

A GYNERGATE OF MYRMECIA

BY GEORGE S. TULLOCH¹

Although gynandromorphs of male and female—including winged female, soldier and worker ants—have been noted from time to time, there has been no case recorded of a form exhibiting a gynandromorph-like combination of female and worker characteristics. The absence of such a form has supported the trophic² rather than the germinal, or blastogenic hypothesis of caste determination. Such an anomaly, here designated as a *gynergate*, was recently discovered in Dr. W. M. Wheeler's collection and with his kind permission is described below. The specimen is a large Ponerine, *Myrmecia* (*Promyrmecia*) *aberrans* Forel, taken in Wagoa, New South Wales by W. W. Froggatt in 1904. The right half of the insect has characteristics of a female³ while the left half has those of a worker.

In the head (fig. 1) the structure of the opposite sides appears to be quite typical of their respective castes, but the lateral margin of the right (female) side is distinctly concave and the posterior corner angular while the left (worker) side is convex and the posterior corner broadly rounded. The right eye is slightly larger than the left, and the clypeus is prolonged further forward on the right side than on the left.

Structural characteristics peculiar to the component forms are prominent in the thoracic region. The structure of the right (female) side (fig. 2) indicates that this specimen once bore two vestigial wings. The anterior one has been broken off (its position indicated by an insertion, W)

¹ Contribution from the Entomological Laboratory of Harvard University.

² Santschi (1920) Bull. Soc. Vaud. Sci. Nat., Vol. 53, p. 177.

³ The winged forms of the subgenus *Promyrmecia* are unknown; hence, the comparison of the female structures have been made with those of related species of the subgenera *Myrmecia* and *Pristomyrmecia*.

but the hind one (VW) is still retained in the specimen. The structures which accompany wings are present, but reduced. The parascutal ridge (P) and the transcutal suture (T) are present in their usual positions. The plate (S2) covering the metathoracic spiracle may be noted as well as the upper plate (PL) of the metapleuron. The

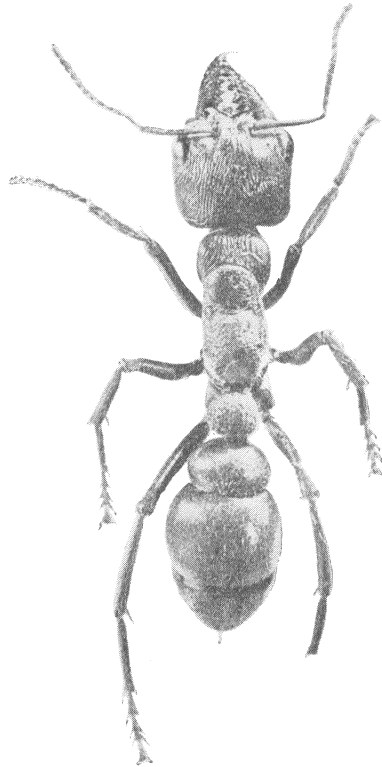


Fig. 1. Dorsal view of gynergate. (Portion of right hind tarsus missing).

left side of the thorax (fig. 3) is distinctly that of a worker. No trace of wings or their accompanying structures can be detected. The large metathoracic spiracular plate (S2), a characteristic of all workers of this genus, is in its usual

position. The metapleuron is fused completely with the propodeum. In the dorsal aspect of the thorax (fig. 1), it will be noted that the right side appears to be large and swollen. This is probably due to the presence of wing muscles. A vestige of a scutellum distorted toward the

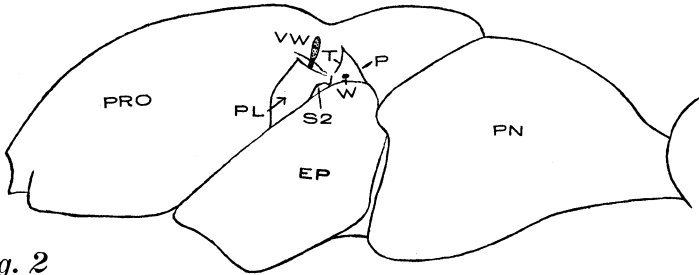


Fig. 2

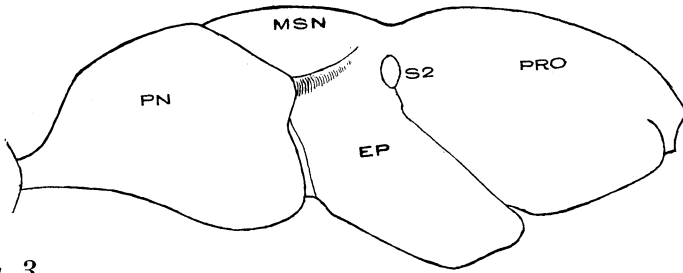


Fig. 3

Fig. 2. Right (female) side of thorax; EP, episternum; P, parascutal ridge; PL, upper plate of metapleuron; PN, pronotum; PRO, propodeum; S2, spiracular plate; T, transcutal suture; VW, vestigial wing; W, wing insertion.

Fig. 3. Left (worker) side of thorax; MSN, mesonotum.

right side may be seen in the specimen as well as a portion of a distinct metanotum.

In the abdominal region the node presents an asymmetrical appearance. The right side is longer and its corners more angular than the left side, so that each side is typical of its respective caste.

The appearance of this gynergate offers some additional evidence in favor of the germinal hypothesis of caste determination. Wheeler⁴ in discussing the significance of the dinergatandromorph (soldier-male) and the ergatandromorph (worker-male) stated that although the workers and soldiers are "abortive females they behave in combination with the male like entities quite as distinct and independent as the female. This suggests that the worker and soldier are not products of nutrition but are germinally predetermined." Santschi⁵ stated that this hypothesis (germinal) would be definitely determined by the discovery of a form presenting female and worker characteristics. From the finding of this ant, therefore, it would appear that the trophic hypothesis of caste determination may have to be discarded in favor of the blastogenetic hypothesis.

BRATHINUS VARICORNIS LEC.

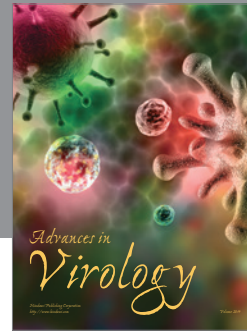
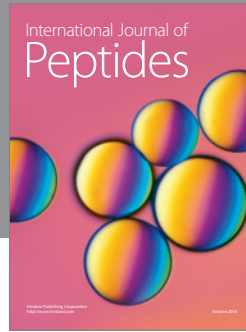
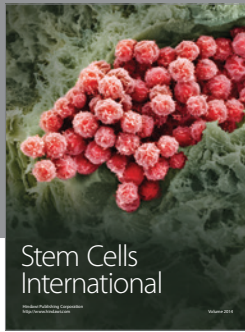
An examination of the available lists shows that the above beetle is recorded but once,—in the N. Y. List from Utica, which is apparently the type locality. On May 22, 1930, I literally unearthed a specimen while sifting wet leaves and more or less mud, taken from the edge of a small pool in a small swampy area in park land near the center of the Town of Framingham. By further sifting, and treading about in the mud and water, I secured three more specimens and on May 23 and June 2, I found six more; other visits were not productive. The time was shortly before sunset and when it had become somewhat dark in the shadows of the young trees and alders. Mr. P. J. Darlington gave me a specimen which he had taken at Exeter, N. H., by "swamp treading," June 7, 1925.

Perhaps they are nocturnal prowlers and it pleases my fancy to endow these peculiar ant-like creatures with strange and unusual habits.

C. A. FROST,
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⁴ *Psyche* (1919) vol. 26, pp. 7-8.

⁵ *ibid.*



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