

LIFE HISTORIES OF NORTH AMERICAN GEOMETRIDAE.—LXVI.

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Cosymbia lunenaria Hübner.

The larva has been observed by Dr. S. H. Scudder, who published descriptions of the last stage and pupa (*Psyche*, viii, 103, 1897). His description was previously quoted by Packard (*Mon. Geom.*, 363, 1876), who gives also a figure of the larva after Abbott (*Mon. Geom.*, pl. 13, fig. 22, 1876) and of the pupa (*loc. cit.*, pl. 13, fig. 14). The food plant observed by Scudder was sweet fern (*Comptonia*); Abbot gives *Psoralea*, while my larvae fed on blueberry (*Vaccinium*). I have described the egg and first stage in British Columbia larvae (*Proc. U. S. Nat. Mus.*, XXVII., 901, 1904).

Egg Long elliptical, ends rounded, depression slight, the sides compressed, not strongly flattened. Reticulations coarse, even, well raised and rounded, irregularly hexagonal. Size .6 x .3 x .25 mm.

Stage I. Head round, whitish. Body moderate, slender, dorsum and venter broadly dark grey, sides narrowly whitish. Feet pale.

Stage II. Head quadrately rounded, thick, equal, dull luteous with a faint smoky band, later all smoky shaded leaving an erect pale line on each lobe; width .3 mm. Body moderate, normal, dorsum and venter broadly smoky olivaceous black, sides narrowly pale greenish. Thoracic feet pale, abdominal ones blackish, shields and tubercles invisible, concolorous.

Stage III. Head full, erect, thick, bilobed, finely gray-brown dotted, leaving a pale vertical streak on each lobe; clypeus and a spot each side white; width .4 mm. Body moderate, seeming flattened, broadly velvety brown dorsally and ventrally, sides narrowly bright greenish white, from joint 2 to the anal feet; foot of joint 10 brown. Tubercles, setae and shields concolorous, invisible. Traces of indefinite white subdorsal lines in the brown dorsal area.

Stage IV. Head full, thick and rounded, slightly bilobed, red brown with white dotting; a vertical stripe of white on each lobe with a dot below beside the clypeus, labrum white; width .75 mm. Body moderate, uniform, annulate somewhat irregularly, red brown, sides white, a fine, broken, narrow subdorsal white line, retracted intersegmentally and more distinct than a still finer straight dorsal line. Outline of white lateral area irregular, a little shaded. Feet brown, the anal pair white outwardly. Tubercles small, dark, showing in the white area; setae fine, small.

Stage I'. Head moderately bilobed, erect, broad; ground white checkered with red brown in alternating oblique bars, leaving a white streak over the vertex of each lobe and eye, in clypeus and over labrum; a black shade before ocelli; width 1.1 mm. Body broadly dark brown dorsally, shading to olivaceous at the sides, including a narrow pulverulent dorsal and subdorsal line, the latter waved; subventral fold broadly pale yellow. Venter and feet, except those of joint 13, dark blackish vinous. Tubercles small, dark, no shields, setae minute. Segments rather finely annulate but not distinctly.

Stage II. Head large, round, thick, distinctly bilobed, light red-brown from the dotting, the ground white, appearing in a vertical streak on each lobe and irregularly over the sides; median suture at vertex and clypeus more blackish, labrum whitish; width 1.6 mm. Body moderate, uniform, smooth. Dorsum brown with velvety black oblique streaks from the segments anteriorly, joining dorsally and extending laterally to the pale yellow subventral area, distinct on joints 5 to 8, smaller on joint 9, scarcely indicated on the other segments. Dorsal line straight, subdorsal waved, pale yellow, broken, dotted; also a broken lateral line, partly confluent with the subventral area. Venter nearly solidly black, dotted with white, forming faintly a double medioventral line. Thoracic feet gray, abdominal ones red-brown, anal ones white-banded without. Another larva was pale but with the same marks. The brown of the dorsal area shades to lilaceous and pales gradually to the subventral area.

Pupa described by Scudder and figured by Packard.



Deinocerites cancer—ventral view of larval head. (Fig. 1.)

