

ANTS INHABITING MOUNT EGMONT.

By W. W. SMITH, R.A.O.U.

TARANAKI's magnificent forest reserve, comprising 80,000 acres, embellishing the lower zone of Mount Egmont, is probably the best-preserved area of native primeval bush remaining in New Zealand. Wild goats have damaged several of the descending spurs near and on the Kaitaki Range, but otherwise the flora and fauna of the great and valuable reserve are well preserved. The rich undergrowth and natural humus of the forest-floor, with numerous decaying logs at varying altitudes, both of which ants and numerous other insects inhabit, are present to the altitude limit of the forest throughout the area. The habitats of the species of ants inhabiting both zones of the mountain vary much. Several species have their nests under stones from near the seashore to the forest radius line, also under logs and stones in the forest area, and under stones to 1,500 ft. above the forest-line. I found five species under stones—namely, *Ponera* (*Mesoponera*) *castanea* Mayr., *Ponera antipodum* Forel, *Ectatomma* (*Acanthoponera*) *brownii* Forel, *Strumigenys antarctica* Forel, and *Melophorus advenus* Smith—in a space of about an acre on the slope beneath the Dieffenbach Cliffs. Where partly embedded stones occur on flat areas and along the river-valleys several species construct their nests under them, and become large and populous colonies. *Monomorium antarcticum* frequently construct nests in tawa and matai logs, and found communities which increase to tens of thousands in large logs. Before this species swarm in February the long, commodious tunnels and chambers they construct are thronged with winged ants in a state of ebullition awaiting a favourable time of calm sunshine and warmth to enable them to cast forth and disperse on the wing to found new colonies. This ant forms the largest and most populous nests of any of the twenty-one known native species. There may be distinct colonies in a large log, as queens occur in different parts of it; but, if so, they seem to harmonize, and certainly swarm at the same time.

When residing at Ashburton and studying ants occurring on the Canterbury Plains, I occasionally observed two to six workers of *Huberia striata* tending a few eggs under stones where there were no queens. It is a common occurrence when studying ants in the bush or on bush clearings where logs are left to decay to find ants' eggs scattered under them with no ants near. Beetles of the genera *Pterostichus* and *Trichosternus* are great enemies of ants, by consuming their eggs. They shelter and live under logs where ants construct their homes. When kept in captivity they consume ant-eggs freely when supplied to them. At Ashburton we had to limit our observations to under-stone-dwelling species. Roots of several shrubby plants grow into the cooler soil under the stones, and are later infested by several species of rhizophagous Hemiptera. After the ants construct their nests under the stones, they carry the hemipterons and place them on the roots when they attend to them, and draw milliferous nutriment from them to feed their young larvæ. The practice is followed alike under stones, in the open, and under logs of various ages in the Taranaki forests. As at Ashburton, ants living in the open country and in the forests here practise the habit of isolating a few eggs and pupæ in a suitable site, and tend the latter to maturity. Occasionally they bring in more eggs and pupæ, and thus new nests are founded and the colony increased.

Professor Forel, in his paper on the Revision of the New Zealand Formicidæ,* stated that "I have no doubt that the North Island will furnish further new species after careful search, especially in vegetable mould and the hollows

of trees." In the congenial climate of Taranaki the floor of well-preserved forest reserves teems with life in varied forms. On days of calm and sunshine, and the forest vegetation dry, many species of ants may be seen moving over the shrubs and young trees in quest of aphids and other food; others are busy scanning the forest-floor, the bark, stems, and limbs of various trees as high as sight can detect them. They are endowed with a perfect sense of direction, and return home safely with the food they collect. Their nests are more numerous on the sides of gently sloping spurs, where the sites are drier and warmer than on the bottom of deep bush-clad valleys. Many of the nests of *Huberia striata* and those of the fine species of *Monomorium*, with *Amblyopone*, *Melophorus*, and *Strumigenys*, are also inhabited by economic and parasitic forms. They include several species of aphids and scale insects; also *Lipura incerta* Moniez., *Lepidophorella brachycephala* Moniez., and *Anoura spinosa* Lubbock. The two former forms also occur in ants' nests at Ashburton. Commensalism is less prevalent in the nests of the stinging *Ponera*.

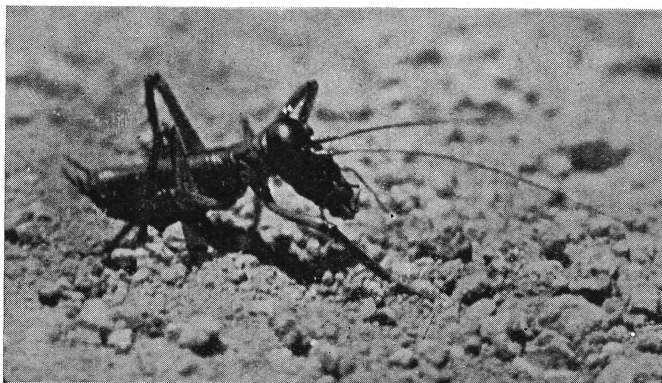
Professor Forel has described *Huberia striata* var. *rufescens*. In Canterbury, and on open lands, and in the forests of Taranaki, var. *rufescens* occurs in the crowded nests of *Huberia* before swarming. I have not observed one remain in the nest after the swarm cast off. When observed under a good lens, moving rapidly with others in courts of the nests, they are structurally more delicate than normal forms inhabiting the same nest. Of the many nests I have examined of *H. striata* in both Islands, I have not met with one in which the variety *rufescens* predominated. I have not, however, observed more than five or six individuals occurring in populous nests, and they are generally late in the summer months appearing in them. Following is a list of species occurring within the radius line of Mount Egmont Forest Reserve. Several species in the list also occur in the open lands and the bush-clad river valleys between the sea and the reserve:—

<i>Discothyrea antarctica</i> Emery.	<i>Monomorium integrum</i> Forel.
<i>Amblyopone saundersi</i> Forel.	<i>Monomorium suteri</i> Forel.
<i>Orectognathus antennatus</i> Smith.	<i>Melophorus advena</i> Smith.
<i>Orectognathus perplexus</i> Smith.	<i>Ponera castanea</i> Mayr.
<i>Strumigenys antarctica</i> Forel.	<i>Ponera antipoda</i> Forel.
<i>Huberia striata</i> Forel, with var. <i>rufescens</i> Forel.	<i>Ectatomma brounii</i> Forel.
<i>Monomorium antarcticum</i> White.	<i>Amblyopone cephalotes</i> Smith.
<i>Monomorium nitidum</i> Smith.	<i>Prenolepsis longicornis</i> Latr. (Introduced.)
<i>Monomorium antipodum</i> Forel.	

To the student of entomology in New Zealand, Mount Egmont, with its beautiful environs, is an unexampled field for study and research. The Board controlling the great reserve are having extensive walks formed in many parts to enable students and visitors to view the flora and varied scenery of the mountain. Excepting the birds and the flora, no other of the natural sciences has received much attention or study from students or scientists. Few insects when studied in captivity can compare with ants when carefully and patiently treated and experimented with. New Zealand ants readily adapt themselves to such conditions.

Note on Hemideina megacephala Buller.—These remarkable insects (the taipo, or weta, of the Maori) are generally said to feed only on vegetation. When recently visiting the Mount Egmont Forest Reserve we observed a large specimen of this insect carrying a large native fly (*Calliphora quadri-*

maculata Swederus) across a shingled path. The Hemideina are nocturnal in habits, but occasionally they roam abroad on dull and wet days. The day we met with it was such a day, preceding heavy rain. After Mr. F. B. Butler photographed the weta *in situ* I captured it, and, with three more large specimens, brought them home to further test their insectivorous habits. I placed them in a large goldfish-globe on a sand bottom, and fed them daily on various native plants on which they feed in their native state. I also introduced a dozen of the flies named above, with a number of the introduced species (*C. erythrocephala* Meigen). When the days are fine and warm the flies are too alert and active to be caught by the wetas. It



is chiefly during the night when the wetas are able to seize the flies while they are at rest. The latter were supplied with sweet and savoury foods, of which the wetas also partook freely. Of the variety of food supplied to the wetas, comprising both native and introduced vegetation, they consumed more rose leaves and shoots than any other food. The flies were all caught and consumed in five days. Two of the introduced flies were the last to be captured. A large female weta placed in a separate vase with rose leaves and two large spiders consumed the latter on the evening they were put together. The accompanying photograph shows the weta carrying the fly as stated above.

Since despatching the manuscript of this article I have examined my volume of notes on native ants compiled in several districts during many years in both Islands. On the 6th October, 1913, while botanizing on Paritutu, a cove (500 ft. alt.) near the New Plymouth Harbour, we were sitting on the grass growing on its rocky summit, which had been partly levelled by the Maoris in former years. In a few minutes we observed several ants moving in a line, each carrying a small piece of grass-leaf. We traced them to the entrance of their nest, which was located deep among the large pieces of broken rock. We did not disturb them further on that date. On visiting the site a month later we failed to meet with any trace of them. During the interval the harbour quarry men were blasting the cove extensively, procuring stone for harbour-construction. Previous to meeting with these leaf-cutting ants I had not yet met with a case of ant-made fungus-beds growing in the nests of any of the twenty-one known species of native ants. They were probably disturbed by the vibrations of the cove during blasting operations, which caused them to migrate. With the pleasant co-operation of two young students of ant-life, we are endeavouring to again retrace the presence of this leaf-cutting species on Paritutu.