

Biological Notes on the Hemipteron

PTILO CERUS OCHRACEUS

BY

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The very curious species of Holoptilinae, which Mr. G. W. Kirkaldy has identified as *Ptilocerus ochraceus* Montandon, and which he was so kind as to describe and figure in the preceding paper, was found by me at Wonosobo, a place in the Kedou Residency (Central Java), situated at a height of about 2600 feet. In the vicinity is a natural spring, used as a bathing place, called Mangli.

In the bamboo sheds surrounding the basin I discovered large numbers of the curious bug. A few of them were flying about, but the majority was to be found in the open ends of the bamboo poles of which the roof was constructed, and on the top of all the wooden posts supporting the structure. Hundreds of the full grown insects as well as their nymphs were crowded together in certain places. They were attended by large numbers of small black ants, which Professor A. Forel had the kindness to determine as *Dolichoderus bituberculatus* Mayr, one of the most common species in this country. These ants usually make their nests in trees where they fasten together two leaves, between which they store the larvae and

cocoons; but other sheltered places serve the same purpose, and many dwelling-houses are infested by them. On post and beams countless numbers are busily moving along definite paths. Their hunting grounds extend to the surrounding trees and shrubs, where they keep large herds of Aphids, Coccids and Membracidae for the sake of the sweet excretions these insects and their larvae afford them. I often found with these ants caterpillars of the Lycaenid butterfly *Gerydus Boisduvali* Mre ¹⁾, which make themselves agreeable to the ants by yielding a fluid of which the ants are fond, but in their turn they feed on the scaleinsects kept by the ants.

This all goes to show that *Dolichoderus bituberculatus* is particularly fond of the sweet excretions of different insects, a taste which sometimes leads to its wholesale destruction, as we shall presently learn.

Most of the ants, which I found in the above named locality near the bugs, appeared to be in a more or less paralysed state and the ground beneath was in some places covered an inch thick with dead ants. These corpses were continually carried off by another kind of small red ant, but new victims, dropped from the roof, incessantly replaced those that were removed. As the spot where the bugs had settled down was a very inconvenient one for closer inspection, I gathered a large number of the insects, adults as well as nymphs, and carried them home alive, together with a section of a bamboo pole from the roof, which being split open revealed a large number of bugs' eggs, fastened to the inner surface.

Soon afterwards I left Wonosobo and returned to my dwelling-place Samarang, where I had a better opportunity for observing the bugs at leisure. The ants I had found with them at Wonosobo also abounded near my house; so I brought a great number of these ants together with the bugs in a

¹⁾ Prof. Courvoisier at Basle was so kind to give me the name of this butterfly.

small cage with glass windows, specially constructed for the observation of insects.

The bugs had fasted for about a week, the only thing I had given them being pure water, sprinkled in their cage, and which they readily absorbed. They were however none the worse for the fasting, only a few of the many hundreds I had captured having died.

As described in Mr. Kirkaldy's paper, the bug possesses a very curious tuft of yellow hair (a trichome), situated on the under-side of the body, which apparently secretes some substance with a flavour agreeable to the ants.

The way in which the bugs proceed to entice the ants is as follows. They take up a position in an ant-path or ants find out the abodes of the bugs, and attracted by their secretion visit them in great numbers.

On the approach of an ant of the species *Dolichoderus bituberculatus* the bug is at once on the alert; it raises half way the front of the body, so as to put the trichome in evidence. As far as my observations goes the bugs only show a liking for *Dolichoderus bituberculatus*; several other species of ants, e. g. *Cremastogaster difformis* Smith and others, which were brought together with them, were not accepted; on the contrary, on the approach of such a stranger, the bug inclined its body forwards, pressing down its head; the reverse therefore of the inviting attitude taken up towards *Dolichoderus bituberculatus*. In meeting the latter the bug lifts up its front legs, folding them in such a manner that the tarsi nearly meet below the head. The ant at once proceeds to lick the trichome, pulling all the while with its mandibles at the tuft of hairs, as if milking the creature, and by this manipulation the body of the bug is continually moved up and down.

At this stage of the proceedings the bug does not yet attack the ant; it only takes the head and thorax of its victim between its frontlegs, as if to make sure of it; very

often the point of the bug's beak is put behind the ant's head, where this is jointed to the body, without, however, doing any injury to the ant.

It is surprising to see how the bug can restrain its murderous intention as if it was knowing that the right moment had not yet arrived.

After the ant has indulged in licking the tuft of hair for some minutes the exudation commences to exercise its paralyzing effect. That this is only brought about by the substance which the ants extract from the trichome, and not by some thrust from the bug, is proved by the fact, that a great number of ants, after having licked for some time the secretion from the trichome, leave the bug to retire to some distance. But very soon they are overtaken by the paralysis, even if they have not been touched at all by the bug's proboscis. In this way a much larger number of ants is destroyed than actually serves as food to the bugs, and one must wonder at the great prolificacy of the ants, which enables them to stand such a heavy draft on the population of one community.

As soon as the ant shows signs of paralysis by curling itself up and drawing in its legs, the bug at once seizes it with its frontlegs, and very soon it is pierced and sucked dry.

The chitinised parts of the ant's body seem to be too hard for the bug to penetrate, and it therefore attacks the joints of the armour. The neck, the different sutures on the thorax and especially the base of the antennae are chosen as points of attack.

Nymphs and adults of the bug act in exactly the same manner to lure the ants to their destruction, after having rendered them helpless by treating them to a tempting delicacy.

The bugs are very sluggish in their movements, advancing by little jerks, brought about by stretching alternately the right and left hindleg, making brief stops between each movement.

Their flight also is very slow and laboured, and the bugs can easily be captured when on the wing.

The hindwings are much reduced in size and consequently the forewings are chiefly used for the purpose of flying.

In copulating the male does not mount the female, but clings to its side, a position necessitated by the shape of the body.

The eggs are deposited in hidden places, as e.g. the inner wall of a bamboo. They are irregularly spread over the surface, and more or less covered with a white exudation.

Although the bugs occurred in thousands in the locality mentioned at the beginning of this paper, I rather think that they are not very common, as I have never met with them before, notwithstanding I often visited localities of the same altitude, and even at Wonosobo I could not find them anywhere else.

Samarang (Java), June 1909.



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