Connecticut
FORMICOIDEA

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FORMICOIDEA.
FORMICIDÆ.

By William Morton Wheeler.

The ants (family Formicidæ) are social Hymenopterous insects, and may be distinguished from the social bees and wasps by having workers, or neuters, as they are less appropriately called, without wings. They are, moreover, readily distinguished from these and all other Hymenopterous insects by the following characters:

1. The first antennal joint in the workers and females, and often also in the males, is greatly elongated and forms what is known as the scape. The remaining shorter joints, constituting the funiculus, or flagellum, are articulated at an angle with the scape and can be folded up against it.

2. One or two of the segments of the base of the abdomen are much reduced in size to form a pedicel, and these segments are either nodiform or bear an erect or inclined scale. When only one of these segments is present, it is known as the petiole; when two are present, the first is the petiole, the second the post-petiole. The swollen portion of the abdomen behind the pedicel is known as the gaster, and has one more visible segment in the male than in the female (queen).

3. The legs of ants are distinguished from those of many other Hymenoptera in having only one instead of two small joints (trochanters) between the hip (coxa) and femur.

4. The venation of the wings of male and female ants is much simplified and differs considerably from that of other Hymenoptera. The female, or queen ant, unlike the queens of the social bees and wasps, loses her wings after fertilization.

The colonies of all our northern ants nest either in the ground or in decaying wood. The nests, or formicaries, may be under stones or logs, and always consist of irregularly excavated, inter-communicating cavities, unlike the regular paper or waxen combs of other social Hymenoptera. Often the nests are surmounted
by earthen craters or dome-shaped mounds, or "hills." The latter are perforated with cavities which serve as incubators for the young, that is, for the minute eggs, the legless, grub-like larvae, and the pupae. The pupæ are either naked or enclosed in elliptical cocoons which are spun by the mature larvae.

Many species of ants harbor in their nests messmates or parasites belonging to various groups of insects. Some of these so-called myrmecophiles are fed and cared for by the ants, others prey upon the ants or their brood. Certain species of ants may themselves become parasitic on other ants. A few of these parasitic species have lost their worker caste completely, and are, therefore, represented only by male and female individuals like the non-social Hymenoptera.

The food of ants consists primarily of other insects found dead or in a moribund or helpless condition on the ground or vegetation. Many species, however, feed on honey-dew, and either collect this sweet liquid directly from the plant-lice and scale insects of which it is the excrement, or lap it up from the surfaces of the leaves on which it has fallen. Ants are, on the whole, beneficial insects, since they consume enormous numbers of dead and decomposing organisms. Many of the less abundant species are neither beneficial nor noxious. A few, like the little red house-ant (Monomorium pharaonis) and the large black carpenter-ant (Camponotus pennsylvanicus), are sometimes a pest in houses. Both of these species are very fond of feeding on sweets in pantries, kitchens, etc., and the carpenter-ant also has the injurious habit of excavating its galleries in the beams and rafters of houses. A few species, like the garden ant (Lasius americanus) and the silky ant (Formica subsericea), disfigure lawns and garden beds with their burrows and craters.

The following list of ants occurring in Connecticut has been prepared at the suggestion of Dr. W. E. Britton from material collected by himself, Mr. H. L. Viereck, and others in various parts of the state, and from my own collections made during several summers in the vicinity of Colebrook, Winsted, and Norfolk in the Litchfield Hills. This list is probably very incomplete, as I have found several species in adjacent portions of New York (e. g., near White Plains), not represented in the material from Connecticut. Previous authors have recorded from the
latter state several species which I have had to discard. Mayr ascribed to Connecticut *Pogonomyrmex subdentatus*, an ant known to occur only in the arid deserts of the Southwest; and Buckley described the following species from the same state: *Formica nortonii, F. americana, F. connecticutensis, F. gnava, F. occidentalis*, and *Myrmica (Diplorhoptrum) scabrata*. With the exception of *F. gnava*, none of these forms can be recognized from Buckley’s abominable descriptions. Under *F. gnava* he evidently included several different ants. One of these, a form of *F. fusca* intermediate between the varieties *subsericea* Say and *neorufibarbis* Emery, I have been able to recognize in the Texan fauna, and I have therefore restricted Buckley’s name to this particular variety. With this single exception, however, all of the above names of Buckley’s Formicidæ may be consigned to oblivion.

As the worker caste is the best known and most commonly met with, it is the only one used for identification in the tables published in the following pages. These tables include the subfamilies, genera, and subgenera known to occur in North America north of Mexico. Of the five subfamilies only four are represented in the Northern States, the remaining one (Dorylinæ) being confined to tropical and subtropical regions.

**Key to Subfamilies.**

1. Cloacal orifice ventral, slit-shaped; sting well developed or vestigial; abdominal pedicel consisting of one or two segments ......................................................... 2
   Cloacal orifice terminal, circular, surrounded by a fringe of hairs; abdominal pedicel consisting of only a single segment; no constriction between the first and second gastric segments; pupæ usually enclosed in cocoon ..............

   **Camponotinae** p. 590

2. Sting developed, sometimes very small but nevertheless exsertile; abdominal pedicel consisting of one or two segments; when of only one, a distinct constriction between first and second gastric segments ................. 3

   Sting vestigial; abdominal pedicel consisting of a single segment; no constriction between first and second gastric segments; anal glands which produce a secretion with a peculiar rancid-butter odor (“Tapinoma odor”) often present; pupæ naked ..................**Doliichoderinae** p. 589

3. Pupæ always enclosed in cocoons; abdominal pedicel consisting of a single segment; gaster with a distinct constriction between its first and second segments; frontal carîne
separated or close together; when close together, dilated to form oblique or horizontal laminae partly covering insertions of antennae ..................................Ponerinae p. 580
Pupae naked; abdominal pedicel consisting of two segments 4
4. Frontal carinae very close together, almost vertical, not at all covering antennal insertions; eyes always very small or absent; tropical and subtropical .........................Dorylinae
Frontal carinae of a different conformation and covering the antennal insertions; eyes rarely vestigial or absent; cosmopolitan ...........................................Myrmicinae p. 581

Ponerinae.

Key to Genera.

1. Frontal carinae closely approximated; antennae inserted very near oral margin; tip of gaster strongly deflected downward ........................................... 2
Frontal carinae of a different conformation; tip of gaster not deflected downward ........................................... 3
2. Front of clypeus projecting in middle; petiole nodiform
   Sysphincta
   Clypeus not projecting in middle; petiole surmounted by a scale ........................................... Proceratium
3. Mandibles linear, inserted close together at middle of oral border; petiole terminating in a point or spine above
   Odontomachus
   Mandibles inserted at corners of head; petiole rounded or flattened above ........................................... 4
4. Antennae very thick and robust ........................................... 5
   Antennae not greatly thickened ........................................... 6
5. Pygidium with a row of prominent prickles on its lateral border; last antennal joint not greatly enlarged ............ Acanthostichus
   Pygidium without prominent prickles on its lateral border; last antennal joint greatly enlarged .................. Cerapachys
6. Mandibles long and slender, with coarse, bidenticulate teeth; clypeus with numerous teeth on its anterior border; petiole not constricted posteriorly .................. Stigmatomma p. 581
   Of a different conformation ........................................... 7
7. Claws pectinate ........................................... 8
   Claws simple ........................................... 9
8. Mandibles edentate, slender; without distinct apical border
   Leptogenys (s. str.)
   Mandibles broader, generally toothed; with distinct apical border ........................................... Leptogenys (Lobopelta)
9. Median spur of mid and hind legs alone developed; lateral spurs lacking; small species with vestigial eyes.. Ponera p. 581
Both spurs of mid and hind legs well developed; medium or large species, with larger eyes .................... 10

10. Cheeks with a longitudinal carina .................. Neoponera
    Cheeks without a carina ............................ 11

11. Pronotum more or less marginate on sides; mid tibiae not abbreviated nor beset with prominent bristles .............. Pachycondyla (s. str.)
    Pronotum not marginate on sides; mid tibiae short, with prominent bristles on their exterior surfaces .............. Euponera (Pseudoponera)

**Stigmatomma Roger.**

*S. pallipes* Haldeman, var *wheeleri* Santschi.

This singular and primitive ant is subterranean or hypogeic in its habits, and occurs only in rich, rather damp woods, under stones, leaf-mold, or more rarely under rotten logs. It is by no means common. The colonies are small, comprising in extreme cases from forty to sixty individuals. The males and winged females appear in August and early September.

Suffield (Geo. Dimmock); Colebrook (W. M. W.).

**Ponera Latreille.**

*P. coarctata pennsylvanica* (Buckley) Emery.

Like the preceding, this small, slender species lives in small colonies, but is much more abundant. It nests under stones and vegetable mold, in rotten logs, etc., in rather open woods, along hedges, etc. The males and winged females appear in late August and early September.

Colebrook (W. M. W.).

**MYRMICINÆ.**

*Key to Genera.*

1. Workers absent .................. Epœcus; Symphidole; Epipheidole
   Workers present ............................ 2

2. Clypeus not extending back between frontal carinae, which are closely approximated; antennæ 12-jointed .............. Pseudomyrma
   Clypeus almost always extending back between frontal carinae, which are more or less separated; in the opposite case antennæ 11-jointed ........................................ 3

3. Antennal fossæ prolonged as grooves for antennal scapes
along sides of head dorsal to eyes and covered by extended lateral margins of head; antennæ II-jointed

**Cryptocerus**

Antennal fossæ of a different conformation or antennæ of a different number of joints ........................................ 4

4. Postpetiole articulated to dorsal surface of gaster, which is flattened dorsally, more convex ventrally, and pointed at tip ........................................... *Crematogaster* p. 585
Postpetiole inserted at anterior end of gaster, which is of the usual shape .................................................. 5

5. Antennæ 6-jointed; head cordiform, antennal fossæ as long as scapes ...................................................... *Strumigenys*
Antennæ with more than six joints ........................................ 6

6. Antennæ II-jointed; without a distinct club or with a club consisting of only a single joint ......................... 7
Antennal club consisting of several joints, or antennæ not II-jointed .......................................................... 10

7. Integument rough, bearing stiff or hooked hairs ........ 8
Integument smoother; hairs scale-like and appressed ..... *Cyphomyrmex*

8. Large species; workers highly polymorphic; head with a pair of occipital spines only; thorax with three pairs of dorsal spines or tubercles ....................................... *Atta* (s. str.)
Small species; workers monomorphic or feebly polymorphic; thoracic dorsum with four pairs of spines or tubercles .... 9

9. Head broad with rounded occipital lobes, without supraocular spines or tubercles ........................................ *Atta* (Moellerius)
Head narrow, with angular occipital lobes; body rough, covered with small tubercles .................................. *Atta* (Trachymyrmex)

10. Antennæ with a 2-jointed club ............................................. 11
Antennal club, when developed, with more than two joints 12

11. Antennæ 10-jointed, epinotum unarmed ............... *Solenopsis* p. 584
Antennæ II-jointed, epinotum dentate ........................................ *Erebomyrma*

12. Posterior margin of clypeus elevated in the form of a welt or ridge bordering antennal fossæ in front .......... 13
Posterior border of clypeus not thus elevated ................. 15

13. Portion of clypeus in front of antennal insertion narrow but not reduced to a mere ridge; antennæ of male 10-jointed . 14
Portion of clypeus in front of antennal insertion reduced to a mere ridge; antennæ of male 13-jointed .. *Myrmecina* p. 584

14. Antennæ 12-jointed ........................................... *Tetramorium* (s. str.)
Antennæ II-jointed ........................................... *Tetramorium* (Xiphomyrmex)

15. Antennæ II-jointed ............................................. 16
Antennæ 12-jointed ............................................. 19
16. Thorax and petiole without any traces of teeth or spines; pronotum never angular ................................. 17
   Epinotum armed with spines or teeth ................................... 18
17. Petiole distinctly pedunculate................................. _Monomorium_ p. 584
   Petiole not pedunculate ........................................... _Xenomyrmex_
18. Mesoœpinotal constriction distinct; males ergatomorphic .......................... _Symmyrmica_
   Mesoœpinotal constriction faint or lacking; males not ergatomorphic ..........  
   Lepthothorax p. 588
19. Workers strongly dimorphic, usually without intermediates
   connecting the extreme forms; antennal club 3-jointed,
   longer than remainder of funiculus ........................... _Pheidole_ p. 584
   Workers monomorphic or polymorphic, i. e., with mediate intermediate
   between major and minor forms; antennal club
   indistinct or shorter than remainder of funiculus ..........  
20. Last three antennal joints much shorter than remainder of
   funiculus and not forming a distinct club ....................... 21
   Last three antennal joints forming a distinct club nearly as
   long as remainder of funiculus .................................  
21. Thoracic dorsum impressed at mesoœpinotal suture; promesoœpinotal
   suture usually distinct ........................................... 22
   Thoracic dorsum without any traces of suture or impressions  
   Pogonomyrmex
22. Posterior tibial spurs pectinated .............................. _Myrmica_ p. 587
   Posterior tibial spurs simple ..................................... 23
23. Small hypogæic species, with vestigial eyes and two keels on
   clypeus .............................................................. 23
   Medium-sized epigæic species with well-developed eyes and
   no keels on clypeus .................................................. 24
24. Workers monomorphic ................................................. 25
   Workers polymorphic .................................................. Novomessor
25. Cosmopolitan species with moderately slender thorax and
   legs ............................................................ _Aphænogaster (s. str.)_ p. 585
   Tropical and subtropical species with very slender thorax
   and legs .......................................................... _Aphænogaster (Deromyrma)_
26. Clypeus armed with a pair of ridges which project forward
   in the form of teeth, rarely without teeth, but then the
   epinotum quite unarmed; mesoœpinotal suture marked
   _Monomorium_ p. 584
   Clypeus of a different conformation, rarely 2-toothed, but
   then the mesoœpinotal suture indistinct ....................... 27
27. Postpetiole campanulate, not constricted behind, but applied
   with its whole posterior surface to first gastric segment  
   _Macromischa_
   Postpetiole constricted behind ............................... _Leptothorax_ p. 588
Myrmecina Curtis.

M. graminicola americana var. brevispinosa Emery.
Rare; nesting in small colonies under stones in shady woods. Males and winged females appear during August. It is a timid species which "feigns death" when rudely handled.
Colebrook (W. M. W.).

Monomorium Mayr.

M. minimum (Buckley) Emery.
This very small jet-black ant nests in small crater nests in sandy or gravelly places. The workers move in files, visiting plants in search of honey-dew and the secretion of the extrafloral nectaries. The species seems to be absent from the hilly portions of the State.
New Haven, North Haven (H. L. V.).

*M. pharaonis Linnaeus.
This little "red" or "yellow house ant," though not recorded from Connecticut, can hardly be absent from the seaport towns, as it is common on ships and has been carried to all parts of the world from its original home in the warmer regions of the Old World.

Solenopsis Westwood.

S. molesta Say.
A species with minute yellow workers and much larger brown females and blackish males. It is common in open grassy places, where it may live either in independent formicaries under stones, or as a thief ant in the walls separating the galleries of the formicaries of larger ants belonging to the genera Formica, Myrmica, Aphenogaster, etc. The males and winged females appear late in August.
New Haven (E. B. Whittlesey); North Haven (H. L. V.); Colebrook (W. M. W.).

Pheidole Westwood.

P. pilifera Roger.
This ant undoubtedly occurs in sandy regions in the southern portion of the State, as it is common on Long Island (Cold Spring Harbor) and has been found in Massachusetts. It is a true harvesting ant, storing the chambers of its nest with seeds of grass
and other plants. The huge-headed soldiers undoubtedly function as seed-crushers.

New Haven (W. E. B.).

Crematogaster Lund.

C. lineolata Say.

A very common species, nesting under stones in open places, under stumps, boards, the bark of old logs, etc. There is a vestigial tendency in this ant to construct carton partitions or cells in its nest or over aphids and coccids on plants. The workers, which have a disagreeable odor, move about in loose files and often carry the triangular gaster over the thorax with the tip turned forward. The males and winged females may be found in the nests from the latter part of July to September.

Connecticut (Mayr); Branford, West Haven (H. L. V.); New Haven, New Canaan (W. E. B.); Suffield (Geo. Dimmock); Colebrook (W. M. W.).

C. lineolata var. cerasi Fitch.

Differs from the preceding in its paler color.

Colebrook (W. M. W.).

Stenamma Mayr.

S. brevicorne Mayr.

Rare; nesting in small colonies under stones or vegetable mold in rich woods.

Colebrook (W. M. W.).

Aphænogaster Mayr.

Key to Species.

1. Antennal scape with a long, flattened lobe at its base ....treatæ
   Antennal scape without a lobe ................................. 2

2. Basal third of first gastric segment longitudinally striated
   mariae
   Basal third of first gastric segment smooth ...................... 3

3. Epinotal spines at least as long as base of epinotum; color red .................................tennesseensis
   Epinotal spines shorter than base of epinotum; color red-dish brown or black ................................. 4

4. Epinotal spines somewhat longer than half the base of epinotum; length 4.5-5 mm. ....................(typical) fulva
   Epinotal spines shorter; length 4-4.5 mm. ...................... 5
5. Color reddish brown .................. fulva subspecies aquia
    Color pitchy black .................. fulva aquia var. picea

A. tenesseensis Mayr.

This species differs from our other species of Aphænogaster in having very small and very smooth females with huge epinotal spines. These aberrant females probably establish their colonies in nests of Aphænogaster fulva or some one of its varieties, in the same way that Formica difficilis var. consocians establishes its colonies in nests of F. schaufussi var. incerta (vide infra). At least tenesseensis is known to occur only in regions where fulva is unusually abundant, and several mixed colonies of the two species, containing queens of tenesseensis only, have been recorded. When living in unmixed colonies it always nests in rotten wood.

Colebrook (W. M. W.).

A. treatae Forel.

The female and worker are easily recognized by the remarkable lamella on the base of the antennal scape.

Poquonock (H. L. V.), almost the northernmost locality in which this species has been found.

A. mariae Forel.

A single winged female that had just descended from her nuptial flight was taken 8 September, 1901.

Colebrook (W. M. W.).

A. fulva Roger.

Nesting in rotten wood in rather dense forests; rarer than the following subspecies and variety.

Connecticut (Mayr); Colebrook (W. M. W.).

A. fulva aquia (Buckley) Emery.

Under stones in shady woods, often in the same stations as the following variety.

Branford (H. L. V., H. W. W.); New Haven (H. L. V.); Colebrook (W. M. W.).

A. fulva aquia var. picea Emery.

Apparently common throughout the State. The males and winged females appear during July and August.

Connecticut (Emery); Colebrook (W. M. W.).
Myrmica Latreille.

Key to Species.

1. First gastric segment with coarse, scattered punctures .........
   punctiventris

   First gastric segment without such punctures ............... 2

2. Antennal scape not dilated to form a tooth or lobe at base,
   but merely curved .................. brevinnodis and varieties
   Antennal scape toothed or lobed at base ..................
   scabrinodis and varieties

M. punctiventris Roger.
A rare species nesting in small colonies under stones or moss in moist shady woods. It is easily recognized by the coarse punctures on the gaster of the worker and female. The winged phases appear during August and September.
   Colebrook (W. M. W.).

M. brevinnodis Emery, var. canadensis Wheeler.
In Connecticut this form is confined to the bogs and low-lying pastures among the Litchfield Hills where it nests in grassy hummocks or under stones. It is the host of a species of Leptothorax, L. emersoni (see p. 588). The males and winged females appear during August.
   Colebrook (W. M. W.).

M. scabrinodis Nylander, var. sabuleti Meinert.
This variety of the palearctic scabrinodis is reddish in color and in the male phase has the antennal scape somewhat more than a third the length of the funiculus. It nests in sandy or gravelly, sunny places, such as open pastures, roadsides, etc. The males and winged females may be found in the nests in the latter part of August.
   West Haven, Branford (H. L. V.); New Haven (W. E. B.); Colebrook (W. M. W.).

M. scabrinodis var. schencki Emery.
This form sometimes passes in the literature as lobicornis.
The male has short, thick antennal scapes, shorter than those of sabuleti and rarely longer than one-fourth of the funiculus.
   Stafford (W. E. B.); Colebrook (W. M. W.).

M. scabrinodis var. fracticornis Emery.
A form which is occasionally found nesting in the grass of
cool bogs or meadows, and is small and dark colored, with the antennal scape bent at a right angle.

Connecticut (Pergande, Emery).

**Leptothorax** Mayr.

*Key to Species.*

1. Thorax faintly but distinctly impressed at mesoöpinotal suture ........................................... 2
   Thorax not impressed at mesoöpinotal suture ...................... 3
2. Post petiole opaque, sculptured acervorum subspecies canadensis Postpetiole smooth ..............................emersoni
3. Color black or dark brown; epinotal spines very long and straight ...........................................longispinosus
   Color yellow; epinotal spines curved ................................. 4
4. Epinotal spines long and thin .........................(typical) curvispinosus
   Epinotal spines short and nearly straight ..................curvispinosus subspecies ambiguus

**L. acervorum** subspecies canadensis Provancher.

A rather rare boreal form nesting in bark in small colonies. Colebrook (W. M. W.).

**L. emersoni** Wheeler.

Living only in xenobiosis with colonies of *Myrmica brevistipes*. It obtains its food by licking the surfaces and mouth-parts of the *Myrmica* workers, and brings up its brood in little cells which communicate by means of slender galleries with the larger chambers and runways of the *Myrmica*. The males and winged females appear during August. Colebrook (W. M. W.).

**L. longispinosus** Roger.

A black species nesting under small stones lying on large boulders, in the clefts of rocks, in hollow nuts lying on the ground, and more rarely under bark. The workers seek their food, which consists of small insects and honey-dew, on the low vegetation in the shade of the trees. Colebrook (W. M. W.).

**L. curvispinosus** Mayr.

Nesting in hollow twigs, galls, etc. Easily recognized by its yellow color and the two black or brown spots on the first gastric segment. Branford, Rockville (H. L. V.).
L. curvispinosus Mayr, subspecies ambiguus Emery.

Very similar to the preceding but with shorter and straighter epinotal spines.

West Haven (H. L. V.); Stafford (W. E. B.); Colebrook (W. M. W.).

Tetramorium Mayr.

*T. caespitum* Linnæus.

Though this form has not yet been recorded from Connecticut, there can be little doubt that it occurs within the state. I have found it at Mamaroneck and Cold Spring Harbor, N. Y., both localities very near the Connecticut boundary. It has been introduced into America from Europe.

**DOLICHODERINÆ.**

*Key to Genera.*

1. Chitinous integument hard and brittle, often strongly sculptured; thorax and petiole often spinose or angular ........

   *Dolichoderus* p. 589

   Chitinous integument thin and flexible, smooth or very finely sculptured; thorax and petiole always unarmed .......... 2

2. Scale of petiole very small, strongly inclined forward, or even altogether absent .................................. 3

3. Scale of petiole more or less inclined, but well developed .... 4

3. Scale of petiole small but distinct; gizzard with a convex, 4-lobed calyx ...........................................Forelius

   Scale vestigial or absent; gizzard with a depressed calyx, without lobes .............................................*Tapinoma* p. 590

4. Epinotum with a conical elevation ...............*Dorymyrmex*

   Epinotum without a conical elevation ......................... 5

5. Body not conspicuously hairy or pubescent; gizzard very short with a large reflected calyx; ocelli absent ..*Iridomyrmex*

   Body densely pubescent; gizzard at least as long as broad; ocelli usually present in large workers ...........*Liometopum*

   *Dolichoderus* Lund.

*D. mariae* Forel.

Readily distinguished from our other species of *Dolichoderus* by the bright red head and thorax in the worker and female. It forms large colonies, nesting in sandy places about the roots of grasses and bushes. The workers ascend trees in files and attend aphids and coccids.

   Connecticut (Emery).
D. plagiatus Mayr.
The head and thorax of the worker are coarsely punctate or foveolate and the gaster has large yellowish red spots. It nests in the ground in small colonies. In other respects its habits resemble those of the preceding species.
Rockville (H. L. V.); Colebrook (W. M. W.).

Tapinoma Foerster.

T. sessile Say.
Evidently very common, especially in the southern portion of the state. It nests under stones, dead leaves, logs, bark, etc., usually in sunny places. The larväe and pupäe are salmon-colored. The workers emit a peculiar rancid-butter odor, the characteristic “Tapinoma odor,” which serves to distinguish them from all our other eastern ants.
Branford, New Haven, Stony Creek, Double Beach (H. L. V.); Orange (W. E. B.); Colebrook (W. M. W.).

Camponotinae.

Key to Genera.

1. Antennae 9-jointed ................. Brachymyrmex p. 591
Antennae with more than nine joints ..................... 2
2. Workers strongly polymorphic, i.e., with large-headed workers (maiores) and small-headed workers (minores) and intermediate forms (medize) ................ Camponotus p. 600
Workers not polymorphic though often of variable size .... 3
3. Clypeal fossa distinctly separated from antennal fossa .... 4
Clypeal fossa confluent with antennal fossa ............... 5
4. Antennal scapes and tibiae with erect hairs; mesonotum constricted but not subcylindrical .Prenolepis (Nylanderia) p. 591
Antennal scapes and tibiae without erect hairs; mesonotum strongly constricted and subcylindrical ................ Prenolepis (s. str.) p. 591
5. Second to fifth joints of funiculus shorter or not longer than succeeding joints; ocelli usually absent ...................... 6
Second to fifth joints of funiculus longer than succeeding joints; ocelli distinct ................................. 7
6. Maxillary palpi 6-jointed .............. Lasius (s. str.) p. 591
Maxillary palpi 3-jointed ...... Lasius (Acanthomyops) p. 594
7. Fourth joint of maxillary palpi nearly as long as fifth .... Myrmecomystus
Fourth joint of maxillary palpi a little longer than fifth .... 8
8. Mandibles with broad dentate apical border .............. Formica p. 594
Mandibles narrow, falcate and pointed ........ Polyergus p. 599
Brachymyrmex Mayr.

B. heeri depilis Emery.

The smallest of the New England ants. It nests under stones in shady woods and has habits similar to those of Lasius. It attends root Coccidae. The males and winged females make their appearance about the middle of August.

Colebrook (W. M. W.).

Prenolepis Mayr.

P. imparis Say.

I have not found this ant in the Litchfield Hills. It makes small crater nests in shady oak woods in soil usually containing more or less clay. The workers visit trees for the purpose of attending aphids, obtaining the secretion of extrafloral nectaries, etc. After imbibing these liquids, the gaster often becomes so distended that it is four or five times its normal size and the insects walk with difficulty. In this replete condition imparis workers may be said to represent a temporary stage of the more extraordinary enlargement of the gaster seen in the honey ants (Myrmecocystus) of the Southwestern States and Mexico. The males and females of imparis often pass the winter in the parental nest and celebrate their nuptial flight early in the spring.

New Haven, Yalesville (H. L. V.); Branford (H. W. W.); New Haven (W. E. B.).

P. imparis var. minuta Emery.

Differs from the preceding merely in the smaller size of the worker. It is probably not a true variety but merely a nest variation (incipient colony form).

New Haven, Yalesville (H. L. V.).

Subgenus Nylanderia.

°P. (N.) parvula Mayr.

Undoubtedly occurs in southern Connecticut. I have taken it as far east as Mamaroneck and Cold Spring Harbor, N. Y., but have never been able to find it in the Litchfield Hills.

Lasius Fabricius.

Key to Species.

1. Maxillary palpi 6-jointed (Lasius s. str.) .................. 2
   Maxillary palpi 3-jointed (subgenus Acanthomyops)...... 7
2. Last three joints of maxillary palpi elongated, of nearly equal length ........................................ 3

Last three joints of maxillary palpi short, successively diminishing in length ................................. 4

3. Scapes and legs without erect hairs ........... *niger* var. *americanus*
Scapes and legs beset with erect hairs ........... *niger* var. *neoniger*

4. Tips of scapes not quite reaching to posterior corners of head ........................................... *brevicornis*

Tips of scapes surpassing posterior corners of head .............. 5

5. Tips of antennal scapes but slightly surpassing posterior corners of head; color pale yellow *flavus* subspecies *nearcticus*

Tips of antennal scapes extending some distance beyond posterior corners of head; color brownish yellow ........ 6

6. Gaster subopaque; with apressed hairs ................

*umbratus* subspecies *mixtus* var. *aphidicola*

Gaster smooth and shining, without apressed hairs ...........

*umbratus mixtus* var. *speculiventris*

7. Petiole low and blunt above in profile ............... *latipes*

Petiole higher, thin, and acute above in profile .............. 8

8. Penultimate joints of distally incrassated antennal funiculus somewhat broader than long; gaster with abundant long hairs ..................................................... *claviger*

Penultimate joints of but slightly incrassated antennal funiculus not broader than long; gaster with sparse long hairs ................................................................. *interjectus*

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**L. niger** Linnaeus, var. *americanus* Emery.

This ant, which passes in much of our entomological literature as *L. alienus*, is not only the commonest of our numerous species of *Lasius*, but the most abundant of our ants, and hence, of all our insects. It occurs over the whole of North America except the extreme southern and southwestern portions, from timberline on the highest mountains to the sands of the seashore. Even in circumscribed localities it shows in its nesting sites great adaptability to different physical conditions, from the damp rotten wood of dense forests to the sandy soil of dry, sunny roads. Usually the workers living in the latter stations are much paler in color than the woodland forms. The nests are indifferently under bark, logs or stones, in rotten wood or in soil. When in the open soil, they are surmounted by small single or clustered craters. Like all of our other species of *Lasius*, *L. niger* var. *americanus* is much given to cultivating root aphids in the chambers and galleries of its nests; but, with the exception of the variety *neoniger*, it is the only one of our forms that is not exclu-
sively subterranean in its habits. It may often be seen visiting
the foliage of trees and bushes in search of aphids and small
insects. Professor S. A. Forbes has shown that it is of consid-
erable economic importance on account of its noxious habit of
cultivating the root aphids of maize, or Indian corn (*Aphis
maidiradicis*). The males and winged females appear in August.

New Haven, West Haven, Branford (H. L. V.); New Haven
(W. E. B., B. H. W.); Colebrook, Winsted, Norfolk (W. M. W.).

*L. niger* Linnæus, var. *neoniger* Emery.

Differs from the preceding variety in having erect hairs on
the legs and antennal scapes in the workers and females.

New Hartford, Stafford (W. E. B.); Colebrook, Winsted,
Norfolk (W. M. W.).

*L. flavus nearcticus* Wheeler.

The American representative of the European *flavus*, under
which name it is sometimes recorded in the literature. The bodies
of the workers have a milky white appearance. The colonies,
which are rather small, nest under stones or leaf-mold in damp,
shady woods. The males and winged females appear during the
first week of August.

Connecticut (Mayr); Colebrook (W. M. W.).

*L. brevicornis* Emery.

The worker of this species differs from that of the preceding
in having the antennal scapes not reaching beyond the posterior
corners of the head. The colonies nest under stones on hill slopes
and in pastures where the soil is rather dry and sandy. The males
and winged females appear about the middle of August.

Branford (H. W. W.); Colebrook (W. M. W.).

*L. umbratus mixtus* Nylander, var. *aphidicola* Walsh.

Nesting under stones or in old logs and stumps in damp, shady
woods. The colonies, which are rather populous, cultivate snow-
white root aphids and coccids in great numbers, especially during
the winter and early spring. The males and females appear during
August and early September.

Westport (W. E. B.); Colebrook, (W. M. W.).

*L. umbratus mixtus* var. *speculiventris* Emery.

This form, originally described as a distinct species, is scarcely
more than a variety. Its habits, according to my observations, are very similar to those of *aphidicola*.

Colebrook (W. M. W.).

**Subgenus Acanthomyops Mayr.**

**L. (A.) interjectus** Mayr.

The yellow *Lasii* of the subgenus *Acanthomyops*, besides having only 3- instead of 6-jointed maxillary palpi in the worker and female phases, have a peculiar and rather agreeable odor like lemon verbena, and quite unlike the odor of the typical *Lasii*. They all form large colonies and lead a subterranean aphidicolous existence. *L. interjectus* is the largest species of the genus. It is found nesting in old logs and stumps in open woods and occasionally makes rough mounds or merely excavates its galleries under large stones.

Connecticut (Mayr); Colebrook (W. M. W.).

**L. (A.) claviger** Roger.

The commonest of our species of *Acanthomyops*, nesting under stones along the edges of woods where there is plenty of warmth and moisture. The males and winged females may be found in the nests from the middle of August till the latter part of September.

Connecticut (Mayr); Colebrook (W. M. W.).

**L. (A.) latipes** Walsh.

Rather common in grassy fields under stones. It has been shown by Mr. J. F. McClendon and myself that some colonies of this ant have dimorphic females. One of these females (the -female) is very hairy, and has much flattened femora and tibiae. The other female (the *a*-female) is intermediate in structure between the *β*-female and the female of *claviger*. The males and winged females are found in the nest during the latter part of August.

Colebrook (W. M. W., J. F. McClendon).

**Formica Latreille.**

*Key to Species.*

1. Clypeus with a notch in middle of anterior border (*F. sanguinea*) .................................................. 2
   Clypeus without a notch in its anterior border ................ 4
2. Color deep red, gaster black ........................................ 3
   Color light red, gaster brown ........................................
   **sanguinea** subspecies *subintegra*

3. Head and thorax not infuscated; slaves nearly always present
   in formicaries .................................. **sanguinea** subspecies *rubicunda*
   Head and thorax often infuscated above; slaves few or entirely
   absent .................................. **sanguinea** subspecies *aserv*

4. Posterior border of head broadly excised ............ **exsectoides**
   Posterior border of head not excised .................. 5

5. Body rather stout; head of larger workers usually but little
   longer than broad; second to third funicular joints, much
   more elongated than sixth to eighth; color red, with brown
   or black gaster ........................................ 6
   Body more slender and graceful; head of larger workers distin-
   tinctly longer than broad; second to third funicular joints
   but little more elongated than sixth to eighth; color rarely
   as in preceding ........................................ 9

6. Petiole broad, with sharp upper border .................. 7
   Petiole narrow, thick and blunt above........ **difficilis** var. *consocians*

7. Gula, or lower surface of head, with erect hairs ........ 8
   Gula and body without erect hairs ........ **truncicola** subspecies *integra*

8. **Trunciæ** with suberect hairs; females large ........
   **trunciæ** subspecies *obscuriventris*
   **Trunciæ** without suberect hairs; females very small ........ **neptica**

9. Middle funicular joints more than one and one-half times as
   long as broad; scape very slender and nearly straight;
   petiole with convex anterior and posterior surfaces and
   blunt upper margin; body smooth and rather shining
   (**pallide-fulva**) .......................................... 10
   Middle funicular joints usually less than one and one-half
   times as long as broad; scape distinctly curved at base;
   posterior surface of petiole flat, body more densely pubes-
   cent (**fuscus**) .......................................... 13

10. Gula and petiolar border with erect hairs ............. 11
    Gula and petiolar border without erect hairs .......... 12

11. Yellowish or reddish brown, gaster but little darker, gula
    and petiolar hairs numerous ........ ................. **pallide-fulva** subspecies *schaufussi*
    Somewhat smaller and darker, with only a few erect hairs on
    gula and petiolar border **pallide-fulva** *schaufussi* var. *incerta*

12. Head and thorax deep reddish; gaster brownish black,
    shining .................................. **pallide-fulva** subspecies *nitidiventris*
    Head and thorax as well as gaster dark brown or piceous, sur-
    face more opaque .......... **pallide-fulva** *nitidiventris* var. *fuscata*

13. Gula without erect hairs .................................. 14
    Gula with erect hairs .................................. 15
14. Gaster finely and densely pubescent, with gray, silky luster
   *fusca var. subsericea*

   Gaster scarcely pubescent, finely shagreened, shining with
   a submetallic luster ............... *fusca var. subænescens*

15. Color light brown, with darker head and gaster ........ *subpolita*
   Color black or dark brown, with reddish legs ........... *neogagates*

**F. sanguinea rubicunda** Emery.

This subspecies of the holarctic "blood-red slave-maker," or
sanguinary ant, is less common than the next. It usually nests
under stones in grassy places along the edges of woods. It obtains
slaves, or auxiliary workers, by kidnapping the larvæ and pupæ
of *subsericea*. The males and winged females appear during
July and August.

   New Haven (B. H. W.); Colebrook (W. M. W.).

**F. sanguinea subintegra** Emery.

This variety has the same auxiliary species as the preceding,
and the somewhat smaller males and winged females make their
appearance during the same months.

   New Haven (H. L. V.); Colebrook (W. M. W.).

**F. sanguinea aserva** (Forel).

Rarer than the preceding form of *sanguinea*. The slaves,
which are present in the colonies only in very small numbers or
are altogether absent, belong to *subsericea*.

   Colebrook (W. M. W.).

**F. exsectoides** Forel.

This "mound-building ant of the Alleghanies," as McCook
has named it, is found nesting in open glades or clearings and is
not uncommon in the more hilly portions of the State. The
mounds which it constructs of earth and vegetable débris, are
regularly dome-shaped and usually vary from three to four feet
in diameter at the base and from one to two feet in height. They
are exposed to the sun, though often covered with living grass
except at the summit. (See plate v.) The entrances are very
numerous and mostly confined to a broad girdle around the base.
A single colony often extends over several mounds. The workers,
which are easily distinguished from those of our other species
of *Formica* by the excised posterior border of the head, are very
pugnacious. Like the European *exsecta*, they have a habit
of sawing off the heads of other ants. It is known that the
females establish their colonies in depauperate colonies of *fusca* var. *subsericea*.

Connecticut (Mayr); Branford, North Haven, New Haven (H. L. V.); New Hartford, Stafford (W. E. B.); Cromwell, Hartford (Forel); Colebrook (W. M. W.).

**F. truncicola obscuriventris** Mayr.

A single colony, found near the summit of one of the Litchfield Hills (about 1,400 feet).

Connecticut (Mayr); Colebrook (W. M. W.); Brookfield (E. L. Dickerson).

**F. truncicola integra** Nylander.

Our largest and most conspicuous form of *truncicola* nesting in great colonies which often comprise several nests. These are in piles of large stones or in old logs and stumps. The ants stuff all the crannies of their abodes with bits of dead grass, leaves, etc. Like most other species of *Formica, integra* is much given to attending aphids. It is most abundant in hilly regions, where it prefers sunny glades or clearings in the forests. The males and winged females appear in July.

Connecticut (Mayr); Colebrook (W. M. W.).

**F. difficilis** Emery, var. *consocians* Wheeler.

In this interesting species, as I have shown, the females, which are yellow and hardly larger than the largest workers, are temporary parasites in the nests of *schaufussi* var. *incerta*. Soon after fertilization the queen seeks adoption in some depauperate and probably queenless colony of *incerta* and there permits her hosts to bring up her young. Later the *incerta* workers die off, leaving the *consocians* as a pure and independent colony, which grows rapidly in size and shows no evidence of its parasitic origin. The nesting habits of *difficilis* resemble those of *integra* on a small scale.

Colebrook (W. M. W.).

**F. nepticula** Wheeler.

Like the preceding, this species has very small females, which, in all probability, are social parasites in the colonies of some other *Formica*, probably *neogagates* Emery. The males and winged females make their appearance during July.

Colebrook (W. M. W.).
**F. pallide-fulva schaufussi** Mayr.

This is one of the commonest species of *Formica*. It nests in rather small colonies under stones or in small, obscure mound nests in sunny and grassy fields. It is timid and runs rapidly. Its food seems to consist very largely of the excrement of aphids and the carcasses of insects.

Connecticut (Mayr and Emery); New Haven (W. E. B.); Winsted, Norfolk, Colebrook (W. M. W.).

**F. pallide-fulva schaufussi** var. **incerta** Emery.

Common in the same localities as the typical *schaufussi*, from which it differs merely in somewhat darker coloration and in having fewer hairs on the chin and petiolar border. It is the host of *.difficilis* var. *consocians*.

Branford (H. W. W.); Rockville (H. L. V.); Winsted, Norfolk, Colebrook (W. M. W.).

**F. pallide-fulva nitidiventris** Emery.

The workers are smaller than those of the two preceding forms, dark colored, without hairs on the chin and petiolar border, and with more shining and less pubescent gaster. The habits are similar to those of other forms of the species.

New Haven (P. L. B.); Salisbury, New Haven, Orange (W. E. B.); Colebrook (W. M. W.).

*F. pallide-fulva nitidiventris* var. **fuscata** Emery.

This variety, which is characterized by its dark color and somewhat opaque gaster, can hardly be absent from Connecticut, as it occurs in the adjacent states.

**F. fusca** Linnaeus, var. **subsericea** Say. Silky Ant.

Next to *Lasius niger* var. *americanus*, this is the commonest of our ants and hence also of our insects. It prefers sunny, grassy places, and either constructs dome-shaped mounds which are largest and most definite in outline in the Middle States, or excavates its galleries under stones, boards, the bark of stumps, etc. Except when living in large colonies, it is a very cowardly species. Like the other members of the genus *Formica*, it attends aphids, but is equally fond of feeding on the dead bodies of insects. The males and winged females make their appearance during July and August.
Suffield (Dimmock); Branford, Cheshire, Mt. Carmel, New Haven (H. L. V.); New Haven, Salisbury (W. E. B.); Cromwell, Hartford (Forel); Winsted, Norfolk, Colebrook (W. M. W.).

_F. fusca var. subaenescens_ Emery.
A rare species, apparently, in New York and New England, but common in the Northern Middle States (Illinois, Wisconsin, Michigan). It differs from the preceding variety in having a more metallic and less pubescent surface. It prefers to nest under logs and stones in rather shady woods.
Connecticut (Emery); Colebrook (W. M. W.).

_F. subpolita_ Mayr.
I have not seen specimens of the typical form of this species from the State. It is possible that Mayr's specimens may have belonged to the following species.
Connecticut (Mayr).

_F. neogagates_ Emery.
Nesting in rather small colonies under stones only on the hills at an altitude of about 1,000 feet or more, according to my observations. The males and winged females appear during late July and early August.
Kent, Salisbury (W. E. B.); Norfolk, Colebrook (W. M. W.).

_Polyergus_ Latreille.

_P. lucidus_ Mayr.
This rare and beautiful species, the "shining slave-maker" of McCook, or "shining amazon," as it may be called, uses the workers of _Formica schaufussi_ as slaves, or auxiliaries. These are bred from pupae kidnapped from their maternal nests by the warlike _lucidus_ workers. The latter are quite unable to feed themselves, excavate their nests, or care for their own brood, but have to depend for these important activities on the _schaufussi_ workers. Hence the ants of this species are quite unable to live an independent life and may be regarded as permanently parasitic on fragments of _schaufussi_ colonies which they bring together with great skill. The sexual forms make their appearance during August.
Connecticut (Mayr).
Camponotus Mayr.

Key to Species.

1. Clypeus with a distinct notch or impression in the middle of its anterior border .................. fallax and its varieties Clypeus without such a notch or impression ........... 2

2. Head of worker major smooth and shining behind; color, at least in part, light red or yellow (castaneus) .......... 3
   Head of worker major opaque or feebly shining behind; color black, or black and dark red (herculeanus) .......... 4

3. Yellow or light red; gaster slightly darker (typical) castaneus Head black or dark brown ...... castaneus subspecies americanus
   Gaster opaque, with long, appressed pubescence .......... 5
   Gaster shining, with short, sparse pubescence; thorax deep red .... herculeanus subspecies ligniperda var. noveboracensis

4. Deep black throughout ... herculeanus subspecies pennsylvanicus Legs, posterior portion of thorax, petiole, and base of gaster brownish red ..... herculeanus pennsylvanicus var. ferrugineus

C. fallax Nylander, var. nearcticus Emery.
   Till recently this species has been cited in the literature as C. marginatus Latreille. Our American subspecies and varieties nest in the hollow twigs of trees and bushes and attend aphids.
   Connecticut (Mayr); Colebrook (W. M. W.).

C. castaneus Latreille.
   The typical form of this species is probably confined to the lower, warmer, and southernmost portions of the State, as I have seen no trace of it in the Litchfield Hills. It nests under stones and logs in rather small colonies.
   Connecticut (Mayr, Coe); Westville (W. E. B.).

C. castaneus americanus Mayr.
   Brookfield (E. L. Dickerson).

C. herculeanus pennsylvanicus Degeer. Carpenter Ant.
   The common "carpenter ant," entirely black in color. It nests usually in shady woods in old logs and stumps, whence it may migrate into old farm-houses and suburban residences, and become a pest, both by riddling the wood-work with its large anastomosing galleries and by visiting the pantries and kitchens for sweets.
   Connecticut (Mayr); Woodmont (P. L. B.); New Haven, Branford (H. L. V.); Colebrook (W. M. W.).
C. herculeanus pennsylvanicus var. ferrugineus Fabricius.
A beautiful color-variety of pennsylvanicus, with the legs, inferior and posterior portions of the thorax, petiole, and base of gaster rust-red in the female and worker phases. Its habits are very similar to those of the typical form, but it seems to be less abundant and more local in its distribution. I have been unable to find it in the Litchfield Hills.

New Haven (E. J. S. M., H. L. V.); Orange, New Canaan (W. E. B.).

C. herculeanus ligniperda var. noveboracensis Fitch.
Nesting in old stumps and logs like the preceding, from which it differs in having a smoother surface and an entirely red thorax in the worker phases.

New Hartford, Orange (W. E. B.); Colebrook (W. M. W.).