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The Canadian Entomologist.

VOL. I.

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No. 11.

ENTOMOLOGICAL NOTES.

PAPER NO. VI.

BY W. SAUNDERS, LONDON, ONT.

Pyrameis cardui.—Larva found feeding on thistle, June 15th, full grown. Length $1\frac{1}{4}$ to $1\frac{3}{8}$ inches.

Head black, reddish in some specimens, above sprinkled with fine whitish hairs, and a few small black tubercles.

Body above greyish-brown, variegated with yellow and black. Second, third, fourth, fifth, and terminal segments, black, with many whitish dots. A broken dorsal stripe, white anteriorly; yellow from fifth to terminal segments: second segment without spines but covered with fine whitish hairs; third and fourth segments have four spines each; the others have seven, excepting the terminal ones which have two pairs, one placed behind the other. The spines are much branched and vary in color from yellowish to brownish-white tipped with black; base of spines along sides of body from fifth to twelfth segments of a reddish-orange color. Body thickly sprinkled with fine whitish hairs arising from minute white or yellow dots; a pale yellowish broken stripe on each side close to under surface. Spiracles black, ringed with dull yellow.

• Under surface greenish-grey, excepting on second, third and fourth segments where it is dull black. Fifth, sixth, eleventh and twelfth segments with tufts of whitish hairs springing from elevated tubercles. Feet dark brown, slightly hairy; prolegs yellowish grey.

The larvæ of *Cardui* vary very much—one young specimen was entirely black, excepting the dorsal and lateral yellow lines; another, full grown, was black throughout marked with yellow dots and transverse lines between the rows of spines—others with very little black, the yellow predominating, but these have some black about the anterior segments. The ridge of tubercles in which the spines are set is bluish-grey in the more yellow specimens, and the same color intermixed with black in the darker ones. Some of the lighter specimens have the base of nearly all the spines reddish, or reddish-orange; others have this color only on segments from fifth to terminal, one rather dark

specimen had all the spines reddish orange at base, giving the whole body a reddish hue.

These larvæ remained in the chrysalis state eight or nine days. The imago is usually found common throughout July and August, and the larvæ plentiful in September. It is quite likely that this insect may also pass the winter in the imago state, although I have never found it hibernating, or taken it on the wing very early in the season.

Limnitis disippus, Godt.—Larva found feeding on willow, July 24th.

Length one inch and a quarter. Head rather large, flattened in front, strongly bilobed, pale green with two dull white lines down the front and roughened with a number of small green and greenish-white tubercles. Each lobe is tipped with a green tubercle, or short horn, larger than any of the others on head. Mandibles brown, tipped with black.

Body above dark rich green, with patches and streaks of dull white; second segment smaller than head, with many minute whitish tubercles; third segment dull whitish-green, raised considerably above second, with a flat ridge above having a long brownish horn on each side of it, thickly covered with very short white and brown spines; fourth segment about the same size as third, with the same kind of ridge above, with a small tubercle on each side capped with a bunch of short whitish spines; between the ridges on third and fourth segments are two small black dots above. Each segment from fifth to thirteenth inclusive has two tubercles, one on each side, and in a line with the long horns on the third segment, each crowned with a cluster of whitish spines; tubercles on sixth and twelfth segments much larger than the others, those on eleventh and terminal segments next in size, the latter placed on the anal lid and nearer together than those on the other segments—those on the ninth are smallest. Tubercles on seventh, eighth, tenth and eleventh segments with a streak of white at their base; each segment behind fourth, excepting ninth, has several smaller tubercles of a bright blue color. A large whitish patch covers nearly the whole of ninth and parts of eighth and tenth segments, and another of a similar character covers the second, third, and part of the fourth. A white stripe extends along each side close to under surface from fifth to terminal segments inclusive, in which is set a small cluster of whitish spines about the middle of segments from sixth to tenth. On each side of seventh, eighth and tenth segments is an elongated blackish spot, just above and behind spiracles; terminal segment with two dark greenish-brown spots above, anterior to the tubercles. Spiracles rather large, oval, brownish-black.

Under surface whitish-green, with a central dull-white stripe on hinder segments; feet brown, ringed with brownish black; prolegs pale greenish, faintly tipped with brown.

This larva varies somewhat in color, some specimens being of a paler green than that above described. There are two broods of this insect in the season, the larvæ resulting from the eggs deposited by the second brood usually attain to less than half their growth before winter, when they hibernate, completing their growth the following spring.

Limenitis arthemis, Drury.—About the middle of July, 1868, while beating some thorn bushes over an umbrella, I captured a larva closely resembling *Disippus*, in fact I thought at first it was merely a variety of that larva. Upon further examination I suspected it to be distinct, and resolved to describe it, but before an opportunity occurred of doing so it disappointed me by changing to a chrysalis, which in ten or twelve days after produced a beautiful specimen of *Arthemis*.

Thecla acadica, Edwds.—Larva found feeding on willow, from 10th to 20th of June.

Length five-eighths of an inch; onisciform. Head very small, pale brown and shining, drawn within the second segment when at rest.

Body above green, of a moderately dark shade, thickly covered with very short whitish hairs scarcely visible to the unaided eye. Body thickest from third to tenth segments. Dorsal line of a darker shade of green than the rest of body. Dorsal region flat, rather wide, and edged on each side with a raised whitish yellow line, beginning at the third segment, and growing fainter on the twelfth and thirteenth. Sides of body inclined at an almost acute angle and striped with faint oblique lines of greenish-yellow. A whitish-yellow line borders the under surface, beginning at the anterior edge of second segment, and extending entirely around the body to a point opposite the place of beginning. This line is raised in the same manner as that bordering the dorsal ridge, Twelfth and thirteenth segments much flattened, especially the latter.

Under surface similar to upper, and also covered with very short fine hairs—feet and prolegs partake of the general color.

In a younger specimen the head was almost black, with a streak of white across the mandibles. The under side was rather deeper in color than the upper, with a faint bluish tint.

Chrysalis 0.33 in. long; greatest width 0.15 in., covered with minute hairs, pale brown, with many dots and patches of a darker shade. A dark ventral stripe from seventh to terminal segments, sides of body with four or five short dark lines. The insect remains in the chrysalis state about eight or nine days.

Thecla——?—Larva found feeding on pine, June 27th, 1865, one specimen full grown, another about one-third grown, probably the larva of *Thecla nippon*, Boisid. & Lec.

Length five-eighths of an inch. Head very small, pale brownish-white and shining. Drawn within the second segment when at rest.

Body above green, of rather a dark shade, but with a tinge of yellow; a prominent dorsal crest or ridge from third to tenth segments inclusive, bordered on each side by a bright whitish-yellow line, spaces between segments somewhat depressed. From the line bordering the crest the sides of body incline abruptly downwards to the spiracles where the color is a little paler. Below this the body is somewhat flattened out and bordered on each side from third segment backwards with a bright whitish yellow line. Second segment rather paler than the rest of body with a somewhat polished surface and without markings. The two hinder segments of body are much flattened.

Under surface slightly paler, feet whitish, shining, and semi-transparent; prolegs green tipped with whitish.

The smaller specimen differed from the larger only in being paler and duller in color, and having the yellow lines less distinct.

The larger specimen entered the chrysalis state July 3rd, the other somewhat later, but both failed to produce the imago, and finally dried up so much that I was unable to determine with certainty to what species they belonged.

Thecla mopsus, Boisd. & Lec.—On the 18th of May, 1863, while beating some wild cherry bushes on the Port Stanley Railroad track, a short distance from London, I obtained a small *Thecla* larva which very much interested me. Its length was one-eighth of an inch. Head small, brownish black, drawn within the second segment when at rest. Body above dull rosy red, of a brighter tint along sides, with the edges of the dorsal crest paler. Body sparingly covered with rather long hairs nearly one-sixth of an inch long, most of them curved backwards.

Underside dull yellowish, feet and prolegs of the same color.

On the 26th May it escaped from the box in which I thought it was carefully secured, and I saw it no more. On the 9th of June I visited the same locality and secured a larger specimen. I was uncertain this time as to whether I got it from thorn or cherry, as in the bush I was beating they were both growing close together, most probably it was from the cherry.

Length 0.40 in. Head small, of a shining black color, with a pale stripe across the front just above mandibles; mandibles black; head drawn within the second segment when at rest.

Body above green along the middle segments, deep rose color at each extremity, thickly covered with short brown hairs; second segment rosy above, greenish yellow at sides with an edging of the same color in front; third segment entirely rose colored; from third to tenth segments is a dorsal stripe of rose which is wide on fourth, fifth, eighth, and ninth segments, narrow, almost

linear on the intermediate ones ; on the 10th segment the green encroaches on the rose color on sides of body, extending more than half way into the segment ; behind the tenth segment the body is rose color with a dorsal streak of a darker shade ; the rose color at each extremity is united by a rosy line along each side close to under surface.

Under surface dull green with a yellowish tint ; feet and prolegs yellowish-green.

June 24th. The larva was now about full grown. Length 0.70 in., width about 0.20 in.

Head very small, bilobed, black and shining, with a streak of dull white across the front above mandibles ; mandibles reddish-brown.

Body above dull green, with a yellowish tint especially on anterior segments, thickly covered with very short brown hairs, scarcely visible without a magnifier—these hairs arise from small pale yellowish dots which appear slightly raised. A dorsal streak of dark green arising from the internal organs showing through the semi-transparent skin from second to fourth segments inclusive. A patch of dull pink or rose color on anterior segments, faint on second segment, covering but a small portion of its upper surface ; nearly covering the dorsal crest on third, and reduced again to a small faint patch on fourth ; on posterior segments is a much larger rosy patch, extending from the hinder part of ninth segment to the end of body—the hinder part of ninth segment is merely tinged, on tenth it is enlarged to a considerable sized patch widening posteriorly, and behind this the body is entirely covered with rosy red. The sides of tenth segment close to under surface have a streak of the same color, and there is a faint continuation of this on ninth segment. Second segment smaller than third. A wide dorsal crest or ridge from third to tenth segments inclusive, behind this the body is suddenly flattened, sides of body acutely sloped from dorsal ridge to under surface.

Under surface yellowish green, with a few very fine brownish hairs ; feet and prolegs greenish, semi-transparent.

I found that the larva fed readily on plum leaves, indeed seemed to prefer them to cherry, so I reared it on this.

June 29th.—The larva fastened itself to the lid of the box in which it had been fed, changing to a chrysalis July 1st.

Chrysalis described July 3rd. Length 0.45 in., greatest width 0.20 in.

Body pale brown and glossy, with many small dark brown or blackish dots distributed over the whole surface, thicker along the middle above, appearing as a faint imperfect ventral stripe from seventh to eleventh segments ; surface thickly covered with very short brown hairs invisible without a magnifier.

The imago was produced on the 13th of July, a fine female *Mopsus*.

I was much surprised when this specimen proved to be *Mopsus*. Boisdu-

val figures the larva of *Mopsus* green, with four white spots above about third or fourth segment, and some white at sides of terminal segments, all very striking in the figure. He also gives *Eupatorium* as its food plant. My specimen was entirely different from this, either Boisduval's figure is incorrect or the *Mopsus* of the south is distinct in its larval state from that of the north.

Thecla—— ? (probably *calanus*, Hub.)—Larva found feeding on oak from 6th to 22nd June.

Length 0.60 in. Head small, rather flat, bilobed, of a shining brownish-black color with a pale streak down the middle, and a line of white across mandibles above; mandibles black; head drawn within the second segment when at rest.

Body above dull greenish-brown with a slight reddish tint, thickly dotted with minute black points invisible to the naked eye, from some of which arise short black or brownish hairs, most numerous about the extremities and around the edge of body close to under surface. Dorsal region flattened above, with a slightly raised line on each side of a paler reddish-brown, edged without from fifth to ninth segments with greenish-grey; a dorsal band of darker brown, enlarging to an indistinct patch at each extremity, most prominent on hinder segments, and having a series of spots along its centre from fifth to ninth segments; inclusive, of dull greenish grey, the hinder ones being almost diamond shaped; spaces between segments slightly paler. The sides of body incline abruptly, and are striped with faint oblique lines of dull greenish-grey. Second segment dull greenish, with many short brown hairs. Close to under surface the larva assumes a reddish brown tint, bordered without by a raised line of dull yellowish or greenish white, extending from the anterior portion of third segment all around the hinder part of body to a corresponding place on the opposite side.

Under surface pale dull green, with a slight bluish tint, and a few short hairs along each side; feet pale brown and shining; prolegs greenish, semi-transparent, faintly tipped with brown.

June 27.—Larva fastened itself up to lid of box in which it was confined, and completed its change on the 29th.

July 3.—Chrysalis. Length 0.40 in., greatest width 0.15 in.

Body dull yellowish brown, slightly glossy, with many streaks and dots of a darker shade of brown; a dull ventral stripe formed of these spots extends from 8th to 11th segments inclusive; a short streak of dark brown down the middle of anterior segments; body thickly covered with very fine short brownish hairs, invisible without a magnifier.

More than two years ago I became firmly convinced that the species now known as *T. calanus* was distinct from *falacer* as figured by Boisduval, with which it had hitherto been confounded; and communicated my views on this

point several times to W. R. Edwards, Esq., and proposed for the species the name *Edwardsii*. A description in manuscript was prepared and read before the London branch of the Entom. Society of Canada. Being persuaded that the larva above described belonged to this insect, I delayed publishing it in hopes of rearing the larva so as to give its complete history. I have taken specimens of the larva for the last three seasons, but have failed each time in bringing them to perfection. One year I had a very fine specimen, which entered the chrysalis state, but while still fresh another larva ate a hole in its side. A second season all my specimens became diseased and dried up, although great care was taken of them. Last year I succeeded in bringing two into the pupa state, and thought, now, surely the problem will be solved, but no! Days and weeks passed away and the imago failed to appear. Thinking it possible that some specimens might be delayed in their development a season they were kept over until a few days since, when I concluded to carefully dissect one to see if the species could be made out. On lifting a small piece of the enclosing shell a number of minute living ichneumons escaped from the orifice. On examination the second specimen was found similarly infested. I hope to succeed better during the present season.

Of late Mr. Grote has determined beyond doubt that the *fulacer* of Boisduval's plate is distinct from that of his text, or that his text is mainly founded on a species distinct from the plate, the *Thecla calanus* of Westwood, which is identical with the insect for which I had proposed the name of *Edwardsii*. Canadian collectors for whom I have named specimens will please bear in mind that the name *fulacer* must be dropped and *inorata*, G. & R., substituted for it, and *Edwardsii* changed into *calanus*, West.

Thecla strigosa, Harris.—Larva found feeding on thorn (*cratægus*) June 13th, 1866. Length 0.55 in., onisciform.

Head small, greenish, with a faint tint of brown, glossy, with a black stripe across the front below the middle, and a patch of white between this stripe and the mandibles; mandibles brownish-black.

Body above rich velvety green, with a yellowish tinge, slightly paler between the segments. A dorsal stripe of a darker shade, centered along the middle segments with a faint yellowish line. Anterior edge of second segment yellowish-brown, with a few dots of a darker shade. Body thickly covered with minute brown hairs scarcely visible to the unaided eye. Dorsal crest not bordered with yellow as in *acadica*; sides of body abruptly inclined and striped with faint oblique lines of yellowish, two or three on each segment. The two last segments have a patch of yellowish on each side, making the dark dorsal line appear more prominent. A faint yellowish line close to under surface, from fifth to terminal segments; spiracles pale red, not prominent.

Under surface bluish green, with a darker patch on last two segments; feet whitish, semi-transparent; prolegs bluish green.

The change to chrysalis took place June 19th. Length of chrysalis 0.35 in.; widest on anterior portion of seventh segment. Head case rounded. Body dark reddish-brown with black markings, thickly covered with fine short whitish hairs, most numerous on anterior and posterior segments; anterior segments with many thickly set patches of blackish; a dark ventral line from sixth to twelfth segments.

This larva very closely resembles that of *Acadica*.

Lycœna neglecta, Edwds.—Larva found feeding on Dogwood (*Cornus*—?) July 12th. Fed it afterwards on willow, which it readily ate.

Length 0.45 in., somewhat onisciform, distinctly annulated. Head small, dark shining brown, with a black streak down the middle, widening as it approaches the mandibles; mandibles brown, with a streak of a paler color above across them; head drawn within the second segment when at rest.

Body above dull greenish white with a faint tinge of yellow; second segment has a deeper shade of green, with a blackish line across its posterior edge where it joins the third segment; a dorsal line of a slightly darker brownish shade; a dull green band across anterior portion of fifth segment, and another in the same position on eleventh; on each side of each segment, from fifth to eleventh, is a spot of the same hue extending obliquely backward. Dorsal crest of a whiter shade than the other portions of body; sides of body slope abruptly, widening considerably at the base. Entire upper surface covered with minute dots from which arise very short fine hairs invisible without a magnifier, but giving the surface a downy appearance. Twelfth and thirteenth segments much flattened.

Under surface similar in color to upper, with the same downy look; feet faintly brown, prolegs partake of the general color.

A very young specimen was decidedly yellow, with the darker markings scarcely apparent. A second pale green, with scarcely any markings. A third about the same size of a much deeper green, strongly marked with dark green as in the full grown specimens, but more distinct.

The chrysalis I failed to note, also the duration of the pupa stage.

Hesperia —. Larva, probably *Thanoos*, found feeding on hazel, July 31.

Head large, dull red, slightly bilobed, each lobe pointing above and tipped with reddish-orange; a spot of the same hue just above mandibles, and another midway between these, forming a row of three on the outer edge of each side of the head.

Body above dull whitish-green, covered with minute dots of a whitish or greyish-white color; a lateral stripe of pale yellow or whitish yellow, becoming linear on anterior segments and terminating on the anterior edge of thirp

segment; anterior edge of second segment, immediately behind the head, ringed with black. Body thickest in the middle, much smaller at second and third segments.

Under surface slightly darker than upper; feet and prolegs of the same hue. This larva I failed to rear.

Several years since I found on the wild columbine (*Aquilegia Canadensis*) a somewhat similar larva belonging to a distinct but allied species. I found several of them on the same plant. They had drawn the leaves together and fastened them with silken threads, forming a rude case, in which they secreted when not feeding. An unfortunate accident destroyed them after they had changed to pupæ, along with the description I had made of them, and I have not met with a similar specimen since,—possibly they may have been the larvæ of *Persius*.

NOTE BY ED. CAN. ENT.—For various reasons—especially that Mr. Saunders' observations on the larvæ of Butterflies might be in the hands of entomologists as early in the season as possible—we have devoted the whole of this number to the conclusion of his valuable Notes, and have been consequently obliged to defer other matter till next month.

THE BUTTERFLIES OF NEW ENGLAND.

The notice in our last number of Mr. Scudder' promised work on New England Butterflies, has already brought many welcome responses. A number of living butterflies have been sent in cotton wool, and although a day upon their journey, were received alive and in good condition: those who live near Boston might try this method, but we think that most persons would be interested in raising the larvæ themselves. In attempting to obtain eggs for this purpose, it is better not to select the freshest butterflies, as their eggs will often prove undeveloped, or at least unimpregnated. It should also be remembered that the males usually appear about a week before the females, and experiments would therefore be more likely to succeed if made about a fortnight after the species is first observed.

In answer to repeated enquiries, we will state that the males of butterflies may, in general, be distinguished from the females by a series of clasping hooks which protrude from the orifice at the tip of the abdomen; frequently these are effectually concealed by long scales. In a number of families the sexes can be determined by the partially undeveloped condition of the front legs of the male: collectors also know many species by their colors.

The proposed volume will include a history and description of the parasites of butterflies. Dr. Packard has kindly promised his assistance in describing these parasites, and examples of every kind, and in large numbers, are desired. They should be accompanied by specimens of the species infested, and, if

possible, by such as show the mode of attack: the fullest observations on the time and manner of attack, and on the subsequent life of the insects, will be acceptable. All specimens will be returned, when desired, by the end of the year.

Complete lists of the butterflies found in different localities, both in New England and the adjacent regions, are wanted, and especially if accompanied by careful memoranda of the exact times of the first appearance, and of the duration of each species. It will be necessary to receive insects from every possible quarter, to arrive at a definite knowledge of their habits. To secure this more effectually, Mr. Scudder will name any local collection of butterflies sent to him with notes, at the Boston Society of Natural History, about the first of October: such collections would be returned before the 1st January. For the safety, however, of his own collection, and of others entrusted to him, it will be necessary to return at once, unnamed, any collection showing traces of having been previously attacked by museum pests.

As stated last month, the amplest credit will be given in the work for every item of scientific intelligence received. We urge our readers to assist in this undertaking to the extent of their ability. With such material aid, the volume cannot fail to supply a need which has long been felt.—*American Naturalist*.

LARVA OF MELITEA PHAETON.—Mr. W. H. Edwards, of Coalburgh, West Va., writes us that he has obtained the larvæ of *M. phaeton*, feeding, May 20, on the leaves of *Chelone glabra*, L., (the plant was determined by Mr. B. Billings, of Ottawa, Ont).

BOOKS RECEIVED.

The Coleoptera of the Island of Montreal. By A. S. Ritchie. (Reprinted from the "Canadian Naturalist and Geologist.")

After some preliminary remarks on classification, and on the habits of the leading families of Coleoptera, the author gives a valuable synonymical list of the species of this order taken on the Island of Montreal. It comprises 27 families, 183 genera, and 217 species, and is a useful contribution to our knowledge of the distribution of species in this country. We observe a few species not on our list, while many of those common in the Upper Province are conspicuous by their absence.

List of Hymenopterous and Lepidopterous Insects collected by the Smithsonian Expedition to South America, under Prof. J. Orton. By A. S. Packard jr., Salem, Mass.

Le Naturaliste Canadien. Quebec. No. 6, May, 1869.

Proceedings of the Boston Soc. Nat. Hist. Vol. xii., pp. 401—419, completing the volume.

The American Naturalist. Salem, Mass., Vol. iii., June, 1869.

The American Entomologist. St. Louis, Mo., June, 1869.

The American Agriculturist. New York, June, 1869.

The Canada Farmer. Toronto, May, 1869.

The Weekly N. Y. Sun. New York, May 5, 12, 19, 26; June 2, 9, 1869.

A Guide to the Study of Insects. By A. S. Packard, jr. Part vii. April, 1869. This part concludes the Diptera and begins the Coleoptera.