STUDIES IN THE LIFE-HISTORIES OF CANADIAN
NOCTUIDÆ.—I.*

BY ARTHUR GIBSON, OTTAWA, ONT.

MONIMA REVICTA MORR.

Eggs of this species were received from Mr. Theo. Bryant, of Wellington, B. C., along with the captured ♀ which laid them. They were deposited on the 26th April, 1904, and hatched on the 9th May—duration of egg state 13 days.

Egg.—Spheroidal, the base flattened; pale yellowish; 0.8 mm. in diameter; about 44 ribs, cross-striæ distinct. Laid singly.

Stage I.—Length when hatched 2 mm.; pale lilac before feeding, after feeding pale green. Head 0.4 mm. wide; bilobed; testaceous, mouth-parts darker. Cervical shield concolorous with head. Body cylindrical, skin smooth and shiny. Tubercles black, shiny, single haired setæ black. Second day after hatching indistinct stripes are noticeable on the body. On the third day, under a lens, these are distinct; in colour dull reddish, and are as follows: a stripe between tubercles i and ii, another stripe, more distinct, almost midway between tubercles ii and iii, and still another stripe running through tubercle iii. There is also a sub-ventral stripe running through tubercle v. At this time the skin between tubercles iv and v is pale bluish. Feet darker than body, front two pairs of prolegs aborted. Larvæ loop when walking.

Stage II.—Length, 6 mm. Head 0.65 mm. wide, rounded; pale luteous, darker at vertex. Ground colour of body dark green, almost a bottle-green, still darker laterally, with a decided burnt-umber tinge. Dorsal stripe pale bluish; sub-dorsal stripe of same colour, just below tubercle ii; lateral stripe, just above tubercle iii, also of same colour, but not so wide or so conspicuous as the sub-dorsal stripe; stigmatal band very wide and conspicuous, extending along the whole side of the body and on to the anal prolegs. Tubercles small and black, each with a black, short hair. Spiracles black in front of tubercle iv. Feet concolorous with venter; prolegs darkened exteriorly. First pair of prolegs aborted, the larvæ still looping when walking. Later in the stage the colour of the skin laterally, just above and below the stigmatal band, becomes more of

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a reddish-brown, as does also the whole dorsum of segment 13 and part of segment 12.

Stage III.—Length, 11.5 mm. In general appearance the larvæ are now dark purplish-black, with a conspicuous white stigmatal band. Head 1.0 to 1.1 mm. wide; honey colour, darkened at vertex. The larvæ in this stage are darker than Stage II, and the markings on body are more distinct. The dorsal stripe is wider and more apparent than the sub-dorsal and lateral stripes; all these stripes pale blue. The lateral stripe is the least conspicuous. Stigmatal band creamy-white and very distinct. Under a lens the colour of the skin of body above the sub-dorsal stripe is almost a bottle-green, with small, pale bluish and blackish mottlings. The dorsal stripe is narrowly margined on either side with black, as is also the upper edge of the sub-dorsal stripe. The colour of the skin between the sub-dorsal stripe and the stigmatal band is almost a clove-brown. Skin below spiracles dark brownish, becoming paler and of a bluish tinge towards centre of venter. Tubercles small, black. Spiracles round, black. Thoracic feet semi-translucent, dark at tips; prolegs sordid-white, darkened exteriorly towards base.

Stage IV.—Length, 18 mm.; Head 1.6 to 1.75 mm. wide; testaceous, reticulated with darker brown; ocelli black. Body purplish-black, the skin above the sub-dorsal stripe with a greenish tinge, throughout which are numerous streaks and dots of black. The stripes on the body are the same as in last stage. The creamy-white stigmatal band is even, wide and very conspicuous. The spiracles are black, elliptical in front of tubercle iv. Tubercles black, small and inconspicuous. Thoracic feet rather translucent, with a brownish tinge; prolegs pale, darker towards base. Venter slightly pruinose, more apparent in some specimens than in others. The larva is a beautiful creature with its dark body, pale bluish stripes and prominent stigmatal band.

Stage V.—Length, 22 mm. Head 2.3 to 2.5 mm. wide; reticulated with brown, as in last stage; an oblique, wide band of brown crosses upper portion of each cheek. The larvæ are now altogether different from previous stages. The colour of the dorsum from the sub-dorsal stripe on one side to the sub-dorsal stripe on opposite side is dark yellowish (yellowish-green in a few specimens), blotched with brown. The tubercles within this area are circled with white. This yellowish colour of dorsum

becomes more distinct as the stage advances. The skin below this, to the wide creamy-white stigmatal band, is rich brown with a purplish tinge. Spiracles black. Below stigmatal band the colour is seal-brown, dotted with white; the venter is slightly pruinose. In some specimens the distinct stigmatal band is edged within with pale (but bright) yellow. Dorsal, sub-dorsal and lateral stripes distinct, but broken in places.

Stage VI.—Length, 30 mm. Head 3.2 mm. wide; markings much heavier than in Stage V. The larvæ in this stage are much the same as in Stage V. The stripes above the spiracles have become less distinct. In some specimens the lateral stripe is almost obliterated. The stigmatal band is now not clear, as in former stages, but is blotched, particularly in the centre, with the same brownish colour of the skin of the body. In some specimens almost the whole of the stigmatal band bears these blotches. Spiracles black. Tubercles minute and inconspicuous. Body colour same as in last stage, below stigmatal band with a distinct purplish sheen. Thoracic feet pale brown; prolegs concolorous with venter.

Length of mature larva 42 mm. at rest, when extended 47 mm.

On June 2 the first larva to burrow entered the earth, and others followed soon afterwards. The oval earthen cocoon made by the larva is similar to that made by many other noctuid larvæ; no silk could be detected.

Pupa.—Length, 18 mm, width at widest part 6 mm., dark chestnut brown, shining; abdominal segments roughly pitted on anterior half; spiracles black. Cremaster blackish, rough, terminating in two long, excurved, stout spines, on either side of each of which there is a short thick spine, and in front of these latter two other spines, all, also, excurved; all the spines dark reddish brown.

The moths (7) emerged in a cool cellar during the latter half of March, and early in April of the following year. The specimens are remarkably alike in appearance, the general colour of the primaries of all being bluish-gray. They vary in expanse from 40 mm. to 44 mm. The moth is well illustrated in Hampson's Catalogue of the Lepidoptera Phalænæ in the British Museum, Vol. V, pl. xc, fig. 24.

Food-plant.—The larvæ were offered apple, willow, poplar and birch, but only ate willow and poplar, preferring the former. Latterly they were reared to maturity on willow.