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A. C. Cole, Jr.

While collecting ants near Albuquerque, New Mexico, May 20, 1932, the writer took a series of 26 specimens of *Formica neogagates* Emery from a small nest in an area of grass and yucca. There was a small, earthen, grass-covered mound over the nest. The workers were not numerous and the queen was not found. In the series collected the writer discovered 6 distinct pseudogynes. These are so markedly different from the normal workers that it seems advisable to give them brief mention.

The late Dr. W. M. Wheeler interpreted the pseudogyne as a "workerlike form with enlarged mesonotum and sometimes traces of other sclerites of the female, but without wings or very rarely with wing vestages."[1] He believed that pseudogynes in nests of *Formica* were produced by Lomechusine beetles in the colony. They are supposedly formed from female larvae which have been neglected by the workers and "left unfed after they have passed the stage at which such treatment would lead to the formation of workers."[2] This is an expression of the trophogenic interpretation of caste formation. Although the matter of caste determination has as yet been unsolved and is still debatable, it is such studies as this one of pseudogynes which seem to indicate a trophogenic rather than a blastogenic determinant for the various female castes of ants.

One of these pseudogynes of *neogagates* (Fig. 1) differs from the normal worker as follows: The thorax is greatly enlarged. In profile, the anterior face of the pronotum is steep, and the mesonotum is large and convex. The anterior face of the long scutum is very convex and leads into the almost flat uppermost surface. The scutellum is well developed, being about one-third as long as the scutum. There is only a faint dorsal impression between the scutum and scutellum. The posterior declivity of the scutellum is very sharp, forming almost a right angle with the horizontal axis of the body, and there is a deep but rather narrow impression between it and the narrow but distinct metanotum. The epinotum is much lower than the mesonotum but only very slightly lower than the metanotum; its dorsal surface is faintly and broadly convex and its posterior declivity is rather steep, the two forming a broad obtuse angle at their juncture. There are no vestages of wings.

Seen from above, the pronotum is broadly convex and its sides are flattened. The mesonotum is ovoid and narrower than the pronotum, being

1 Wheeler, W. M., *Ants; their Structure, Development and Behavior*. Columbia Univ. Press, 1926, p. 96.

2 *Ibid.*, p. 408.

widest just a little anterior to its union with the lateral surfaces of the pronotum. The scutellum is subtriangular; its dorso-anterior angle is sharply acute and its posterior dorsal border is broadly convex. The metanotum is narrow. The epinotum is rather flat laterally, as broad as the scutum and as broad as high.

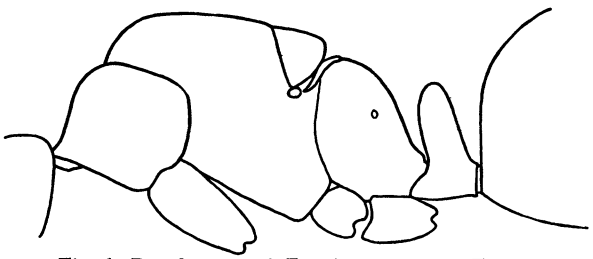

Fig. 1. Pseudogynes of *Formica neogagates* Emery.

Two specimens vary from this description as follows: The scutum is much more convex, so that the thorax in profile has a very decided arched appearance. There is no evidence of a suture dividing the mesonotum into a scutum and a scutellum, and there is no metanotum. The mesoepinotal suture is deep and rather broad, and the epinotum is much lower than the mesonotum. Among all the pseudogynes, the curvature of the lateral thoracic sutures varies considerably. Two specimens exhibit a narrower epinotum in profile than does the one described and figured. This results from a rather straight lateral mesoepinotal suture. In two specimens the lateral boundaries of the scutum are defined by faint sutures. In another specimen the scutum is more convex; hence the impression between the scutum and the scutellum is more pronounced. The thorax of each pseudogyne is reddish brown with doral infuscation. This condition of color also prevails among some of the normal major workers. Each pseudogyne has a body length comparable to that of a major worker.

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