# THE ANTS OF VICTORIA.

BY J. CLARK, F.L.S.

[Part 1.]

Probably the most interesting, and neglected, group of insects is the large family of ants, *Formicidæ*. This great continent is very rich in large and peculiar species, which are not found elsewhere, yet little or nothing is known concerning them. The habits and life history of even our commonest forms are unknown. This is the more unfortunate because, with the advance of settlement, the natural bush, gradually, is becoming cultivated land, and the ants, like many other native animals, slowly, but surely, are disappearing. Before it is too late, it would be well to learn all we can of these insects; even now, some species, which are very local, have become extremely rare.

The difficulty attached to the study of Australian ants has always been the lack of popular literature on the subject; unfortunately, such literature does not exist. Most of our ants have been described in various scientific journals, published in German, French and Italian. To the average nature lover, these records are uninteresting, since they are technical descriptions of the ants. They are, of course, essential, from a scientific point of view, but make little appeal to one bent on the study of ants in the bush.

Books published in Australia contain very little concerning ants. The best of them is *Australian Insects*, by W. W. Froggatt, published in 1907. In 1905, the same zealous entomologist published a catalogue, with notes on a few species, of the Australian ants. Mr. H. Tryon, in 1888, published some notes on Queensland ants, in the Proceedings of the Royal Society of Queensland. To the *Victorian Naturalist*, in 1903, E. E. Barker contributed a good paper on Bull-dog Ants: F. P. Dodd contributed interesting notes to the same journal, in 1902. The most useful book on ants in general is that by Professor W. M. Wheeler, entitled *Ants: Their Structure, Development and Behaviour*. It is published by the Columbia University Press, New York, U.S.A.

Some quaint and weird stories, particularly in connection with our Bull-ants, will be found in literature published overseas. Sharp (1899) writes that the nests are "said to be sometimes five feet high." This surely must apply to Termites' nests. Bull-ants will climb anywhere; and it is possible that a stranger, seeing huge ants on a high mound, might conclude that they were the owners. Probably the quaintest story regarding our Bull-ants, is that recorded by Smith, in the Proceedings of the Linnean Society of London (1861), from details supplied to him by Mrs. Hatton, of Sydney. The "funeral rites" of the soldier-ants are described. This has been dealt with in the *Victorian Naturalist*, by Barker.

I have kept Bull-ants in captivity for some years, and find that, far from showing sympathy with the injured, or the dead, they throw them on the rubbish-heap, where gradually they become covered in the refuse from the nest. In the bush, other ants would certainly carry such bodies to their nests, and it is possible that Mrs. Hatton noticed some species of *Camponotus*, several of which look much like Bull-ants to the casual observer, carry the dead Bull-ants to their nests, which frequently are indicated only by holes on the surface of the ground. When food is being taken to the nest in abundance there are generally a few ants around the entrance; this may have suggested the "funeral."

In an article in *The Entomologist* (1865), B. T. Lowne dealt with a number of ants seen and captured during a two-months' visit to Sydney, in 1862. Some of his notes are good; but in several cases his observations do not tally with those of Australian observers. In dealing with *Myrmecia gulosa*, one of the commonest Bull-ants, he says:— "These ants are the most rapacious and numerous of Australian species; they climb trees in vast numbers, to attack the great *Anoplognathi*, which they pull down and bury alive in the earth; although, in point of bulk, the beetles bear very much the same relation to the ants that an elephant does to a man. I have, however, often seen three ants bring one of the largest to the ground in spite of all its exertions. Their sting is very severe, but the pain occasioned is evanescent." In dealing with *Myrmecia nigrocincta*, he says:—"This insect is remarkable for the leaps it takes in running, often jumping over a foot of ground at a leap; it also jumps from the trunks of trees upon persons walking near it. Its sting is very severe."

Bull-ants do climb trees, and they will attack anything and everything that comes in their way, but why they should pull down and bury the beetles alive is a mystery that Lowne does not explain. There is no reason whatever for such action. From my own observations, these ants carry home every insect they capture; but the victims, as a rule, are honey-bees, and other soft-bodied insects, taken to feed the larvæ in the nest. I have never known adult Bull-ants to eat animal food; they always prefer the nectar of blossoms and the exudation of trees, shrubs, etc. In my artificial nests the food supplied is honey, sugar in various forms, and cake of all sorts, with plenty of water each day; also a quantity of insects and caterpillars for the larvæ. Although the adult Bull-ant is really a honey-eater, the larvæ must have an insect diet, or they will eat one another when close together. On more than one occasion, when the food supply was overlooked, I found that one larva had apparently been supplied as food to other two by the ants; and several times weak, or injured, ants have been served to the larvæ. When the larvæ have finished their feeding on the insect body, its remains are carried outside the nest to the rubbish-heap, where, in the bush, they are promptly removed by other ants. Thus, a Bull-ants' nest very rarely shows signs of food remains, either inside or out.

Lowne's observation, that these ants jump from trees on to a person, is quite correct, as most bush lovers know; but the statement that the Jumper, *nigrocincta*, can jump over a foot of ground requires verification. I have not seen one jump more than four inches, and that is more than twice the usual length of the Jumper's "leap."

Apart from the Bull-ants, there are many species that will reward study, such as the Harvesting Ants, which collect, and store in their nests as food, seed of various plants, including grasses. Very little is known concerning "Harvesters" in Australia. In other parts of the world, there are Fungus-growing Ants. These insects strip the leaves off trees to make the beds on which they raise the fungus. So far, this habit has not been discovered in any Australian species.

The nests of most ants contain numbers of other insects, mostly beetles. Although numbers of these insects have been collected in Australia, we possess only meagre knowledge concerning them, or the reasons for their presence in the nests

with the ants. Myrmecophiles, and their habits, offer a wide field to the entomologist.

The study of ants is most interesting, and entails very little exertion. It should appeal to those whose health does not allow of vigorous work in the bush. It keeps the observer in the open, with his mind fully occupied, so that life's worries are soon forgotten, while a store of valuable information is gained. Ants are numerous everywhere. They are easily kept in artificial nests, and make interesting pets. The food required by them is always at hand, and the nests are readily made; so that no one should experience much difficulty in keeping ants for observation at home.

At present a bare list of the ants found in Victoria would not be very useful, so I propose to give a detailed list of the various forms, with references to the literature, and notes where possible. The literature is very scattered; besides, much of it is now unobtainable and deals only with the descriptions of the species. Inclusion of references to the literature is the more necessary from the fact that Froggatt's catalogue gives only some 30 species as found in Victoria, whereas, thanks to my many entomological friends, I have been able to see several times that number from this State. Of course, it must be borne in mind, that a number of the early workers considered "Australia" as sufficient indication of locality, so that many in Froggatt's list should be treated as Victorian species.

The compilation of this paper has been rendered possible through the assistance I have received from entomologists in Victoria, particularly from Mr. J. A. Kershaw, through whose courtesy I have been able to examine the ants in the National Museum, Melbourne, and Mr. J. C. Goudie, who has gone to great trouble to send me the ants of North-Western Victoria; Messrs. C. Barrett, H. W. Davey, F. E. Wilson, G. F. Hill, and W. F. Hill, have collected extensively, and sent me a considerable number of new and interesting species. Recently Mr. C. Oke has sent some interesting species; while to the energy and enthusiasm of the late Mr. L. B. Thorne I owe much valuable material and information. I am greatly indebted to these friends for their assistance.

## Family FORMICIDÆ.

### Sub-family DORYLINÆ, Leach.

This sub-family is not at present represented in the fauna of Victoria. Only three species are recorded for the whole of

Australia, and of these two are from Mackay, North Queensland, and one from Lismore, New South Wales.

### Sub-family CERAPACHYINÆ, Forel.

Wheeler, Psyche, vol. XXVII, 2-3, p. 50, 1920; Proc. Amer. Acad. Arts, Sc., 53, pp. 215-265, 17 figs., 1918.

Clark, Jour. Roy. Soc., W. Aust., vol. IX, pt. 2, pp. 72-89, 10 figs., 1923; vol. X, pp. 75-89, pls. VI-VII, 1924.

This sub-family is well represented in Australia, about two-thirds of the known forms having been described from this country. At present they are poorly represented in Victoria. Only four species have been found, and these had previously been recorded from other States. No doubt many more will be discovered when the study of this interesting group is undertaken by local entomologists.

### Genus **Eusphinctus,** Emery.

In this genus the abdomen is elongate and cylindrical, the segments are separated from each other by well-defined constrictions; the workers are eyeless, or with very minute eyes. This genus contains two subgenera, based on the number of antennal joints, these in *Eusphinctus* s.str. being 11-jointed, while in the other sub-genus, *Nothosphinctus*, they are 12-jointed. These are rare ants, generally found in small communities, under logs and stones. Wheeler considers that they are hypogæic; their nests and habits certainly suggest that they are so in Western Australia, where I found one colony foraging in the bush among half-buried logs. At present very little is known concerning their habits.

1. EUSPHINCTUS STEINHEILI, Forel. Belgrave (F. E. Wilson).

*Sphinctomyrmex* (*Eusphinctus*) *Steinheili,* Forel, Ann. Soc. Ent. Belg., 44, p. 72, 1900, ♀ (nec. ♂): Emery, Gen. Insect. Fasc. 118, p. 7, 1911; Froggatt, Agric. Gaz., N.S.W., p. 15, 1905.

*Sphinctomyrmex* (*Eusphinctus*) *fallax,* Forel: Ann. Soc. Ent. Belg. 44, p. 73, 1900, ♂.

*Eusphinctus* (*Eusphinctus*) *Steinheili,* Forel, Wheeler, Proc. Amer. Acad. Arts & Sc., 53, 3, pp. 225-228, figs. 1-2, 1918.

A specimen from Belgrave agrees perfectly with the description of this species. It is a small, reddish-brown ant,

barely one-quarter of an inch in length. It has no traces of eyes. This ant is also found in Queensland, New South Wales, and South Australia.

2. EUSPHINCTUS STEINHEILI, Forel, var. HEDWIGÆ, Forel. Ferntree Gully (F. P. Spry).

*Sphinctomyrmex* (*Eusphinctus*) *fallax*, var. *hedwigæ*, Forel, Rev. Suisse, Zool. 18, p. 21, 1910, ♂ ♀; Emery, Gen. Insect. Fasc. 118, p. 7, 1911. Bull, Lab. Zool. Gen. Agrar. 8, p. 179, 1914.

*Sphinctomyrmex hednigæ*, Forel, Froggatt, Agric. Gaz. N.S.W., p. 15, 1905. Aust. Insects, p. 92, 1907.

*Eusphinctus* (*Eusphinctus*) *Steinheili*, var. *hedwigæ*, Forel. Wheeler, Proc. Amer. Acad. & Arts & Sc., 53, 3, p. 228, 1918.

Several examples of this variety, in the collection of the National Museum, were found under stones at Ferntree Gully, by the late Mr. F. P. Spry, and noted by him as rare. It is very close to the preceding species, and, apart from colour, which is more uniformly reddish, it is not easily distinguished from that species.

## Genus Phyracaces, Emery.

The ants of this genus are most interesting, and may be regarded as the Foraging Ants of Australia. 35 species are known from all parts of the continent, but concerning their habits we have little information. Wheeler has published some notes on species from New South Wales, in his paper, published in 1918; and I have given a few notes on Western Australian species. From the notes so recorded, it is evident that the members of this genus obtain the most of their food supplies by raiding the nests of other ants, and carrying off the larvæ and pupæ to their own nests, where they are served as food to the *Phyracaces* larvæ.

In some cases the female is fully winged, as in most female ants; but in many cases the female is ergatoid, or worker-like, hardly to be distinguished from the workers except by her larger size. In other cases, the female has the thorax fully developed, but bears no wings. Even in the winged forms, the wing veination is more or less obsolete. Only two species have, so far, been found in Victoria, and both were previously recorded from New South Wales.

3. PHYRACACES LARVATUS, Wheeler. Ferntree Gully (F. P. Spry); Beaconsfield, Belgrave (F. E. Wilson).

Wheeler, Proc. Amer. Acad. Arts & Sc., 53, 3, p. 257, fig. 15, 1918, ☿.

Clark, Jour. Roy. Soc., W. Aust., X, p. 83, pl. 7, figs. 1-6, 1924. ♀ ♂ .

This species was originally found in New South Wales, but it appears to be more abundant in Victoria than in that State. The male and female were described from the material collected by Spry at Ferntree Gully; the types of these are in the National Museum. In his notes, Mr. Wilson says:—"This ant is very rare; found under stones." It is a shining black ant, about a quarter of an inch in length, with the mandibles, cheeks, clypeus, legs, pygidium and incisures of the abdomen dark red.

4. PHYRACACES SENESCENS, Wheeler. Broadmeadows (C. Oke).

Wheeler, Proc Amer. Acad. Arts & Sc., 53, 3, p. 259, fig. 16, 1918, ☿

Clark, Jour. Roy. Soc. W. Aust., X, p. 87, 1924, ☿

This species is slightly larger than the last; and easily distinguished from it by its greyish appearance, which it receives from the long, grey hairs on the body. It is black, with the mandibles, tips of the scapes, pygidium and parts of the legs castaneus.

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## BLUE-TONGUED LIZARD AND SNAILS.

Hearing a crunching noise under the floor of the verandah of my house at Maldon, I lifted some of the boards quietly and discovered a full-grown Blue-tongued Lizard, *Tiliqua scincoides*, making a meal on snails, *Helix aspersa*, which had affixed their shells to the brick wall. The lizard crushed the shells with the greatest ease, and ate them, with their tenants. In country districts Blue-tongued Lizards, and also the Shingle-back, *Trachysaurus rugosus*, often establish themselves under the floors of dwellings, etc., and it is a common belief (shared also by the writer) that houses thus "protected" are shunned by snakes. Yet these harmless, interesting, and useful reptiles sometimes are killed by persons who think that they are "dangerous-looking."—J.C.G.