

segments, just beyond the trip of the leg-case. They may be an abnormality.

The species is only half as large as an average Nymphula.

Specimen from Cedar Lake, in the northwest corner of New Jersey. This genus is evidently much nearer to Nymphula (*Hydrocampa*) than to *Paraponyx*, but may be easily distinguished by the different case and different front and labrum of the larva; and by the very small size of the pupa (perhaps also by the ridges on the under side of the abdomen.)

A FEW SUGGESTIONS ON THE CARE OF THE EGGS AND THE REARING OF THE WALKING-STICK, *DIAPHEROMERA FEMORATA* SAY.

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Some difficulty seems to have been experienced by a number of investigators to determine the number of molts which various species of Phasmids have. In a previous paper (7) we discussed the diversity of opinions of various entomologists concerning the number of molts undergone by our common American walking-stick, *Diaperomera femorata*. Among the European Phasmidae, *Bacillus rossii* seems to offer the greatest opportunity for a difference in opinion as to the probable number of molts. According to Pagenstecher,¹ *Bacillus rossii* casts its skin seven or eight times, while Kheil (4) and Godelmann (3) both agree upon five molts. Daiber (2), who did some work on this same species of walking-stick, is unable to give the number of molts with certainty, because as she explains, the process of ecdysis occurs during the night and the exuviated skins are often eaten immediately by the recently molted walking-sticks. She says, "Da aus den angeführten Gründen mit Leichtigkeit eine Häutung übersehen werden kann, möchte ich diese Zahl von 5 Häutungen als Minimum bezeichnen." v. Baehr (1) "möchte auch behaupten, dass die Zahl 5 zu klein ist."

¹ Paper not accessible. Quoted from Godelmann's (3) paper.

In the above-mentioned paper we (7) called attention also to certain indications which appear a day or two before *Diapheromera* molts. A method, which instantly revealed to us when the walking-stick had molted, was to first mark them with a toothpick, match or needle dipped in water-proof India ink. A few hours after each molt, some difficulty may be experienced in marking the specimens, for the ink may not then spread evenly but may run together to form drops, as if the newly exposed integument was oily. This may be due to the molting or exuvial fluid which forms between the old and new skins at the time of ecdysis. If, however, the integument has thoroughly dried, no trouble will be encountered in marking the walking-sticks. Sometimes after a week or more, the India ink will wear or peel off, but this can be replaced very readily by a second coating.

In our experiments, the walking-sticks were reared to maturity in a large glass jar covered with a glass plate. Five young walking-sticks were usually placed in each jar, these insects being first marked with India ink on the dorsal side of one of the three divisions of the thorax or the anterior or posterior halves of the abdomen. At the bottom of the jar rested a small narrow-mouthed bottle filled with water, in which had been placed a few twigs of hazel-nut or linden leaves. If a wide-mouthed bottle was used, the top was closed around the twigs, for the young walking-sticks in wandering about, as well as during the process of molting, will otherwise often fall into the water and drown. The water in the bottles was either changed every day or the loss of water from the bottles due to evaporation or to transpiration of the leaves was replaced with fresh water through a long pipette. All the leaves attacked by fungus or bacterial diseases were removed from the twigs; and the jar as well as the leaves were freed daily from all excrement. Fresh twigs of hazel-nut or linden leaves, first carefully washed in water, were supplied about twice a week. The moisture which condensed in the jar was removed whenever drops were formed, especial care in this respect being exercised when the walking-sticks were very young, for otherwise many specimens were found sticking to the glass jar. By keeping the jars away from open windows, the condensation of the water was greatly reduced.

To hatch the leaf-insect, *Phyllium scythe* (Gray), Morton (5)

placed the eggs, "sur du sable fin dans une boîte couverte par une feuille de papier buvard épais. La boîte fut mise dans une cage en treillis, dans une serre, dont la température normal varie entre 18 et 20° C., et le papier buvard humecté chaque jour, afin de donner aux œufs, sans les mouiller, une certaine humidité." Other naturalists, who hatched the eggs of various species of Phasmids, used a wet sponge to supply the eggs with moisture. In our work with *Diapheromera*, the eggs were kept upon fine lake sand which was sprayed with water whenever it became too dry. Attention has already been called in a previous paper (6) to the fact, that if the sand is kept too dry, especially at the time of hatching, many walking-sticks fail to emerge completely from the eggs. If the eggs are kept in a well aerated breeding cage, molding can be prevented.

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