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**THE AUSTRALIAN ANT-GENUS MYRMECORHYNCHUS
(ERN. ANDRÉ) AND ITS POSITION IN THE SUB-
FAMILY CAMPONOTINAE.⁽¹⁾**

By WILLIAM MORTON WHEELER.

(Communicated by Arthur M. Lea.)

[From "*Transactions of the Royal Society of South Australia*,"
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PLATE I.

Twenty years ago the late Ernest André founded the genus *Myrmecorhynchus* for the reception of a singular Camponotine ant, *M. emeryi*, which he described from a unique worker, measuring 3 mm., taken in the Alps of Victoria.⁽²⁾ Two years later Emery⁽³⁾ received a specimen of the same ant from Mr. Tepper, of the Museum of South Australia, and as it was larger than André's specimen (4.5 mm.) and had a broader head and traces of ocelli, he naturally concluded that it was the major worker of the species of which André's specimen represented the minor. During December, 1914, I found under a large stone on a roadside at Enoggera, near Brisbane, Queensland, what I now know to have been a small colony of *Myrmecorhynchus*. It comprised only a few workers, all of the same size as those reported by André and Emery. Unfortunately I have not succeeded, since my return to the United States, in finding the few specimens which I secured. They were evidently mixed with and lost among a great many specimens of *Iridomyrmex*, *Melophorus*, and other genera bottled on what proved to be a very hasty excursion. The authorities of the Museum of South Australia, however, have recently sent me a series of workers and larvae from a *Myrmecorhynchus* colony discovered by Mr. H. B. White at Windsor, South Australia. These workers are of three different types, ranging from 2.5 to 6.5 mm. The smallest, corresponding with André's type specimen, is, therefore, the worker minima, those measuring 4-4.5 mm. are mediae, and correspond with Emery's specimen; while the maxima, hitherto unknown, has a much larger and broader head, with more distinct ocelli. It seems advisable, therefore, to describe and figure the different forms and to rewrite the generic and specific diagnoses, in order that Australian entomologists may more easily recognize this

(1) Contributions from the Entomological Laboratory of the Bussey Institution, Harvard University, No. 120.

(2) Fourmis Nouvelles d'Asie et d'Australie, Rev. d'Ent. 15, 1896, pp. 253 and 254.

(3) Descrizioni di Formiche nuove malesi e australasiane; note Sinonimiche. Rend. Accad. Sc., Bologna, N.S. 2, 1898, p. 237, figs. 9 and 10.

rare and evidently archaic ant, secure additional specimens, especially of the unknown male and female, and investigate its habits.

Genus *MYRMECORHYNCHUS*, Ern. André.

Worker. Polymorphic, presenting distinct maxima, media, and minima forms, differing especially in the size and shape of the head. Worker maxima with the head large and broad, with large elliptical, feebly-convex eyes, placed near the middle of its sides but on the dorsal surface. Mandibles triangular, very convex, with numerous, rather crowded, acute teeth on the apical border. Palpi short; maxillary pair 6-jointed, labial pair 4-jointed. Clypeus large, trapezoidal, not extending back between the antennal insertions or frontal carinae, with an anterior projecting, median lobe. Frontal area large, distinct, triangular. Frontal carinae short, narrow, diverging behind, not concealing the insertions of the antennae, which are very near the posterior clypeal border and the anterior ends of the frontal carinae. Frontal groove distinct. Ocelli small, but well developed. Clypeal and antennal foveae confluent. Antennae 12-jointed. Funiculi gradually enlarged towards the tip, with the five terminal joints forming an indistinct club. In the minima the head is much narrower, the eyes more prominent and proportionally larger and situated more on the sides of the head, the clypeal lobe is much more projecting, the mandibles much more elongate with straight lateral borders, less convex dorsal surfaces, and more numerous teeth. The ocelli and frontal groove are absent, the antennae more slender. The media is intermediate in the shape of the head between the maxima and minima, the frontal groove is feeble, and the ocelli are minute or indicated by pits. All three forms have the thorax, petiole, and gaster of essentially the same shape. Thorax rather small and narrow, scarcely longer than the head, including the mandibles, with deep and rather long meso-epinotal constriction, with distinct promesonotal suture and the mesonotum bounded behind by a distinct suture separated by a space from the anterior suture of the epinotum. In this space, representing the metanotum, lie the metathoracic spiracles, which are produced and distinctly tubular, especially in the media. Epinotum rounded and unarmed. Petiole with well-developed, erect, bluntly rounded scale. Gaster voluminous, its first segment smaller than the second and third, which are subequal; the constrictions between the segments well marked. Anal orifice surrounded by a circlet of cilia. Middle and hind tibiae with short but distinct spurs; tarsi with well-developed, rather straight, simple claws. Proventriculus (fig. 2) small and very short, the bulb scarcely

longer than broad, feebly chitinized, the sepals of the calyx more heavily chitinized, extremely short, turned outwards but not reflected.

MYRMECORHYNCHUS EMERYI, Ern. André.

Worker Maxima (fig. 1, *a* and *b*). Length, 6.65 mm.

Head convex above, excluding the mandibles a little broader than long, broader behind than in front, with straight posterior border and feebly convex sides. Mandibles one-third as long as the head, with convex outer borders and dorsal surface, their inner borders with 8-9 acute teeth, gradually decreasing in length towards the base. Clypeus convex, strongly carinate, its anterior border produced in the middle as a distinct lobe, narrowly emarginate in the middle and rather deeply sinuate on each side. Its posterior border is straight and transverse in the middle. Frontal carinae terminating behind opposite the middle of the eyes. Antennal scapes curved, narrow and slightly flattened at the base, thickened gradually towards their apices, which scarcely reach to the posterior corners of the head. All the funicular joints longer than broad; first joint equal to the two succeeding joints together; joints 2-5 subequal, $1\frac{1}{2}$ times as long as broad; remaining joints a little longer; terminal joint fully twice as long as broad, nearly as long as the two preceding joints together. Thorax through the mesonotum a little more than half as broad as the head, broadest through the pronotum, which is as long as broad including the rather long neck, rounded above and higher than the epinotum. Mesonotum transversely elliptical, convex, rounded, and sloping. Epinotum from above subrectangular, with parallel sides, longer than broad; in profile higher than long, with distinct and subequal base and declivity, the former horizontal, the latter sloping and feebly concave below. Petiolar scale from above transverse, twice as broad as long, in profile lower than the epinotum, thick, as thick above as below, with straight, flattened anterior and posterior surfaces and rounded summit; its ventral portion convex, laterally compressed. Gaster large, elliptical, convex above, its tip somewhat pointed. Legs rather slender. Shining. Mandibles covered with sparse, coarse punctures. Clypeus, head, and thorax subopaque, coarsely shagreened; sides of head more granular or densely and finely punctate; the clypeus and anterior portions of cheeks longitudinally rugose, the front divergently rugulose. Upper-surface of thorax transversely, the sides of pronotum, the mesopleurae and sides of epinotum vertically rugulose. Petiole and gaster very finely and superficially shagreened, shining, with small, sparse, piligerous punctures.

Hairs white, erect, moderately long, not very abundant, rather uniformly inverting the body, scapes, and legs. Pubescence absent. Chestnut-brown; upper-surface of head and epinotum darker; petiole above and gaster black; mandibles brownish-yellow, with black teeth; dorsal surfaces of scapes towards their tips blackish; legs with the middle portions of the femora and flexor surfaces of the tibiae dark-brown; extensor surfaces of the latter brownish-yellow.

Worker Media (fig. 1, c). Length, 4.45 mm.

Head smaller than that of the maxima, as long as broad, with straight sides and more convex, laterally situated eyes, the median lobe of the clypeus more projecting, the mandibles longer and less convex, with about the same number of teeth as the maxima, the antennal scapes longer, more slender, extending a little beyond the posterior corners of the head. In other respects like the maxima.

Worker Minima (fig. 1, d). Length, 2.5-3 mm.

Differing from the media in the shape of the head, which is decidedly longer than broad, rounded behind, and has very prominent eyes. The clypeus is longer, with longer anterior lobe, and the mandibles are much longer and narrower, with straight external borders and 10-11 teeth. The antennae are very slender, with the scapes extending considerably beyond the posterior border of the head. The head behind and the dorsal portion of the thorax are much less sharply sculptured than in the media and maxima, so that these regions are smoother and more shining. In other respects the sculpture, pilosity, and colour are much as in the media and maxima.

Young Larva (fig. 4, a, b, c). Body plump, with distinct segments, constricted behind the prothoracic segment, which is large and swollen. Head rather small, broad, and rounded, covered with sparse, simple hairs, without antennae and with short maxillae and labium furnished with the usual truncated sense-papillae. Mandibles small, flattened, falcate, with long apical tooth and blunt denticles along the inner border. Surface of body covered with flexuous; 2-, 3-, or 4-branched hairs, except the ventral thoracic surface, which is beset with simple, bristly hairs.

Adult Larva (fig. 4, d, e, f). Body much swollen, but with distinct segments. Head extremely small. Hairs almost lacking, except on the head and ventral surface of the anterior segments, where the hairs are short, simple, and bristly. The shape of this larva suggests that it does not spin a cocoon but forms a naked pupa.

Described from six maxima, seven media, and three minima workers and a dozen larvae taken from a single colony at Windsor, South Australia, by Mr. H. B. White.

The question of the position of *Myrmecorhynchus* among the various tribes and genera of the Camponotinae leads me to a consideration of Forel's most recent arrangement of this subfamily in the sixth part of his "Formicides Néotropiques."⁽⁴⁾ He divides the Camponotinae into three sections—the Procamptoninae, the Mesocamptoninae, and the Eucamptoninae—on the structure of the proventriculus, or "gizzard." In the first section, which contains only one genus, the extraordinary Malayan *Myrmoteras*, the gizzard has a very short calyx, with widely diverging, heavily chitinized sepals, strongly recurved at their tips. The Mesocamptoninae have the calyx reflected and comprise three tribes—the Melophorini (genera *Notoncus* and *Melophorus*), the Plagirolepidini (genera *Rhizomyrma*, *Plagirolepis*, *Acantholepis*, *Acropyga*, and the Myrmelachistini (genera *Myrmelachista*, *Aphomomyrmex*, *Brachymyrmex*, and the fossil *Rhopalomyrmex*). The Eucamptoninae, which have the gizzard "straight or slightly curved, but never reflected," embrace five tribes—the Gesomyrmini (genera *Gesomyrmex* and *Dimorphomyrmex*), the Prenolepidini (genus *Prenolepis*), the Formicini (genera *Pseudolasius*, *Lasius*, *Formica*, *Polyergus*, *Myrmecocystus*, and *Cataglyphis*), the *Oecophyllini* (genera *Gigantiops*, *Myrmecorhynchus*, and *Oecophylla*), and the Camponotini (genera *Camponotus*, *Echinopta*, *Polyrhachis*, *Dendromyrmex*, *Calomyrmex*, and *Opisthopsis*).

While considerable portions of this classification are undoubtedly well founded, there are at least two genera, *Myrmoteras* and *Myrmecorhynchus*, whose interpretation and position seems to me to be open to discussion. Forel believes that *Myrmoteras* is an extremely ancient and primitive type, a veritable "living fossil," which "shows that the Camponotinae must be directly derived from some primitive aberrant Ponerine like *Odontomachus*, *Stigmatomma*, or *Mystrium*." He inclines to this view because the worker and female *Myrmoteras* have a head remarkably like that of *Odontomachus*, with long, linear, toothed jaws, inserted close together. It seems to me that he has reached this peculiar conclusion through supposing that an ancient is necessarily a primitive and ancestral form. Undoubtedly *Myrmoteras* is a very old Mesozoic genus, but its two surviving species, *M. binghami*, Forel, and *M. donisthorpei*, Wheeler, are at the same time extremely specialized, as shown by the wing-venation and the structure of the head and legs. The resemblance to *Odontomachus* and similar Ponerine genera (which are themselves highly specialized and by no means ancestral forms) are due to convergent development, and

(4) Mém. Soc. Ent., Belg., 20, 1912, pp. 87 to 92.

indicate even less generic affinity to the Ponerinae as a subfamily than is exhibited by many Eucamponotine genera. It may, perhaps, be advisable to make a special Camponotine section for the accommodation of the genus *Myrmoteras*, but to name this section "Procamponotinae" is, to say the least, misleading.

André, from a study of his single minor worker, concluded that *Myrmecorhynchus* "bears a certain resemblance to the *Oecophylla*, in the neighbourhood of which it should probably be placed." Forel seems to have accepted this position as established, since, as we have seen, he places the genus, together with *Gigantiops* and *Oecophylla* in the *Oecophyllini*, his fourth tribe of Eucamponotinae, characterized by having "the gizzard long and narrow, with straight calyx." Such a gizzard is, of course, found in *Oecophylla* and *Gigantiops*, as shown in fig. 3, but the gizzard calyx of *Myrmecorhynchus*, as I have endeavoured to show in fig. 2, is entirely different. There is, to be sure, as André maintained, a certain resemblance between *Myrmecorhynchus* and *Oecophylla* in the shape of the head, particularly of the mandibles and clypeus, and of the thorax; but this resemblance is apparent only in the worker minima of the former genus. *M. emeryi* is, moreover, terrestrial, whereas the species of *Oecophylla* and *Gigantiops* are arboreal. One who had first seen the large workers of *Myrmecorhynchus* would be inclined to place it near *Camponotus*, both on account of the shape and structure of the head and of the pronounced polymorphism of the worker. But the genera of the tribe Camponotini also have a gizzard with long, narrow, straight sepals, and the clypeal and antennary fossae are non-confluent. One meets with no better success in endeavouring to fit *Myrmecorhynchus* into other tribes in Forel's scheme. We are compelled, therefore, either to establish a new tribe, *Myrmorhynchini*, in the section of Eucamponotinae, for its reception, or to leave the position of the genus undecided till the male and female of its single species have been discovered and studied.

EXPLANATION OF PLATE I.

Fig. 1. *Myrmecorhynchus emeryi*, Ern. André. *a*, worker maxima, lateral view; *b*, head of same, dorsal view; *c*, head of worker media; *d*, head of worker minima.

Fig. 2. *Myrmecorhynchus emeryi*, Ern. André. Proventriculus from the side.

Fig. 3. *Oecophylla smaragdina*, Fabr. Proventriculus from the side.

Fig. 4. *Myrmecorhynchus emeryi*, Ern. André. *a*, young larva, lateral view; *b* and *c*, branched hairs of same; *d*, adult larva; *e*, head of same, dorsal view; *f*, mandible of same.

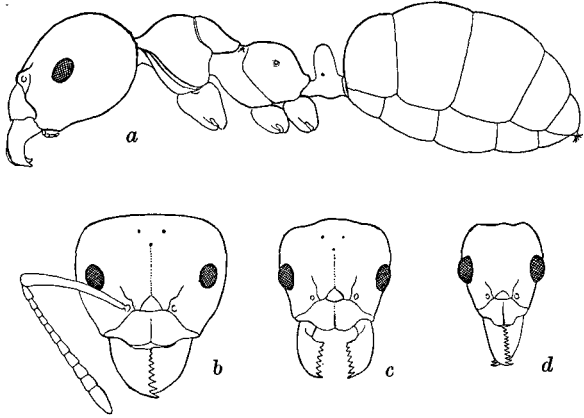


Fig. 1.

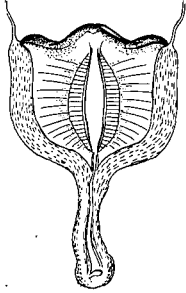


Fig. 2.

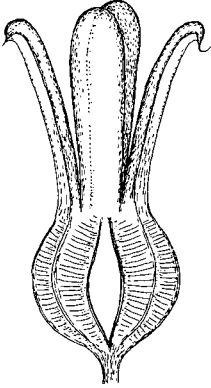


Fig. 3.

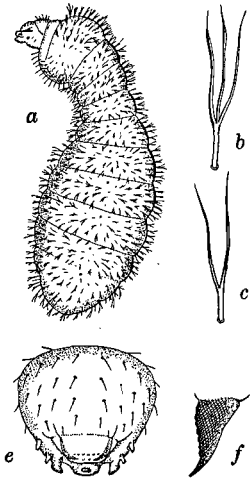


Fig. 4.

