

THE ANT LARVAE OF SIX TRIBES: SECOND SUPPLEMENT
(HYMENOPTERA: FORMICIDAE: MYRMICINAE)

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ABSTRACT

The authors' first supplement on ant larvae of the subfamily Myrmicinae was published in 1960. The present supplement treats the tribes Cardiocondylini, Crematogastrini, Solenopsidini, Pheidologetini, Myrmecini and Meranoplini and contains descriptions of 15 additional species in the genera **Calyptomymex*, *Cardiocondyla*, *Carebara*, *Crematogaster*, **Mayriella Meranoplus*, *Monomorium*, *Myrmecina*, *Oligomymex*, **Oxyepoecus*, and *Pristomymex*. The genera marked * are characterized here for the first time; a revised characterization (based on better material) of *Meranoplus* is added. A key to the genera of Meranoplini is included. Key Words: Immatures, taxonomy, *Calyptomymex*, *Cardiocondyla*, *Carebara*, *Chelaner*, *Crematogaster*, *Mayriella*, *Meranoplus*, *Monomorium*, *Myrmecina*, *Oligomymex*, *Oxyepoecus*, *Pristomymex*.

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Subsequent to the publication of our first supplement on the larvae of the subfamily Myrmicinae (1960a)¹ we have collected or received from other myrmecologists so much additional material that it has become necessary to publish another supplement.

TRIBE CARDIOCONDYLINI
Cardiocondyla nuda (Mayr)

Cap

Length (through spiracles) about 2.2 mm. Similar to *C. elegans uljanii* Emery (1953a: 188) except in the following details. Occipital margin of head slightly rounded. Head hairs shorter (0.025-0.063 mm long). Mandible with teeth sharp-pointed. Hypopharynx with spinules in short transverse rows. (Material studied: two larvae from New South Wales, courtesy of Rev. B. B. Lowery.)

TRIBE CREMATOGASTRINI
Genus CREMATOGASTER Lund

cap

Several changes should be made in our 1952 paper to bring the classification and nomenclature into accord with Buren's 1968 revision:—

Subgenus *Acrocoelia* becomes *Crematogaster* s. str. *C. (Crematogaster) acuta* (p. 258) becomes *C. (Eucrema) acuta*.

C. lineolata (Say) (p. 250) should be changed to *C. cerasi* (Fitch). Under material studied (p. 252) delete New Hampshire, New Jersey and New York.

C. lineolata subopaca Emery (p. 252) should be changed to *C. lineolata* (Say). Under material studied (p. 254) delete Arkansas.

C. laeviscula Mayr (p. 255) should be changed to *C. clara* Mayr.

Crematogaster auberti Emery and *C. scutellaris* Olivier. According to Soulié (1961) the larvae are thin-skinned and subject to desiccation. The dark interior of the formicary is the only place they can have suitable humidity, but darkness itself is not essential for normal development.

¹To save space we cite our previous description by date only. The complete references are in Literature Cited.

WILLIAM L. BROWN

Crematogaster australis Forel

Length (through spiracles) about 2.4 mm. Similar to *C. lineolata* (now *C. cerasi*) (1952: 250) except in the following details. Posterior end of body more rounded. Body hairs fewer: (1) 0.006-0.05 mm long; (2) four on each AI-AV. Head with an extensive and entire flattened dorsal portion. [All head hairs broken off.] Posterior surface of labrum with only two sensilla. Mandible with the apical half more slender.

YOUNG LARVA: Length (through spiracles) about 1.1 mm. Similar to the mature larva (above) except as follows. Head on the anterior end; head, thorax and AI-AIV of about the same diameter, remainder tapered posteriorly; posterior end round-pointed. Anus subterminal. Body hairs as in mature larva in abundance: (1) 0.003-0.038 mm long; (2) about 0.125 mm long. Head with about 14 sensilla. Mandible tapering gradually from base to apex.

Material studied: numerous larvae from New South Wales, courtesy of Rev. B. B. Lowery.

ital

CREMATOGASTER CERASI (Fitch)
(Figs. 26 and 27)

IMMATURE LARVAE: Straight length 1-1.1 mm. (Mature larva: straight length about 1.94 mm.) There are two distinct body shapes, shown best in ventral view: type 1, outline smooth, with indistinct segmentation. Inside some of these smooth integuments is type 2, each segment marked by a distinctly raised median portion. Numerous preserved larvae show type 2 integuments only. We judge that the smooth integument is about to be shed. (Material studied: numerous larvae from Michigan, G. C. Wheeler No. 198.)

ital/l.c.

CREMATOGASTER DEPILIS Wheeler

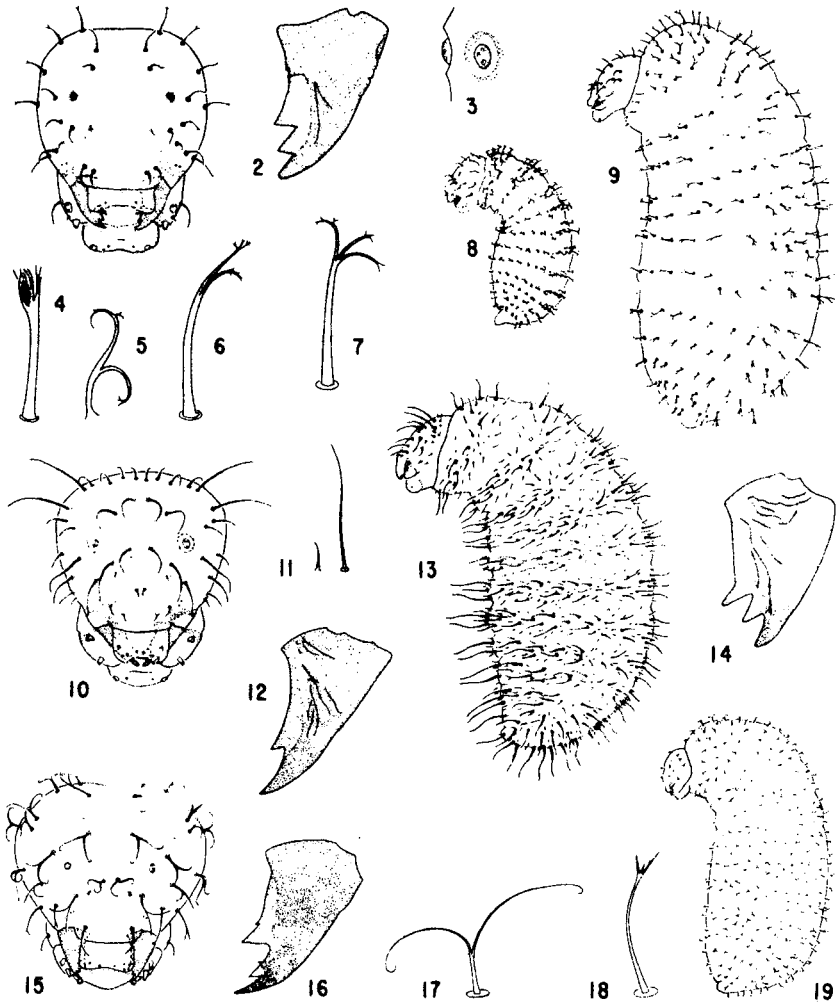
Length (through spiracles) about 3.3 mm. Similar to *C. lineolata* (now *C. cerasi*) (1952: 250) except as follows. Body more nearly ellipsoidal. No spinules on lateral surfaces of body. Body hairs: (1) shorter (0.012-0.025 mm long); (2) about 0.175 mm long, on AI-AV only. Head with narrow flattened area along occipital margin. Head hairs minute (0.006-0.008 mm long), numerous. Mandible with apical half narrow, sharp and slightly curved medially, basal half widely inflated.

YOUNG LARVA. Length (through spiracles) about 1.9 mm. Similar to mature larva (above) except as follows. Entire integument sparsely spinulose, the spinules minute and isolated or in short rows. Body hairs: (1) 0.006-0.025 mm long; (2) about 0.2 mm long. No sclerotic bar on surface of gena.

VERY YOUNG LARVA. Length (through spiracles) about 1.4 mm. Similar to young larva except as follows. Body subovoidal; head nearly same diameter as body; diameter greatest at prothorax, diminishing posteriorly. Body hairs: (1) 0.006-0.043 mm long; (2) about 0.175 mm long.

SEXUAL LARVA. Length (through spiracles) about 5.9 mm. Similar to queen larva (1952: 252) in body shape, otherwise similar to mature worker larva above.

Material studied: numerous larvae from Nevada, G. C. and J. Wheeler No. 307.



Figs. 1-9. *Calyptomyrmex cataractae*. Fig. 1. Head in anterior view, X88. Fig. 2. Left mandible in anterior view, X267. Fig. 3. Left antenna in side and anterior views, X267. Figs. 4-7. Four body hairs, X267. Fig. 8. Very young larva in side view, X28. Fig. 9. Mature larva in side view, X28. Figs. 10-13. *Meranoplus* sp. Fig. 10. Head in anterior view, X76. Fig. 11. Two body hairs, X133. Fig. 12. Left mandible in anterior view, X267. Fig. 13. Larva in side view, X28. Fig. 14. *Meranoplus dimidiatus*. Left mandible in anterior view, X184. Figs. 15-19. *Mayriella abstinens*. Fig. 15. Head in anterior view, X111. Fig. 16. Left mandible in anterior view, X350. Figs. 17 and 18. Two types of body hairs, X705. Fig. 19. Larva in side view, X60.

CREMATOGASTER (ORTHOCREMA) VICTIMA F. Smith

Length (through spiracles) about 1.5 mm. Very similar to *C. lineolata* (now *C. cerasi*) (1952: 250). Body hairs less numerous and longer: (1) 0.013-0.076 mm long, with the tip frayed; (2) about 0.1 mm long, four on each AI-AV. Head hairs twice as numerous, longer (0.025-0.05 mm long), with the tip frayed. Anterior surface of each half of labrum with two hairs, 0.006-0.012 mm long. Mandible with the basal portion less inflated and the apical portion stouter.

VERY YOUNG LARVA. Length (through spiracles) about 0.54 mm. Similar to the mature larva (above) except in the following details. Body hairs (1) 0.019-0.088 mm long; (2) about 0.125 mm long.

Material studied: numerous larvae from Brazil, K. Lenko, collector.

TRIBE SOLENOPSIDINI

Ettershank (1966) has constructed a table (p. 161) of the "classification of larval types" in the Solenopsidini and Pheidologetini based on data from our papers "but the genera are split or regrouped as required by the present classification." He tabulated three characters: body profile, mandible shape and "types of setae." "The setal classification is newly introduced here: simple hairs (1); apically bifid (2); deeply bifid (3); multifid (4); anchor-tipped (5); and denticulate (6)."

Genus Megalomyrmex Forel*Megalomyrmex bicolor* Ettershank

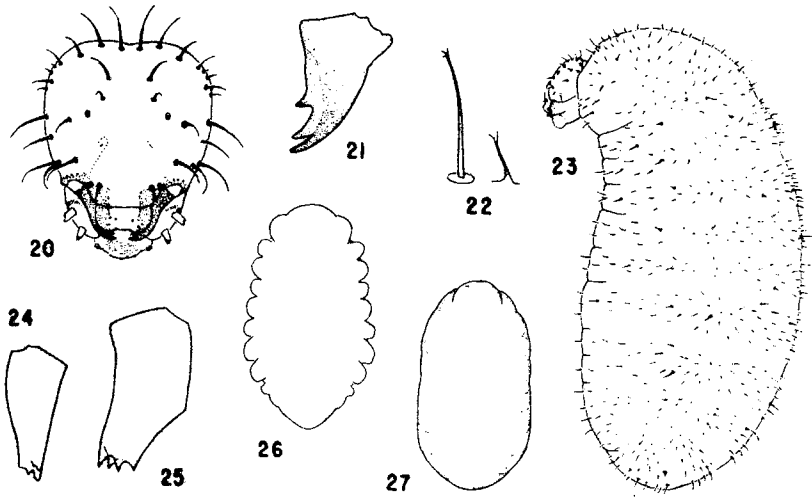
Ettershank 1965: 58—"Essentially similar to that of *M. symmetochus* shown by G. C. and J. Wheeler [1955]. The head and prothoracic dorsum bear simple, slightly curved setae The remaining body segments dorsally and laterally bear deeply cleft setae, . . . while ventrally on each abdominal segment are paired clusters of setae of mixed types: short simple; long simple; and long deeply bifid. . . . In their characterization of *Megalomyrmex* larvae, the Wheelers state that only simple setae are present—short ones on the head, long ones on the body—and that the ventral and lateral surfaces of the abdomen are nearly naked. This diagnosis is based on *M. symmetochus*, a member of the *modestus* species group." Fig. 4 (p. 56): profile of larva. Fig. 5 (p. 56): hairs.

Genus Monomorium Mayr*Monomorium ilia* Forel

Length (through spiracles) about 1.6 mm. Very similar to *M. pharaonis* (1955: 121). Body hairs less numerous; 0.025-0.044 mm long, denticles on branches fewer and relatively longer. Head hairs 0.013-0.038 mm long, with the denticles on the branches fewer and relatively longer. Labrum with the hairs on the anterior surface simple and shorter. Mandible with base broader; medial blade with subapical tooth anterior to the apical tooth, remainder of the blade variable. (Material studied: six larvae from New South Wales courtesy of Rev. B. B. Lowery.)

Monomorium minimum (Buckley)

G. C. and J. Wheeler 1955: 122—*M. spp.* should be changed to *M. minimum*.



Figs. 20-23. *Oxyepoecus* sp. Fig. 20. Head in anterior view, X111. Fig. 21. Left mandible in anterior view, X248. Fig. 22. Two body hairs, X267. Fig. 23. Larva in side view, X37. Fig. 24. *Carebara* sp. (Chapman coll.). Left mandible of sexual larva in posterior view, X284. Fig. 25. *Carebara* sp. (Alcala coll.). Left mandible of sexual larva in anterior view, X417. Figs. 26 and 27. *Crematogaster cerasi*. Two body shapes of young larvae in ventral view, X27.

Monomorium pharaonis (Linnaeus)

Peacock et al. 1950—Fig. 1 on p. 6: very young larva, full-grown larva and semipupa. Life cycle (p. 9): egg 7½ days, larva 18½ days, semipupa 3 days, pupa 9 days.

Monomorium salomonis (Linnaeus)

Cloudsley-Thompson 1962: 179—A calliphorid fly snatches larvae from the workers.

Genus *CHELANER* Emery

We have characterized this genus under the name *Monomorium* (*Notomyrmex*) 1960: 16.

Genus *OXYEPOECUS* Santschi

Profile cardiocondyliform (i.e., short and stout, thorax stout and arched ventrally, abdomen straight and a little stouter, posterior end broadly rounded). Body hairs sparse, short and with bifid tip. Cranium subtrapezoidal, with the occipital border feeder impressed. Antennae minute. Head hairs few; short to long; unbranched, with the tip fine and flexuous. Mandible leptothoraciform (i.e., moderately narrow, tapering gradually and curving gradually to an apical tooth, anterior surface produced medially into a blade bearing two medial teeth).

Oxyepoecus would key (1960b) to *Cardiocondyla* from which it may be distinguished by its leptothoraciform mandible.

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Oxyepoecus sp.
(Figs 20-23)

Length (through spiracles) about 2 mm. Profile cardiocondyliform. Anus ventral. Leg, wing and gonopod vestiges present. Prothoracic spiracle the largest, remainder minute. Integument of venter of thorax with a few spinules in transverse rows. Body hairs sparse, short (0.025-0.075 mm long), with bifid tip; a few of the longest on each somite with alveolus and articular membrane. Cranium subtrapezoidal, as broad as long, with the occipital border feebly impressed. Antenna minute, with three sensilla, each of which bears a minute spinule. Head hairs few, short to long (0.017-0.058 mm long), simple, tip fine and flexuous. Labrum small; twice as broad as long; slightly narrowed dorsally; feebly bilobed; anterior surface of each lobe with three minute hairs, two sensilla and with a few minute spinules medially; ventral border of each lobe with one isolated and two contiguous sensilla, spinules few, coarse and isolated; posterior surface of each lobe with two or three isolated and a cluster of three sensilla and with a cluster of minute spinules near its middle, the spinules isolated or in rows of two or three. Mandible leptothoraciform. Maxilla with the apex paraboloidal, without spinules; palp a skewed peg with five sensilla (two apical, one subapical and two lateral, one of the last bearing a long spinule); galea a short cylinder with two apical sensilla, each with a long spinule. Labium with moderately numerous spinules on the anterior surface, the spinules small and in rather short transverse rows; palp a short peg with five sensilla (one bearing a rather long spinule); an isolated sensillum between each palp and the opening of the sericteries, the latter a short transverse slit. No spinules visible on the hypopharynx. (Material studied: numerous larvae from Brazil, courtesy of Dr. W. L. Brown.)

Genus *SOLENOPSIS* Westwood

Solenopsis richteri Forel

USDA 1958: 5—"The larvae are dirty white, legless, and sparsely covered with recurved hairs. As the larvae grow, their body segments and their slightly protruding mouth parts become discernible." Sexual larvae are larger than worker larvae. Life cycle: egg 8-10 days, worker larvae 6-12 days, pupa 9-16 days. Photograph (p. 4) of worker and sexual larvae.

Wilson 1959: 278-279—Photographs of larvae.

Solenopsis santschii Forel

Baroni Urbani 1968—Description p. 454-456; figures (p. 455) of young larva, mature larva and head of mature larva.

TRIBE PHEIDOLOGETINI

Ettershank 1966: 161—See under tribe Solenopsidini.

Genus *CAREBARA* Westwood

Carebara sp.

(Fig. 24)

Length (through spiracles) about 2 mm. Very similar to *C. lignata* (1953b: 142) except as follows. Head hairs slightly shorter (0.024-0.036 mm long), simple or bifid. Mandible lacking the posterior tooth. Labium with a very few rows of a few spinules each.

SEXUAL LARVA. Length (through spiracles) about 15 mm; straight

about 9 mm. Similar to the worker larva, except as follows. Body swollen and bean-shaped. Head very small. Integument very flabby; spinulose, the spinules more numerous and longer anteriorly. Posterior portion of cranium withdrawn into prothorax, mouth parts small. Antenna with one to three sensilla. Labrum bilobed; anterior surface of each lobe with four sensilla; ventral border crenulate, with a few rather large spinules. Mandible irregularly hexagonal in anterior view; with the apex wide and bearing four minute teeth, three anterior and one posterior. Maxilla appearing adnate; palp represented by a slightly raised and feebly sclerotized dome bearing four sensilla; galea represented by two contiguous sensilla. Labium without spinules; palp represented by a slightly elevated, feebly sclerotized dome bearing four sensilla.

Material studied: two worker and four sexual larvae from Philippines, courtesy of the late Dr. J. W. Chapman.

Carebara sp.

(Fig. 25)

SEXUAL LARVA. Length (through spiracles) about 13.2 mm. Very similar to the sexual larva from Philippines, above, except as follows. Body more slender anteriorly and more swollen posteriorly. Body hairs very short (0.025-0.05 mm long), with the tip simple to multified, few, most numerous on T1 and the venter of T2 and T3. Antennae of moderate size, low on the cranium, each with two sensilla, which bear a spinule each. Labrum feebly bilobed. Maxilla adnate; palp a small low elevation with four sensilla; galea represented by two contiguous sensilla. Labium small; palp a small low elevation with four sensilla. (Material studied: three damaged sexual larvae from Philippines, courtesy of A. Alcalá.)

Genus *EREBOMYRMA* Wheeler

G. C. and J. Wheeler 1953b: 141—*Erebomyrma* is now regarded as a synonym of *Oligomyrmex*.

Genus *OLIGOMYRMEX* Mayr

REVISION (1953b: 138): Delete last sentence.

Oligomyrmex corniger Forel

Length (through spiracles) about 1.9 mm. Similar to *O. parvicornis* (1953b: 138) except as follows. Body stouter; ventral profile straighter. Anus with anterior and posterior lips. Thoracic spiracles twice as large as abdominal spiracles. Spinules on the thorax. Body hairs: (1) 0.038-0.05 mm long; (2) 0.013-0.038 mm long. Cranium less angular; frons bulging. Maxillary palp a skewed peg with five sensilla. Labial palp with five sensilla. (Material studied: numerous larvae from New South Wales, courtesy of Rev. B. B. Lowery.)

Oligomyrmex mjobergi Forel

Length (through spiracles) about 1.6 mm. Similar to *O. parvicornis* (1953b: 138) except as follows. Abdomen more swollen, but the ventral profile straighter. Anus without lips. Venter of entire thorax spinulose. Body hairs (1) 0.025-0.05 mm long; (2) 0.013-0.038 mm long.

IMMATURE LARVA. Length (through spiracles) about 1.2 mm. Body of about the same diameter throughout, otherwise similar to the mature larvae.

Material studied: numerous larvae from Queensland, courtesy of Rev. B. B. Lowery.

TRIBE MYRMECININI
Genus *MYRMECINA* Curtis
Myrmecina australis Forel

YOUNG LARVA. Length (through spiracles) about 2.7 mm. Similar to *M. americana* (1954a: 130) except as follows. Body much more slender; T2 with a lateral boss ventral to each spiracle; with seven differentiated somites. Integument (in addition to ventral spinules) of dorsal surface of posterior somites with rather coarse spinules in short transverse rows, spinules becoming isolated anteriorly. Body hairs sparse. Of two types: (1) 0.1-0.4 mm long, longest with very fine flexuous tip, on all surfaces of all somities; (2) 0.05-0.15 mm long, bifid, on the dorsal surface of each somite except T1 and AX. Maxilla with more rounded apex; palp with two apical, two lateral and one basal sensilla. (Material studied: five larvae from New South Wales, courtesy of Rev. B. B. Lowery.)

Genus *PRISTOMYRMEX* Mayr

Pristomyrmex (Odontomyrmex) quadridentatus E. André

IMMATURE LARVA: Length (through spiracles) about 3.4 mm. Similar to *P. (O.) sp.* (1954a: 133) except as follows. Neck more slender and abdomen more bag-like. Anus with prominent anterior and posterior lips. Body hairs (1) 0.036-0.072 mm long; (3) 0.15-0.35 mm long, about six in a ring around the middle of each thoracic somite, and one on each ventrolateral surface of AI-AIV; (4) 0.42-0.54 mm long, basal portion kinked, anchor-tipped, four on the dorsal surface of each AI-AIV; (5 and 6) 0.012-0.24 mm long, bifid, with branches as *P. (O.) sp.* Cranium less bulging laterally and in the frons. Head hairs much shorter (0.006-0.019 mm long), all simple. (Material studied: numerous larvae from New South Waes, courtesy of Rev. B. B. Lowery.)

In alcohol the larvae are held in packets by their entangled hairs.

TRIBE MERANOPLINI

KEY TO THE MATURE WORKER LARVAE IN OUR COLLECTION

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|--------------------------------------|----------------------|
| 1a. Mandibles carebariform | <i>Mayriella</i> |
| 1b. Mandibles leptothoraciform | 2 |
| 2a. Hairs simple | <i>Meranoplus</i> |
| 2b. Hairs branched | <i>Calyptomyrmex</i> |

Genus *CALYPTOMYRMEX* Emery

Profile cardiocondyliform (i.e., short and stout; thorax stout and arched ventrally; abdomen straight and a little stouter; posterior end broadly rounded). Anus with a prominent posterior lip. Body hairs sparse, moderately long and stout-based; variously branched. Cranium suboctagonal. Antenna small; a slight convexity on the bottom of shallow pit. Head hairs few, moderately long and stout-based. Mandible leptothoraciform (i.e., moderately stout; tapering gradually and curving gradually to an apical tooth; anterior surface produced medially into a blade; which bears two stout subapical medial teeth).

In our 1960b key *Calyptomyrmex* would run to Group C2, but would require a new rubric; see under *Meranoplus*.

Calyptomyrmex cataractae Arnold
(Figs. 1-9)

Length (through spiracles) about 2.3 mm. Cardiocondyliform. Dorsal profile C-shaped, ventral feebly sigmoid. Anus subterminal, with a prominent posterior lip. Leg and wing vestiges present. Six feebly differentiated somites. Diameter of spiracles decreasing posteriorly. Integument of venter of anterior somites and portions of posterior somites with minute spinules in short transverse rows. Body hairs sparse, moderately long (0.025- 0.11 mm), with stout base; variously branched (bifid to dendritic) the branches denticulate. Cranium suboctagonal; slightly broader than long. Antenna in a shallow pit, each a slight convexity bearing three sensilla, each of which bears a minute spinule. Head hairs few, 0.025-0.088 mm long, with stout base and variously branched tip. Labrum short, width twice the length; ventral border with a shallow concavity, anterior surface with a medial longitudinal depression; each lobe with four minute hairs or spinulose sensilla on anterior surface, ventral border with two contiguous sensilla near the middle; entire posterior surface with six isolated and three clusters of two or three sensilla each and spinulose, the spinules in short rows. Each mandible leptothoraciform. Maxilla with the apex paraboloidal and bearing spinules in a few rather long rows; palp a short peg with two apical, two subapical and one lateral sensilla; galea digitiform, with two apical sensilla. Labium with the anterior surface sparsely spinulose, the spinules in short transverse rows; palp represented by a cluster of five sensilla; an isolated sensillum between each palp and the opening of the sericteries, the latter a very short transverse slit. Hypopharynx with small spinules in short transverse subparallel rows.

YOUNG LARVA. Length (through spiracles) about 1 mm. Similar to mature larvae, except as follows. Thorax forming a stout distinct neck; abdomen swollen. Anus ventral, with a prominent posterior lip. Integument of posterior somites sparsely spinulose, the spinules minute and isolated or in rows. Body hairs sparse. Of two types: (1) 0.013-0.075 mm long, bifid, with the branches variously denticulate, on all somites except AX; (2) 0.003-0.013 mm long, simple, a few on the ventral surface of each of the last few posterior somites. Antenna a slightly raised disc with three sensilla, each bearing a spinule. Labrum more rounded; anterior surface of each lobe with four sensilla. Mandible with the teeth shorter and more rounded. Maxilla more rounded and with fewer spinules; palp and galea shorter. Labium with the spinules smaller and the rows closer together.

Material studied: numerous larvae from Rhodesia, courtesy of Dr. W. L. Brown.

Genus *MAYRIELLA* Forel

Profile cardiocondyliform. Head large. Anus with a prominent posterior lip. Body hairs moderately abundant and short. Of two types: (1) deeply bifid with branches curling in opposite directions; (2) with the tip denticulate. Cranium subcordate. Antennae minute. Head hairs few, moderately long and bifid. Mandibles carebariform (i.e., stout; very broad at base, narrowing rapidly to apex, which is curved medially as a rather small slender round-pointed apical tooth; a short narrow medial blade arises

from the anterior surface and bears medial teeth; a medially directed tooth may arise from the posterior surface).

In our 1960b key *Mayriella* would fit under Group C2, but would require a new rubric "b₄. Mandibles carebariform."

Mayriella abstinens hackeri Wheeler
(Figs. 15-19)

Length (through spiracles) about 1.7 mm. Profile cardicondyliform. Head large. Anus ventral, with a prominent posterior lip. Leg vestiges present. Spiracles small, diameter decreasing posteriorly. Entire integument of AIX and AX and the venter of thorax and AI with a few minute spinules in short transverse rows. Body hairs moderately abundant, short and uniformly distributed. Of two types: (1) 0.036-0.072 mm long, deeply bifid, with the branches curling in opposite directions, on all surfaces except the venter of the thorax and AI; (2) 0.036-0.048 mm long, with denticulate tip, on the venter of thorax and AI. Cranium subcordate in anterior view, slightly wider than long. Antenna minute, slightly raised, with three or four sensilla, each of which bears a short spinule. Head hairs few, moderately long (0.034-0.05 mm), bifid, with the branches short to long. Labrum small, feebly bilobed; each lobe with two minute hairs and two sensilla on anterior surface, ventral border with two contiguous sensilla, posterior surface with three contiguous and three or four isolated sensilla; entire posterior surface sparsely spinulose, the spinules in subtransverse rows. Mandible carebariform; the blade may also bear more teeth and a few denticles. Maxilla small, the apex paraboloidal; palp a skewed peg with one lateral sensillum bearing a long spinule and three apical sensilla; galea a short peg with two apical sensilla. Labium with the anterior surface sparsely spinulose, the spinules minute and in short subtransverse rows; palp a short peg with four sensilla, one of which bears a long spinule; an isolated sensillum between each palp and the opening of the sericteries, the latter moderately wide and slightly projecting. Hypopharynx with a few transverse rows of minute spinules.

IMMATURE LARVA: Length (through spiracles) about 1.0 mm. Stout and J-shaped; thorax curved ventrally. Anus ventral. Head very large. Entire integument of AVIII-AIX and venter of thorax and AI-AIII with a few short rows of minute spinules. Body hairs moderately long. Of two types: (1) about 0.07 mm long, bifid, with the tips of the branches curled, on all somites except AIX and AX; (2) 0.03-0.048 mm, with denticulate tip, on the venter of the thorax and AI-AII and on all surfaces of AIX and AX. Cranium suboval, widest dorsally. Head hairs 0.038-0.05 mm long, bifid or with short denticulate tip. Labrum with a few isolated spinules. Mandible feebly sclerotized, short and stout, with three stout-based sharp-pointed teeth. Maxillary palp a low projection with three apical, one lateral and one basal sensilla; galea a short cone with two apical sensilla. Labia palp a low elevation with four sensilla.

Material studied: numerous larvae from New Zealand, courtesy of Dr. R. W. Taylor.

Genus *MERANOPLUS* F. Smith

Because we had inadequate material for this genus previously (1954b: 443), we are giving a complete description here.

Profile cardicondyliform. Head large. Anus with a posterior lip. Body hairs sparse; short to long; all simple, the longest flexuous. Cranium subheptagonal. Antennae small, each mounted on a low convexity. Head hairs moderately numerous; short to long; simple. Mandibles leptothoraciform.

In our 1960b key *Meranoplus* and *Calyptomyrmex* would run to Group C2, but would require a new rubric: "b₃. Mandibles leptothoraciform." In *Calyptomyrmex* each antenna is in a shallow pit. In *Meranoplus* each antenna is mounted on a low convexity.

Meranoplus sp.
(Figs. 10-13)

Length (through spiracles) about 2.6 mm. Cardiocondyliform. Dorsal profile C-shaped, ventral J-shaped; diameter greatest at AIV, decreasing rapidly to the posterior end and less rapidly to the anterior end. Diameter of head more than half that of T1. Anus ventral with a posterior lip. Leg, wing and gonopod vestiges present. Spiracles small, diameter decreasing posteriorly. Integument of venter of thorax and dorsal surface of posterior somites with short spinules in short transverse rows. Body hairs sparse, 0.025-0.23 mm long, longest (a few on each somite) with flexuous tip. Cranium as broad as long, subheptagonal, widest above antennal level. Each antenna mounted on a low convexity, a small disc with three sensilla, each bearing a spinule. Head hairs moderately numerous, short to long 0.019-0.23 mm long, simple. Labrum bilobed, lateral borders feebly sinuate; each lobe with four minute hairs on the anterior surface, with one isolated and two contiguous sensilla on the ventral border and with three isolated and a cluster of three sensilla on the posterior surface; entire posterior surface with spinules in transverse arcuate rows. Mandible leptothoraciform, apex forming a long slender curved tooth; blade bearing a single conspicuous medial tooth; anterior surface with a few sublongitudinal ridges and furrows. Maxillae with paraboloidal apex bearing a few minute spinules in short arcuate rows; palp a short cylinder bearing four apical and one lateral sensilla; galea digitiform with two apical sensilla. Labium spinulose, the spinules minute and in short arcuate subtransverse rows; palp a low knob with five sensilla; an isolated sensillum between each palp and the opening of the sericteries, the latter a transverse slit. Hypopharynx sparsely spinulose, the spinules minute and in short arcuate rows. (Material studied: 20 larvae from Mt. Kuringa, Sydney, New South Wales, 700 feet elevation. 11 May 1963, courtesy of Rev. B. B. Lowery.)

Meranoplus dimidiatus F. Smith
(Fig. 14)

IMMATURE LARVA: Length (through spiracles) about 4.3 mm. Similar to *M. sp.* above except as follows. Neck more distinct, abdomen more swollen and sac-like. Integument with a few short rows of minute spinules on the dorsal surface of the last few abdominal somites only. Body hairs 0.05-0.5 mm long. Cranium widest at antennal level; clypeus with a few minute isolated spinules. Head hairs 0.013-0.23 mm long. Labrum with the ventral portion of the anterior surface sparsely spinulose, the spinules minute and isolated; each lobe with five or six hairs and one

or two sensilla on anterior surface, posterior surface with five or six isolated sensilla in addition to the cluster; entire posterior surface spinulose, the spinules coarser and isolated ventrally. Mandible with two medial teeth. (Material studied: 15 larvae from South Australia, courtesy of Rev. B. B. Lowery.)

Meranoplus sp.

Length (through spiracles) about 4.7 mm. Similar to *M.* sp. above except as follows. Thorax forming a longer more distinct neck. Integument of dorsal surface of posterior somites with few minute spinules in short transverse rows only. A cluster of short hairs (0.018-0.1 mm long) on the ventral surface of the anterior portion of T1, remainder of body with sparse hairs, 0.05-0.3 mm long. Head hairs about twice as numerous, most numerous below antennal level. Medial blade of mandible lacking teeth. (Material studied: numerous larvae from Mudgee, New South Wales, Flats to west of aerodrome, 2 September 1963, courtesy of Rev. B. B. Lowery.)

LITERATURE CITED

- Baroni, Urbani C. 1968. Studi sulla mirmecofauna d' Italia. IV. La fauna mirmecologica delle isole maltesi ed il suo significato ecologico e biogeographico. Ann. Mus. Civ. Stor. Nat. Genova 77: 408-559.
- Buren, W. F. 1968. A review of the species of *Crematogaster*, sensu stricto, in North America. J. Georgia Entomol. Soc. 3: 91-121.
- Cloudsley-Thompson, J. L. 1962. A note on the association between *Bengalia* spp. (Dipt., Calliphoridae) and ants in the Sudan. Entomol. Mo. Mag. 98: 177-9.
- Ettershank, G. 1965. A new species of *Megalomyrmex* from the Chilean Andes. Psyche 72: 55-8.
- Ettershank, G. 1966. A generic revision of the world Myrmicinae related to *Solenopsis* and *Pheidologeton*. Australian J. Zool. 14: 73-171.
- Peacock, A. D., D. W. Hall, I. C. Smith and A. Goodfellow. 1950. The biology and control of the ant pest *Monomorium pharaonis* (L.). Dept. Agric. for Scotland Misc. Publ. No. 17: 51 pp.
- Soulié, J. 1961. Quelques notes éthologiques sur la vie dans le nid chez deux espèces méditerranéennes de *Crematogaster*. Insectes Sociaux 8: 95-8.
- U.S.D.A. 1958. Observations on the biology of the imported fire ant. U.S. Dept. Agric., Agric. Res. Serv. 33-49: 21 pp.
- Wheeler, G. C., and Jeanette Wheeler. 1952. The ant larvae of the myrmicine tribe Crematogastrini. J. Washington Acad. Sci. 42: 248-62.
- Wheeler, G. C., and Jeanette Wheeler. 1953a. The ant larvae of the myrmicine tribes Melissotarsini, Metaponini, Myrmicariini, and Cardiocondyliini. J. Washington Acad. Sci. 43: 185-9.
- Wheeler, G. C., and Jeanette Wheeler. 1953b. The ant larvae of the myrmicine tribe Pheidologetini. Psyche 60: 129-47.
- Wheeler, G. C., and Jeanette Wheeler. 1954a. The ant larvae of the myrmicine tribe Myrmecinini. Proc. Entomol. Soc. Washington 56: 126-38.
- Wheeler, G. C., and Jeanette Wheeler. 1954b. The ant larvae of the myrmicine tribes Meranopliini, Ochetomyrmicini and Tetramoriini.

- Amer. Midland Nat. 52: 443-52.
- Wheeler, G. C., and Jeanette Wheeler. 1955. The ant larvae of the myrmicine tribe Solenopsidini. Amer. Midland Nat. 54: 119-41.
- Wheeler, G. C., and Jeanette Wheeler. 1960a. Supplementary studies of the larvae of the Myrmicinae. Proc. Entomol. Soc. Washington 62: 1-32.
- Wheeler, G. C., and Jeanette Wheeler. 1960b. The ant larvae of the subfamily Myrmicinae. Ann. Entomol. Soc. Amer. 53: 98-110.
- Wilson, E. O. 1959. Invader of the South. Natural History 68: 276-81.
- J. Georgia Entomol. Soc. 8(1) January, 1973 pp. 27-39.
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