

## NOTES ON THE EARLY STAGES OF CALOCAMPA CINERITIA, GROTE.

By G. O. Day, F.E.S., Duncan, B. C.

A female moth was found ovipositing on the twig of a willow tree, soon after dusk on 11th March, 1914. A few catkins were out on the top of the tree, but the eggs were not laid on a blossom twig. The moth seemed to have started at end of twig with head turned inwards. She laid the eggs (75) in regular batches. I watched the operation for some time, and the following is the method of her procedure: After laying an egg against the one before, the moth moved a step forward and carefully felt about with her ovipositor for a position for the next egg. The eggs were deposited fairly regularly in rows of twos or threes.

Size of egg, 10/12 mm. (i.e., 12 eggs to 10 mm.). In shape rather flattened, broadest at base. Usual sculpturing with lines meeting in micropyle—micropyle not depressed. Color a faint greenish white at first, changing later to a light brown with pinkish tinge. The moth ceased to lay when boxed, but after about a week she began again and deposited a good number of eggs, mostly in sheets, that is, in flat masses with eggs laid regularly and side by side, but not adhering at their bases to the box. There were also a number of loose eggs which had evidently fallen away from the sheets. The sheets consisted of rows of threes and fours arranged similarly to the manner in which the eggs were laid on twigs.

Hatched out 5th April, 1914. Young larva rather active, 4 mm. in length; it rests on the two pairs of legs next the anal claspers, which are slightly raised, as is also the head and fore part of the body. Head yellowish, slightly wider than body. A yellow tinge on first segment merging posteriorly into reddish purple which becomes darker at tail end. As soon as the larva has eaten, the purple tinge goes and gives place to a uniform green, the same color as the willow buds on which it feeds. Each segment has black dots on it, grouped in fours and twos, across, rather indistinct on the fore segments, more plain in the hinder. A short spiky hair is emitted from each of the dots, except those near the tail. After the first few days the color of the head becomes a light transparent brown. Expanse of larva 8 mm. at end of first stage.

On the 18th April, when the larvae were 9 mm. long, the black dots before noticed had all disappeared, the body fairly cylindrical, tapering slightly to each end. Color, bright green with a central dorsal white line, very distinct; and a similar white spiracular line, running the entire length of the body, from the head to the anal pair of legs. Midway between the dorsal and the spiracular lines there is a finer white line on

each side, making five lines altogether. Head yellowish green, somewhat transparent. Position at rest much the same as at first, i.e., clasping with the two pairs of legs next the anal claspers and with body raised. Fed on sallow leaves freely.

In the next instar the spiracular white lines are broader and more conspicuous than any of the others, otherwise the appearance of the larva is much the same. On 1st May, larva 19 mm. long; no change in general appearance except that white dots are apparent on each segment, two on each side of the central line, placed diagonally, and others, inconspicuous and variable, between the spiracular and subdorsal lines. The larva rolls up into a ring when disturbed, but the whole of the body is not on the same plane. On 10th May, when quiescent for moulting, the larvae were 27 mm. long, of a soft watery green color, and the only markings noticeable were the five longitudinal white lines, of which the most pronounced were the spiracular, then the mediodorsal, and finally the two intermediate lines the most indistinct. The regular white dots previously noted have now disappeared and the whole surface of the larva (except the belly) seems to be occupied by obscure whitish flecks only distinguishable under a hand lens. After casting the skin just described, the larva undergoes a complete change. The head becomes very broad, slightly broader than the body, and the color of the body is a soft, velvety light brown, with darker brown markings down the back with the exception of the first segment behind the head, which is plain like the head and divided from it by a dark brown line. The spiracular lines are very plain, being white tinged with brown. All the belly below the spiracular lines, a lighter brown than above. Length of larva 36 mm. immediately after moult. The darker dorsal markings are arrow-head shaped, the point of the arrow starting at the fold of each segment and extending obliquely forward across the segment and half-way into the next towards the head. These V-shaped markings start from and are connected by a central dorsal line of the same color.

By the 21st May most of the larvae had disappeared for pupation in soil placed in bottom of breeding jar. The full-fed larva is 40 mm. long and 7 mm. wide. Just before pupation the colors become more dull and the V-shaped marks not so conspicuous. It is a plump, healthy-looking larva of a russet-brown color, with a double dorsal line under which runs a vein which can be seen to pulsate, almost causing the line to disappear when contraction of the vein takes place.