

**Article VIII.—NOTES ON TRANSFORMATIONS OF
SOME NORTH AMERICAN MOTHS.**

By WILLIAM BEUTENMÜLLER.

The following are a few notes on the earlier stages of some Lepidoptera, made by me during the summer of 1891, to which are added the descriptions of several cocoons from Mexico, which are in the Hy. Edwards Collection, and as far as I am aware have not yet been described.

Chionobus semidea *Say.*

Egg.—Received from Dr. S. H. Scudder. Laid about July 15. Larva emerged July 26. Oblong oval, with numerous longitudinal wavy ridges. On the top is a small nipple. The base is nearly smooth and is somewhat flattened. The egg becomes somewhat narrower towards the top, and is of a pale yellow color, assuming a slaty gray as the young larva within develops. Height, 1 mm.; width, .75 mm.

Young Larva.—Head dirty greenish white. Body above mouse colored. Last segment with a fork-like process. Underside dull greenish gray. Length, 2 mm.

I did not succeed in rearing this insect beyond this stage.

Apatelodes torrefacta *A. & S.*

Egg.—Smooth, lenticular, semitranslucent, shining, rounded in outline and very much flattened above and below. Width, 2 mm.; height, .5 mm. Laid June 24. Larva emerged July 5. Received from Miss Emily Morton.

Young Larva.—Yellowish white, with long flossy, white hairs covering the body. Head white, with a black spot on the anterior part of each side. Length, 3 mm. Moulded July 10.

After First Molt.—Little difference from the previous stage, except that the underside is now somewhat greenish, and the hairs are distinctly longer, with a single black pencil or tuft on the eleventh segment. Length, 7 mm. Moulded July 14.

After Second Moul.—In this stage the hairs are considerably longer, clearer white and more flossy. Mouth parts pitchy black. Along the dorsum is now a faint black longitudinal stripe, and a few black hairs of the same color are on the second and third segments. Length, 11 mm. Moulded July 18.

After Third Moul.—The hairs are still longer than in the previous moult, and the black pencil on the eleventh segment more distinct. The hair on the three anterior segments are longer than those of the posterior segments. The black dorsal line is also more distinct and is broken. The underside of the body is semitranslucent, showing the greenish contents. Length, 20 mm. Moulded July 23.

After Fourth Moul.—The hairs in this stage are pure white and are directed backwards. On the dorsum of each of the second and third segments is a long black pencil, and one on the eleventh segment. Along the dorsum is a narrow black line as in the previous stage, and a bunch of short hairs of the same color on each segment, dorsally. The body color is now of a bluish-white, and the spiracles are black. Body on the underside with a short transverse black patch on each segment. Some individuals of the brood are now yellowish in color. Length, 30 mm. Moulded July 27.

After Fifth Moul.—Head dirty white. A row of rather large spots on each side of the body, one spot on each segment. The dorsal stripe is much broader and more prominent than in the previous moult, and the three dorsal pencils are mouse color instead of black, and are tipped with white at the extreme ends. The abdominal legs are black, with their extremities pinkish. The thoracic feet are also black. The hairs are all directed backwards, except those on the anterior segment, which are directed forwards. Mouth parts pitchy black. The short tufts of black hairs along the dorsum are also present. When fully grown the body is creamy white or pale yellow, with the black spots along the sides and dorsum quite conspicuous. The hairs in the yellow-bodied larvæ are pale yellow, and in the whitish-bodied ones the hairs are pure white. In some yellow-bodied larvæ which I found outdoors the hairs were bright sulphur yellow. When fully grown

the extremities of the abdominal legs are much redder than immediately after moulting. Length, about 45 mm.

Entered the ground August 2, at 10 A. M. Pupated August 4, at 4 P. M. Emerged August 27, 28 and 29.

My brood of larvæ were raised on Wild Cherry (*Prunus serotina*). It also feeds on Willow, Alder, Blackberry, Bayberry (*Myrica cerifera*), Azalea, Sassafras and Hazel.

Sisyrosea inornata G. & R.

Full-grown Larva.—Bright yellowish green; the body much flattened at the sides, the segments there being ornamented with flattened processes armed with spines and looking like the antennæ of a Bombyx. These spinuous processes are nine on each side. The head is quite hidden by the overlapping of the other segment. It is smooth, pitchy. The second segment is darker green than the rest of the body. The third and fourth have shorter spines on the sides, and these are edged with orange speckled with black. The dorsum is elevated into a double ridge, pale cream color. On the eighth and tenth segments is a small orange mark in form of a maltese cross. The ridges over the head are produced into a short spine, orange, flecked with black. The spiracles are pale yellow, and on each segment there are six small fovea, which on the sides are continued by pale green waved lines, those on the dorsum the smallest. Underside pale green. Length, about 15 mm.; width, 10 mm. (including spines).

Food-plants.—Oak, Cherry, Hickory.

Anisota stigma Abb. & Sm. (var. or nov. sp.).

Before Last Moulting.—The ground color is jet black and shining, becoming greenish or tea colored as it is more advanced towards the last moult. The whole of the tubercular spots, as well as the spines and longer processes, are also jet black. The white irroration, so well marked in *A. stigma*, is entirely wanting, and there are no marks on the obsolete, double, broken, subdorsal sordid white line. Length, 30 mm.

Full-grown Larva.—The head is now brick red. The obsolete broken subdorsal line is a little more distinct, and is treble instead

of double. The body has lost its shiny appearance, and is now dull black. The irrorations are jet black, shiny, save that on each segment is a double row of tubercular irrorations, sordid white. There is a dull claret-stained ventral line, broken at the junction of each segment, and the interior surface of the abdominal legs is also stained with a claret shade. They are black outwardly, as are also the thoracic feet. The broken line on the underside is really reduced to three lozenge-shaped dashes on each segment. Laterally the larvæ are stained with red. Length, about 60 mm.

I have been unable to rear this singular larva to maturity. A number of them were taken by me last season at Scarsdale, N. Y. The late Henry Edwards and S. L. Elliot were also acquainted with this larva, and likewise did not succeed in raising it. Mr. Edwards considered it the larva of a new species of *Anisota*. It is certainly very different from all other *Anisota* larva found in the vicinity of New York City.

HYBRID BETWEEN **Actias luna** MALE, AND **Actias selene**
FEMALE.

Egg.—Received from Miss Emily Morton. Ovate, smooth, not shining, covered with a brown substance, much the same as that of *A. luna*, in fact I cannot see any difference.

Young Larva.—Pinkish brown, with two rows of deep brown spots on each side, and one row on the dorsum, which are quite indistinct; on the third segment the spots are largest and deeper in color. The spots along the sides are two in number on each segment, while in the subdorsal row there is only one spot on each segment. The juncture of the segments are greenish in color, as is also the head, which has two transverse, black bands. On each side of the body are three rows of tubercles, bearing a number of long spine-like hairs. The first segment is yellowish, and without spots. Underside of body wholly greenish. Length, 6 mm. Molted July 2.

After First Molt.—The larvæ are now greenish in color, with the three rows of tubercles on each side yellow, tipped with reddish orange; the two pairs of dorsal tubercles on the third and fourth segments are decidedly larger than the rest, and are tipped

with black. The rows of spots are also less distinct than in the previous stage, and the head lacks the transverse bands, and is of the same color as the body, with a small black dot on the anterior part of each side. Each of the tubercles has a few, rather long, brown hairs. Underside greenish. Thoracic feet jet black. Abdominal and anal legs tipped with black. One individual of the brood is flesh colored, and has the extremities of the tubercles black, and the lateral row of spots more distinct than the two other rows. Length, 15 mm. Moulded July 6.

After Second Mould.—The body is now bright green, with a narrow, paler green line below the spiracles, which are orange. The spots are absent in this stage, and the tubercles more prominent with a few black hairs, and tipped with orange. The anal plates are half brown and half black, and are narrowly bordered with green. Head pale green, mouth parts pitchy. Thoracic feet black. Abdominal legs green, with a black patch on the outer side of each. Underside wholly green. Length, 25 mm. Moulded July 11.

After Third Mould.—No difference from the previous stage, except in size, and in the tubercles being somewhat brighter in color. Length, 35 mm. Moulded July 15.

After Fourth Mould.—The head in some individuals is now purplish green instead of wholly green, as in the foregoing stage. The tubercles are also more prominent. Length, 40 mm. Moulded July 19.

After Fifth Mould.—The head in this stage is pale chestnut brown, as are also the thoracic feet, with a yellow ring at their bases. The anterior edge of the first segment is yellow. The anal plates are brown with a yellow margin. The spiracles are large and orange in color. The abdominal legs have a black band on the outside of each. The two rows of tubercles along the sides are smaller than those on the dorsal region, as is the case throughout all the previous stages. The segments are much swollen, and deeply incised at junctures. The yellow line below the spiracles runs from the beginning of the fourth segment to the end of the eleventh. The hairs on the yellow tubercles are

pale brown, while those on the row of tubercles below the spiracles are black. One example has the bases of the tubercles on the third and fourth segments blackish. Fully grown July 31. Length, 65 mm.

***Euchromia bella* Guer.**

Cocoon.—Oval, bright lemon yellow in color; very thin and composed of finely woven silk, which is intermixed with the larval hairs, also of lemon-yellow color. These hairs penetrate through the cocoon, thus giving it a decidedly woolly appearance. Length, 15 mm.; width, 8 mm.

One example, collected by Mr. Wm. Schaus, in Jalapa, Mexico. Coll. Hy. Edwards, Am. Mus. Nat. Hist.

***Euchætes fumidus* Hy. Edwards.**

Cocoon.—Oval, very frail in structure, and composed of dark brown threads amongst which are mingled the larval hairs. Very much like that of *Euchætes egle* Dr., and hardly distinguishable from it. Length, about 18 mm.; width, about 8 mm.

One specimen, collected by Wm. Schaus, in Jalapa, Mexico. Coll. Hy. Edwards, Am. Mus. Nat. Hist.

***Pericopsis leucophæa* Walker.**

Pupa.—Color, bronzy brown, with a slight bluish reflection on the thorax, if held in certain light. Thorax and anterior portions of the abdominal segments above, opaque. The posterior portions of the segments beneath, as well as the wing-cases, are shiny. A few very short reddish brown hairs are also scattered over the segments above. The first to fourth segments are decidedly elevated dorsally, and the remaining segments gradually decreasing in size toward the posterior end of the body, which is bluntly rounded. Length, 22 mm.; width, about 7 mm.

Two examples, collected by Wm. Schaus, in Jalapa, Mexico. Coll. Hy. Edwards, Am. Mus. Nat. Hist.

***Callosoma calleta* Westwood.**

Cocoon.—Ovate, base abruptly rounded and gradually becoming narrower towards the end from which the imago makes its escape.

The outer cocoon is finely woven, very compact and cemented together with a glutinous substance, which makes the texture very tough and hard, giving the cocoon a rather smooth appearance. Inside the cocoon is entirely covered with the glutinous substance, except about one-third from the orifice, from where it consists of a coarse brown silk loosely woven and drawn together, so that the imago can readily escape. At one side at this end of the cocoon is a short band, by means of which it hangs to the twig. Length, about 45 mm. ; width near base, about 18 mm. ; width near top, about 10 mm.

Four specimens, collected by Wm. Schaus, in Jalapa, Mexico. Coll. Hy. Edwards, Am. Mus. Nat. Hist.

Platysamia orizaba *Westwood.*

Cocoon.—Similar to that of *Callosoma calleta*, but may be distinguished from it by being more regular in outline, and the lower end of cocoon bluntly rounded, but not so abruptly as in *C. calleta*. The sides are almost parallel, being only slightly rounded. The meshes of the outer coating are more loosely woven, and are not cemented together with the glutinous substance. In color the cocoon is dirty silvery white or pale golden brown. It is also fastened to the twig by a short band. Length, 45 mm. ; width, 20 mm.

Four examples, collected by Mr. Wm. Schaus, in Jalapa, Mexico. Coll. Hy. Edwards, Am. Mus. Nat. Hist.

Gortyna nitela *Guen.*

Egg.—Bluish or greenish white, changing to cream color before exclusion ; deposited in the axil of upper leaves. The young larva on being hatched, bores into the stalk, and eats upwards. On reaching the top of the stalk, it feeds upon the young and tender leaves ; when these are destroyed it descends again into the stalk and eats downwards. Sometimes the stalk swells from the disorder of its juices, through the punctation, and the young larva is often killed.

Larva before Last Moul.—Head, shining, very pale chestnut color, with the second segment of the same shade, and a black

lateral stripe which is common to both. On the side of the second segment, below the black line, is a broad streak of clear white, which encloses the black spiracles. The third segment is purplish brown. One dorsal and two subdorsal stripes of clear white. The fourth, fifth, sixth and seventh segments are wholly purplish black, and are elevated by the caterpillar when walking. The remainder of the segments are purplish brown, with the dorsal and subdorsal white stripes as before. Beneath, the posterior and anterior segments are sordid white. The middle ones purplish brown. Feet blackish. Abdominal legs sordid white.

Full-grown Larva.—The posterior segment is now a little paler in ground color, and the head and anal segment yellowish. Length, 30 mm. Bores in the stalks of Burdock and a variety of other plants.

Gortyna cataphracta Grote.

Full-grown Larva.—Head and second segment pale testaceous. Mouth parts pitchy. Body color purplish brown with dorsal whitish stripes continued throughout the whole length. On side of head and second segment is a black shining line. On the third and fourth segments are three warty black tubercles on each side, six smaller ones on the third, and four on the fourth, dorsally. The other segments have two large and two small tubercles dorsally, and three smaller ones laterally. All the tubercles look like points of tar or pitch. Anal segment pale testaceous, black at sides. Thoracic feet black. Abdominal legs whitish. There are also a few sordid white hairs scattered over the whole of the body. Length, 30 mm. Bores in the stalks of Lily (*Lilium superbum*).