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The Canadian Entomologist.

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No. 5

MONOGRAPH OF THE LOMATINA OF NORTH AMERICA.

BY D. W. COQUILLET, ANAHEIM, CAL.

The Lomatina may easily be distinguished from the other Bombylidæ by the following characters :

Front very large ; antennæ shorter than the head, the third joint at least twice as long as the first, tapering to the tip, or suddenly contracted near its base, the terminal portion styliform ; terminal style minute. Proboscis never projecting more than one half its length beyond the hyperstoma. Front and face when viewed from the side form a gentle curve, never greatly produced at base of antennæ. Wings with two submarginal and four posterior cells ; furcation of the second and third veins occurs before the small cross-vein at a distance of at least twice the length of that cross-vein. All of the tibiae bristly.

The following table contains all the genera known to occur in North America :

- 1.—Third basal cell open.....2
Third basal cell closed, third antennal joint when viewed from the side more than twice as long as wide, gradually tapering from near base to apex, which is blunt and bears a very short, sharp-pointed style ; pulvilli present.....4. *Oncodocera*.
- 2.—Third antennal joint when viewed from the side, more than twice as long as wide, suddenly contracted near its base, the terminal portion styliform ; whole of face pilose.....3
Third antennal joint when viewed from the side, but little longer than wide ; upper half of face bare ; pulvilli present....1. *Eucessia*.
- 3.—Pulvilli present ; face usually retreating below....3. *Aphabantus*.
Pulvilli wanting ; face projecting below.....2. *Leptochilus*.

Stygia elongata Say does not belong to the Lomatina.

Triodites O. S. = *Aphabantus* Lw. At the time of establishing this genus, the Baron Osten Sacken had not seen a specimen of *Aphabantus*

(see West. Dipt., p. 228), and the only character he gives for separating these two genera (l. c., p. 229) is that the second submarginal cell is appendiculate in *Aphabantus*, and not appendiculate in *Triodites*, but this character frequently varies in different specimens of the same species, and sometimes even in the different wings of the same specimen. The species upon which these two genera were established (*T. mus* O. S., and *A. cervinus* Lw.) do not offer any characters that would justify their separation into two different genera.

In the following pages I have placed an exclamation point (!) after those localities from which I have obtained specimens of the species.

I. EUCESSIA, n. gen.

Antennæ porrect, third joint when viewed from the side scarcely longer than wide, somewhat oval in outline, but tapering to the tip, which is blunt and bears a very short style, tipped with a short bristle; first joint longer than the second, but not one half as long as the third; first two joints of nearly an equal width, not much more than one half as wide as the third at its base. Face retreating below, bare except on oral margin. Head a little thicker than long, wider than the thorax, and fully three fourths as large. Thorax with bristles in front of wings and on hind angles. Scutellum rounded behind. Wings with two submarginal and four posterior cells, all of the latter open, as is also the third basal; small cross-vein near middle of discal cell; furcation of second and third veins occurs before proximal end of discal cell. All of the tibiae provided with bristles; pulvilli pad-like.

Eucessia rubens, n. sp.—♀. Front black, the lower half white pollinose, reddish or white pilose; face densely silvery-white pollinose, the upper part bare, oral margin white and reddish pilose; proboscis not projecting beyond hyperstoma. Antennal joints proportioned as 2, 1 and 6; first two joints reddish, the third black. Occiput white tomentose, that in middle above, reddish. Thorax black, reddish tomentose, the bristles also reddish; pleura white pilose. Scutellum reddish, above black, its tomentum and bristles reddish. Abdomen reddish, tomentum concolorous except a white vittae on middle of dorsum and one on each side; pile of first segment white, dense on the sides, that on sides of other segments sparse, reddish; venter reddish, its tomentum concolorous. Legs reddish, tomentum concolorous, that on hind side of each femur and

on front side of hind femora at base, white ; bristles reddish ; apex of tarsi black. Wings hyaline, costal cell yellowish.

♂. Eyes quite widely separated on the front, the latter wholly silvery white pollinose ; hypopygium very large and greatly dilated below.

Length 4-5 m.m. Cal. ! 4 ♂ and 6 ♀, in Sept. (several pairs were in coitu).

2. LEPTOCHIRUS, Loew.

1.—Hind margin of scutellum shallowly concave, wings hyaline, costal cell yellowish.....*modestus* Lw.

Hind margin of scutellum convex, basal third or more of wings blackish-brown.....*transitus*, n. sp.

L. transitus, n. sp.—♀. Front black, the lower half gray pollinose, black pilose, that next the antennae white ; face black, gray pollinose, yellowish and black pilose, most abundant on oral margin ; face and front apparently destitute of short, appressed tomentum ; proboscis never projects more than one half the length of its labellæ beyond hyperstoma. Antennæ black, first joint about four times as long as the second. Occiput gray pollinose, the upper part yellowish tomentose. Thorax black, yellowish tomentose, sides broadly white tomentose ; pile and bristles largely black ; pleura white pilose, that on upper part yellowish. Scutellum shining black, rounded behind, yellowish tomentose, the pile and bristles black. Abdomen black, yellowish tomentose, that on base of each segment white ; sides of first segment abundant whitish pilose, sides of other segments very sparse black and white pilose, dorsum of abdomen sparse long black pilose ; venter black, white tomentose. Femora black, tibiae, bases of tarsi and sometimes of the femora, reddish ; apex of tarsi and sometimes base of hind tarsi and apex of hind tibiae, black ; tomentum of legs white, the bristles reddish. Wings hyaline at the apex, the base brown, the outline of this color extending from apex of first vein obliquely to second vein, then basally a short distance, then transversely to discal cell beyond small cross-vein, then basally to base of discal cell, then transversely to extreme base of fourth posterior cell, then basally to axillary incision.

♂. Eyes narrowly separated on the front, hypopygium small and not dilated below.

Length 5-8 m. m. Cal. ! 10 ♂ and 7 ♀ in April.

L. modestus Loew.—♀. Differs from *transitus* as follows: Front whitish tomentose, and black and yellowish pilose; face whitish tomentose, oral margin yellowish pilose; proboscis projects about one fourth its length beyond hyperstoma; first two joints of antennæ yellowish pilose. Occiput whitish tomentose, that in middle above reddish. Thorax mixed whitish and yellow tomentose, more whitish in front and each side; pile reddish and black, longest behind; bristles reddish; pleura white pilose. Scutellum shallowly concave behind, mixed white and yellow tomentose, pile and bristles reddish. Abdomen largely reddish, tomentose, that on base and sides whitish; pile white and yellowish; venter mixed white and yellowish tomentose. Tomentum of legs mixed white and yellowish. Wings hyaline, costal cell yellowish.

♂. Hypopygium rather large, and considerably dilated below.

Length, 7-10 m. m. Cal. Texas. 5 ♂ and 5 ♀ in April and May.

3. APHOBANTUS LOEW. (Syn. *Triodites* O. S.)

1.—Thorax and abdomen destitute of white-tomentose dorsal vittæ.... 2

Thorax with two, abdomen with one white-tomentose dorsal

vitta..... *vittatus* n. sp.

2.—Proboscis never projects more than the length of its labellæ beyond the hyperstoma..... 3

Proboscis projects half its length beyond the hyperstoma... *litus*, n. sp.

3.—Abdomen black tomentose and with white-tomentose cross

bands..... *mus* O. S.

Abdomen yellowish tomentose, destitute of distinct white-

tomentose cross bands..... 4

4.—Abdomen densely clothed with long, erect, whitish pile; abdomen of male depressed, about as wide as the thorax, in outline elongate-ellipsoidal..... *hirsutus*, n. sp.

Abdomen never densely clothed with long erect pile, abdomen of male usually sub-cylindrical and tapering posteriorly. *cervinus* Lw.

Aphobantus litus, n. sp.—♀. Front black, the lower half gray pollinose, mixed yellowish and white tomentose and black pilose; face black, destitute of tomentum, densely gray pollinose except on lower edge, sparse white and yellowish pilose, most abundant in middle below; oral margin white and yellowish; proboscis projects about half its length beyond hyperstoma. Antennæ black, first joint nearly twice as long as the second, and about as long as the thickened basal part of third; styliiform portion

of third joint very slender, and about three times as long as the thickened basal part of this joint. Occiput gray pollinose, white tomentose, the upper part largely yellowish tomentose. Thorax black, mixed white and yellowish tomentose, the pile and bristles largely black; pleura white pilose and tomentose. Scutellum shining black, rounded behind, yellowish tomentose, the pile and bristles black. Abdomen black, mixed black, brown and whitish tomentose, the black forming a cross band at base of the second segment, the brown chiefly confined to base of each segment; first segment wholly white tomentose and pilose, pile of other segments very sparse, white; venter black, whitish tomentose. Femora and apices of tarsi black, tips of femora, tibiae wholly and bases of tarsi, reddish; tomentum of legs white, the bristles reddish. Wings hyaline, costal cell yellowish; a stump of a vein near base of anterior branch of third vein.

♂. Eyes barely contiguous on the front, the latter wholly gray pollinose and yellowish pilose, abdomen with black-tomentose cross bands at base of each segment, tarsi wholly reddish; hypopygium moderate, slightly dilated below, its upper half behind long black or reddish pilose.

Length 7-10 m. m. Cal. ! 3 ♂ and 1 ♀ in Sept. The face is less retreating below than in the other species.

Aphæbantus hirsutus, n. sp.—Wholly black. Front yellowish tomentose and black pilose, face yellowish-white tomentose and pilose; proboscis projects half the length of its labellæ beyond hyperstoma. Antennal joints as 2, 1 and 4, the styliform portion of the third joint about twice as long as the thickened basal part of this joint. Occiput white tomentose. Thorax yellowish tomentose and pilose; pleura white pilose. Pile and bristles of scutellum pale yellowish. Abdomen yellowish tomentose and densely clothed with long white or yellowish pile; venter white pilose. Legs white tomentose, the bristles reddish. Wings hyaline, the costal cell yellowish.

♂. Eyes very narrowly separated on the front; abdomen greatly depressed, about as wide as the thorax, elongate-ellipsoidal in outline; hypopygium very small; front and middle tibiae with a row of white pile on the outside.

Length 7-8 m. m. Cal. ! 2 ♂ and 2 ♀.

Aphæbantus mus O. S. (Syn. *Triodites mus* O. S.)—Female. Black, the tibiae and tarsi sometimes reddish. Front gray pollinose on lower part, whitish tomentose and black pilose; face gray pollinose and whitish

pilose; proboscis not projecting beyond hyperstoma; styliform portion of third joint of antennae about twice as long as the thickened basal part of this joint. Occiput white tomentose. Thorax yellowish tomentose, more whitish on the sides, the bristles black or yellowish. Scutellum rounded behind, yellowish tomentose, the pile and bristles black. Abdomen black tomentose and with a white-tomentose cross band on apex of each segment except the last one; first segment wholly white and yellowish pilose; sides of abdomen quite abundant long white pilose; venter white tomentose. Legs white tomentose, the bristles reddish. Wings hyaline, the sub-costal cell yellowish.

Male.—Eyes meet each other for some distance on the front.

Length 4–8 m. m. Cal. ! Ariz. ! Utah. 4 males and 7 females.

Aphaebantus vittatus, n. sp.—Female. Black, tips of femora, tibiae and tarsi reddish. Front and face white tomentose and pilose, tomentum of front sometimes largely or wholly brownish; proboscis not projecting beyond hyperstoma. Styliform portion of third joint of antennae about once and a fourth as long as the thickened basal part of this joint; second joint minute. Occiput white tomentose. Thorax brownish tomentose, and with two widely separated white-tomentose dorsal vittae; sides of thorax and pleura white tomentose, bristles of thorax reddish. Scutellum mixed white and brown tomentose, its hind margin wholly white tomentose, the bristles black. Abdomen brown tomentose, a dorsal vitta, the sides and venter white tomentose. Legs white tomentose, the bristles reddish. Wings hyaline, the costal cell yellowish.

Male.—Eyes quite widely separated on the front, hypopygium moderate and not noticeably dilated below.

Length 4–6 m. m. Cal. ! 5 males and 5 females.

Aphaebantus cervinus Loew.—Differs from *vittatus* only in having no white-tomentose vittae on the thorax and abdomen, the sides of the thoracic dorsum and of the abdomen are not so conspicuously white tomentose, and the eyes of the male meet each other for some distance on the front. Pile of front varies from white, through yellowish, to black, and the tomentum of front varies from white to brown; bristles of thorax, scutellum and tibiae usually reddish, but sometimes black.

Length 6–11 m. m. Cal. ! Ariz. ! Col. ! Texas. 15 male and 11 females, July to Oct.

Var. *pavidus* n. var.—Differs from the typical *cervinus* in being smaller, and in having the front and face densely snow-white tomentose, but the front is sometimes brownish tomentose. Length 4–6 m. m. Cal. ! 1 male and 4 females.

4. ONCODOCERA Macq.

1.—Length 4–7 m. m.; first posterior cell open.....*leucoprocta*

Length 14 m. m.; first posterior cell closed.....*valida*

Oncodocera leucoprocta Wied. (Syn. *Mulio leucoprocta* Wied.; *Anthrax terminalis* Wied.; *Oncodocera dimidiata* Macq.)—Male. Wholly black, the thorax, scutellum and abdomen deep velvet-black. Wholly black pilose except front, face and last two abdominal segments, which are white pilose, but thorax sometimes largely yellowish pilose, and pile on sides of abdomen sometimes rusty-brownish. Apex of wings hyaline, the base brownish, the outline of this color extending from apex of first vein obliquely to base of fourth posterior cell, then following penultimate vein to hind margin of wing; axillary cell almost wholly hyaline; apex of first basal cell hyaline; only the extreme base of discal cell brown. Eyes contiguous for some distance; proboscis not projecting beyond hyperstoma.

Female.—Pile of head and body, except sides of abdomen, yellowish; no white pile on last two abdominal segments.

Length 4–7 m. m. N. C. ! Va., Ill., Wis., Ky., Ga., Fla. ! Mex.

Oncodocera valida Wied. (Syn. *Anthrax valida* Wied.; *Anisotamia eximia* Macq.)—As I have never seen a specimen of this species, I give below a translation of Wiedemann's original description (Aus. Zwei. Ins., II., page 636).

“Deep black, abdomen having the apex each side fulvous pilose, in the male with two vittæ; 7 lines. From Oaxaca in Mexico.

“Antennæ black, with a simple style. Eyes of the ♂ contiguous, so that on the crown only a small space remains, extended in a point anteriorly. Besides these, the whole insect is black, and black pilose, only the end of the abdomen with golden-yellow, beneath even foxy-reddish, glossy, silken pile, which in the male forms two broad vittæ that extend to the first segment, but in the female only forming two spots which extend across the last two segments. Wings on the costal margin for two-thirds their length brownish; in the male less dark. Veins as in the fifth tribe, except that the inner branch of the forked vein is connected with the next following vein at the hind margin of the wing.”

DESCRIPTION OF THE PREPARATORY STAGES OF
SATYRUS CHARON, EDW.

BY W. H. EDWARDS, COALBURGH, W. VA.

EGG.—Conoidal, somewhat rounded at base ; truncated, nearly flat, a very little convex, at top ; the sides a little convex, and marked by about twenty-two sharp vertical ridges, which start from edge of base and end at rim of summit, the spaces between these ridges deeply and roundly excavated ; the summit is covered with shallow cells, irregularly five and six-sided, in four rows, not concentric, but somewhat spiral, about a central rosette of rhomboids. Very like the egg of *Alope*, but there are a greater number of flutings on sides. Color lemon-yellow. Duration of this stage about 12 days.

YOUNG LARVA.—Length .1 inch ; the anterior segments thickest, tapering from 3 or 4 to 13, at the extremity nearly square, with a projecting point at either side ; armed with long white processes or bristles, arranged as follows : on either side, a sub-dorsal row, a second on mid-side, and a third along base ; also two demi-rows confined to 2, 3, 4, one of them between the two upper rows, the other between the second and third rows ; the sub-dorsal has one bristle each on 2, 3, 4, bent forward, 2 each from 5 to 12, 1 on 13, besides another proceeding from the terminal point, all bent back ; the demi and lateral rows have one to each segment, all bent forward, except those on 12, 13 ; the lower row has two to each segment, those on 2 bent forward slightly, all the rest back ; these bristles are thick at base and taper a little to a blunt point, and under a high power are seen to be rough with the stubs of branching spurs ; there are also over pro- and anal legs two shorter bristles to each ; in most of these bristles the bend is close to base, giving them the appearance of so many hooks ; and they spring from rather prominent tubercles ; color of body pinkish-yellow, with red-brown longitudinal lines, one mid-dorsal, two finer ones close together on mid-side, and another heavier than the last just over spiracles ; there is also a less distinct and broken line along base ; legs and pro-legs color of body ; head one-half broader than 2, sub-globose, narrowing upwards, the top a little depressed ; color yellow-brown, specked thickly with red-brown ; a few white bristles over surface, like those on body and rising from dark brown tubercles, all bent down ; ocelli brown, except the largest, which is emerald-green.

About eight days after beginning to feed the larva changed color, becoming pale green, the lines as before, head as before. From end of hibernation to first moult 21 to 38 days, the larvæ being on grass in a warm room.

After First Moult.—Length at 24 hours after the moult, .15 inch ; tapering from anterior segments to 13 both dorsally and laterally, the last ones a little arched ; 13 ends in two conical tails, one at either side, the space between roundly excavated ; body covered with rough tuberculations, from which come short stiff processes, not tapering, but small at base, and thick at end and rounded, varying in size and somewhat in length ; rough also like the bristles at first stage ; except on 2, where these are turned forward, all are bent back and flattened to the body, which gives a downy coating to whole surface ; color green ; a pale brown mid-dorsal line, two such on middle of side and another over spiracles ; feet green, whitish at ends, pro-legs green ; head a little broader than 2, sub-globose, bright green, pitted with darker green, rough with white tubercles, each of which gives a process like those on body, and bent down ; ocelli emerald. Duration of this stage 15 to 20 days.

After Second Moult.—Length at 24 hours, .3 inch ; same shape ; color either yellow-green or a bluish sage-green ; covered with bent processes as before ; the lines as before, but green instead of brown ; along base a yellow stripe ; head as before. Duration of this stage 12 to 18 days.

After Third Moult.—Length at 20 hours, .4 inch ; color yellow-green ; tails reddish ; the mid-dorsal stripe distinct, the three side lines not well defined ; the basal ridge yellow ; there is also now a sub-dorsal line or narrow stripe of pale yellow. Duration of this stage 15 to 20 days.

After Fourth Moult.—Length at 18 hours .54 inch ; closely as in last previous stage ; 5 days later was fully grown.

MATURE LARVA.—Length .94 inch, greatest breadth .12 inch ; cylindrical, tapering from middle to end both on dorsum and sides, rather stout in middle, but not obese, the anterior segments even ; ends in two sharp conical divergent tails ; each segment creased six times, and on the flattened ridges so caused are numerous fine yellowish tubercles, each of which sends out a short, slender, white process, more or less pressed to the surface ; color yellow-green over dorsum to sub-dorsal band, from that to base more green, less yellow ; the tails pale red, on outer sides

yellow ; the sub-dorsal band nearly as wide as basal, and same shade of yellow ; the dorsal stripe is dark green, and is edged on either side narrowly by yellow ; feet and legs green ; head sub-globose, broad at base, narrowing upwards, a little depressed at top ; roughly tuberculated, the tubercles in vertical rows, conical, each with white hair ; color bright green ; the ocelli brown, except the largest, which is emerald. Duration of this stage 20 days at the least.

CHRYsalis.—Length, male .4 inch, female .5 to .54 inch ; breadth across mesonotum, male .16, female .17 ; across abdomen, male .17, female .18 inch ; cylindrical, abdomen conical ; head case short, narrow at top and a little convex, the sides excavated ; mesonotum prominent, roundly carinated, the sides somewhat convex, followed by a shallow depression ; color pale yellow-green, the dorsal side throughout, and the ventral side of abdomen, thickly dotted and mottled with whitish ; three whitish stripes along dorsum, one in middle, the others sub-dorsal, and running from end to end ; on the wing cases are three streaks of darker green, the longest in mid-wing and reaching hind margin, the others short and stopping before margin ; there are also some small patches same green ; wing cases next base, the top of head case and keel of mesonotum lined with white.

Another example was wholly whitish-green, no dark streaks on wing cases and no dorsal bands.

Others were greenish-black, finely dotted gray ; the three dorsal stripes gray ; the wings black and gray, about equally, running in streaks with the nervules.

Another was of a dull brown, with no tinge of green, marked like the last described, but the light parts were of a pinkish-white ; on the wings were three deep black streaks, corresponding to the green ones before mentioned. Duration of this stage 11 to 12 days.

This pretty little *Satyrus* was first made known by Mr. T. L. Mead, who took it in Colorado in 1871. It was described by me in *Trans. Am. Ent. Soc.*, iv., p. 69, 1872, and appended was a note as follows : " This species was first met near the Twin Lakes, in Upper Arkansas Valley, elevation 8,000 feet, in July, 1871. It flew near the ground, frequently alighting on the sage-brush, and seemed much more partial to flowers than was *Satyrus* (*Hipparchia*) *Ridingsii*, also common in that vicinity. By the latter part of July it was abundant throughout the entire Park and

mountain country, and so continued till September." In Mr. Mead's Report on the Lepidoptera taken by the Wheeler Expeditions, 1875, it was farther said of *Charon*: "It was found both in South and Middle Parks, though not so abundantly as in the Arkansas Valley. In August, females were obtained and inclosed with grass; several eggs were laid; they are whitish and very similar to those of *Nephele*." I do not know that another line has been published on the habits of this butterfly than what Mr. Mead wrote or authorized as above, although the species has been taken in many localities from New Mexico to Montana, and even in British America, as appears by Captain Geddes' list. Mr. Morrison also took it in Nevada.

I received 20 eggs of *Charon* from Mr. H. W. Nash, then at Rosita, Colorado, 4th August, 1884; on the 10th August, 23 more, and many others on 14th Aug.; sent through the mail, in turned wooden boxes, the eggs all obtained by confining females in bags over grass. They came in perfect order, and began to hatch, the 1st lot, 10th Aug., the 2nd lot, 17th. The larvæ were remarkably like those of *Alope*, same shape, color, longitudinal bands and processes, and the latter were bent like fish-hooks, just as in *Alope*. I had larvæ of *Hipparchia Ridingsii* hatching at same time, and the difference between them and the larvæ of *Charon* at this stage was striking. It was generic. The same resemblance to *Alope* runs through the whole history of *Charon*, egg, all the larval stages, and the chrysalis, except that in color this last is variable as to coloration in *Charon*, and not in *Alope*.

The larvæ devoured the egg shells more or less completely, but eat no grass, and settled themselves for a winter's sleep. I left them for several weeks in the cellar, in paper pill boxes. On 10th October, they were sent to Clifton Springs, New York, and placed in the "cooler" of the Sanitarium there, temp. all the year 40° Far. On 7th March, 1885, I received the larvæ again; nearly all were alive, and they were placed on a sod of grass set in flower pot, and covered by a glass lamp chimney. On 8th, several were feeding. The first larva passed 1st moult 29th March, but several were ready to pass this moult for about a week had the weather been pleasant, instead of cold, cloudy and stormy, much of the time. Two more passed the moult 2nd April. The last one of 15 larvæ passed 1st moult 15th April; so that between the first and last was an interval of 17 days.

The second moult began on 9th April, and the last one of 10 larvæ passed same 21st April, a difference of 12 days.

The third moult began 21st April, and the last of 8 larvæ passed same 7th May, a difference of 15 days.

The fourth moult began 3rd May, and the last of 9 larvæ passed same 6th June, a difference of 34 days.

The first chrysalis formed 20th May, and the last larva was mature 10th June, and would have pupated about 15th, had I not put it in alcohol. The difference would have been about 26 days in pupating.

The first imago out of chrysalis was on 2nd June, the pupa period being from 11 to 12 days.

So that, supposing larvæ to behave in natural condition as these in confinement, fresh butterflies from same brood would be coming out daily for several weeks. And so undoubtedly they do, as is the case with *Alope*.

LARVA OF COELODASYS MUSTELINA, PACK.

BY G. H. FRENCH, CARBONDALE, ILL.

Length .80 of an inch. Head oblique, narrow, slightly bilobed, about one-fourth of the head above the height of joint 2; body nearly cylindrical; on joint 5 a nearly conical projection about two-thirds as high as the depth of the body, bifid at the top, each part tipped with a hair; on joint 9 is a slight elevation, and a more prominent one on joint 12. When at rest the posterior part of the body is raised, making these elevations appear more prominent. In color, the head, joint 2, and the dorsum of joints 3 and 4 to the top of the tubercle on joint 5, is dark brownish purple mottled with gray, the sides being lighter than the front of the head and the dorsum, the latter narrow posteriorly; the sides of joints 3 and 4 are bright green with a few fine purple dots and a pale dorsal edging; the sides of the body back of joint 4 are a series of fine, close, crenate purplish red lines or mottlings on a grayish yellow ground color, more yellow above, giving the sides something of an orange appearance; the dorsum of joints 5 to 8 is more of a grayish color from the ground color being paler and the mottlings finer and more of a purple shade; a darker patch on the dorsum of joint 8, this color extending

back obliquely on joints 9 and 10, making a dark purple lateral line; the pale part of the dorsum is wider on the posterior than on the anterior of each joint, the space being bordered by an oblique purple line that fades out before quite reaching the lateral line; the rest of the dorsum is like the sides, except a little darker; between the two posterior tubercles or elevations is a clear white V, the point beginning on the anterior part of joint 10 and extending back to the posterior part of joint 11 on the sides.

Three of these larvæ were found by Mrs. French on a rose bush, September 18, 1884, nearly grown. By October 1st they had pupated, fastening the leaves together for a puparium, within which they changed. The following spring these produced three imagines, May 20, 22 and 31 respectively. No effort was made to rear a second brood, but from the time the larvæ were found in the fall it is to be presumed that there are two broods in a season.

NOTES ON CERTAIN COLEOPTERA OF THE NEIGHBORHOOD OF GALESBURG, ILL.

BY C. W. STRUMBERG.

Lebia divisa Lec.—Twenty-nine specimens of this beautiful Carabid were taken during July (1884) with the sweeping net, on various weeds along the edge of a slough. One specimen was found under a board. Towards sunset seemed to be the only time they could be captured, differing in that respect from some of the others of the genus, which are about at all hours of the day. My first specimen was taken in 1876 in same locality.

Lebia tricolor, *pleuritica* and *analis* seem to be rare. Have taken them with the sieve late in October.

Apenes sinuata Say. Oct., two specimens under a log.

Pentagonica bicolor Lec. Not rare among leaves and rubbish in the late fall and early spring. Specimens are often taken in the sweeping net during summer.

Cryptobium serpentinum Lec. Oct. 2 (1883?). Took two specimens of this fine insect under logs in moist woods.

Dicerca asperata L. & G. Was found in numbers late in the fall by searching among the fallen leaves on hill sides, especially in flat places or

depressions near large trees. Sometimes a specimen of *D. lepida* was taken, while *D. divaricata* and *D. obscura* were quite common.

Stethon pectorosus Lec. July, two specimens under bark.

Fornax badius Melsh. July 18th, 16 specimens under the bark of a stump.

CELIPTERA BIFASCIATA, Sp. Nov.

BY J. ELWYN BATES, SO. ABINGTON, MASS.

Coloration and shading as in *frustulum*, with the following exceptions, which are very marked and leave no room for doubt that it is entirely distinct from that species.

The peculiar black spots on the inner third of the fore wings of *frustulum*, are entirely wanting in this species. There is a small dark brown triangular spot acutely pointed and situated very near the costa, in line with the extra-discal row of dots, and ending on costa and outer margin of the wings. In some specimens these spots are rounded internally. A light buff-colored band crosses the wings, limiting the inner third, which is shaded heavily with chocolate-brown exteriorly. This band is nearly identical in coloration with the extra-discal one, though perhaps a trifle lighter. In *frustulum* the extra-discal band bends outward beyond the median vein; while in this species it pursues an unaltered course to the costa. Discal ringlet somewhat reniform, and smaller than in *frustulum*. Traces of two very faint brown lines crossing the fore wings in discal space, nearly parallel with the extra-discal band. A light cinereous narrow band crosses the hind wings from the inner angle to a point in line with the extra-discal band of the fore wings. Wings quite heavily shaded with brown beyond this band. No other markings on hind wings. Beneath like *frustulum*, except that it is of a darker hue. Length of fore wing, male, .70, female, .73; of body, male, .65, female, .70; expanse of wings, male, 1.50, female, 1.56 inches.

This insect is rather common at Cassia, Orange Co., Fla., where I took a number of specimens. It flies by daylight as well as by night, and is one of a very small number of species that will come to sugar in that locality.

I sent specimens of this insect to several entomologists for deter-

mination, and one returned it under the name of *C. frustulum*, and the others said it was new to them. It does not compare with any examples of *frustulum* that I have seen, and I therefore venture to describe it as a new species.

NOTE ON STATEN ISLAND NOCTUIDÆ.

BY A. R. GROTE, A. M.

My earliest collecting field was the south side of Staten Island, where I found many rare insects, especially among the Coleoptera. This south beach of the Island is visited by the warm spring coming from the south very early in the year, and is a good collecting field. Staten Island is a continuation of the Jersey coast, and one finds on it southern species of butterflies such as *Argynnis Idalia*, which are less frequent on Long Island, the next extension of the coast to the north. So far as the fauna is concerned, I am inclined to class Staten Island with New Jersey, rather than with New York. It forms the beautiful southern boundary of New York Harbor. At the same time Mr. Davis informs us that the Red Squirrel, not uncommon on the mainland of New Jersey, is not found on Staten Island, and thus has not crossed the narrow Kills. But I have abundant faith it will yet turn up on the Island, where all good things naturally live. I have collected on Staten Island a good many of those kinds of moths which come up our coast with the warmer weather and the Gulf Stream. I have in various papers called attention to the seasonal migration, from south to north, of many species of moths, which adds so much to the fauna of the United States. These moths have found a lodgment in Florida, but probably do not breed to the northward. I have taken on Staten Island *Euthisanotia Timais*, the Spanish Moth, as also *Aletia Argillacea*, the Cotton Worm. So far as I know, the northern limit of successful hibernation of the latter is not yet definitely ascertained, notwithstanding all that has been published by the U. S. Government on the subject. Also in the fall I have taken *Anomis Erosa* Hübn., a Noctuid allied to the Cotton Worm, although in the cut of wing and color it resembles *Eucirroedia Pampinatrix* Guen., a Noctuid which has, I believe, real affinities with *Scoliopteryx Libatrix*, a Noctuid found in North America and Europe. This latter inhabits Canada and Hudson's Bay

Territory. It has not been introduced, but is apparently an unchanged survival since before the Glacial Epoch, when the fauna of Siberia, northern Europe and boreal America had much in common.

Mr. Davis has given me some common Staten Island *Noctuidæ*, and it is strange that these few species should have among their number at least two southern visitants which probably do not hibernate successfully on Staten Island. I hope local lists will soon be published by the Staten Island Natural Science Association, and the following may serve as a slight introduction thereto :

- Apatela occidentalis* G. & R. July 30.
Agrotis saucia Hübn. Oct. 15.
 " *clandestina* Harris. June 24.
Mamestra trifolii Rott. Aug. 15.
 " *renigera* Steph. June 8.
Hadena devastatrix Brace. Aug 15.
 " *dubitans* Walk. "
Prodenia flavimedia Harvey. Aug. 9.
Laphygma frugiperda Abb. & Sm. Aug. and Oct.
Autumnalis Riley.
Orthosia ferrugineoides Guen. Oct. 15.
Anomis erosa Hübn. Oct. 20.
Aletia argillacea Hübn. Oct. 7.
Eucirroedia pampina Guen. Sept. 2.
Pyrrhia exprimens Walk. July 22.
Lygranthoecia marginata Haw. July and Aug.
Plusia precatationis Guen. July 22.
Syneda graphica Hübn. May 15.

Among the southern visitants I once took a specimen of the strange Noctuid, *Sylectra Erycata* Cram., on the Battery, New York City. Its home is, I believe, Surinam; it had certainly wandered far. The Blue and Green Sphinx, *Arges Labruscæ* Linn., has been taken in New Jersey. This species probably does not breed within the limits of the United States, although since Mr. Thaxter has bred *Euthisanotia Timais* in southern Florida, we may expect that the Florida Colony of tropical Lepidoptera embraces many West Indian moths.

A NEW CHALCID PARASITE ON THE COMMON BASKET WORM (*Thyridopteryx ephemeraeformis* Haworth).

BY WM. H. ASHMEAD, JACKSONVILLE, FLORIDA.

* This peculiar moth, which so perplexed the older Lepidopterists at classifying, is quite common in Florida on oaks, willows, shrubs, etc.

Full accounts of its habits, with accurate figures of the moth, caterpillar, etc., will be found in Prof. Riley's "First Mo. Report," Saunders' "Insects Injurious to Fruits," and Dr. Lintner's "First N. Y. Report."

Indeed, these authors quite fully, accurately and succinctly describe the habits and parasites of this pest, and it would not now be noticed by me but for the fact of my breeding from it here in Florida a Chalcid parasite new to science and unnoticed by any of the above mentioned authors.

Prof. Riley, in his report, gave but two parasites, *Pimpla inquisitor* Say, and *Hemiteles thyridopterygis* Riley. Mr. Lintner, in his work, added *Pimpla conquisitor* Say, *Chalcis ovata* Say, a *Pteromalus* allied to *Pteromalus puparum* L., and a fly—*Tachina* species—making in all six parasites.

I have now the pleasure of recording the seventh, a *species novum*, interesting from the fact that it belongs to a genus in the family *Chalcididae*, recognized by the abnormal shape of its first antennal joint, and in which heretofore but one species was known to science, and that described from Europe.

Sub-fam. EUCYRTINÆ.

Dinocarsis thyridopterygis, n. sp.

♀. Length .06; wing exp. .14 inch. Color: pale brown, abdomen darker; posterior femora and tibiae darker; scutellum rather large, somewhat orange.

Head much broader than thorax, eyes large, brown; antennae long, 11-jointed, large, strongly, sub-triangularly keeled below, the three terminal joints white; wings rather long and narrow, pubescent, submarginal vein short, rather close to and parallel with outer margin, marginal vein not extending to half the length of wing, it, with stigmal and postmarginal veins, very small and about equal in length.

Described from a specimen bred in March.

The rearing of this Chalcid is quite interesting, as it is the first of the genus recorded from North America, and the second species known.

The genus *Dinocarsis* was erected by Forster in 1856, *vide* Hymenopterologische Studien, p. 33, to contain *Eucyrtus hemipterus* Dalman.

Dr. Mayr, in Die Europäischen Eucyrtiden, gives the synonymy as follows :

Dinocarsis hemiptera Dalm.

Eucyrtus hemipterus Dalm., Ict. Ac. H. 1820, p. 166 (42) und 371.

Nees Hym. i. a. M., 1834, p. 252.

Dinocarsis hemiptera Forst., Hym. Stud. ii., 1856, p. 37.

Dicelloceras vibrans Six Tijdschr. v. Entomol. 1867, pl. x., f. g.

Nothing is known of this European species. Mine, while bred from the case, is evidently parasitic on the eggs enclosed therein.

NOTE ON PRIONOXYSTUS ROBINLÆ.

BY AUG. R. GROTE, A. M.

Having recently examined the European *Cossus* (*Xyleutes*) *ligniperda*, the generic differences between *Cossus* and *Prionoxystus* impressed me quite forcibly. The *Cossidae* or *Teredines* of Hübner (Grote, Proc. Am. Phil. Soc., Nov., 1874), form a sub-family group of the "Spinners" or *Bombycidae*, and are generally characterized by the wood-eating habit of the larvæ, which are provided with powerful mandibles for the purpose. The moths are generally of a clumsy build and are usually of a gray color, resembling the bark of trees on which they rest, and are more or less reticulated with darker shade lines, peppered and spotted so as to give the idea of protective imitation. The ocelli are wanting and the tongue is rudimentary. In the genus *Cossus*, and in most of the genera of the group, the vestiture of the body is close, thick and hairy. Although gray is the prevailing color, some Australian species have the hind wings especially of a reddish-brown hue. The European *Zeuzera Aesculi* is white, spotted over wings and thorax with steely blue. The North American genus *Prionoxystus* differs at first sight by the sparse, thinly laid on, scaly vestiture. The thorax, compared with *Cossus*, is elongated and the prothorax slopes to the head, which latter is freer than in *Cossus*. This gives the insect a Sphingid appearance which, joined to the more pointed wings and the yellow secondaries of the male, recalls certain *Macroglossinæ*, notably our *Lepisesia flavofasciata*. The parts of the head afford comparative differences when examined and compared with *Cossus*:

The chitinous tegument of the body appears readily, when the mealy vestiture is rubbed and is black and stout. The wings are very papery and a worn *Robinia*, as it sits on a locust or other tree, reminds one a little of some of the larger wood eating *Cerambycidae*, such as the Pri-
onians. The European *Cossus* is very sluggish in its habits, whereas *Prionoxystus* is, when first hatched, comparatively an active insect, flying readily when disturbed. We have two species in our fauna which I refer to *Prionoxystus*, viz., *Robinia* Peck, the type of the genus (found from East to West apparently), and *Querciperda* of Fitch, which I believe is only Eastern and of much rarer occurrence. With *Prionoxystus*, we have a true *Cossus*, the *Centerensis* of Lintner, beside several other species of this Fabrician genus, judging from Authors. We have also three species, Western, of the genus *Hypoapta*, and then the small-sized and singular *Cossula magnifica* of Bailey, from Florida. I have never recognized the "*Zeuzera Canadensis*," figured by Herrich-Schaeffer, and it seems to me that the moth is wrongly referred and the probability is that we have no true North American species of *Zeuzera*. But it may be that the European *Aesculi* has been introduced into the United States. Twice the description of a moth was communicated to me which might have been this species. Nothing is easier than the transportation of wood-eating larvæ or pupæ. There are three European species of *Cossus*, and the larva of one of them, *Terebra*, is said to remain four years in poplar wood before pupating.

ON PLAGIOMIMICUS RICHII.

BY A. R. GROTE, A. M.

This species I have mistaken, according to Mr. J. B. Smith, for *Polenta Tepperi* in several of my papers. The moth is easily recognized, being of a delicate green color and having the transverse lines similar to *Plagiomimicus Pityochromus*, which is a blackish fuscous and stouter species. *P. Richii* has the anterior tibiæ armed with a claw and the clypeus provided with a cup-like expansion, less prominent than in *Pityochromus*. *P. Richii* occurs in Texas, Florida, and I have seen it also from the Southwest. The genus may be further known by the tips of the patagia being somewhat relieved, and belongs to the *Stiriina*, a group of *Noctuidæ* which I have fully discussed in the pages of the CANADIAN ENTOMOLOGIST. I regret that I have been mistaken in my identification

of *Polenta*, thus needlessly criticizing Mr. Morrison and afterwards Mr. J. B. Smith. But my first specimen of *P. Richii* (see Bull. Buf. Soc. Nat. Sci.) was given to me as authentically determined, and I was confirmed in my belief by seeing the type of *Polenta* afterwards, which curiously resembled my species, though not so brightly colored; I, however, could not examine its structure, which is now stated by Mr. Smith to be quite different from my species, *P. Richii*, inasmuch as the anterior tibiae are said to be unarmed. I hope to be able to figure our two species of *Plagiomimicus* ere long, the genus being very interesting to me from its casual resemblance to *Lygranthoecia*, though structurally so different.

BOOK NOTICE.

Systematic Review of Fossil Myriopods, Arachnoids and Insects: By Samuel H. Scudder.

This work, separately printed in German out of the "Handbuch der Paläontologie," Leipzig, 1885, is a most welcome one to the student who was obliged to look for information as to its subject in a quantity of different publications. The text is remarkably clear and concise, and woodcuts illustrating the different genera give all possible information on the difficult subject. That so many existing families of insects were represented in the Miocene is remarkable. The beetles, owing to their hard forms and sharp outlines, are the best preserved and the most recognizable. Even a *Stylops* has been found in Prussian amber, which belongs to a genus which may be called *Mengea* after its discoverer, the term *Triaena* being used for a sub-genus of *Apatela* called by Guenée afterwards *Semaphora*, and which is not unlikely to come into use as a distinct generic term. The Lepidoptera are very sparingly represented in the Tertiary, but the larger groups all existed. An interesting figure of the fossil butterfly, *Prodryas Persephone* Scudd., is given from the Oligocene of Florissant, Colorado, where the beds have proved prolific in insect remains. Even a caterpillar (Provence) has come up to us out of these abysses of time.

This brief notice of a work which will add enduringly to Mr. Scudder's reputation, will be sufficient to call the attention of the readers of the CANADIAN ENTOMOLOGIST to its publication, and is all that is here designed. The book itself will repay study, and it is hoped that it will also appear (as it doubtless also exists) in English.

A. R. GROTE.