

THE ANTS OF VICTORIA.

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[PART II.]

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Sub-family PONERINÆ, Lepeletier.

The ants of this sub-family are large or of moderate size, and the workers and females are armed with a formidable sting. The petiole is composed of only one joint, or node. In some genera the post-petiole, or first segment of the abdomen, is greatly constricted behind, as in *Myrmecia*, making this section appear to be two-jointed. In other genera, as *Amblyopone*, the node is attached to the post-petiole throughout its entire posterior surface, with the result that these ants do not show a distinct node when seen in profile.

The Ponerinæ are the most ancient group of ants, and are the stock from which the higher, specialised sub-families arose. Nowhere are they a dominant group, except in Australia, where, according to Prof. W. M. Wheeler, "these ancient insects occupy a position amongst ants analogous to that of the monotremes and marsupials among animals, and the Rhynchocephalia among reptiles. And it is especially the genus *Myrmecia*, comprising the 'Bull-dog Ants,' which may be said to characterise this fauna, and, at the same time, to represent the prototype of all ants."

All the species form small colonies, usually in the ground, under logs and stones. Some, however may be found nesting in rotten logs, and in tree-stumps. The life-history and habits of most of our species are unknown, but they may be regarded as being insectivorous. Many species, of several genera, may be found hunting on trees and shrubs in flower, where they obtain numbers of small insects. Frequently they are seen sipping the nectar of the blossoms. This applies particularly to *Myrmecia*, *Rhytidoponera*, and *Chalcopyponera*. No species has been observed attending aphids, scale-insects, or mealy-

bugs on the trees; but at least one species, *Euponera lutea*, generally has a large number of mealy-bugs in its nest.

The nests of Ponerinae are much frequented by other insects. Colonies of *Chalcopectera* and *Euponera* are rarely without visitors, insects of some of the other orders. Other Arthropods, such as mites, pill-bugs, etc., are also commonly found in most nests.

The sketch reproduced here illustrates the principal portions of an ant. The terms (and the positions indicated) are

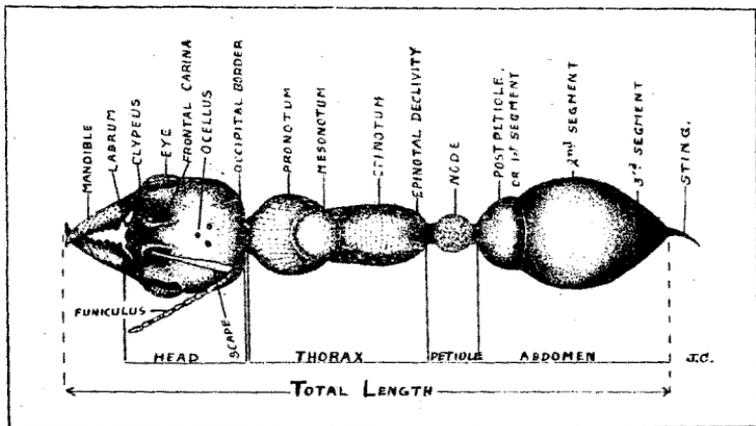


Fig. 1.—*Myrmecia* (*Pronymecia*) *aberrans*, Forel.
Dorsal view of the worker to show the principal parts.

those generally used in literature, and will be adopted in these articles.

Tribe AMBLYOPONII.

This tribe is represented in Australia by two genera, namely, *Amblyopone* and *Myopopone*; only the first, however, has so far been found in Victoria.

Genus, *Amblyopone*, Erichson.

Erichson, Arch. fur. Naturg., vol. III, p. 260, pl. 5, fig. 7, 1841.

Emery, Genera Insectorum, Fasc. 118, 1911.

In this genus the petiole consists of one joint; this is articulated over the whole of its posterior surface with the

first segment of the abdomen. The mandibles are long and narrow, with few teeth on the inner border. Eyes very small. Antennæ 12-jointed.

These are primitive ants, living in small colonies in the ground. They may sometimes be found under logs and stones. I have several times found nests in rotten logs in S.W. Australia. These logs always contained colonies of Termites, and the larvæ of Lamellicorn beetles, upon both of which, no doubt, the *Amblyopone* depend for food.

Ants of this genus do not expose themselves during the day, nor have I seen them on the surface of the ground. They shun the light. They travel long distances under half-buried logs and stones, and have tunnels diverging in all directions. The actual nest is rarely seen in such situations, being generally deep underground. I have found the queens and the brood only in rotten logs. Frequently several fertile females may be present in one colony. The winged males and females are observed in the nests, running with the workers, during January and February.

At present little or nothing is known concerning these ants. The fact that, generally, they are found in comparatively moist, or damp, situations, where beetle and other larvæ abound, suggests that they prey on these; probably also on Termites.

5. *AMBLYOPONE AUSTRALIS*, Erich. Ferntree Gully (F. P. Stry, J. E. Dixon, L. B. Thorn, C. Barrett); Beaconsfield (F. E. Wilson).

Erichson, Arch. fur. Naturg., 8, p. 260, pl. 5, fig. 7, 1841, ♀; Smith, Cat. Hymn. Brit. Mus., 6, p. 109, pl. 7, figs. 21-24, 1858, ♀♀♂.

Amblyopone australis, Er., Froggatt, Agric. Gaz., N.S.W., 1905.

Amblyopone australis, Er. Ern. Andre, Rev. d'Ent., 15, p. 260, 1906, ♀♀. Emery, Gen. Insect., Fasc., 118, 1911.

Originally described from Tasmania, this species is found throughout Southern Australia. It is about one-third of an inch in length, and varies in colour from light ferruginous to dark brown. The head is coarsely, but not densely, punctate, except in front. The thorax is smooth and shining, and has a few scattered punctures. The mandibles are long and nar-

row, with 5-6 teeth on the inner border. The eyes are very small, and there are no ocelli. The antennæ are short, the scapes not reaching beyond the eyes.

The female is larger than the worker, and is winged. She has larger eyes, and three well-developed ocelli.

The male is black, with the antennæ, tibia, and tarsi yellowish. The mandibles are small and triangular. The antennæ are 13-jointed. The thorax is densely punctate; the node almost smooth. The worker and the female are provided with a large and powerful sting.

6. *AMBLYOPONE AUSTRALIS*, Er., var. *OBSCURA*, Smith. Ferntree Gully (F. P. Spry); Belgrave (F. E. Wilson).

Amblyopone obscura, Smith, Cat. Hymn., Brit. Mus., 6, p. 109, 1858 ♀♀.

Amblyopopone australis, Er., var. *OBSCURA*, Sm. Froggatt, Agric. Gaz., N.S.W., 1905; Forel, Rev. Suisse Zool., 18, p. 2, 1910, ♀♀; Emery, Gen. Insect., Fasc., 118, 1911.

This variety has a wide distribution in Eastern Australia, ranging from Tasmania to North Queensland. It is much like *australis*, but is larger and darker in colour. The head is more densely punctate behind, and more definitely striate in front. The epinotal declivity, in both the worker and the female, is inclined to be transversely rugose; in *australis* it is smooth and shining.

The male differs from the male of *australis* much more than the workers of the two species differ. It is much larger and more strongly sculptured. The thorax and node are densely punctate. The antennæ and legs are darker in colour.

7. *AMBLYOPONE FERRUGINEA*, Smith. Ferntree Gully (F. P. Spry); Belgrave (F. E. Wilson); Woori Yallock (L. B. Thorn).

Smith, Cat. Hymn., Brit. Mus., 6, p. 110, 1858, ♀.

Froggatt, Agric. Gaz., N.S.W., 1905.

Ern. Andre, Rev. d'Ent., 15, p. 261, 1906, ♀♀; Emery, Gen. Insect., Fasc., 118, 1911.

A small species, barely a quarter of an inch in length. It is yellowish, or reddish yellow. The head and pronotum are

finely, and longitudinally, striate. The remainder of the body is smooth and shining.

The female is slightly larger than the worker, and is winged. The head, thorax and node are brownish black; the mandibles, antennæ, legs and abdomen reddish, or yellowish red. The male is unknown.

This species appears to live in small colonies, under stones. At present nothing is known concerning its life history, nor habits.

Tribe MYRMECHINI, Emery.

This tribe contains only one genus, and is purely Australian.

Genus *Myrmecia*, Fabr.

Fabr., Syst. Piez., p. 423, 1804.

This is a large genus, and, with the exception of one from New Caledonia, all the species are found only in Australia and Tasmania. They rank among the largest of known ants; some examples measuring up to $1\frac{1}{4}$ inches. They are very conspicuous, and most of the species are very aggressive. They will generally follow an intruder for some distance, if the nest is disturbed. The genus is well represented throughout Australia, but is more abundant, in species and individuals, in the coastal areas than in the dry interior. Some species, however, range far inland, and a few appear to be confined to the interior. Some of the species are widely distributed, while others are very local. When searching for food, in the trees or on the ground, these ants are fearless, attacking every living thing they meet. Even man himself they do not fear. They seem to have a strong objection to picnic parties, and, perhaps, have disorganised more picnics than all the other animals of the bush together.

This genus has been divided into four sub-genera, based mainly on the size and formation of the mandibles and the antennæ. This division, however, is not very satisfactory. Emery, in the *Genera Insectorum* (1911), erected two sub-genera, *Promyrmecia* and *Pristomyrmecia*, to contain some species which were certainly out of place in the genus *Myrmecia*, s.str. Both of these sub-genera contain only jumping species; but, apparently, Emery did not know that half the species of the whole genus are jumpers. The *Myrmecia*,

s.str., do not jump; they are walkers, or runners. Wheeler*, in dealing with "jumping ants," noted that the jumpers had not been separated, so he erected another new sub-genus, *Halnamyrmecia*, to contain these, with *M. pilosula* as the type. Something had to be done to correct the distribution made by Emery; but it is doubtful whether the new sub-genus tends to improve matters. Both the sub-genera erected by Emery are composed of jumpers, and the anatomical details are not sufficient to warrant such separation, as, under these conditions, it almost becomes necessary to erect a sub-genus for every other species.

The variations in the formation of the mandibles and the length of the scapes is very great among the jumpers. In many cases it is almost impossible to say definitely in which of the sub-genera some of the more obscure forms should be placed. To avoid further confusion, I maintain only two divisions of the genus, and separate them into *Gressoria*, *Myrmecia*, Fabr. s.str., and *Saltatoria*, *Promyrmecia*, Emery.

The *Gressoria* contains *M. Gulosa*, *vindex*, *forficata*, and their allies, all of which are species with long legs adapted for walking only. The *Saltatoria* contains *M. (P) aberrans*, *pilosula*, *mandibularis*, and their allies, all of which have short legs, and the posterior pair adapted for jumping. They have the femora of the hind legs slightly thickened, and are able to leap some inches along the ground. The formation of the mandibles is variable in this section, but the antennal scapes rarely pass the occipital border in the workers.

The *Gressoria* are the largest of the Bull-dog Ants, and generally construct their nests in the ground. When the nest is underground they raise a more or less cone-shaped mound on the surface with material excavated. The entrance usually is at the summit, and is an irregular opening, from one to four inches in diameter. Occasionally nests are found under logs or stones, and, in some localities, even in rotten logs. The colonies are small, rarely numbering more than 200 individuals. Sometimes the number is greater, but more often about 100 individuals comprise the colony.

The ground-nest usually goes down two feet, almost vertically. There is a series of three or four pockets on the ground level, just under the mound. Similar pockets occur

*Wheeler, Observations on *Gigantiops destructor*, Fabricius and other Leaping Ants; *Biological Bulletin*, Vol. XLII, No. 4, 1922.

at intervals down the shaft, which terminates in a large chamber. During the summer months the brood, more particularly the pupæ, generally is in the surface pockets. At the first alarm the brood is carried to the bottom chamber.

The winged males and females are found in the nests during the summer. Usually the nuptial flights take place, during the afternoon, in the period from February to April. After the flight the male dies, but the female, using her legs, breaks off her wings. She constructs a cell under a log or a stone, in which she deposits her eggs. Sometimes three or four females, with their eggs, are discovered in one cell, under a stone. When the eggs hatch these females fight with each other until but one remains alive to found the new colony. There is only one queen in a nest. In many instances ergatoid females have been found in the nests with queens. These females differ from the workers only in having the thoracic sclerites more developed; sometimes wing-pads are present, but no wings.

These ants hunt in bright sunlight, rarely, if ever, coming out at night. The food consists mainly of the nectar and exudations of trees and plants. The larvæ, however, are insectivorous, and are supplied with insects and caterpillars as food.

8. MYRMECIA GULOSA, Fabr.

Formica gulosa, Fabr., Syst. Ent., p. 395, ♀, 1775.

Myrmecia gulosa, Fabr., Smith, Cat. Hymn., Brit.

Mus., 6, p. 143, 1858; Lowne, Entomologist, 2,

p. 1865; Mayr., Jour. Mus. Godef., XII, p. 95,

1876; Froggatt, Agric. Gaz., N.S.W., pp. 5 and

9, pl. 1, fig. 3, 1905; Emery, Gen. Insectorum,

Fasc., 118, p. 21, 1911.

This species was selected by Emery as the type of the genus. It does not appear to be common in Victoria, although plentiful in all the other Eastern States. The workers measure from $\frac{3}{4}$ to fully 1 inch in length. The head and most of the body are reddish-yellow; the three apical segments of the abdomen are black. The first segment of the abdomen is yellowish, like the body. The jaws are yellow and the teeth brownish.

9. MYRMECIA NIGRISCAPA, Roger. Cheltenham (C. Barrett); Belgrave (F. P. Spry, L. B. Thorn); Greytown (J. E. Dixon); Portland (H. W. Davey).

Roger, Beryl. Ent. Zeitschr., p. 33, 1861, ♀; Mayr, Verh. Zool. Bot. Ges. Wien., XII, p. 723, 1862, ♀; Froggatt, Agric. Gaz., N.S.W., p. 1905, ♀; Emery, Gen. Insect. Fasc., 118, p. 9, 1911, ♀.

This species is very close to the preceding one. The colour is a little darker, more reddish. The antennal scapes are blackish brown. The apical segments of the abdomen are reddish; in *gulosa* they are black. The workers measure from 17 mm. to 26 mm.

The female closely resembles the worker, but is larger (26 mm. to 29 mm.). The colour is darker, and the sculpture stronger. The head is broader behind, nearly square. The antennal scapes do not extend so far beyond the occipital border as they do in the worker. The node is more strongly rugose. The wings are hyaline.

The male (length 15 mm. to 18 mm.) is differently coloured from the worker. The head is reddish, with the occipital border and the sides blackish. The pronotum and scutellum are blackish, tinged with red. The remainder of the thorax, node, first segment of the abdomen, legs and antennæ are yellowish red. The mandibles are yellow; the wings hyaline.

This ant has a wide range, extending from Bunbury, Western Australia, round the Southern Coast to Rockhampton, Queensland. It constructs the usual dome-shaped mound-nest, but occasionally nests under logs and stones. The dealated* females may be found, during May to July, in cells under stones, with their eggs. The eggs are small, slightly under 2 mm. in length and 1 mm. in width; they are yellowish-white. From five to seven eggs are laid at a time. The eggs hatch in from six to nine days, but six to seven months elapse before the first ants appear. These are always small examples, owing no doubt to the scarcity of food. The first brood are raised entirely by the female. While rearing this small family the queen devotes much time to excavating a nest. By the time the first ants appear she generally has a small nest, about 6 inches underground, where the larvæ and pupæ are stored. On the arrival of the small family the female stops all work and devotes her energy entirely to egg-laying.

*Females which have dropped their wings.

The new workers at once enlarge the nest, and attend to all future eggs, larvæ and pupæ. The second, and subsequent, broods usually are normal size, as the workers procure the food. Sometimes a few small workers may be found, particularly in spring. These are regarded by some naturalists as minor workers, but I consider that they are merely the result of a scarcity of food during the winter months.

10. *MYRMECIA VINDEK*, Smith. Sea Lake (J. C. Goudie); Mallee (J. E. Dixon).

Smith, Cat. Hymn. Brit. Mus., 6, p. 147, 1858, ♀; Mayr, Verh. Zool. Bot. Ges. Wien., XII, p. 72, 1862, ♀; Froggatt, Agric. Gaz., N.S.W., p. 10, 1905; Emery, Gen. Insect., 118, p. 11, 1911; Crawley, Ent. Mon. Mag., 3, III, p. 119, 1922.

This species was originally described from Western Australia. It is, however, widespread through Southern Australia.

The worker (length 16 mm. to 25 mm.) is rather slender. The colour is reddish-yellow, with the whole of the abdomen shining black. The mandible and clypeus are a clear yellow, with the teeth brown.

The female is larger (23 mm. to 27 mm.), but closely resembles the worker. The wings are long.

The male (15 mm. to 18 mm.) is coloured very much like the worker, but has the first segment of the abdomen also reddish-yellow. In this sex the mandibles are small and triangular, with only three teeth. The antennæ are 13-jointed, and almost as long as the body; the scape is very short.

The life and habits of this species are similar to those of the preceding, but the workers are more pugnacious. They drop off trees and plants on to the passer-by more readily than do more other species.

11. *MYRMECIA VINDEK*, Smith. var. *DESERTORUM*, Wheeler. Maldon (J. C. Goudie); Mallee (J. E. Dixon).

Wheeler, Proc. Roy. Soc., S. Aust., XXXIX, p. 805, 1915, ♀.

This variety was described from specimens collected at Todmorden, South Australia. It is widely distributed in the inland portions of West Australia, South Australia, Vic-

toria, and New South Wales. It varies much in size and slightly in colour. It is of a much lighter yellow than *vindex*; the head and abdomen are dark brown, sometimes almost black. It is also more densely covered with fine hairs than *vindex*; while the striation of the thorax and node usually is not so strong.

The female resembles the worker very closely, but is slightly larger.

The male is very much like the male of *vindex*, but the first abdominal segment is black, not reddish, as in *vindex*.

In Central Western Australia this species generally nests in the roots of trees. My friend, Mr. J. Hickmer, of Jigalong, states that the natives call it "Toon-jee," and treat it with great respect.

12. *MYRMECIA VINDEXT*, Smith, var. *NIGRICEPS*, Mayr. Cheltenham (C. Barrett); Fern-tree Gully (F. P. Spry); Portland (H. W. Davey).

Myrmecia nigriceps, Mayr. Verh. Zool. Bot. Ges. Wien., XII, p. 725-728, 1862, ♀; Froggatt, Agric. Gaz., N.S.W., p. 9, 1905.

Myrmecia vindex, Sm., var. *nigriceps*, Mayr. Forel, Fauna Sud-west, Aust. 1, 7, pp. 264-266, 1907; Emery, Gen. Insect., 118, p. 11, 1911; Viehmeyer, Arch. fur, Naturg., 79, p. 28, 1913, ♂.

This variety is distributed throughout Australia. It is slightly larger and darker than *vindex* or *desertorum*, and the sculpture is stronger than in both of these; the head is broader behind. In all other respects it is much like *vindex*.

Viehmeyer described, with doubts, a single male from South Australia as the male of this species. According to his description, the specimen most certainly does not belong to this species. The male of *nigriceps* is almost identical with the male of *vindex*, differing only in its slightly darker colour.

I have, growing in my garden at Sandringham, a Myrtle-leaf Acacia, *A. myrtifolia*, 2½ inches in height, and bearing 12 flowers. This, I consider, is almost a floral record for acacias. In June last I brought from the Dandenongs this seedling, which is thriving in its new environment.—A.J.T.

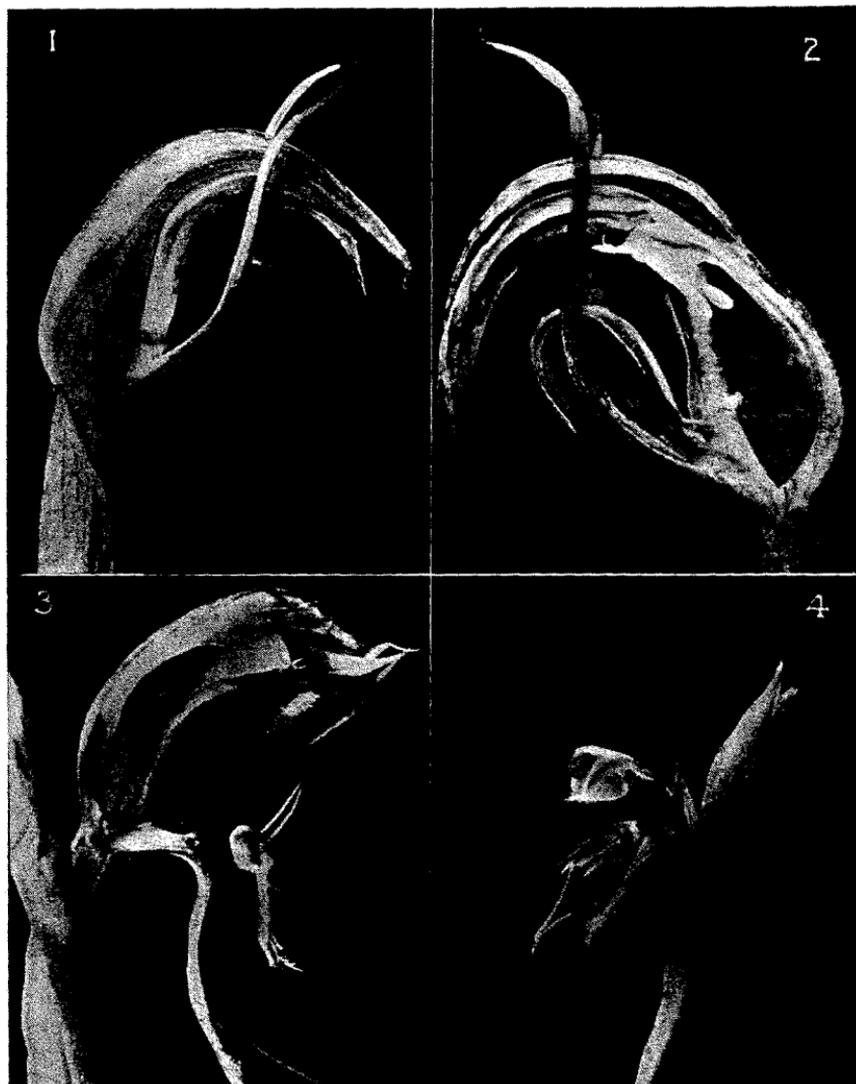


Fig. 1 PTEROSTYLIS ACUMINATA
(Magnified about 2 diam.)

Fig. 2 PTEROSTYLIS ACUMINATA
One Side Cut Away
(Magnified nearly 3 diam.)

Fig. 3 PTEROSTYLIS RUFO
One Side Cut Away
(Magnified about 3 diam.)

Fig. 4 PTEROSTYLIS PUSILLA
(Galea Cut Away)
(Magnified about 3 diam.)

Photos by T. Green