# THE LARVA OF ALLOMERUS (HYM.: FORMICIDÆ)

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That the genus *Allomerus* has received scant attention from myrmecologists might be attributed to its restricted range, the paucity of its species, the small size of the workers and the arboreal nesting habits. Nevertheless, my studies on the larvæ would seem to indicate that these ants merit more extensive investigation.

There are only two species in the genus—*decemarticulatus* Mayr and *octoarticulatus* Mayr. The latter has four varieties. In the *Genera Insectorum* (1922) Emery records the geographic distribution of all forms as "Brésil: Amazonas." *A. o.* var. *demeraræ* W. M. Wheeler (1929), however, occurs in British Guiana. The minute yellow workers and their much larger sexual forms inhabit natural cavities in swellings of plants in tropical rain forests. The most complete account of the habits of *Allomerus* is given by Dr. W. M. Wheeler in the *Transactions of the Fourth International Congress of Entomology* (1929, p. 343).

The larvæ of *Allomerus* unique in two characteristics —body hairs and sexual differentiation. The flattened, angulate body hairs of the worker and young sexual larvæ and the enormous, rigid, serrate ventral hairs of the mature sexual forms are peculiar to this genus. As a rule, the larvæ of the sexual forms of ants are differentiated from those of their workers chiefly by size. In *Allomerus,* however, they differ in size, shape and hairs, and these differences are so great that the two types might be regarded as generically distinct, were it not for the similarity of the heads.

**Allomerus octoarticulatus** Mayr. var. **demeraræ** W. M. Wheeler.

Young worker larva (Pl. VII, Fig. 2): Similar to mature worker larva but more slender.

MATURE WORKER LARVA (Pl. VII, Fig. 1): Orthocephalic; prothorax forming a short, thick neck perpendicular to the rest of the body, which is subcylindrical; nearly straight, rather stout, and slightly attenuated posteriorly; posterior end round-pointed; anus subterminal. Metamerism indistinct. Spiracles, 10 pairs.

Body-hairs few, uniformly distributed, and arranged (at least on the abdomen) in transverse metameric rows and also (less regularly) in longitudinal rows. They fall into four types: (1) at the posterior end a very few small (about 0.016 mm. long) slender hairs with bifid tips (Pl. VII, Fig. 16); (2) a very few small (about 0.016 mm. long) stout hairs with frayed tips on the ventral surface (Pl. VII, Figs. 13 and 14); (3) a few small (about 0.023 mm. long) slender hairs, which have the distal third serrate and often bent and are found on the prothorax and also near the posterior end (Pl. VII, Fig. 17); (4) short (0.036-0.077 mm. long) highly variable hairs, which are typically rather stout, terete or flattened, sharply angulate at the basal third and again near the distal fifth; the terminal portion is flattened and has serrate tip and margins; this type is mostly confined to the dorsal and lateral surfaces (Pl. VII, Figs. 10-12, 15, and 18-22).

Integument thin, delicate, and (except on the thorax) furnished with minute spinules arranged in short transverse rows.

Head (Pl. VII, Fig. 8) moderately large; broadly subpyriform in dorsal view, with the posterior border broadly rounded; width greatest in front of the antennæ. Hairs of head few, about 0.023 mm. long, angulate or strongly curved just distal to the middle; apical half bearing two or three fine, short branches. Antennæ rather large, with three sensillæ, each bearing a spinule.

*Labrum* (Pl. VII, Fig. 9) small and short, the breadth being twice the length; three-lobed, the middle lobe somewhat larger and projecting farther forward than the lateral lobes; dorsal surface with a pair of minute hairs near the center and usually a third hair near the middle of one lateral border; each lateral lobe with several sensillæ (each bearing a spinule) along the anterior border; median half of ventral

surface spinulose, the spinules in transverse rows which form a subreticulate pattern; on the ventral surface of each lateral lobe a pair of sensillæ near the center and a cluster of four sensillæ near the anterior border at the junction with the median lobe. *Mandibles* (Pl. VII, Fig. 6) very small and without teeth; base subtriangular; apex slender and bent medially at an angle to the base. *Maxillæ* prominent, fused to the labium; proximal sense-organ (Pl. VII, Fig. 5) a slightly raised cluster of five sensillæ, three of which bear one spinule each; distal sense-organ (Pl. VII, Fig. 4) a short projection with two apical sensillæ, each bearing a spinule. *Labuim* prominent, a few fine ridges forming a narrow reticulate pattern posterior to the opening of the sericteries; labial sense-organ a slightly raised cluster of five sensillæ, three of which bear one spinule each. *Hypopharynx* (Pl. VII, Fig. 7) broad and furnished with longitudinal ridges.

IMMATURE SEXUAL (?) LARVA (Pl. VIII, Fig. 6): Differs from the mature worker larva of the same size in being stouter and in having the abdomen enlarged at the middle, so that the dorsal profile is more convex.

SEXUAL LARVA (Pl. VIII, Fig. 4): Voluminous and plump, much larger than the mature worker larva (Pl. VIII, Figs. 7A and B); hypocephalic; bean-shaped, somewhat curved ventrally; dorsal profile strongly convex; ventral profile concave anteriorly, slightly convex posteriorly; diameter greatest at the middle, decreasing slightly towards the ends which are rounded. Anus subterminal, with small lips. Metamerism indistinct. Spiracles, 10 pairs.

Body mostly naked, but with a few hairs of four types, each type restricted to a small area. Type I hairs: Extremely long (0.4-0.6 mm.); base stout, straight, and heavily sclerotized; attenuating rather rapidly to a fine apical portion, which is slightly curved forward; distal ⅔ serrate; restricted to the posterior ¾ of the ventral surface and arranged in 4 longitudinal rows, 5 to 8 in each outer row and 4 to 6 in each inner row (Pl. VIII, Fig. 5). Type II hairs: A few (about 10) moderately long (0.17-0.25 mm.) slender hairs, which have the apical half serrate; these are restricted to a small area at the posterior end and are strongly

curved ventrally (Pl. VIII, Fig. 2). Type III hairs: A single pair of simple, slender, strongly curved hairs about 0.15 mm. long, at the anterior end, one a short distance in front of each mesothoracic spiracle (Pl. VIII, Fig. 1). Type IV hairs: A few very minute (0.009 mm. long), simple, straight, acute hairs on the prothorax around the base of the head (Pl. VIII, Fig. 3).

Head and mouth-parts like those of worker larva.

The above descriptions are based on larvæ from a single nest collected at Kartabo, British Guiana, VII-27-1920. I am indebted to Dr. W. M. Wheeler for the material.

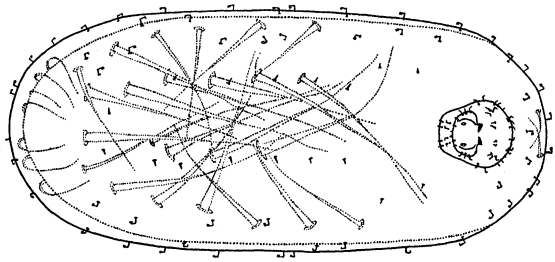
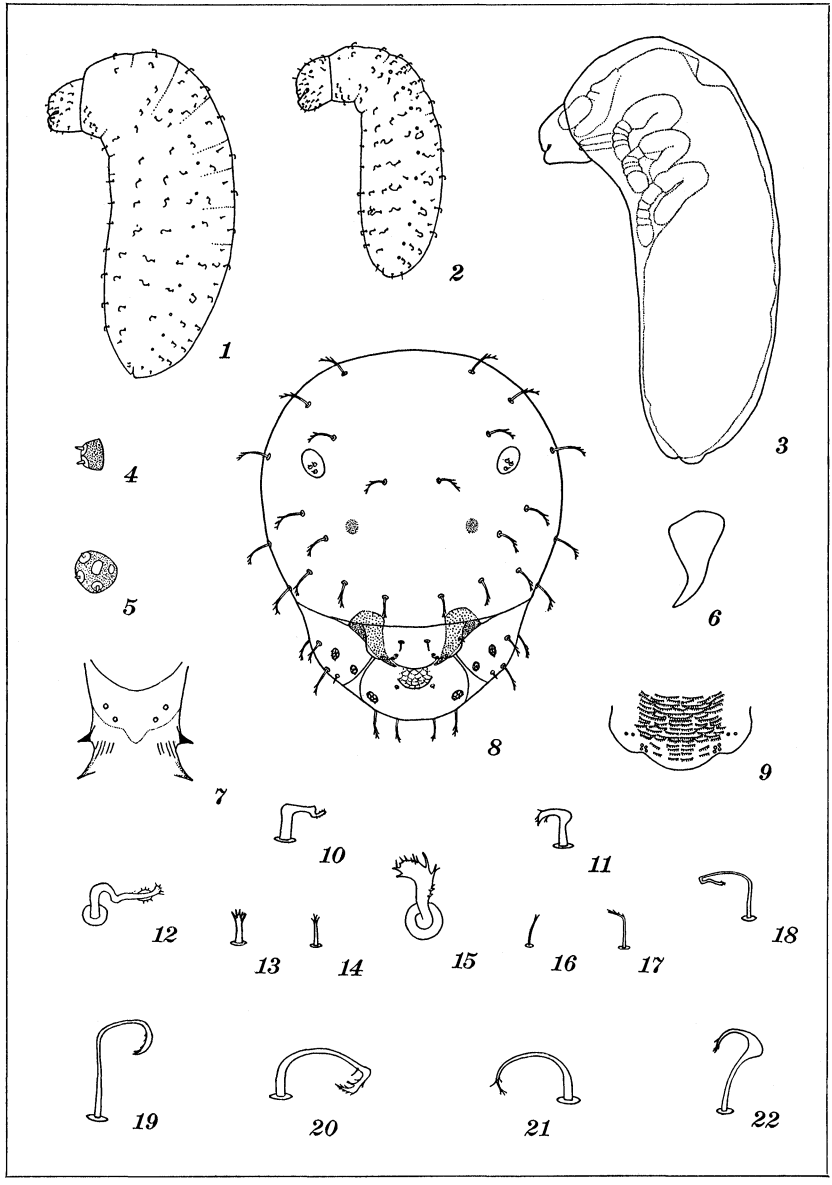


Fig. 1. *Allomerus octoarticulatus* var. *demerarae* W. M. Wheeler. Larva ready to molt to definitive sexual form; the hairs of the latter are easily seen through the transparent integument of the younger form. Ventral view. X50.

As mentioned previously the mature larvæ of worker and sexual forms are so very different that they might be regarded at first glance as belonging to different genera. That such is not the case is proved by the fact that the heads of the two types are identical and by the fact that I have found young larvæ of the sexual type still encased in an integument of the worker type (Fig. 1). Moreover, a worker semipupa enclosed in an integument of the worker type (Pl. VII, Fig. 3) shows that worker larvæ do not attain what I have designated as the definitive sexual form before pupating.

In spite of the fact that all larvæ of *Allomerus* are alike in the early instars, nevertheless, some slight differentiation occurs previous to the molt to the definitive sexual form. Such, at least, is my tentative interpretation of the material studied. The bodies of small (i. e. worker) semipupæ are

Psyche, 1935 VOL. 42, PLATE VII.

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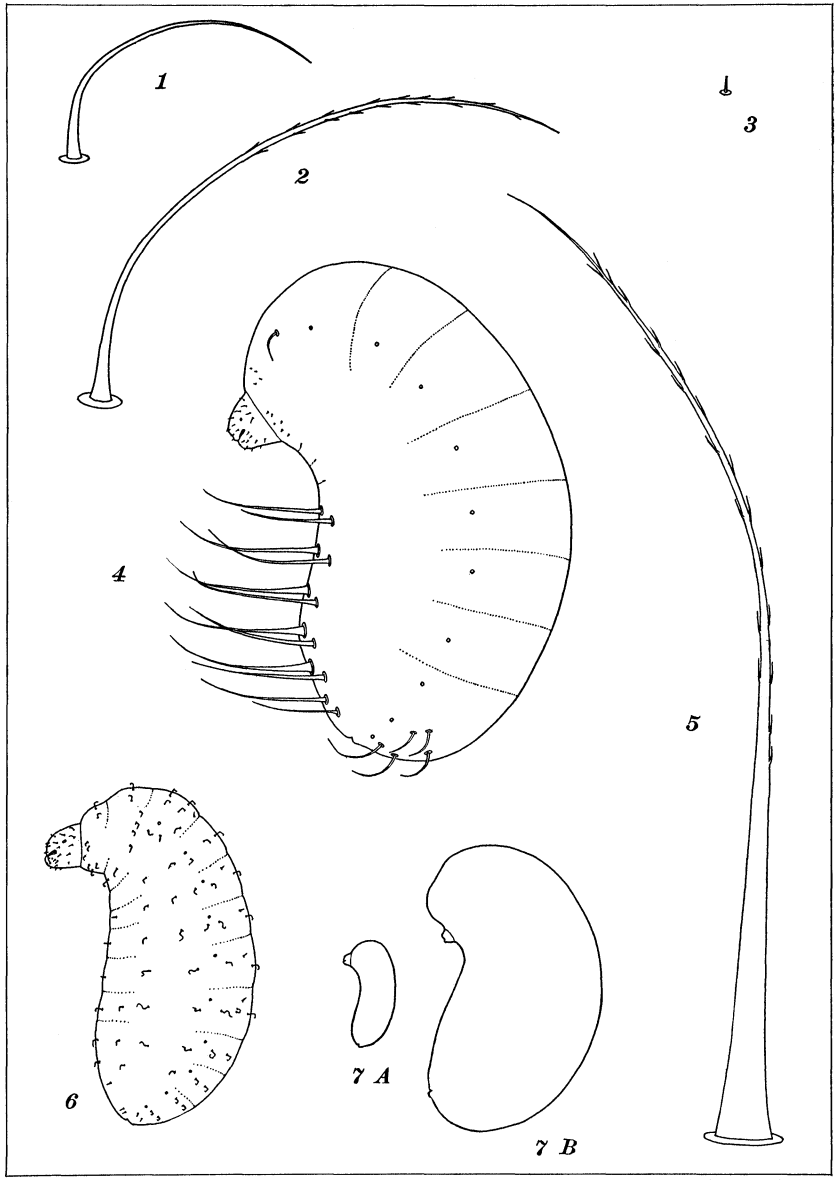
Psyche, 1935 VOL. 42, PLATE VIII.

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still as slender and subcylindrical as are those of most of the young larvæ. I have found, however, a few of the size of mature worker larvæ, which differ from the latter only in being stouter, and these I have described above as "immature sexual (?)" forms.

If this tentative conclusion should be substantiated in the future, *Allomerus* larvæ may prove useful in studying the problem of the differentiation of castes.

## Explanation of Plates

### Plate 7.

Worker larva of *Allomerus octoarticulatus* var. *demeraræ*.

Fig. 1. Mature worker larva, in side view. X34.
Fig. 2. Young larva, side view. X34.
Fig. 3. Semipupa, side view. Hairs omitted. X34.
Fig. 4. Distal maxillary sense-organ, in profile. X550.
Fig. 5. Proximal maxillary sense-organ, surface view. X550.
Fig. 6. Mandible, dorsal view. X275.
Fig. 7. Hypopharynx, dorsal view. X275.
Fig. 8. Head, dorsal view. X190.
Fig. 9. Labrum, ventral view. X275.
Figs. 10-12 and 18-22. Type 4 body-hairs. X275.
Figs. 13 and 14. Type 2 body-hairs. X275.
Fig. 15. Type 4 body-hair, apical aspect. X550.
Fig. 16. Type 1 body-hair. X275.
Fig. 17. Type 3 body-hair. X275.

### Plate 8.

Sexual larva of *Allomerus octoarticulatus* var. *demeraræ*.

Fig. 1. Type III body-hair. X275.
Fig. 2. Type II body-hair. X275.
Fig. 3. Type IV body-hair. X275.
Fig. 4. Young (half-grown?) sexual larva, side view. X34.
Fig. 5. Type I body-hair. X275.
Fig. 6. Young sexual larva before molting to definitive sexual form, side view X34.
Fig. 7. Mature sexual larva (*A*) compared in size with mature worker larva (*B*), side view. Outlines only. X10.