

NOTES ON THE LIFE-HISTORY OF CERURA
OCCIDENTALIS.

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These notes are to complete the partial account of the life-history given in Dr. Packard's monograph.

Egg.—As usual, hemispherical with a flat base, dark black-brown, not shining; diameter 1.1 mm., height .7 mm. Reticulations neat, distinct, rounded hexagonal, smooth, not elevated, the enclosed spaces densely coarsely granular, serving to make the smooth reticulations conspicuous. Laid singly on a willow leaf.

Stage I.—Head bilobed, rather square; red-brown, the ocelli darker; width .5 mm. Dorsum of joints 3 to 12 continuously broadly greenish-yellow, the rest of the body purplish-brown; tails darker, blackish toward the base, with two sordid white rings. Cervical horns and tails spiny. Setæ normal, i. to v. and leg-plate present on the abdomen, i. a and b, ii. a and b, iv. and vi. on thorax, vi. double, ii. b not very evident. At the end of the stage the yellow band is slightly constricted at joints 6-7 and 11, horns, cervical shield, anal plate and tails darker than the now vinous body. Head light red; abdominal feet whitish, thoracic blackish; no marks.

Dr. Packard's descriptions of stages II. and III. are comparative only, so I give my notes in full.

Stage II.—Width of head .9 mm. Medial suture deep; all red-brown, uniform, smooth, the clypeal tubercles marked by yellowish dots. Dorsum to spiracles vinous brown except a yellow patch on joints 3-5 and 7 post.-10 ant., the now dark parts of the former yellow band smoky olivaceous; subventral region and legs pale yellowish; two yellow rings on the tails. Tubercles distinct, setæ dark. Cervical horns slightly spinose; length of tails 2.8 mm. During the stage the larva suffers an entire change in markings, resulting as follows: Green, an incised dorsal brown band triangular from the horns to a slight fold on the anterior part of joint 3, elliptical on joints 4 to 11, widening to the anal plate, with a very slight retraction at the incisure of joints 11-12. A yellow patch on joints 7 post.-10 ant.

Stage III.—Width of head 1.5 mm. At first much the same as at the end of stage ii. Later head reddish-brown with many pale yellow dots over the lobes; pale behind the brown ocelli. Body bluish-green, dotted with white and yellow and shaded with white in the region of the