

Article X.—NOTES ON THE TRANSFORMATIONS OF SOME SPECIES OF LEPIDOPTERA.

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The following notes were made by the late Messrs. Henry Edwards and S. Lowell Elliot on the earlier stages of some species of Butterflies and Moths in the collection of the latter.

The Elliot Collection of Insects was generously donated to the Museum by his widow, while the notes passed into the hands of Mr. Edwards, who kindly gave me permission, shortly before his death, to publish them, as a continuation of the paper published by him, in conjunction with Mr. Elliot, in 'Papilio,' Vol. III, pp. 125-136. To the notes that follow I have added the description of the larva and pupa of *Doryodes acutaria*, and the notes in brackets.

Papilio crespontes Cram.

Egg.—Ovate, attached by a rather flattened base to the upper-side of the leaf. It is covered with an orange mealy substance, which, after exclusion of the caterpillar, renders the egg slightly obscure.

Young Larva.—Olive green, with the third, fourth, fifth, eighth and ninth segments somewhat darker, with a number of tubercles on each. Length, 3 mm.

After First Moults.—Head in front, with a triangular white mark. Body darker than in the previous stage, with paler portions more in contrast. The piliferous tubercles are six to each segment, those of the second segment being the largest. Length, 8 mm.

After Second Moults.—The body color is now blackish olive, and the paler portions on the fourth and terminal segments dull pink, with an olive stain, the pink shade reaching to and enclosing the spiracles. The tubercles are larger and very shining. Length, 15 mm.

***Lycæna comyntas* Godt.**

Young Larva.—Dull green, the dorsal region elevated, covered with short soft hairs; a faint dorsal line of dull olive green, composed of two oblique stripes meeting in the centre, and a lateral stripe of the same shade similarly composed. Mouth-parts and head pale testaceous; legs, concolorous.

After Third Moul.—The body in this stage is purplish brown, with a well-defined dorsal line of darker shade, and two oblique narrow paler stripes on each segment. Lateral line below the spiracles, white; underside, including legs, dull greenish.

Full-grown.—The colors are brighter, and the oblique whitish stripes form a triangular blotch on each segment, joining the dorsal line and becoming a portion of it. They are reddish lilac, and are edged narrowly with white. The three terminal segments have these marks very faintly indicated. The lateral line is also dull lilac.

[*Food-plant.*—*Lespedeza*, feeding amongst the bunches of the flowers, and always surrounded by large quantities of ants.]

***Datana major* G. & R.**

After Second Moul.—Ground color bright reddish brown. Head and first segment wholly reddish brown, as is also the anal segment. There is a series of eight very bright lemon-yellow stripes—the space on the dorsal region between the stripes being the widest, as is usual in the genus. Underside wholly reddish brown.

After Third Moul.—Head greatly increased in size. First segment reddish brown only on the dorsal region. Stripes still more distinct and very vivid yellow. Underside reddish brown with a yellow ventral stripe.

Full-grown Larva.—Ground color of body jet black. Head and middle of first segment bright chestnut red. Each segment bears a series of eight broken stripes of bright canary yellow, the patches being composed of oblong pieces, except those above the base of the legs, where they are quite irregular in shape.

The feet and legs are bright chestnut red. Segments sparsely covered with sordid white hairs; anal claspers bright chestnut red. The stripes and patches in some broods are white instead of yellow. Length, 60 mm.

Food-plant.—*Andromeda ligustrina*.

[I found the larva feeding on Witch-Hazel (*Hamamelis virginica*) at West Woodstock, Conn., last September. This is a new food-plant for the species.]

***Acronycta dactylina* Gr.**

Full-grown Larva.—Body dull black. The hairs of the dorsal region are tawny brown, those of the lateral region clear white, the caterpillar having the appearance (when moving, and the segments being devided) of the skin of a tiger, the colors being precisely the same. The head is jet black, shining. The fifth, seventh and twelfth segments bear a single median pencil of black hairs. Spiracles, cream white; underside and legs wholly black. Length, 50 mm.

[*Food-plants.*—Willow (*Salix*); White Birch (*Betula alba*).]

***Hadena turbulenta* Hüb.**

The larva of this species, before undergoing the change to pupa, collects small masses of sand and of the particles forms a cocoon, which is ovate and regular in outline. The pupa is thickened about the head parts and wing-cases, and very much roughened, while the abdominal region is smooth and shining. Length, 21 mm.

[The larva feeds on Catbriar (*Smilax rotundifolia*) in large swarms. It was described by me in the 'Canadian Entomologist,' Vol. XX, p 136.]

***Mamestra legitima* Gr.**

After Second Moul.—Very pale apple green, with a broad dorsal and two narrow lateral white stripes, the spaces between filled with white specks. The head and second segment are free from white and are wholly pale greenish. Head rather small with the mouth-parts slightly pitchy. Length, 15 mm.

[*Full-grown Larva*.—In this stage the larva has become slightly yellowish green, with the dorsal line strongly marked, the lateral less so and of a bright yellowish tint. The speckles have become very decidedly yellow, with the spots fewer and yellower. The lateral line is broader towards the anal segment. Length, 30 mm.

Food-plant.—Wild Cherry (*Prunus serotina*).]

[*Doryodes acutaria* H. S.

Full-grown Larva.—Body pale ashen brown, with a number of very narrow, indistinct longitudinal stripes of almost the same color as the body, a broad indistinct stripe on the dorsum, and along the subdorsal region and sides a pale ochreous stripe, followed by one a little deeper in color. Underside paler than above, and also with a number of indistinct stripes. Head of the same color as the body with a number of stripes. On the eighth and ninth segments a pair of abdominal legs, of the same color as the body, as are the anal and thoracic legs. Length, 34 mm.

The larva is a semi-looper, and when at rest mimics a blade of withered grass. It lives on species of grass found in salt marshes, and spins an elongated cocoon between pieces of grass and stems. Length, 30 mm.; width, 5 mm.

The pupa is reddish brown, smooth, and covered with a bluish white farinaceous matter. Sides nearly parallel, and the posterior extremity of the last segment bluntly rounded. Length, 15 mm.; width, 3 mm.]

Chamyris cerintha Tr.

Full-grown Larva.—Head light olive gray, with two oblique purplish-brown stripes. Dorsal region purplish brown, with two subdorsal stripes of pale pinkish white. Underside and extreme sides dull green. Anal segment and claspers very long. Each segment on the dorsum has four small concolor tubercles, and there are a number of long hairs over the whole surface. Feet and abdominal legs pinkish brown. The tubercles on the last segment are larger than the others. Length, 1.10 mm.

Changed to pupa August 23, on ground, between leaves drawn together with a few silken threads. The pupa is pale ochreous, and rather long.

Food-plant.—*Cratægus*.

Ennomos alniaria Linn.

The larva spins a thin but firm ovate elongated whitish web on the underside of a leaf. The web is open at both ends so as to allow the insect easy escape. The pupa is pinkish white without any markings, and is suspended inside the web. It is roughened on all the segments, but the spaces between are semi-transparent and yellowish. The pupa is also covered with a mealy substance. Length, 35 mm. Length of web, 35 mm.

Chærodes clemitaria A. & S.

Full-grown Larva.—Head large, produced in front. Third segment very much swollen on the crown, but forming only one tubercle and looking like a portion of the head, until examined with a lens. The tubercle is not divided as in *Eubyja cognataria* Guen. Body purplish brown, marbled with a paler shade, each segment with eight slightly raised pale points, two in centre of segment, two nearer the posterior edge, and two near the spiracles on each side. On the seventh segment are two large tubercles raised much above the surface, shaded with chestnut brown, and two swollen ones on the twelfth segment of the same color. The spiracles are dull orange, edged with black, that of the second segment appearing in front as if upon a portion of the head. Underside of body marked like the upper, the lateral fold, below the spiracles, being in twisted corrugations. Length, 55 mm.

[*Food-plant*.—Dogwood (*Cornus florida*).]

Eccopsis inornatana Clem.

Full-grown Larva.—Pale vivid apple green, with yellowish hairs. Head dull jet black, also the second segment, with a very few hairs. Feet, legs and underside wholly apple green. Length, 20 mm.

[*Food-plant*.—Wild Cherry (*Prunus serotina*).]

***Cacœcia rosana* Linn.**

Full-grown Larva.—Dull whitish green. Head and posterior half of the second segment dull black. There are also two blackish spots on the sides of the second segment. The feet are pitchy black, and the abdominal legs the same color as the body. Length, 13 mm.

***Cacœcia parallela* Robs.**

Full-grow Larva.—Dull olive green. Head dull orange; second segment paler yellow, with two black dots in front on a narrow white line, and a black semi-circular band passing along the base of the segment and ending at the exterior margin. The remaining segments have each eight white tubercular spots from which spring whitish hairs. Feet blackish. Abdominal legs concolorous with the body. Length, 20 mm.

Food-plants.—Willow, Aster.