

conical form, and then become for a while arrested in their development. In this state, surrounded by a firm membrane of a blackish-grey colour, they continue until the following spring, when the investing membrane splits to allow of the elongation of the branch."

In November the water was again crowded with fragments of *Paludicella*, and also *Plumatella*, small fresh-water crustaceans, and beautiful water-mites. No doubt the larger water-mains contain masses of these *Polyzoa*, amongst which large numbers of fresh-water animals find a habitation.

Both *Paludicella* and *Plumatella* were found choking the water-pipes of the City of Hamburg, and were considered as having an unfavourable influence on the water-supply, as providing a nidus for undesirable germs. Allman found that this species was "eminently a lover of obscurity," being only found under arches or places where direct sunlight does not penetrate.

ART. XXVI.—*Short Notes on some Insects.*

By F. W. HILGENDORF, M.A., B.Sc.

[Read before the Philosophical Institute of Canterbury, 26th November, 1902.]

Poliaspis media.

I found this Coccid in dense white masses near the base of the leaves of *Phormium tenax*, at Lincoln. Maskell, in his notes on Coccids, records this insect only on *Veronica*, *Leucopogon*, *Cyathodes*, and ferns.

Rhizobius graminis.

Under the roots of cultivated grasses are commonly observed masses of a white mouldy-looking substance. On examining these I found each to contain an immature form of the above Aphidian. Its appearance and size are something like those of the underground form of *Phylloxera vastatrix*. The adult form, of which I found a single specimen, was covered with white waxy threads, as *Schizoneura lanigera* is, and it is doubtless by the shedding of these threads that the common tufts of white substance are formed. The adult, when cleaned of its covering, was dirty-white in colour, with bright-red eyes and a very long and strong proboscis, by means of which it feeds on the roots of grasses.

Anabarhynchus luridus.

I found the larva of this fly about 2 in. under the surface of ground sown in wheat, which at the time was about 3 in.

high. The larva was about 1 in. long, very thin comparatively, and of a light-brown colour. I found it on the 1st October, and the adult fly emerged on the 7th November..

Odontria zealandica.

The night of the 16th November, 1900, was dark, calm, and warm. As daylight failed the grass-paddocks became literally alive with brown beetles. The rustling of their climbing out of the grass was like a strong breeze in an oat-crop, and their droning while on the wing was like the hum of many threshing-mills. In their wheeling flight they struck the head at every moment, and tangled themselves in the hair and beard of observers. This lasted for twenty minutes at the outside—from 7.25 to 7.45—then absolute stillness again. When I looked for the beetles they were discovered in countless numbers in the orchard, eating the younger leaves of pears, apples, and plums. They took no notice of the light of a strong acetylene-lamp, except occasionally to fall off the tree and lie as if dead. I often counted four beetles on a single leaf, and I believe there was a beetle on every leaf. When the tree was shaken they fell to the ground like hail. At 9 p.m. they were still feeding, and there was no change at 10.30 or 12 p.m. or at 2 a.m. At 3.30 a.m. a white streak of light had appeared in the east; many of the beetles were still feeding, but a few were flying homeward. By 4 a.m. they were nearly all gone; but there was only a silent and gradual stealing away, very unlike the great bustle of their approach to their feeding-ground. I have not observed so great a flight since, though there have been several of less magnitude. The 16th was very calm and dull, and at nightfall there was a light breeze from the north-west, which changed at 2 a.m. to a slight air from the south-west, with a feeling of dampness. The minimum temperature for the night was 50° Fahr. By morning on the 17th the wind was again north-east, but by noon there was a howling gale from the south-west, with 1.635 in. of rain, next to the heaviest twenty-four hours' fall during the year. The three succeeding days were also days of south-west wind and slight rainfall.

Another note on the brown beetle may perhaps be of interest. On the night of the 9th November, 1901, I was sleeping on the ground on the slopes of Mount Torlesse. I was suddenly awakened, and soon realised that a beetle had crawled into my ear, and, in the natural efforts of a ground-beetle to get to the bottom of a hole, was clawing against the tympanum, producing intense pain. It continued this scratching while I was striking a wet match, finding a knife, and sharpening a lead pencil, by means of which my com-

panion shortly succeeded in withdrawing piecemeal a specimen of *Odontria*.

Cacœcia excessana.

This common and very variable moth has taken on a new habit of great importance to the general public, and especially to fruit-growers. Meyrick described the insect as probably polyphagous, and Mr. Fereday has recorded, and Mr. Hudson observed, the caterpillar's habit of spinning down a leaf on to a nearly ripe apple or pear and eating away the fruit under the leaf. But the habit that I am about to record is, I believe, new, and certainly very destructive. The moth lays her eggs on the leaves of the apricot, on which the larva feeds till the fruit is nearly ripe. Then it bores its way into the fruit in the groove near the stem. It eats its way under the stem, which thus looses its hold, and the fruit falls to the ground when it is just starting to ripen. An apricot-tree near Lincoln College was loaded with well-formed fruit beginning to take on the colour of ripeness. Within a fortnight the whole of the fruit had fallen off without ripening.

Heliostibes atychioides.

Meyrick notices this moth as frequenting *Leptospermum*. I found its larva in great numbers on the ornamental shrub *Juniperus communis*. The caterpillar is about $\frac{1}{2}$ in. in length and $\frac{1}{8}$ in. broad. It is of a light-brown colour, with the head and thorax dark-brown or black. Some hundreds were feeding on a single branch, and had quite destroyed the tough prickly foliage. When pupating they spin a cocoon binding several of the leaves together, and the general effect was to entirely destroy the branch on which they had been feeding.

Plutella cruciferarum.

The caterpillar of this moth abounds in, and often ruins, the turnip-crops of this district. I found many specimens that had been killed by the entomophagous fungus *Entomophthora radicans*, with which I was able to infect healthy larvæ, though not with that degree of certainty that one could have wished for.

Porina cervinata.

I found very numerous specimens of the larva of this moth under the roots of long-established grass at Lincoln College. The caterpillar is in all respects like that of *P. signata*, as figured by Mr. Hudson in his "New Zealand Moths." I isolated several specimens on the 23rd September, and some of them hatched out on the 15th October.

Bombyx.

We have here imported three bumble bees, *B. virginalis*, *B. hortorum*, and *B. hortorum* var. *harrisellus*. While making some investigations into the harm or good that these bees do to the bean-crop I made the following observations that I think worth recording: Of sixteen specimens of *B. virginalis* that I watched, the whole sixteen bit through the base of the flower to get at the nectar. Of thirteen specimens of *B. hortorum* and of seventeen of *B. hortorum* var. *harrisellus*, the whole number climbed in through the mouth of the flower and got at the nectar by the legitimate means. It thus appears—and, indeed, it would appear from the structure of their probosces—that, as far as the bean goes, *B. virginalis* is useless or harmful, while the other two are useful.

ART. XXVII.—*The Rotifera of New Zealand: a Revised and Expanded List.*

By F. W. HILGENDORF, M.A., B.Sc.

[Read before the Philosophical Institute of Canterbury, 26th November, 1902.]

THE object of this paper is to make numerous corrections in the "Contribution to the Study of the Rotifera of New Zealand," which appeared in the "Transactions of the New Zealand Institute," vol. xxxi., p. 107, and at the same time to add to the list the names of some species that I have found since writing my last paper. The corrections referred to have been made largely at the suggestion of Mr. C. F. Rousset, Curator of the Royal Microscopical Society, and partly as the result of my own further observations.

Order RHIZOTA.

Family FLOSCULARIDÆ.

Genus **Floscularia**.

- F. coronetta* (Hudson and Gosse, "Rotifera," p. 49): Found by Archdeacon Stock at the Hutt. Recorded, Trans. N.Z. Inst., vol. xxv., p. 193.
- F. ornata* (H. and G., p. 50): Found among water-lilies, Lincoln College.
- F. ambigua* (H. and G., p. 53): Found in lily pond at Mount Eden, Auckland.