of wing 31

31. (30) Stipes unusually large, very long and slender, with a prominent inner basal tooth (fig. 6, *E*); (scape short, approximately as long as the combined lengths of the first 2 funicular segments; funiculus long and slender, with the first segment pyriform; Mayrian furrows present; introduced species; Florida) ..... *Wasmannia* Forel, p. 305
Stipes not as described above, or, if somewhat similar, the other characters do not agree 32

32. (31) Head, in profile, unusually flattened (fig. 1, *D*); (scape approximately as long as the combined lengths of the first 3 funicular segments; 2 cubital and 1 discoidal cell but the radial cell not clearly closed; legs slender; epinotum with a pair of tubercles ..... *Aphaenogaster*, subgenus *Attomyrma* Emery, p. 297
Head, in profile, not unusually flattened 33

33. (32) Wing normally with 2 closed cubital cells (*Pheidole*, *Sympheidole*, and *Epipheidole*) 34
Wing normally with 1 closed cubital cell (wing venation in *Stenamma* highly variable, this also sometimes true of *Leptothorax*) 36

34. (33) Mayrian furrows present but often not very distinct; (first funicular segment noticeably wide, somewhat annular or subglobular; ocelli borne on a high protuberance at summit of head (fig. 1, *H*)) ..... *Pheidole*, subgenus *Pheidole* Westwood, p. 298
Mayrian furrows absent 35

35. (34) Mandible with a single apical tooth; epinotum rounded, unarmed; discoidal cell present (fig. 7, *E*); parasitic in colonies of *Pheidole ceres* Wheeler; rare; Colorado ..... *Sympheidole* Wheeler, p. 299
Mandible with 2 or 3 apical teeth; epinotum with 2 prominent spines; no discoidal cell (fig. 7, *C*); parasitic in colonies of *Pheidole pilifera* (Roger) and its subspecies *coloradensis* Emery; rare; Nebraska and Colorado ..... *Epipheidole* Wheeler, p. 299

36. (33) Six mm. or more in length 37
Less than 6 mm. in length 38

37. (36) Legs unusually long and slender; (head narrow dorsoventrally, flattened beneath, moderately convex above; posterior border of head slightly constricted above to form a weak flange (fig. 1, *J*); Texas, New Mexico, and Arizona ..... *Novomessor* Emery, p. 297
Legs slender but not unusually long; (intercubitus absent due to the fusion of the radial and cubital veins (fig. 5, *D*); Colorado, Nevada, Arizona, and California ..... *Veromessor* Forel, p. 298

38. (36) Scape very short, approximately as long as the combined lengths of the first 2 funicular segments or less; (no Mayrian furrows; a cubital cell but no radial cell, discoidal cell present or absent) 39
Scape usually longer than the combined lengths of the first 2 funicular segments 40

39. (38) Scape approximately as long as the combined lengths of the first 2 funicular segments; (mandible slender, with several teeth (fig. 2, *I*); ocelli small); no radial or discoidal cells; native and introduced species .....*Monomorium*, subgenus *Monomorium* Mayr, p. 300
Scape much swollen, even shorter than the second funicular segment; (first funicular segment globular; succeeding segments gradually narrowing toward apex of funiculus); discoidal cell usually present but radial cell missing; introduced species, present in a few southern towns or cities.....*Monomorium*, subgenus *Parholcomyrmex* Emery, p. 300

40. (38) Without a radial cell 41
Radial cell present or absent; (Mayrian furrows present but often not clearly defined; antenna usually with a well-differentiated club; discoidal cell present or absent) .....
.....*Leptothorax*, subgenus *Leptothorax* Mayr (part), p. 303

41. (40) Discoidal cell usually present; 1 to 2 cubital cells; Mayrian furrows usually present but sometimes obsolescent or absent; epinotum either somewhat depressed (fig. 4, *A*) or else angulate; petiole rather strongly pedunculate (fig. 4, *C*) .....*Stenamma* Westwood, p. 296
Discoidal cell absent; 1 cubital cell; Mayrian furrows absent; (mesonotum strongly convex; wings hyaline, with pale veins and stigma); epinotum not depressed; petiole not so strongly pedunculate .....
.....*Leptothorax*, subgenus *Dichothorax* Emery, p. 303

Subfamily MYRMICINAE Lepeletier

MYRMICA, subgenus MYRMICA Latreille

Myrmica Latreille, 1802, Histoire Naturelle, Générale et Particulière des Crustacés et des Insectes, vol. 4, p. 141.

Subgenotype, *Formica rubra* Linnaeus (by designation of Girard, 1879).

Length 3.5-6 mm. Antenna 13-segmented; last 4 or 5 funicular segments enlarged into a club. Mandibles well developed, usually subtriangular, toothed. Eye often strongly convex; ocelli small. Thorax with distinct Mayrian furrows (Fig. 3, *F*). Wing with first and second cubital cells partly separated by a longitudinal vein (Fig. 5, *B*). Tibial spurs strongly pectinate (Fig. 4, *H*). Cerci present.

Widely distributed over the United States; 4 species, 7 subspecies, and 20 varieties. Species examined, *brevinodis* Emery and its varieties *canadensis* Wheeler and *sulcinodoides* Emery; *punctiventris* Roger, *rubra laevinodis* Nylander, *scabrinodis sabuleti americana* Weber, *scabrinodis* var. *fracticornis* Emery, and *scabrinodis schencki* var. *emeryana* Forel.

MYRMICA, subgenus MANICA Jurine

Manica Jurine, 1807, Nouvelle Méthode de Classer les Hyménoptères et les Diptères, p. 276.

Subgenotype, *Formica rubida* Latreille (by designation of Wheeler, 1911).

Characters similar to those of the subgenus *Myrmica* except that the males are generally larger (6-7.5 mm.) and do not have the last 4 or 5 funicular segments enlarged into a club. The subgenus *Manica* contains 5 species which are apparently confined to the Western States. Species examined, *mutica* Emery, the only one in which males are known.

POGONOMYRMEX, subgenus POGONOMYRMEX Mayr

Pogonomyrmex Mayr, 1868, Soc. dei Nat. di Modena Ann. 3: 169.

Subgenotype, *Formica badia* Latreille (by designation of Wheeler, 1911).

Length 6.5-11 mm. Antenna 13-segmented; funiculus not forming a club. Eye small, ocelli very much so. Mandible well developed, toothed. Mayrian furrows absent, poorly developed or well developed. Tibial spurs strongly pectinate (Fig. 4, *H*). Wing with very variable venation, the venation sometimes extremely abnormal; usually 1 to 3 cubital cells, a discoidal cell, and a radial cell that is either closed or almost closed. Body clothed with long, flexible, abundant hairs. Stipes with very blunt apex.

This subgenus contains 13 species, 7 subspecies, and 8 varieties. These are confined to the Southwestern and Western States, with the exception of *badius* (Latreille), which is distributed along the Coastal States from Louisiana into New Jersey. The males of some species appear in immense numbers during their nuptial flights. Species examined, *badius* (Latreille), *barbatus* vars. *molefaciens* (Buckley) and *nigrescens* Wheeler, *californicus* (Buckley), *comanche* Wheeler, *desertorum* Wheeler, and *occidentalis* (Cresson).

POGONOMYRMEX, subgenus EPHEBOMYRMEX Wheeler

Pogonomyrmex (Ephebomyrmex) Wheeler, 1902, Psyche 9: 390.

Subgenotype, *Pogonomyrmex naegelii* Forel (by designation of Wheeler, 1911).

Characters similar to those of *Pogonomyrmex* (*Pogonomyrmex*) except that the males are smaller (4-5 mm.), the Mayrian furrows are usually very distinct, and the occipital border of the head forms a very pronounced flange.

Three species, *pima* Wheeler and *townsendi* Wheeler of Arizona and *imberbiculus* Wheeler of Oklahoma and Texas. The male has not been described for any of these species. The above description is based on males of *imberbiculus* which are in the collection of the National Museum.

STENAMMA Westwood

Stenamma Westwood, 1840, An Introduction to the Modern Classification of Insects, vol. 3, p. 83.

Genotype, *Stenamma westwoodi* (Stephens, M. S.) Westwood (monobasic).

Length 2-3.5 mm. Antenna 13-segmented; scape not less than combined lengths of first 3 to 5 funicular segments; first funicular segment wider than the second; funiculus noticeably enlarging toward apex but not forming a

definite club. Mandible well developed, distinctly toothed. Ocelli not placed on a prominent protuberance. Mayrian furrows usually present but sometimes absent or obsolescent. Wing with prominent stigma; no radial cell, discoidal cell usually present; usually 1 but sometimes 2 cubital cells. Epinotum somewhat depressed (*brevicorne* (Mayr) and its variants (Fig. 4, *A*)) or else angulate; when depressed, bearing a pair of large, blunt tubercles. Petiole rather strongly pedunculate (Fig. 4, *C*). Genitalia not prominent. Cerci present.

Three species, 5 subspecies, and 1 variety. Entire United States with the possible exception of the most extreme southern section. Those forms east of the Mississippi River generally belong to *brevicorne* or else are variants of it. Species examined, *brevicorne* (Mayr), *brevicorne diecki* var. *impressum* Emery, and *nearcticum* Mayr.

APHAENOGASTER, subgenus ATTOMYRMA Emery

Aphaenogaster (Attomyrma) Emery, 1915, Accad. delle Sci. dell'Ist di Bologna Rend, **19**: 70.

Subgenotype, *Formica subterranea* Latreille (by original designation).

Length 3-5 mm. Antenna 13-segmented; scape approximately as long as combined lengths of first 3 funicular segments. Ocelli small. Mandible subtriangular, toothed. Head unusually flattened (Fig. 1, *D*). Mayrian furrows usually present, though sometimes indistinct or apparently wanting. Wing with well-developed stigma, 2 cubital cells, and a discoidal cell; radial cell not distinctly closed. Epinotum usually with a pair of tubercles. Legs rather slender. Cerci present.

Eleven species, 12 subspecies, and 13 varieties. Occurring throughout the United States but more common in the southern and eastern half. Specimens examined, *fulva* Roger, *fulva aquia* (Buckley), *fulva aquia* vars. *picea* Emery and *rudis* Emery, *lamellidens* var. *nigripes* M. R. Smith, *tennesseensis* (Mayr), and *treatae* Forel.

NOVOMESSOR Emery

Novomessor Emery, 1915, Accad. delle Sci. dell 'Ist. di Bologna Rend. **19**: 73.
Genotype, *Aphaenogaster (Ischnomyrmex) cockerelli* André (by original designation).

Length 6-7.5 mm. Antenna 13-segmented; funiculus slender, not terminating in a distinct club; scape approximately as long as combined lengths of first 3 funicular segments. Ocelli not placed on a prominent protuberance. Head narrow dorsoventrally; flat beneath, moderately convex above. Mandible well developed, with distinct masticatory border which bears only a very few, distinct teeth. Posterior border of head slightly constricted to form a weak collar or flange (Fig. 1, *J*). Mayrian furrows weakly developed. Epinotum in profile angular, bearing a pair of very small tubercles. Wing with prominent stigma; a cubital and a discoidal cell but no radial cell. Legs remarkably long and slender. Cerci present. Genitalia small.

Two species, *cockerelli* (André) and *albisetosus* (Mayr), which are

confined to the arid regions of Texas, New Mexico, and Arizona. *Novomessor cockerelli* appears to be the more common form. Species examined, *cockerelli*.

VEROMESSOR Forel

Novomessor (Veromessor) Forel, 1917, Soc. Vaud. des Sci. Nat. Bul. **51**: 235.
Genotype, *Aphaenogaster andrei* Mayr (by designation of Emery, 1921).

Length 6.5-8.5 mm. Antenna 13-segmented; scape not so long as combined lengths of first 4 funicular segments. Mandible well developed, distinctly toothed. Ocelli small. Mayrian furrow present but usually weakly developed. Wing with prominent stigma; 1 cubital and 1 discoidal cell; radial cell present or absent. Intercubitus absent or poorly developed owing to the fusion of the radial and cubital veins (*Formica* type, Fig. 5, *D*). Legs slender but not so remarkably long as with *Novomessor*.

Five species and 2 subspecies, one or more of which occur in Colorado, Nevada, Arizona, and California. California contains all of the 7 forms except *lobognathus* (Cockerell). Species examined, *andrei* (Mayr), *pergandei* (Mayr), and *stoddardi* (Emery).

PHEIDOLE, subgenus MACROPHEIDOLE Emery

Pheidole (Macropheidole) Emery, 1915, Soc. Ent. de France Bul., p. 190.
Subgenotype, *Pheidole fimbriata* Roger (monobasic).

This subgenus is represented by a single native species, *rhea* Wheeler of Arizona, the male of which is unknown. The male of *rhea* should be easily distinguished by its size. The female, which is 14.2 mm. long, is the largest known species of *Pheidole* in the United States.

PHEIDOLE, subgenus PHEIDOLE Westwood

Pheidole Westwood, 1840, Ann. and Mag. Nat. Hist. **6**: 87.
Subgenotype, (*Atta providens* Sykes)=*Pheidole indica* Mayr (by designation of Bingham, 1903).

Length 2.5-5 mm. Antenna 13-segmented; scape approximately as long as combined lengths of first 2 funicular segments; first funicular segment noticeably widened (annular or subglobular). Mandible small but with one or more teeth, usually 1 to 3. Eye large, convex, placed close to base of mandible. Ocelli borne on a high protuberance at summit of head (Fig. 1, *H*). Mayrian furrows usually well developed, distinct. Wing with prominent stigma; 2 cubital and a discoidal cell but usually no radial cell. Cerci present.

Forty species, 20 subspecies, and 23 varieties; one or more of these occur in every State in the Union; this subgenus is best represented, though, in the Southwestern and Western States. *P. megacephala* (F.) has been introduced into a number of localities in Florida and *anastasii* Emery has become established in greenhouses in several of our Eastern States. Species examined, *anastasii* Emery, *dentata* Mayr, *hyatti* Emery, *megacephala* (Fabricius), and *vinelandica* Forel.

EPIPHEIDOLE Wheeler

(Fig. 7, *C*)

Epipheidole Wheeler, 1904, Amer. Mus. Nat. Hist. Bul. **20**: 14.
Genotype, *Epipheidole inquilina* Wheeler (monobasic).

Length 3-3.5 mm. Antenna 13-segmented; scape very short; first funicular segment noticeably enlarged; funiculus long and slender. Mandible small, slender, 2- to 3-toothed. Mayrian furrows absent. Wing with prominent stigma; 2 cubital cells but no radial or discoidal cell. Epinotum with 2 well-developed spines. Cerci present.

One species, *inquilina* Wheeler, which is parasitic in colonies of *Pheidole pilifera* (Roger) and its subspecies *coloradensis* Emery. Colorado and Nebraska. Rare. No specimens of *inquilina* have been examined.

SYMPHEIDOLE Wheeler

(Fig. 7, *E*)

Sympheidole Wheeler, 1904, Amer. Mus. Nat. Hist. Bul. **20**: 7.
Genotype, *Sympheidole elecebra* Wheeler (monobasic).

Length 2.5-2.75 mm. Antenna 13-segmented; scape short; first funicular segment large, globose; funiculus long and slender. Mandible small, slender, with a single apical tooth. Mayrian furrows absent. Wing with a prominent stigma; 2 cubital and a discoidal cell, but no radial cell. Epinotum rounded, unarmed. Postpetiole much broader than long, angulate on each side. Cerci present.

One species, *elecebra* Wheeler, which is parasitic in colonies of *Pheidole ceres* Wheeler. Colorado. Rare. No specimens of *elecebra* examined.

CARDIOCONDYLA Emery

Cardiocondyla Emery, 1869, Accad. degli Aspiranti, Naples Ann. **2**: 21.
Genotype, *Cardiocondyla elegans* Emery (monobasic).

Length 2 mm. Antenna 13-segmented; all segments longer than wide; scape long, at least as long as combined lengths of first 5 funicular segments. Mandible well developed, with distinct teeth. Prothorax with well- defined humeral angles. Mayrian furrows absent. Wing feebly veined; usually a cubital but no radial or discoidal cells; stigma distinct but not large.

One species and 2 varieties, apparently introduced, all of which occur in Florida. The male of *emeryi* Forel is normal but the males of *wroughtoni* var. *bimaculata* Forel and *nuda* var. *minutior* Forel are ergatandrous. For characters of the ergatandrous forms see the key. No males have been examined of any of these forms.

CREMATOGASTER, subgenus ORTHOCREMA Santschi

Crematogaster (Orthocrema) Santschi, 1918, Soc. Ent. de France Bul., p. 182.
Subgenotype, *Myrmica sordidula* Nylander (by original designation).

Length 2.5-3 mm. Characters similar to those of *Crematogaster*, subgenus *Acrocoelia* Mayr except that the antennae are 11-segmented.

One species and 3 subspecies, which are mostly southern in distribution. *C. minutissima missouriensis* Emery is the most common form. Males examined of *minutissima missouriensis* and *minutissima minutissima* Mayr.

CREMATOGASTER, subgenus ACROCOELIA Mayr

Acrocoelia Mayr, 1852 [1853], Zool. Bot. Gesell. Wien, Verh. **2**: 146.
Subgenotype, (*Acrocoelia ruficeps* Mayr)=*Formica scutellaris* Olivier (by designation of Bingham, 1903).

Length 2-5 mm. Antenna 12-segmented; scape very short; funiculus usually with strong constrictions between the segments, which give the segments somewhat of a beadlike appearance (Fig. 2, *D*). Mandible elongate, masticatory border usually toothed. Mesonotum large, convex, without Mayrian furrows. Wing usually with a cubital and a discoidal cell, the veins delimiting these often very faint. Postpetiole attached to dorsal surface of base of gaster. Gaster from above usually subcordate (Fig. 6, *H*).

Nine species and 10 varieties; one or more of these distributed over all parts of the United States. Species examined, *ashmeadi* Mayr, *atkinsoni* Wheeler, *laeviuscula* Mayr, *lineolata* (Say), *lineolata* var. *cerasi* (Fitch), *lineolata* var. *lutescens* Emery, *lineolata* var. *subopaca* Emery, and *pilosa* Emery.

MONOMORIUM, subgenus MONOMORIUM Mayr

Monomorium Mayr, 1855, Zool.-Bot. Gesell. Wien, Verh. **5**: 452.
Subgenotype, *Monomorium minutum* Mayr (monobasic).

Length 2.5-4.5 mm. Antenna 13-segmented; scape approximately as long as combined lengths of first 2 funicular segments. Mandible slender, elongate, with several teeth (Fig. 2, *I*). No Mayrian furrows. Wing with well-developed stigma; a single cubital cell.

This subgenus contains 3 species and 1 variety, *minimum* (Buckley), of the entire United States, and its variety *ergatogyna* Wheeler, of California; *floricola* (Jerdon) of Florida; and the introduced *pharaonis* (Linnaeus) of most of our larger towns and cities. Males have been examined of all these forms, except *ergatogyna*.

MONOMORIUM, subgenus PARHOLCOMYRMEX Emery

Monomorium (Parholcomyrmex) Emery, 1915, Soc. Ent. de France Bul., p. 190.
Subgenotype, *Myrmica gracillima* F. Smith (by original designation).

Length 4-4.5 mm. Antenna 13-segmented; scape much swollen, shorter than even the second funicular segment; first funicular segment globular, the succeeding segments gradually narrowing in width toward apex of funiculus. No Mayrian furrows. Wing with well-developed stigma; a single cubital cell; discoidal cell usually present but radial cell absent.

One introduced species, *destructor* (Jerdon), which occurs in a few southern towns and cities. The male of this species has not been examined.

XENOMYRMEX Forel

Xenomyrmex Forel, Soc. Vaud. des Sci. Nat. Bul. **20**: 369.
Genotype, *Xenomyrmex stolli* Forel (monobasic).

Length 2 mm. Antenna 12-segmented; scape approximately as long as combined lengths of first 2 funicular segments; last funicular segment approximately as long as combined lengths of 2 preceding segments. Mandible longer than broad, toothed. Eye large, ocelli small. Mayrian furrows present. Wing with distinct stigma; venation greatly reduced; no radial, cubital, or discoidal cells. Posterior wing lanceolate, with long cilialike hairs on posterior margin. Epinotum without spines or tubercles. Petiole nonpedunculate (Fig. 4, *B*). Legs neither long nor incrassated. Cerci present. Stipes moderately large, subtriangular in profile.

Two subspecies, *stolli rufescens* Wheeler and *stolli floridanus* Emery, both of Florida. Rare. Only males of *floridanus* have been examined.

SOLENOPSIS Westwood

Solenopsis Westwood, 1840, Ann. and Mag. Nat. Hist. **6**:86.
Genotype, (*Solenopsis mandibularis* Westwood)=*Atta geminata* Fabricius (monobasic).

Length 3-6 mm. Antenna 12-segmented; scape short; first funicular segment globular or annular (Fig. 1, *H*); funiculus often narrowed apically. Mandible small, narrow, usually toothed. Clypeus convex. Eye very large, borne on anterior half of head. Ocelli situated on high summitlike protuberance at vertex of head (Fig. 1, *H*). No Mayrian furrows. Wing with distinct stigma; a cubital and a discoidal cell but no radial cell. Cerci present. Stipes fairly prominent.

This genus contains 11 species, 6 subspecies, and 6 varieties, all of which are confined to the southern half of the United States except *molesta* (Say) and its forms. Species examined, *geminata* (Fabricius) and subspecies *rufa* (Jerdon), *saevissima* var. *richteri* Forel, *molesta* (Say), *xyloni* MacCook.

EPOECUS Emery

(Fig. 7, *F*)

Epoecus Emery, 1892, Soc. Ent. de France Ann. **61**: 276.
Genotype, *Epoecus pergandei* Emery (monobasic).

Length 2 mm. Antenna 11- or 12-segmented; scape long, approximately as long as combined lengths of first 7 or 8 funicular segments; last 3 funicular segments noticeably larger than preceding segments. Anterior border of clypeus with a median impression and 2 teeth. Wing with a distinct stigma; a cubital but no radial or discoidal cell. According to Emery the mandible is narrow and pointed. Base of gaster with a very prominent impression above.

Only one species, *pergandei Emery,* which is probably parasitic in colonies of *Monomorium minimum* (Buckley). District of Columbia. Extremely rare. No worker caste known. Males examined.

ANERGATES Forel

(Fig. 7, *H*)

Anergates Forel, 1874, Schweiz. Naturf. Gesell. Denkschr. **26**: 93.
Genotype, *Myrmica atratula* Schenck (monobasic).

Length 2.5-3 mm. Wingless. Pupoid. Antenna 11-segmented. Clypeus emarginate. Mandible edentate. Mayrian furrows absent. Petiole and postpetiole very short and broad. Gaster convex above, concave beneath, with apex directed anteroventrally. Genitalia large and prominent.

Parasitic in colonies of *Tetramorium caespitum* (Linnaeus). Apparently only one species, *atratulus* (Schenck). Extremely rare. Delaware, New Jersey, and Virginia. No males examined.

EREBOMYRMA Wheeler

(Fig. 7, *G*)

Erebomyrma Wheeler, 1903, Biol. Bul. **4**: 138.
Genotype, *Erebomyrma longi* Wheeler (monobasic).

Length 5-5.5 mm. Antenna 13-segmented; scape approximately as long as combined lengths of first 2 funicular segments; funiculus subfiliform. Mandible well developed, with 4 teeth. Clypeus strongly convex. Thorax without definite Mayrian furrows but with faint parapsidal sutures. Wing with a well-developed stigma; a cubital, a radial, and a discoidal cell; brownish, with apical third hyaline. Petiole scarcely pedunculate. Cerci present.

Only one species, *longi,* Wheeler of northern Texas. Males examined.

MYRMECINA Curtis

Myrmecina Curtis, 1829, Brit. Ent. **6**: 265.
Genotype, (*Myrmecina latreillei* Curtis)=*Formica graminicola* Latreille (monobasic).

Length 3-4 mm. Antenna 13-segmented; scape rather short, but distinctly longer than second funicular segment; funiculus enlarged apically but not forming a definite club, the constrictions between the funicular segments very distinct. Mandible vestigial, represented by a blunt, toothless stub (Fig. 2, *E*). Labrum exposed. Ocelli small. Mayrian furrows distinct. Wing dark, pilose, with ciliated margins; stigma distinct; a radial and cubital cell but no discoidal cell; radial cell usually appendiculate (Fig. 5, *C*). Middle of femur and tibia noticeably incrassated. Epinotum with a pair of spines or tubercles. Petiole and postpetiole very suggestive of that of the worker. Genitalia often retracted. Cerci present.

Two subspecies and one variety. The subspecies, *graminicola americana*

Emery, is the most common form. Ants of this genus occur over almost the entire United States, at least as far west as Arizona and Montana; they are apparently more common, though, in the eastern half. Males of *graminicola americana* examined.

MACROMISCHA Roger

Macromischa Roger, 1863, Berlin Ent. Ztschr. **7**: 184.
Genotype, *Macromischa purpurata* Roger (by designation of Wheeler, 1911).

Length 2-3 mm. Antenna 13-segmented; scape unusually long and slender, approximately as long as combined lengths of first 9 or 10 funicular segments; last 3 funicular segments noticeably enlarged. Mandible small but distinctly toothed. No definite Mayrian furrows. Wing with faint veins; a well-developed stigma but no radial, cubital, or discoidal cells. Scutellum strongly convex. Gaster with distinct basal angles. Uncommon.

Three species, *floridanus* (Wheeler) of Florida, *polita* M. R. Smith of Arizona, and *subditiva* Wheeler of Texas. Description based on males of *subditiva*.

LEPTOTHORAX, subgenus LEPTOTHORAX Mayr

Leptothorax Mayr, 1855, Zool.-Bot. Gesell. Wien, Verh. **5**: 431.
Subgenotype, *Myrmica clypeata* Mayr (by designation of Emery, 1912).

Length 2-4 mm. Antenna 12- or 13-segmented, usually with a well-differentiated club. Mayrian furrows present but often not clearly defined. Wing with a distinct stigma; a single cubital cell; radial and discoidal cell present or absent.

Twenty-one species, 6 subspecies, and 7 varieties. One or more forms occur in every section of the United States. Species examined, *curvispinosus* Mayr and *longispinosus* Roger.

LEPTOTHORAX, subgenus DICHOTHORAX Emery

Leptothorax (Dichothorax) Emery, 1895, Zool. Jahrb. Abt. f. System. **8**: 323.
Subgenotype, *Leptothorax (Dichothorax) pergandei* Emery (by designation of Wheeler, 1911).

Length 2-2.5mm. Antenna 13-segmented; scape approximately as long as combined lengths of first 5 funicular segments; first funicular segments noticeably wider than second; funicular segments 2 to 8 very slender; last 4 funicular segments forming a club, the last segment of which is longer than the 2 preceding segments. Mandible with 4 teeth. Eye very convex, placed near base of mandible. Head somewhat flattened. Mesonotum large, without Mayrian furrows. Wing with well-developed stigma; a cubital cell but no radial or discoidal cells; hyaline with pale veins. Hairs simple.

One species, 2 subspecies, and 1 variety, which are either *pergandei* Emery or variants of this species. Distributed from Florida and Virginia westward to at least Iowa and Texas. Males of *pergandei* examined.

LEPTOTHORAX, subgenus MYCHOTHORAX Ruzsky

Leptothorax (Mychothorax) Ruzsky, 1904, Fourmis Gouv. Arkangelsk Bul. Soc Geogr., p. 228.

Subgenotype, *Formica acervorum* Fabricius (by designation of Wheeler, 1911).

Length 3-4 mm. Antenna 12-segmented; scape approximately as long as combined lengths of first 2 funicular segments; no distinct antennal club. Mayrian furrows well developed. Wing with distinct stigma; no radial cell but a cubital and a discoidal cell. Petiole and postpetiole usually rather robust. Cerci present.

Five species, 5 subspecies, and 6 varieties, which are distributed over the northern half of the United States, especially the North and Northwest. Species examined, *acervorum canadensis* Provancher, *acervorum canadensis* var. *calderoni* Forel, *duloticus* Wesson, *emersoni* Wheeler, *muscorum* var. *septentrionalis* Wheeler, and the ergatandrous males of *diversipilosus* M. R. Smith.

SYMMYRMICA Wheeler

(Fig. 7, *A*)

Symmyrmica Wheeler, 1904, Amer. Mus. Nat. Hist. Bul. **20**: 3.

Genotype, *Symmyrmica chamberlini* Wheeler (monobasic).

Length 3-3.25 mm. Wingless. Ergatandrous. Antenna 11-segmented. Eye and ocellus very large and prominent. Mandible small, not meeting, each with a single acute tooth on masticatory border. Clypeus short, very convex. Mayrian furrows feebly developed. Epinotum with a pair of obtuse swellings. Cerci present. Gaster and genitalia not especially large.

One species, *chamberlini* Wheeler. Inquilinous in colonies of *Myrmica mutica* Emery. Extremely rare. Utah. No males of this species have been examined.

HARPAGOXENUS Forel

Tomognathus Mayr, 1861, Die Europäischen Formiciden, p. 56 (preoccupied by Agassiz, 1850).

Harpagoxenus Forel, 1893, Soc. Ent. de Belg. Ann. **37**: 167.

Genotype, *Myrmica sublaevis* Nylander.

Length 2.7 mm. Antenna 12-segmented; scape long, approximately as long as combined lengths of first 5 funicular segments. Mandible well developed, usually distinctly toothed. Antennal scrobe weakly to moderately well developed, extending posteriorly on head approximately to ocelli (Fig. 1, *F*). Mayrian furrows and parapsidal sutures present. Wing with cubital cell but no radial cell; discoidal cell present or absent; stigma well developed but often pale. Mandibles, antennae, wings, and legs exceedingly pale.

Two species, *americanus* Emery and *canadensis* M. R. Smith. The former is a slave-making form on *Leptothorax longispinosus* Roger and *L. curvispinosus* Mayr. The species has been collected in Virginia, New Jersey, Massachusetts, New York, Pennsylvania, Illinois, and Ohio. *Harpagoxenus canadensis,*

which was originally described from Quebec, Canada, has recently been collected in Minnesota. This ant is a slave-making form on *Leptothorax acervorum canadensis* Provancher var. Only the male of *americanus* is known. The characters of the male *canadensis* should prove similar to those of the European *sublaevis* Nylander. Males of *americanus* examined.

TRIGLYPHOTHRIX Forel

Triglyphothrix Forel, 1890, Soc. Ent. de Belg. Comp. Rend. **34**: cvi.
Genotype, *Triglyphothrix walshi* Forel (monobasic).

Similar to *Tetramorium* except in bearing trifid or branched hairs (Fig. 6, *F*), at least in part. Introduced.

One species, *striatidens* (Emery) occurs in several towns in Florida, South Carolina, Alabama, Mississippi, and Louisiana. The male of *striatidens* is unknown; it will probably measure approximately 2.75-3.75 mm. in length.

TETRAMORIUM Mayr

Tetramorium Mayr, 1855, Zool.-Bot. Gesell. Wien, Verh. **5**: 423.
Genotype, *Formica caespitum* Linnaeus (by designation of Girard, 1879).

Length 2.6-7 mm. Antenna 10-segmented; second funicular segment unusually long, closely approximating length of scape (Fig. 1, *I*). Mandible well developed, toothed. Mayrian furrows present. Wing with a cubital and a discoidal cell, the radial cell present or absent. Legs slender. Hairs simple.

Four species, all introduced; usually found in towns and cities or their immediate vicinities, especially the more important seaport and railroad points in the southern and eastern half of the United States. According to their relative abundance the species might be ranked as follows: *caespitum* (Linnaeus), *guineense* (Fabricius), *simillimum* (F. Smith), and a form of the *pacificum* Mayr group. Males have been examined of all these species.

XIPHOMYRMEX Forel

Tetramorium (Xiphomyrmex) Forel, 1887, Schweiz. Ent. Ges. Mitt. **7**: 385.
Genotype, *Tetramorium (Xiphomyrmex) kelleri* Forel (by designation of Wheeler, 1911).

Characters same as for *Tetramorium*.

Native. Habitat, very warm, dry, open regions. Two subspecies, *spinosus hispidus* Wheeler of the desert region around Tucson and Phoenix, Ariz., and *spinosus insons* Wheeler from localities in Texas and Arizona. Males of both subspecies are unknown; they will probably range from 4-6 mm. in length.

WASMANNIA Forel

Wasmannia Forel, 1893, Ent. Soc. Lond. Trans., p. 383.
Genotype, *Tetramorium auropunctatum* Roger (by designation of Wheeler, 1911).

Length 4-5 mm. Antenna 13-segmented; scape approximately as long as combined lengths of first 2 funicular segments; first funicular segment pyriform; funiculus rather long and slender. Eye large, convex, protuberant. Mandible well developed, subtriangular, distinctly toothed. Clypeus convex. Mayrian furrows and parapsidal sutures present. Wing with prominent stigma; a cubital but no radial or discoidal cells. Cerci present. Stipes long, very slender, with a prominent inner basal tooth (Fig. 6, *E*). Hypopygium terminating apically in a point.

One introduced species, *auropunctata* (Roger), which occurs in a number of localities in Florida. Males examined.

CRYPTOCERUS, subgenus CRYPTOCERUS Fabricius

Cryptocerus Fabricius, 1804, Systema Piezatorum, p. 418.

Subgenotype, *Cryptocerus umbraculatus* Fabricius (by designation of Emery, 1914).

Length 5 mm. or less. Antenna 13-segmented; funiculus greatly thickened toward apex, clavate (Fig. 2, *B*); scape shorter than second funicular segment; first funicular segment small; last 4 funicular segments greatly enlarged forming somewhat of a club. Mandible well developed, subtriangular, toothed. Mayrian furrows present. Wing with a distinct stigma; a radial, a cubital, and a discoidal cell; radial cell rather short, appendiculate, the appendix sometimes vestigial (Fig. 5, C). Legs rather short, femora somewhat incrassated. Cerci present. Stipes prominent.

Two species, *rohweri* Wheeler, of Arizona, and *texanus* Santschi, of Texas. No males have been examined of either species.

CRYPTOCERUS, subgenus CYATHOMYRMEX Creighton

Cryptocerus (Cyathocephalus) Emery, 1915, Soc. Ent. de France Bul., p. 192 (preoccupied by Kessler, 1868).

Cyathomyrmex Creighton, 1933, Psyche, **40**: 98.

Subgenotype, *Cryptocerus pallens* Klug (by original designation).

Characters same as for *Cryptocerus*, subgenus *Cryptocerus*.

One species, *varians* F. Smith, of Florida. No males examined.

STRUMIGENYS, subgenus STRUMIGENYS F. Smith

Strumigenys F. Smith, 1860, Jour. Ent. **1**: 72 [London].

Subgenotype, *Strumigenys mandibularis* F. Smith (monobasic).

Length 2-3 mm. Head much narrowed toward the mandibles. Antenna 13-segmented; scape short; funiculus long, subfiliform. Mandible narrow, much longer than broad, toothed or toothless. Eye convex, strongly protuberant. Mayrian furrows present. Wing pilose, with ciliated margins; veins poorly developed, indistinct, especially in apical half of wing; a single cubital cell present. Declivity of epinotum somewhat laterally margined, especially in lower half. Petiole and postpetiole often with thin, membranous appendages beneath and around margins.

Uncommon. *Strumigenys louisianae* Roger and its subspecies *laticephala* M. R. Smith are both distinctly southern. Males of each have been examined.

STRUMIGENYS, subgenus TRICHOSCAPA Emery

Cephaloxys F. Smith, 1864, Linn. Soc. Lond. Jour. Zool. **8**: 76 (preoccupied by Signoret, 1847).
Genotype, *Cephaloxys capitata* F. Smith (monobasic).
Strumigenys (Trichoscapa) Emery, 1869, Accad. degli Aspiranti Naples Ann. **2**: 24.
Subgenotype, *Strumigenys (Trichoscapa) membranifera* Emery (monobasic).

Characters same as for *Strumigenys*, subgenus *Strumigenys*.

Uncommon. Twenty species, 1 subspecies, and 4 varieties. Members of this subgenus are confined mostly to the eastern half of the United States. Species examined, *pergandei* Emery, *pulchella* Emery, *rostrata* Emery, *venatrix* Wesson and Wesson, and *reflexa* Wesson and Wesson.

The usage of *Trichoscapa* was formerly suppressed in favor of the earlier name *Cephaloxys*. Since *Cephaloxys* is preoccupied as indicated above, it will be necessary to revert again to the use of the name *Trichoscapa*.

CYPHOMYRMEX, subgenus CYPHOMYRMEX Mayr

Cyphomyrmex Mayr, 1862, Zool.-Bot. Gesell. Wien, Verh. **12**: 690.
Subgenotype, *Cryptocerus rimosus* Spinola (by designation of Wheeler, 1911).

Length 2.3-2.6 mm. Antenna 13-segmented; scape very long, approximately as long as combined lengths of first 8 funicular segments; funiculus gradually enlarging apically but not forming a distinct club. Eye convex, protuberant. Ocelli small. Mandible large, subtriangular, toothed. Frontal carinae very large, unusually elevated (Fig. 1, *B*). Mayrian furrows present. Wing with stigma absent or obsolescent; a radial and 2 cubital cells present but no discoidal cell; radial cell approximately 3 times as long as broad. Legs not slender as with *Trachymyrmex*. Genitalia not prominent. Hairs on body simple.

One species, 1 subspecies, and a variety, at least one form of which is confined to Florida, Texas, or California. Species examined, *rimosus minutus* Mayr.

CYPHOMYRMEX, subgenus MYCETOSORITIS Wheeler

Atta (Mycetosoritis) Wheeler, 1907, Amer. Mus. Nat. Hist. Bul. **23**: 714.
Subgenotype, *Atta (Mycetosoritis) hartmanni* Wheeler (monobasic).

Length 2 mm. Characters similar to those of *Cyphomyrmex*, subgenus *Cyphomyrmex*, except that the body hairs are curved or hooked instead of simple.

A single species, *hartmanni* Wheeler of Texas. No specimens of *hartmanni* have been examined.

TRACHYMYRMEX Forel

Atta (Trachymyrmex) Forel, 1893, Soc. Ent. de Belg. Ann. **37**:600.
Genotype, *Atta septentrionalis* McCook (by designation of Wheeler, 1911).

Length 3-5 mm. Antenna 13-segmented; scape long, approximately as long as combined lengths of first 8 funicular segments; funiculus enlarged apically, the last 4 segments forming a rather distinct club. Eye convex, protuberant. Ocelli very small. Mandible large, subtriangular, toothed, the teeth often small. Mayrian furrows and parapsidal sutures present, the former not always clearly defined. Wing with distinct but not large stigma; a radial and a cubital cell present but no discoidal cell; radial cell approximately 3 times as long as broad. Epinotum with a pair of distinct spines. Legs exceedingly slender. Genitalia not especially prominent.

Four species, 2 subspecies, and 4 varieties; 6 of the 10 forms belong to *septentrionalis* (McCook). Distributed over the eastern half of the United States and several of the extreme Southwestern States. Species examined, *arizonensis* Wheeler and *septentrionalis* (McCook).

ACROMYRMEX, subgenus MOELLERIUS Forel

Atta (Moellerius) Forel, 1893, Soc. Ent. de Belg. Ann. **37**: 589.
Subgenotype, *Atta (Acromyrmex) landolti* Forel (by designation of Wheeler, 1911).

Length 8 mm. Antenna 13-segmented; scape very long, approximately as long as combined lengths of first 8 funicular segments; funiculus noticeably enlarging toward apex. Eye convex, very protuberant. Ocelli small. Mandible large, subtriangular, with well-developed teeth (Fig. 2, *F*). Mayrian furrows present but not always clearly defined; parapsidal sutures present. Wing with well-developed veins; stigma distinct but small; a radial and a cubital cell present but no discoidal cell; radial cell approximately 3 times as long as broad. Legs slender. Dorsal surface of first gastric segment with a depression on each side near base and a median depression more posteriorly. Stipes large, stout, inwardly curved, with inner basal tooth and truncate apex (Fig. 6, *G*).

One species, *versicolor* (Pergande) of Arizona, and the subspecies, *chisosensis* Wheeler of Texas. Species examined, *versicolor* (Pergande).

ATTA Fabricius

Atta Fabricius, 1804, System Piezatorum, p. 421.
Genotype, *Formica cephalotes* Linnaeus (by designation of Wheeler, 1911).

Length 12 mm. Head unusually small in proportion to body. Mandible large, subtriangular, with numerous well-developed teeth (Fig. 2, *F*). Antenna 13-segmented; scape very long, approximately as long as combined lengths of first 8 funicular segments; funiculus noticeably enlarged apically. Ocelli large, strongly protuberant. Thorax unusually large. Mayrian furrows absent or obsolescent. Wing with well-developed veins; no distinct stigma; a radial and a cubital cell present but no discoidal cell; radial cell at least 6 times as long as broad. Legs exceedingly slender. Genitalia large, with pronounced characteristic configuration.

One species, *texana* Buckley of Texas and western Louisiana. Species examined, *texana* Buckley.

Subfamilies DOLICHODERINAE Forel and FORMICINAE Lepeletier

(Note: The symbol D, in parenthesis, refers to the subfamily *Dolichoderinae* and the symbol F to the subfamily *Formicinae*.)

1. Antenna 10-segmented; length of body 1-2 mm. or slightly more ..... *Brachymyrmex*, subgenus *Brachymyrmex* Mayr (F), p. 313
   Antenna with more than 10 segments; size usually larger 2

2. (1) Mandible elongate, slender, somewhat sickle-shaped, and without masticatory border of teeth (Fig. 2, *G*) ..... *Polyergus* Latreille (F), p. 320
   Mandible not as described above, usually with distinct masticatory border.... 3

3. (2) Scape approximately as long as the combined lengths of the first 3 funicular segments or longer 7
   Scape shorter than the combined lengths of the first 3 funicular segments; if not, then the head is flattened (Fig. 1, *D*), and the third segment of the maxillary palpus is approximately as long as the combined lengths of segments 4, 5, and 6 4

4. (3) Radial cell narrow and open; no discoidal cell 5
   Radial cell closed or open; usually a discoidal cell 6

5. (4) Third segment of maxillary palpus much longer than the second segment, approximately as long as the combined lengths of segments 4, 5, and 6; (head flattened (fig. 1, *D*), strongly concave beneath; anterior part of thorax often strongly protuberant; New Jersey to Iowa and California and southward) ..... *Dorymyrmex* Mayr (D), p. 312
   Third segment of maxillary palpus about as long as the second segment and much shorter than the combined lengths of the fourth, fifth, and sixth segments ..... *Forelius* Emery (D), p. 312

6. (4) Second funicular segment remarkably long, very distinctly longer than scape; (introduced species) ..... *Iridomyrmex* Mayr (part) (D), p. 311
   Second funicular segment at most not exceeding length of antennal scape; (mandible well developed, subtriangular, with distinct masticatory border bearing numerous denticulae (fig. 2, *H*); integument rather highly sclerotinized; petiole stout, thick anterioposteriorly; Eastern States and westward to Minnesota and Oklahoma) ..... *Dolichoderus*, subgenus *Hypoclinea* Mayr (D), p. 310

7. (3) Scape usually shorter than combined lengths of first 4 funicular segments; if not, then the petiole is inclined, and the base of the gaster is impressed (fig. 3, *B*) 8
   Scape usually longer than combined lengths of first 4 funicular segments; of not, then the petiole is not inclined, and the base of the gaster is not impressed 10

8. (7) Genital appendages unusually large, comprising at least one-third of the gaster (fig. 3, *E*); wing normally with 2 cubital cells, a radial cell and a discoidal cell; mandible large, subtriangular, and bearing numerous teeth or denticulae (fig. 2, *H*); (Southwestern and Western States); 7-10 mm. long ..... *Liometopum* Mayr (D), p. 311
   Genital appendages not so large and prominent as described above; wing normally with less than 2 cubital cells; mandible smaller; 5 mm. or less in length 9

9. (8) Petiole inclined, thick anteroposterio-ly; base of gaster with a distinct, wedge-shaped impression (fig. 3, *B*) ..... *Prenolepis* Mayr (F), p. 317
   Petiole erect, not inclined or noticeably thick antero-posteriorly; base of gaster without a distinct wedge-shaped impression; (native species) ..... *Iridomyrmex* Mayr (part) (D), p. 311

10. (7) Antenna often inserted some distance from posterior border of clypeus; clypeal suture separated from antennal fossa; large ants usually 5 mm. or more in length; stipes prominent, moderately long and slender (fig. 3, *G*) ..... *Camponotus*, subgenera *Camponotus* Mayr, p. 313; *Tanaemyrmex* Ashmead, p. 314; *Myrmothrix* Forel, p. 314; *Colobopsis* Mayr, p. 315; *Myrmaphaenus* Emery, p. 315; *Manniella* Wheeler, p. 315; *Myrmobrachys* Forel, p. 315.
Antenna usually inserted at posterior border of clypeus or in very close proximity to posterior border of clypeus (fig. 1, *A*) 11

11. (10) Base of gaster always impressed; petiole strongly inclined (fig. 3, *B*); cerci small and inconspicuous, or absent 12
Base of gaster usually not impressed; petiole not strongly inclined (suberect to erect); cerci more or less apparent 14

12. (11) Scape unusually long, approximately 1¾ times or more the length of the head; (no erect hairs on the antennal scape) ..... *Paratrechina* subgenus *Paratrechina* Motschoulsky (F), p. 316
Scape often exceeding the length of the head but not so long as described above 13

13. (12) Tibiae, and usually scapes, with coarse, dark, suberect to erect hairs..... *Paratrechina*, subgenus *Nylanderia* Emery (F), p. 316
Tibiae and scapes without dark, suberect to erect hairs; (mandible with numerous denticulae (fig. 2, *H*), these sometimes very difficult to see except under high magnification)..... *Tapinoma* Förster (D), p. 313

14. (11) First segment of funiculus usually distinctly pyriform, wider than the following segment; genital appendages small or moderate in size, with their apices not directed strongly ventrad 15
First segment of funiculus not distinctly pyriform; genital appendages rather large and robust, and usually with their apices directed strongly ventrad (fig. 3, *C*); (fourth segment of maxillary palpus not longer than the combined lengths of the fifth and sixth segments)..... *Formica*, subgenera *Proformica* Ruzsky, p. 319; *Neoformica* Wheeler, p. 319; *Formica* Linnaeus, p. 319.

15. (14) Maxillary palpus unusually long and slender, fourth segment longer than combined lengths of fifth and sixth segments (fig. 6, *B*); (Western and Southwestern States) ..... *Myrmecocystus* Wesmael (F), p. 318
Maxillary palpus not unusually long and slender, the fourth segment, when present, shorter than, or equal to, combined lengths of fifth and sixth segments 16

16. (15) Maxillary palpus very short, 3-segmented..... *Lasius*, subgenus *Acanthomyops* Mayr (F), p. 318
Maxillary palpus longer, 6-segmented ..... *Lasius*, subgenera *Lasius* Fabricius (F), p. 317, and *Chthonolasius* Ruzsky (F), p. 318

Subfamily DOLICHODERINAE Forel

DOLICHODERUS, subgenus HYPOCLINEA Mayr

Hypoclinea Mayr, 1855, Zool.-Bot. Gesell. Wien, Verh. **5**: 377.
Subgenotype, *Formica quadripunctata* Linnaeus (by designation of Wheeler, 1911).

Length 3.5-5.5mm. Integument rather highly sclerotinized, not very flexible. Antenna 13-segmented; scape usually very slightly shorter than combined lengths of first 2 funicular segments, or at least very closely approximating

their combined lengths; second funicular segment clearly longer than the preceding or succeeding segment. Mandible well developed, subtriangular, multidenticulate (Fig. 2, *H*). Eye large, strongly convex, subreniform. Maxillary palpus rather long and slender. Parapsidal sutures present but no Mayrian furrows. Wing with well developed stigma; 1 or 2 cubital cells (usually 2), a radial cell and a discoidal cell. Petiole thick anteroposteriorly, stout, erect. Stipes short, stout.

Three species, 2 subspecies, and 4 varieties. The 3 species are *mariae* Forel, *plagiatus* Mayr, and *taschenbergi* Mayr, each of which has one or more subspecies or varieties. There are no records of any species having been collected west of the 104th degree of longitude. Species examined, *mariae* Forel and *taschenbergi* Forel.

LIOMETOPUM Mayr

Liometopum Mayr, 1861, Die Europäischen Formiciden, p. 38.
Genotype, *Formica microcephala* Panzer (monobasic).

Length 7-10.5 mm. Head small, subtriangular. Antenna 13-segmented; scape shorter than combined lengths of first 3 funicular segments. Mandible rather large, subtriangular, multidenticulate (Fig. 2, *H*). Eye longer than broad, rather strongly convex. Parapsidal sutures present but no Mayrian furrows. Wing with well-developed stigma; a radial, 2 cubital, and a discoidal cell. Petiole, in profile, cuneate, with very thin, usually emarginate superior border. Genital appendages extremely large, occuping one-third or more of gaster (Fig. 3, *E*). Cerci prominent. Body covered with fairly dense to dense pubescence, and with rather abundant, long, erect hairs.

Two species and 1 subspecies; one or more of these have been found in the following States: Texas, New Mexico, Arizona, Colorado, California, and Oregon. *Liometopum occidentale* Emery seems to be the most common form in California. Species examined, *apiculatum luctcosum* Wheeler.

IRIDOMYRMEX Mayr

Iridomyrmex Mayr, 1862, Zool.-Bot. Gesell. Wien, Verh. **12**: 702.
Genotype, *Formica detecta* F. Smith (by designation of Bingham, 1903).

Length 2-3 mm. Antenna 13-segmented; scape shorter than second funicular segment (*humilis* Mayr and *iniquus* var. *nigella* Emery) or else approximately as long as, or longer than, combined lengths of first 3 funicular segments. Head flattened, often concave beneath (Fig. 1, *D*). Mandible usually distinctly toothed or else with many small denticulae. Eye moderately to very large and convex, placed near base of mandible. Thorax moderately to quite massive. Mesonotum stout, strongly convex, projecting anteriorly, with weakly defined to well defined parapsidal sutures. Wing with highly variable venation; stigma distinct but varying from small to large; radial cell present or absent, either cubital or discoidal cell, or both present. Petiole low, erect, distinct. Genital appendages small to moderately large.

Two species and 3 varieties, *Iridomyrmex humilis* Mayr, an introduced species, occurs in the Southern States and California; another introduced species, *iniquus* var. *nigella* Emery, is found at least in greenhouses throughout the eastern half of the United States; the native *pruinosus* (Roger) and its variety *analis* André are confined mostly to the Southern States. Species examined, *humilis* Mayr, *iniquus* var. *nigella* Emery, and *pruinosus* var. *analis* André.

FORELIUS Emery

Forelius Emery, 1888, Ztschr. f. Wiss. Zool. **46**: 389.
Genotype, *Iridomyrmex maccooki* Forel (monobasic).

Length 3 mm. Antenna 13-segmented. No Mayrian furrows. Emery (1912, Wytsman's Genera Insectorum Fascicule 137: 18, 35) states that the third segment of the maxillary palpus is almost equal to the length of the second (only slightly longer) and is much shorter than the combined lengths of segments 4, 5, and 6. He is also authority for the statement that there is no radial or discoidal cell. He remarks that the ants have a strong resemblance to *Dorymyrmex*. Mayr (1886, Zool.Bot. Gesell. Wien, Verh. 36: 432) says that the petiole of *maccooki* is almost nodelike and nearly twice as broad as thick; the legs long and slender, and the wings with a closed cubital cell.

This genus is not well known in the United States. The workers, at least, resemble the workers of *Iridomyrmex* more than those of any other North American genus. Only a single species, *maccooki* (Forel), of Texas, has been described. No males of this species have been studied.

DORYMYRMEX Mayr

Dorymyrmex Mayr, 1866, Akad. der Wiss. Wien, Math. Nat. Kl. Sitzber. **53**: 494.
Genotype, (*Dorymyrmex flavescens* Mayr, nec Fabricius)=*Dorymyrmex planidens* Mayr (monobasic).

Length 2-3 mm. Head flattened (Fig. 1, *D*), strongly concave beneath. Antenna 13-segmented; scape often shorter than combined lengths of first 2 to 3 funicular segments; all funicular segments longer than broad, first funicular segment broader than second segment. Mandible slender, with an obliquely sloping masticatory border which bears a very long apical tooth and several smaller teeth. Ocelli not placed on a prominent protuberance at summit of head. Eye large, not much longer than broad, placed rather close to base of mandible. Third segment of maxillary palpus approximately as long as combined lengths of segments 4, 5, and 6. No Mayrian furrows. Venation highly variable; a distinct stigma; no radial, cubital, or discoidal cells; usually, however, there is a vestige of a radial and often of a cubital cell. Petiole low, erect, usually thick anteroposteriorly, with rounded, nonemarginate, superior border. Legs long, slender. Cerci present. Genital appendages rather prominent.

One species, *pyramicus* (Roger) and 4 varieties. These ants occur throughout the southern two-thirds of the United States. Species examined, *pyramicus* (Roger) and its variety *bicolor* Wheeler.

TAPINOMA Förster

Tapinoma Förster, 1850, Hymenopterologische Studien, vol. 1, p. 43.
Genotype, (*Tapinoma collina* Förster)=*Formica erratica* Latreille (monobasic).

Length 1.3-4.5 mm. Antenna 13-segmented; scape approximately as long as combined lengths of first 5 funicular segments or less; all funicular segments longer than broad; antennal fossa contiguous with posterior border of clypeus (Fig. 1, *A*). Mandible well developed, multidenticulate (Fig. 2, *H*), the denticulae often extremely small and difficult to see except under high magnification. Anterior border of clypeus with or without median emargination. Eyes oval, strongly convex, not touching base of mandible. Mayrian furrows absent. Wing with well-developed stigma; a radial and a cubital cell; discoidal cell present or absent. Petiole low, stout, inclined. Base of gaster with an impressed area for reception of petiole (Fig. 3, *B*). Genital appendages rather prominent. Stipes stout, subtriangular. Cerci present but usually small. Erect hairs on body rather sparse.

Three species, *littorale* Wheeler and the introduced *melanocephalum* (Fabricius), which occur in Florida, and the common *sessile* (Say), which is apparently distributed over the entire United States. Males have been examined of all three species.

Subfamily FORMICINAE Lepeletier

BRACHYMYRMEX, subgenus BRACHYMYRMEX Mayr

Brachymyrmex Mayr, 1868, Soc. dei Nat. di Modena Ann. **3**: 163.
Subgenotype, *Brachymyrmex patagonicus* Mayr (monobasic).

Length 1-2 mm. Very small and robust. Antenna 10-segmented; scape approximately as long as combined lengths of first 5 or 6 funicular segments, first funicular segment distinctly broader than second. Head and clypeus each broader than long. Mandible vestigial, narrow and pointed, without definite masticatory border. Ocelli placed at summit of head. No Mayrian furrows. Wing with distinct stigma; a single cubital cell but no discoidal or radial cell. Petiole low, sometimes more or less obscured by junction of thorax and gaster.

One species and 2 subspecies, *nanellus* Wheeler of Texas, *heeri obscurior* Forel of Florida, and the common *heeri depilis* Emery of at least the eastern half of the United States. Species examined, *heeri depilis* Emery.

CAMPONOTUS, subgenus CAMPONOTUS Mayr

Camponotus Mayr, 1861, Die Europäischen Formiciden, p. 35.
Subgenotype, *Formica ligniperda* Latreille (by designation of Bingham, 1903).

Length 8-11 mm. Head usually small. Antenna 13-segmented; scape slender, as long as, or longer than, combined lengths of first 6 funicular segments; first funicular segment noticeably wider than second. Antennal fossa distinctly separated from posterior border of clypeus. Clypeus generally subtrapezoidal.

Eye usually prominent, moderately to strongly convex, far removed from base of mandible. Mandible generally well developed, with usually a distinct apical tooth and remainder of masticatory border toothless. Cheeks long. Parapsidal sutures present but no Mayrian furrows. Wing with well-developed stigma; a radial and a cubital cell but no discoidal cell. Petiole low, usually well developed, erect, and cuneate in profile, superior border often excised. Genital appendages small. Stipes long, slender, narrowest apically (Fig. 3, *G*). Cerci present.

This subgenus contains 6 species, 8 subspecies, and 16 varieties. Distributed over the entire United States. There are 6 forms of *herculeanus* (Linnaeus) and 14 forms of *sansabeanus* (Buckley). The best known species of this subgenus is probably *herculeanus pennsylvanicus* (DeGeer). Species examined, *castaneus* (Latreille), *castaneus americanus* Mayr, *herculeanus ligniperdus noveboracensis* (Fitch), *herculeanus* var. *modoc* Wheeler, *herculeanus pennsylvanicus* (DeGeer), *herculeanus pennsylvanicus ferrugineus* (Fabricius), *herculeanus* var. *whymperi* Forel, *laevigatus* (F. Smith), *sansabeanus* (Buckley), *sansabeanus* var. *luteangulus Wheeler, sansabeanus* var. *nitidiventris* Emery, *sansabeanus* var. *semitestaceus* Emery, and *vafer* Wheeler.

CAMPONOTUS, subgenus TANAEMYRMEX Ashmead

Tanaemyrmex Ashmead, 1905, Canad. Ent. **37**: 384.

Subgenotype, *Formica longipes* Gerstäcker (by designation of Emery, 1925).

Length 6-9 mm. Characters similar to those of the subgenus *Camponotus*.

Three species and 4 varieties which are distributed in the extreme southern section of the United States from North Carolina westward into Texas and Arizona. The two best known members are *socius* Roger of Florida, Georgia, South Carolina, North Carolina, Alabama, and Mississippi, and *fumidus* var. *festinatus* (Buckley) of Texas. Species examined, *tortuganus* Emery, *fumidus* var. *festinatus* (Buckley), and *fumidus* var. *fragilis* Pergande.

CAMPONOTUS, subgenus MYRMOTHRIX Forel

Camponotus (Myrmothrix) Forel, 1912, Soc. Ent. de Belg. Mém. **20**: 91.

Subgenotype, *Formica abdominalis* Fabricius (by designation of Wheeler, 1913).

Length 6-7 mm. Characters same as for the subgenus *Camponotus*.

Myrmothrix contains two subspecies, *abdominalis floridanus* (Buckley), of Florida, Georgia, and South Carolina, and *abdominalis transvectus* Wheeler of Texas. Species examined, *abdominalis floridanus* (Buckley).

CAMPONOTUS, subgenus MYRMENTOMA Forel

Camponotus (Myrmentoma) Forel, 1912, Soc. Ent. de Belg. Mém. **20**: 92.

Subgenotype, *Formica lateralis* Olivier (by designation of Wheeler, 1913).

Length 5.5-9 mm. Characters similar to those of the subgenus *Camponotus*.

One of the largest subgenera of *Camponotus* with representatives in all parts of the United States. The subgenus is badly in need of revision; at the present it is considered to have 6 species, 4 subspecies, and 10 varieties, 13 forms of which are allied to *caryae* (Fitch). Species examined, *caryae* (Fitch), *caryae* var. *decipiens* Emery, *caryae discolor* (Buckley), *caryae discolor clarithorax* Emery, *caryae* var. *minutus* Emery, *caryae rasilis* Wheeler, *caryae rasilis pavidus* Wheeler, *caryae subbarbatus* Emery, and *sayi californica* Pergande.

CAMPONOTUS, subgenus COLOBOPSIS Mayr

Colobopsis Mayr, 1861, Die Europäischen Formiciden, p. 38.
Subgenotype, *Formica truncata* Spinola (monobasic).

Length 3.7-4.5 mm. Characters similar to those of subgenus *Camponotus*.

Apparently distributed throughout the southern half of the United States, especially in the Southern States. Four species, 1 subspecies, and 2 varieties. Several of the best known members are *abditus* var. *etiolata* Wheeler of Texas, *mississippiensis* M. R. Smith of South Carolina, Mississippi, Louisiana, Illinois, and Oklahoma, and *pylartes* Wheeler of Texas, Louisiana, and Oklahoma. Species examined, *pylartes* Wheeler and *mississippiensis* M. R. Smith.

CAMPONOTUS, subgenus MYRMAPHAENUS Emery

Camponotus (Myrmaphaenus) Emery, 1920, Rev. de Zool. et de Bot. Africaines **8**:237.
Subgenotype, *Camponotus leydigi* Forel (by original designation).

Two species, *bruesi* Wheeler of Texas and *yogi* Wheeler of California. The male of each species is unknown. They will probably be found to have characters similar to those of the subgenus *Camponotus*.

CAMPONOTUS, subgenus MANNIELLA Wheeler

Camponotus (Manniella) Wheeler, 1921, Psyche **28**: 19.
Subgenotype, *Camponotus sphaericus* Roger (by original designation).

A single species, *ulcerosus* Wheeler of Arizona, the male of which is unknown. The male will probably be found to have characters similar to those of the subgenus *Camponotus*.

CAMPONOTUS, subgenus MYRMOBRACHYS Forel

Camponotus (Myrmobrachys) Forel, 1912, Soc. Ent. de Belg. Mém. **20**: 91.
Subgenotype, *Formica senex* F. Smith (by designation of Wheeler, 1913).

Length 4.5-5 mm.

One species and 1 subspecies, *planatus* Roger of Florida and Texas, and *mina zuni* Wheeler of Arizona. Characters similar to those of the subgenus *Camponotus*. Species examined, *planatus*.

PARATRECHINA, subgenus PARATRECHINA Motschoulsky

Paratrechina Motschoulsky, 1863, Bul. Soc. Nat. Moscou. **36**: 13.

Subgenotype, (*Paratrechina currens* Motschoulsky) = *Formica longicornis* Latreille (monobasic).

Length 2.6-3 mm. Head longer than broad. Antenna 13-segmented; scape extremely long and slender, approximately one and three-fourths times the length of the head; without suberect to erect hairs; funiculus subfiliform, the first segment not noticeably broadened, all segments distinctly longer than broad. Eye longer than broad, convex, not placed near base of mandible. Mandible moderately well developed, longer than broad, with one small apical tooth and several fine denticulae. Parapsidal sutures present but no Mayrian furrows. Wing with poorly developed stigma; a radial and a cubital cell but no discoidal cell. Legs extremely long and slender. Petiole moderately well developed, inclined, not so thick anteroposteriorly as with *Prenolepis*. Base of gaster with an impression for reception of petiole (Fig. 3, *B*). Genital appendages rather large and prominent. Stipes robust, with medianly directed apex. No cerci. Head, thorax, and gaster with fairly abundant, long, coarse, suberect to erect hairs; these very sparse or absent on femora and tibiae.

One introduced species, *longicornis* (Latreille), which is established in many of our larger towns and cities, especially those towns in States bordering the Gulf of Mexico and the Atlantic Ocean. This ant is apparently more widely distributed in Florida than in any other State. Males have been examined of this species.

PARATRECHINA, subgenus NYLANDERIA Emery

Prenolepis (Nylanderia) Emery, 1906, Soc. Ent. de Belg. Ann. **50**: 134.

Paratrechina (Nylanderia) Emery, 1925, In Wytsman, Genera Insectorum, Fasc. 183, p. 217.

Subgenotype, *Formica vividula* Nylander (by original designation).

Length 1.5-3 mm. Antenna 13-segmented; scape considerably less than one and three-fourths times length of head (usually one and one-half times or less); all segments of funiculus longer than broad, the first segment slightly broadened. Antennal fossa placed close to or touching posterior border of clypeus (Fig. 1, *A*). Scapes (usually) and tibiae with rather coarse, suberect to erect hairs, these less abundant than on head and thorax (the male of *bourbonica* Forel var. probably does not have any such hairs on the scapes and tibiae). Mandible well developed, usually with an apical tooth and some very small, indistinct teeth or else without teeth. No Mayrian furrows present but usually parapsidal sutures. Wing with distinct stigma; a radial and a cubital cell but no discoidal cell. Petiole well developed, inclined, often thickened anteroposteriorly. Base of gaster with an impression for reception of petiole (Fig. 3, *B*). No cerci. Genital appendages rather prominent. Stipes varying from rather robust, subtriangular, to more slender, digitform.

Four species, 3 subspecies, and 3 varieties. Two of these are introduced, a variety of *bourbonica* Forel in Florida, and *fulva pubens* Forel in several green-

houses in at least the Eastern States. The native forms are most common in the eastern half of the United States and in the Southern States. Species examined, *parvula* (Mayr) and *fulva pubens* Forel.

PRENOLEPIS Mayr

Prenolepis Mayr, 1861, Die Europäischen Formiciden, p. 52.

Genotype, *Tapinoma nitens* Mayr (by designation of Bingham, 1903).

Length 2.5-4 mm. Antenna 13-segmented; scape long but not exceeding combined lengths of first 4 funicular segments; first funicular segment not noticeably wide, all segments longer than broad. Mandible rather well developed, longer than broad, indistinctly toothed except for apical tooth; mandible sometimes more or less concealed by clypeus. Eye longer than broad, strongly convex, not placed near base of mandible. Ocelli sometimes borne on a prominent protuberance above general surface of head. Parapsidal sutures present but no Mayrian furrows. Wing with well-developed stigma; a radial and a cubital cell but no discoidal cell. Petiole large, inclined, thick anteroposteriorly, with transverse superior border (Fig. 3, *B*). Base of gaster with an impression for reception of petiole (Fig. 3, *B*). Genital appendages large and prominent, but slender. Cerci present.

One species, *imparis* (Say) and 6 varieties. There are apparently one or more of these in all parts of the United States. Species examined, *imparis* (Say).

LASIUS, subgenus LASIUS Fabricius

Lasius Fabricius, 1804, Systema Piezatorum, p. 415.

Subgenotype, *Formica nigra* Linnaeus (by designation of Bingham, 1903).

Length, 2.5-3.5 mm. Antenna 13-segmented; scape as long as, or longer than, combined lengths of first 4 funicular segments; first funicular segment pyriform, distinctly wider than the following segment (Fig. 2, C). Mandible well developed, with 1 or 2 apical teeth, remainder of masticatory border toothless or with small, indistinct teeth. Eye almost subglobular but longer than broad, moderately convex to rather strongly convex, not placed near base of mandible. Maxillary palpus 6-segmented. Parapsidal sutures present but no Mayrian furrows. Wing with distinct stigma; a radial and a cubital cell; discoidal cell present or absent. Petiole erect, usually rather narrow anteroposteriorly, with superior border often very thin and emarginate. Base of gaster with an impression. Cerci present. Genital appendages prominent. Stipes varying from stout, subtriangular, to more slender, digitform.

This subgenus contains 1 species, 3 subspecies, and 3 varieties, with representatives in all parts of the United States. Some of the best known forms are *brevicornis* Emery, *flavus nearcticus* Wheeler, and *niger* var. *americana* Emery. Species examined, *brevicornis, flavus nearcticus, niger* var. *americana,* and *niger* var. *neoniger* Emery.

LASIUS, subgenus CHTHONOLASIUS Ruzsky

Lasius (Chthonolasius) Ruzsky, 1913, Arch. f. Naturgesch. Ser. A. Heft. 9, **79**: 60.
Subgenotype, *Formica flavus* Fabricius (by designation of Wheeler, 1916).

Length 2.6-4.5 mm. Characters similar to those of the subgenus *Lasius*.

Two species, 4 subspecies, and 1 variety. Representatives in all parts of the United States. The best known form is *umbratus mixtus* var. *aphidicola* (Walsh). Species examined, *umbratus minutus* Emery, *umbratus mixtus aphidicola*, *umbratus speculiventris* Emery, and *umbratus subumbratus* Viereck.

LASIUS, subgenus ACANTHOMYOPS Mayr

Acanthomyops Mayr, 1862, Zool.-Bot. Gesell. Wien, Verh. **12**: 699.
Subgenotype, *Formica clavigera* Roger (by designation of Wheeler, 1911).

Length 2.6-5 mm. Characters similar to those of the subgenus *Lasius* except that the maxillary palpus is short and 3-segmented.

Nine species and 4 subspecies, one or more of which occur over all parts of the United States. The three best known forms are *claviger* (Roger), and *interjectus* Mayr of the eastern half of the country and *latipes* (Walsh), which is distributed over the entire Union. Species examined, *claviger*, *claviger subglaber* Emery, *interjectus*, *latipes*, and *plumopilosus* Buren.

MYRMECOCYSTUS Wesmael

Myrmecocystus Wesmael, 1838, Brussels, Acad. Roy. des. Sci. de Belg. Bul. **5**: 766.
Subgenotype, *Myrmecocystus mexicanus* Wesmael (monobasic).

Length 3-7 mm. Antenna 13-segmented; scape very long and slender, approximately as long as the combined lengths of the first 6 or 7 funicular segments; funiculus slender, subfiliform; first funicular segment enlarged, usually distinctly pyriform. Eye moderately to strongly convex, generally placed at a considerable distance above base of mandible. Ocelli often very small. Maxillary palpus unusually long and slender, the fourth segment longer than the combined lengths of the fifth and sixth segments (Fig. 6, *B*). Mandible large, masticatory border with a prominent apical tooth; remainder of border toothless or with a few very small teeth. Parapsidal sutures present but no Mayrian furrows. Wing with a distinct stigma, which is often large; a radial and a cubital cell; discoidal cell present or absent. Legs long and slender. Petiole well developed, erect. Base of gaster not impressed. Cerci present. Genitalia prominent. Stipes subtriangular, usually not directed so strongly ventrad as with *Formica*.

Five species, 9 subspecies, and 8 varieties. Western and Southwestern with one or more representatives in the following States: California, Oklahoma, New Mexico, Arizona, Texas, Colorado, and Utah. The 2 most common species are *melliger* Forel and *mexicanus* Wesmael. There are 6 subspecies and 6 varieties

of *melliger* and 3 subspecies and 1 variety of *mexicanus*. According to Wheeler, *melliger* is most abundant at altitudes of about 300-1,500 meters, whereas *mexicanus* seems to find its *optimum* environment at about 2,000-3,000 meters. Species examined, *hammettensis* Cole, *melliger semirufus* Emery, *melliger semirufus kennedyi* Cole, and *mexicanus idahoensis* Cole.

FORMICA, subgenus PROFORMICA Ruzsky

Formica (Proformica) Ruzsky, 1903, Soc. Ent. Ross. Horae **36**: 303.
Subgenotype, *Formica nasuta* Nylander (by designation of Wheeler, 1911).

Length 6-7.5 mm. Characters similar to those of the subgenus *Formica*.

Proformica contains 2 species, 1 subspecies, and 3 varieties. Representatives occur over most of the United States with the possible exception of the extreme southern section. The best known form is *neogagates* Emery. Species examined, *neogagates*.

FORMICA, subgenus NEOFORMICA Wheeler

Formica (Neoformica) Wheeler, 1913, Harvard Univ. Mus. Compar. Zool. Bul. **53**: 388.
Subgenotype, *Formica pallidefulva* Latreille (by designation of Wheeler, 1913).

Length 7-10 mm. Characters similar to those of the subgenus *Formica*.

This subgenus contains 2 species, 4 subspecies, and 4 varieties. Representatives occur over most of the United States but the species are apparently most abundant in the eastern half of the country. The majority of the forms belong to the *pallidefulva* group, which includes the typical species and 7 variants. Species examined, *pallidefulva* Latreille, and *pallidefulva nitidiventris* Emery.

FORMICA, subgenus FORMICA Linnaeus

Formica Linnaeus, 1758, System. Naturae Ed. 10, p. 579.
Subgenotype, *Formica rufa* Linnaeus (by designation of Girard, 1879).

Length 5-10.5 mm. Antenna 13-segmented; antennal fossa contiguous with or in close proximity to posterior border of clypeus (Fig. 1, *A*); scape at least as long as combined lengths of first 4 funicular segments, all funicular segments longer than broad, the first funicular segment not appreciably broadened. Mandible longer than broad, with an apical tooth; masticatory border toothless or else usually with indistinct teeth. Clypeus usually weakly to strongly carinate. Ocelli small to large. Eye large and prominent, moderately to strongly convex, not placed near base of mandible. Fourth segment of maxillary palpus not exceeding combined lengths of fifth and sixth segments. Parapsidal sutures present but no Mayrian furrows. Wing with prominent stigma; a radial and a cubital cell; discoidal cell sometimes absent. Petiole erect, usually low, thick anteroposteriorly. Cerci present. Genital appendages large, their apices directed at an angle to longitudinal axis of body approaching a right angle (Fig. 3, *C*).

This subgenus is divided into 5 groups: *fusca* Linnaeus with 5 species, 2 subspecies, and 20 varieties (there are 6 variants of *cinerea* Mayr in addition to *fusca* and its 12 variants); *rufa* Linnaeus with 7 species, 5 subspecies, and 13 varieties; *microgyna* Wheeler with 9 species, 3 subspecies, and 8 varieties (in addition to *microgyna* there are 8 variants of it); *exsecta* Nylander with 2 species, 1 subspecies, and 2 varieties (*exsectoides* Forel and *ulkei* Emery are the two best known species); *sanguinea* Latreille with 9 species, 5 subspecies, and 3 varieties (there are 7 variants of *sanguinea*). Representatives of these five groups occur in all parts of the United States with the possible exception of the extreme southern section. The *rufa* group seems to be best represented in the western half of the United States, whereas those of the *exsecta* group are most common in the eastern half. Species examined, *fusca* var. *subaenescens* Emery, *fusca* var. *subsericea* Say, *lecontei* Kennedy and Dennis, *rufibarbis* var. *gnava* Buckley, *truncicola integroides haemorrhoidalis* Emery, *truncicola integra* Nylander, *difficilis* Emery, *habrogyna* Cole, *indianensis* Cole, *microgyna* Wheeler, *exsectoides* Forel, and *sanguinea aserva* Emery.

POLYERGUS Latreille

Polyergus Latreille, 1805, Histoire Naturelle, Générale et Particulière des Crustaces et de Insectes, vol. 13, p. 256.

Genotype, *Formica rufescens* Latreille (monobasic).

Length 6-7 mm. Antenna 13-segmented; scape approximately as long as combined lengths of first 3 funicular segments. Mandible narrow, elongate, pointed, somewhat sickle shaped; without masticatory border or teeth (Fig. 2, *G*). Clypeus strongly convex or subcarinate. Eye distinctly longer than broad, subreniform. Ocelli very small. Parapsidal sutures present but no Mayrian furrows. Wing with well-defined stigma; normally a radial and a cubital cell; discoidal cell usually present. Petiole emarginate. Cerci present. Genital appendages relatively small.

One species, 3 subspecies, and 4 varieties. *Polyergus lucidus* Mayr is the most common form in the extreme eastern section of the United States. Subspecies and varieties of *rufescens* Latreille occur in the Middle West and West, the subspecies *breviceps* Emery apparently being the most common form. Species examined, *rufescens breviceps, rufescens bicolor* Wasmann, and *lucidus* Mayr.

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