

THE ANT GENUS RHOPALOMASTIX<sup>1</sup>

BY WILLIAM MORTON WHEELER

The genus *Rhopalomastix* was established by Forel in 1900 for a very aberrant female Myrmicine ant (*Rh. rothneyi*) taken by G. A. J. Rothney at Barrackpore, near Calcutta, India<sup>2</sup>. In 1911 he detected the worker and male of this species and also the female of a second species or subspecies (*Rh. escherichi*) among the ants collected by Prof. K. Escherich in Ceylon<sup>3</sup>, and was therefore able to recognize the close relationship of the genus to *Melissotarsus* Emery, which now comprises four species, confined to the Ethiopian and Malagasy Regions, namely, *M. beccarii* Emery from Erythrea and Natal, *emeryi* Forel from southern Ethiopia, with a var. *pilipes* Santschi in East Africa, *weissi* Santschi from the Congo and *insularis* Santschi from Madagascar. In both genera, which together now constitute the tribe Melissotarsini, the antennæ of the worker are very short, with much enlarged terminal joint, the frontal carinæ are closely approximated and resemble those of certain Ponerinæ (*Ponera*), the thoracic dorsum is sutureless and the tibiæ of the middle and hind legs are spurless. The wings of the male and female lack the discoidal cell, and have a long cubital and a closed and appendiculate radial cell. The antennæ of the males are 12-jointed in both genera, but the worker of *Melissotarsus* has the antennæ composed of only 6 joints, whereas there are 10 in *Rhopalomastix*. *Melissotarsus* is also peculiar in possessing conspicuously dilated basitarsal joints on all the legs. Emery<sup>4</sup> believed that the worker of *M. beccarii* was distinctly dimorphic, or repre-

<sup>1</sup>Contributions from the Entomological Laboratory, Bussey Institution, Harvard University, No. 313.

<sup>2</sup>Forel, A. Un nouveau genre et une nouvelle espece de Myrmicide. Ann. Soc. Ent. Belg. 44, 1900, p. 24-26.

<sup>3</sup>Forel, A. Ameisen aus Ceylon. In K. Escherich's "Termitenleben auf Ceylon", 1911 pp. 215-228.

<sup>4</sup>Emery, C. Catalogo delle formiche esistenti nelle collezioni del Museo Civico di Genova. Part I. Anal. Mus. Civ. Genova 9, 1877 p. 378-379, fig.

sented by a soldier phase (Fig 2) with anteriorly broad head and convex blunt-toothed mandibles and a worker phase proper with anteriorly narrower head and acute mandibles, but Arnold<sup>5</sup>, who examined a long series of this species, finds a complete gradation between the two forms.

Several years ago Viehmeyer sent me eleven workers and two immature males of a *Rhopalmoastix* belonging to a series taken by H. Overbeck at Singapore. Viehmeyer<sup>6</sup> had recorded them as belonging to *Rh. rothneyi*, but on comparing them with Forel's description I find that they differ in size and coloration and therefore probably represent a distinct subspecies, which is here described:

***Rhopalomastix rothneyi* Forel subsp. *johorensis* subsp. nov.**

*Worker.* Length 2 - 2.6 mm.

Distinctly larger than the typical *rothneyi*, which measures only 1.7 - 1.8 mm. Head scarcely longer than broad (1 1/6 longer than broad in *rothneyi*) and with somewhat smaller eyes (13 to 15 facets, instead of about 20). Head and thorax rich ferruginous red; appendages, abdomen and sides and declivity of epinotum clear brownish yellow.

I have recently received another series of specimens, comprising all three phases of a second subspecies of *rothneyi* from Java, which may be described as:

***Rhopalomastix rothneyi* subsp. *javana* subsp. nov. (Fig. 1)**

*Worker.* Length 1.3-1.8 mm.

Averaging smaller than the typical form of the species. Head not longer than broad; thorax shorter, only 1 2/3 times as long as broad, with the epinotum distinctly narrower than the promesotum. Median tooth of the anterior clypeal border very indistinct. Eyes smaller, consisting of only 12 to 14 facets. Sculpture finer than in the subsp. *johorensis*; color similar, but the head and thorax more yellowish ferruginous, the gaster clouded with brown apically.

<sup>5</sup>Arnold, G. A Monograph of the Formicidæ of South Africa, Ann. South Afr. Mus. 1916 p. 188 nota.

<sup>6</sup>Viehmeyer, H. Ameisen von Singapore. Arch. Naturg. 81, (1919) 1916 p. 108-168, 15 figs.

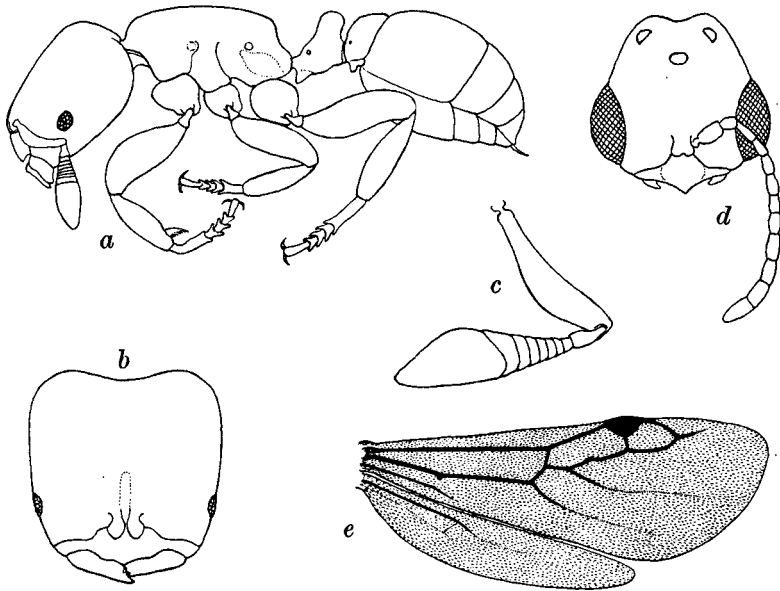


Fig. 1. *Rhopalomastix rothneyi* Forel subsp. *javana* subsp. nov. *a*, worker in profile; *b*, head of same, dorsal view; *c*, antenna of same; *d*, head and antenna of male; *e*, wings of same.

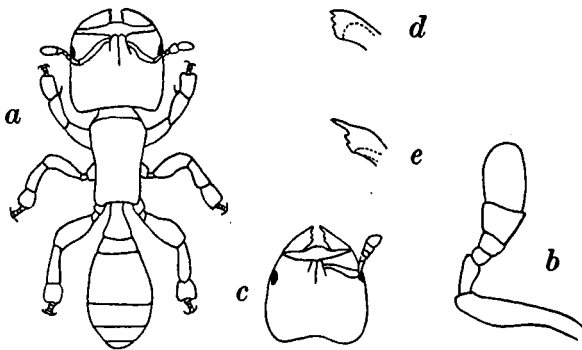


Fig. 2. *Melissotarsus beccarii* Emery. *a*, broad-headed worker, dorsal view; *b*, antenna of same; *c*, head of narrow-headed worker (After C. Emery); *d*, mandible of broad-headed worker; *e*, mandible of narrow-headed worker (After G. Arnold).

*Female* (deälated). Length 2.5-2.8 mm.

Antennæ 10-jointed as in the worker. Deep castaneous brown; pronotum, thoracic sutures, pedicel and appendages paler, more reddish brown. Sculpture as in the typical *rothneyi*, the anterior third of the head and the thoracic dorsum very finely longitudinally striated, the posterior portion of the head shining, sparsely and rather coarsely punctate, the gaster shining, with finer, piligerous punctures.

*Male*. Length 2-2.3 mm.

Black, with brown appendages. Wings clear and hyaline, with dark brown veins and pterostigma, the latter small and subelliptical. The costal vein is absent basal to the pterostigma and there is a distinct indication of a former division of the long cubital cell into two cells and pale indications of former prolongations of the cubitus and discoidal veins towards the tip of the wing. The hind wing is narrow and has only one distinct vein, the media.

Described from numerous workers, four females and three males taken at Bondowoso, Besoeki, Eastern Java and received from Dr. L. G. K. Kalshoven.

My female specimens of *javana* do not agree with Forel's description of the typical *rothneyi* in the number of antennal joints. In his generic diagnosis he gives the number as 11, which is also the number given by Emery in the "Genera Insectorum," but in my specimens the number is certainly 10. Probably Forel did not examine balsam mounts, without which it is impossible to determine the precise number of the very short and crowded median joints of the funiculus. That both worker and female of *Rhopalomastix* have the same number is also indicated by the conditions in *Melilotarsus*, both the female phases of which have 6-jointed antennæ.

Apart from the complete absence of spurs on the middle and hind tibiæ, the legs of *Rhopalomastix* also show peculiarities in the structure of the worker and female tarsi, which are by no means of the "common form" as stated by

Forel. To be sure, the basitarsi are not dilated as in *Melissotarsus*, but the second to fourth joints are unusual in being extremely short, obliquely prolonged on each side and overlapping.

In regard to the palpal joints, I am unable to add anything to Forel's statement that in the worker the "labial palpi are two-jointed, the maxillary palpi not to be found." Perhaps the latter are present but greatly reduced.

The peculiarities of the wing-venation are inadequately described by Forel. As will be seen from Fig. 1e, the fore wing is peculiar in completely lacking the costal vein basal to the pterostigma, in the shape of the pterostigma, and the length of the cubital cell which exhibits traces of a division into two. Forel compares the venation with that of *Solenopsis*, but it is clearly more like that of *Myrmecina*, especially in the structure of the radical cell. According to Arnold, the apterostigma is almost obsolete in *Melissotarsus*.

Both the genera of *Melissotarsini* have essentially the same nesting habits, as shown by the following notes. Escherich took all phases of the typical *Rh. rothneyi* under bark. Viehmeyer cites Overbeck as having taken the form which I have described as the subsp. *johorensis* from several nests in the dead twigs of mango (*Mangifera*) and in the bark of durion trees (*Durio zibethinus*), and Dr. Kalshoven has sent me the following note in regard to the subsp. *javana*: "The *Rhopalomastix* (g104) was collected from a sample of bark of a dying *Mangifera indica*, which was forwarded to our Institute at Buitenzorg by Dr. Loos, the landbouwconsulent (agricultural expert) at Bondowoso (Res. Besoeki, Eastern Java). Dr. Loos wrote us that the ants were burrowing in the bark of the dying tree. The bark was riddled by the insects over half the circumference of the tree and at least as high as he could reach. Numerous pupæ were seen. The ants, however, were not considered to be the cause of the death of the tree." This note shows that the *Rhopalomastix* colonies may be very populous. That *Melissotarsus* has very similar habits may be inferred from Arnold's remark (p. 190) on *M. beccarii*, which was taken at Durban, "nesting under bark in moderately populous colonies."

The affinities of the *Melissotarsini* to other tribes of *Myrmicinae* are very obscure. Forel at first regarded *Rhopalomastix* as allied to *Solenopsis*, but on receiving the worker at once recognized its close relationship to *Melissotarsus*. He believed, however, that "both genera are undoubtedly primitive *Myrmicines*, allied to the Ponerine group *Cerapachyi*." In view of the extraordinary specialization of the structural characters in both genera of *Melissotarsini*, this relationship can hardly be maintained. It was evidently suggested by purely superficial resemblances in general habitus to forms like *Cylindromyrmex*, *Simopone*, etc. which also burrow in wood. Emery, who had carefully studied *Melissotarsus*, when he came to revise the classification of the *Myrmicinae* for the "Genera Insectorum" (1921 p. 8) confessed his inability to establish the affinities of the *Melissotarsini* and a few other aberrant *Myrmicine* genera. He says: "*Myrmicaria*, *Stereomyrmex*, *Cardiocondyla* and especially the *Melissotarsini* are very specialized and isolated ants. In the present state of *Myrmecology* it is absolutely impossible to say anything about their affinities. I am of the opinion that the *Melissotarsini* are very primitive, but profoundly adapted to particular conditions of existence (thorax without sutures, antennæ, lack of spurs, very small size, etc.). At any rate this group is very aberrant." In the "Genera Insectorum" Emery placed the *Melissotarsini* next to the *Stereomyrmicini*, which they somewhat resemble. In my opinion there are also vague affinities between the *Melissotarsini* and the *Myrmecinini*, especially in the wing-venation and the structure of the head of the male, though the mesonotum of the male *Myrmecina* possesses notauli which are absent in the *Melissotarsini*.

In all probability the *Melissotarsini*, which now comprise only half a dozen species, are the last survivors of some very ancient *Myrmicine* stock. Their antiquity is attested by their rare and sporadic occurrence in a rather circumscribed geographic area. Evidently the Indomalayan genus *Rhopalomastix* is more primitive than *Melissotarsus*, which is known only from the warmer parts of Africa and Madagascar. In both genera, however, the characters of the worker, particularly the diminutive size, compact, subcylindrical

shape of the body, the small eyes, reduced palpi, short, stout appendages, the flattened, club-like antennal funiculi, the peculiar shape of the mandibles and the coloration, all reminiscent of similar characters in the Scolytid and Platypodid beetles, represent so many specialized adaptations to a burrowing life in bark and dead wood. The tribe is, therefore, like certain tribes of Ponerine and Formicine ants and certain vertebrates such as the sturgeons among fishes, the ostriches among birds and the monotremes among mammals, a group of ancient but highly specialized and conservative species which have managed to survive in a narrow, constant environment.

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A NOTE ON THE ASPARAGUS BEETLE,  
*CRIOCERIS ASPARAGI* LINN.

In the summer of 1928 I examined some small apple trees planted in an asparagus bed in North East, Erie Co., Pa. Great numbers of the asparagus beetle, *Crioceris asparagi* Linn., were present on the asparagus, and a large number of both sexes were resting and crawling about on the trunks and branches of the apple trees. Several rows of peach trees were also set in the asparagus bed, but I could find no beetles upon them, although the insects were apparently as numerous on the asparagus between the peach trees as on that between the apple trees. No eggs of the beetle were found on the apple trees, the insects apparently only resting on the trees. Since the beetle is strongly positively phototropic, the fact that the apple trees were open with their branches shaded very little from the sunlight, while the trunks and branches of the peach trees were shaded by foliage, may, perhaps, account for the seeming preference of the asparagus beetle for the apple trees as resting places.

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