

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- Coloured covers/  
Couverture de couleur
- Covers damaged/  
Couverture endommagée
- Covers restored and/or laminated/  
Couverture restaurée et/ou pelliculée
- Cover title missing/  
Le titre de couverture manque
- Coloured maps/  
Cartes géographiques en couleur
- Coloured ink (i.e. other than blue or black)/  
Encre de couleur (i.e. autre que bleue ou noire)
- Coloured plates and/or illustrations/  
Planches et/ou illustrations en couleur
- Bound with other material/  
Relié avec d'autres documents
- Tight binding may cause shadows or distortion  
along interior margin/  
La reliure serrée peut causer de l'ombre ou de la  
distorsion le long de la marge intérieure
- Blank leaves added during restoration may appear  
within the text. Whenever possible, these have  
been omitted from filming/  
Il se peut que certaines pages blanches ajoutées  
lors d'une restauration apparaissent dans le texte,  
mais, lorsque cela était possible, ces pages n'ont  
pas été filmées.

- Coloured pages/  
Pages de couleur
- Pages damaged/  
Pages endommagées
- Pages restored and/or laminated/  
Pages restaurées et/ou pelliculées
- Pages discoloured, stained or foxed/  
Pages décolorées, tachetées ou piquées
- Pages detached/  
Pages détachées
- Showthrough/  
Transparence
- Quality of print varies/  
Qualité inégale de l'impression
- Continuous pagination/  
Pagination continue
- Includes index(es)/  
Comprend un (des) index

Title on header taken from: /  
Le titre de l'en-tête provient:

- Title page of issue/  
Page de titre de la livraison
- Caption of issue/  
Titre de départ de la livraison
- Masthead/  
Générique (périodiques) de la livraison

Additional comments: /  
Commentaires supplémentaires:

This item is filmed at the reduction ratio checked below /  
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	14X	18X	22X	26X	30X
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12X	16X	20X	24X	28X	32X

# The Canadian Entomologist.

VOL. XIV.

LONDON, ONT., DECEMBER, 1882.

No. 12

## ENTOMOLOGY FOR BEGINNERS.

### *THE POPLAR DAGGER-MOTH*—*Acronycta lepusculina*, Gueneé.

BY THE EDITOR.

The caterpillar of this moth is often very destructive to poplar trees, and more especially to the foliage of the cottonwood tree in the west. It is, when full grown, an inch and a half or more in length, with a black head, and its body clothed with long, soft yellow hairs, from amongst which arise along the back five long pencils of black hairs.

When at rest it curls itself up on the leaf as shown in figure 22.

When full grown the caterpillar spins a pale yellow cocoon of silk interwoven with its own hairs, hidden in some sheltered spot, and there changes to

a dark brown chrysalis, from which in due time the moth appears.

The perfect insect measures when its wings are expanded about an inch and three-quarters across, see figure 23. Its wings are gray varied with dark brown dots and spots and shadings. Near the hinder angle of the front wings is a rather conspicuous spot not very distinctly shown in the figure, resembling the Greek letter *psi* placed sidewise. There are two broods of this insect during the year; the moths of the first appear in June, deposit eggs which produce larvæ that reach their full growth, pass through

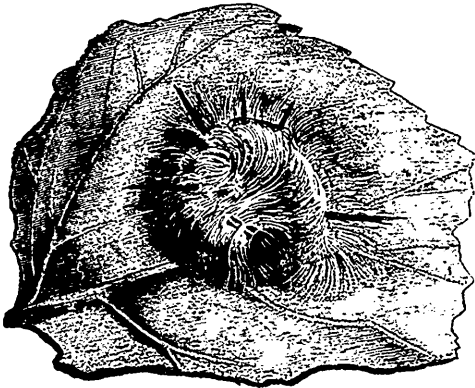


Fig. 22, after Riley.



Fig. 23, after Riley.

the chrysalis stage, and from which moths emerge about the end of July. The second brood of larvæ are found about the last of August and throughout September; they become chrysalids late in the season, and pass the winter in the chrysalis state.

*THE LIME-TREE MEASURING WORM—Hybernia tiliaria* Har.

The larva of this insect is a yellowish looper or measuring worm with a reddish head and ten wavy black lines along the back. It is shown in



Fig. 24, after Comstock.

figure 24, in different positions. It is hatched early in the spring and completes its growth about the middle of June, about which time it is often very destructive to basswood, elm, hickory and apple trees. When ready for its next change the larva lets itself down from the tree by a silken thread and buries itself five or six inches below the surface of the ground, and there changes to a chrysalis from which the moth usually

escapes the following spring. Occasionally some of the moths appear in October or November, but this rarely occurs with us.

The male moths have large and delicate wings and feathered antennæ, as seen in the figure. The fore wings, which measure when spread about an inch and a half across, are of a rusty buff color, sprinkled with brownish dots, with two transverse wavy brown lines and a central brown dot. The hind wings are pale with a brown dot about their middle.

The female, also shown in the figure, is a wingless, spider like creature, with slender thread-like antennæ, yellowish white body, sprinkled on the sides with black dots, and with two black spots on the top of each segment excepting the last, which has only one. The eggs are oval, of a pale color, and covered with a net-work of raised lines.

---

### LONG STINGS.

BY FREDERICK CLARKSON, NEW YORK CITY.

In the May number of the CANADIAN ENTOMOLOGIST there is a very interesting paper under this caption, contributed by Mr. Harrington, giving an account of the habits of the *Rhyssa atrata* and *lunator*. These Long Stings the past summer were very abundant at Oak Hill, the residence of Mr. Herman T. Livingston, in the township of Livingston, Columbia Co., New York, and furnished me with a good opportunity of studying their habits. While I agree with all that has been so well observed and so cleverly presented by your correspondent, I am somewhat disposed to differ from the commonly accepted opinion that these insects deposit their ova on the larvae of wood-borers. My experience has demonstrated that while it may be a fact that these insects deposit their ova on the larvae of the Uroceridae or other borers, they do not commonly do so. In every case that came under my observation, the long ovipositor, instead of penetrating through the burrow of a *Tremex* or other wood-borer, entered through wood that had not been previously attacked, and though I failed to discover the egg deposited, I am very much of the opinion that the deposition is oftentimes, if not generally made regardless of the contact with a larva. My observations were necessarily confined to such visitations from these insects as were made to a somewhat decayed stump of a beech tree, for though there were a

number of oaks and other trees close by, their choice was for the beech, to which both species were constantly arriving and inserting their long ovipositors. At the close of each day I cut off, to the depth of six inches, such portions of the stump as had been attacked, but failed to detect in any of the cuttings either the burrow or larva of *Tremex* or other larva. I also noticed that the wood as exposed by such clippings as I had made, attracted the greatest number of these insects. I regard it therefore a matter of considerable doubt if either the *atrata* or *lunator* commonly deposit their ova in the body of wood-boring larvae, and it seems to me that if these ichneumon larvae are carnivorous, they must possess the power of boring in search for their food. I do not suppose that these insects perform the great labor of inserting their long ovipositors upon the merest chance of meeting with a larva, but rather that they deposit their eggs at every insertion, my observations abundantly proving that they are not governed by any instinct in the selection of particular spots, so far as regards the presence of larvae.

---

## NOTES ON THE OCCURRENCE OF SOME SPECIES OF URO CERIDÆ.

BY W. HAGUE HARRINGTON, OTTAWA, ONT.

Although my collections hitherto have been chiefly of Coleoptera, I have, as opportunity offered, captured specimens in other orders, and among those thus taken during the past season are representatives of a few species of the Uroceridæ. I wish now to record a few brief notes on these—the more readily because so little regarding this group has been published in the ENTOMOLOGIST.

1. On the 25th of June last I captured upon a recently dead maple tree, near my house, two rather small insects, of which the larger had its ovipositor inserted in the bark. They proved to be two female specimens of *Xiphydria albicornis* Harris. One was half an inch long, the other five-eighths.

2. About the same date I also found upon a maple another female, which may be only a variety of those just mentioned, or, possibly, a distinct species. The antennæ are *dark*; the head has two scarcely perceptible white dots; the legs are much yellower, and only four of the abdominal segments are marked with white, the dots being very small. It may be *mellipes* of Harris, which he describes as differing chiefly from *albicornis* in having "only four white spots on each side of the abdomen." Length as given by Dr. Harris, four-tenths of an inch; of my specimen five-eighths of an inch.

3. In looking over my summer collections a few days ago, I discovered an insect which is evidently a male of one of the preceding insects. Unfortunately it had been hastily pinned without labelling, so that I cannot give the place of capture or the precise date, which, however, must have been in June or July. It is small, being barely three-eighths of an inch long; head of a clouded yellowish-white color, with a dark brownish stripe on the vertex; antennæ dark; thorax chiefly white beneath, and with two V-shaped whitish marks above; wings small; abdomen long and very thin.

4. *Tremex columbia* Say is very destructive here to old beech and maple trees, especially such as are isolated and growing along road sides, or have received gashes or injuries of the bark. The Rev. V. Clementi has recorded (vol. 1, page 29) the issue of specimens from oak firewood which had been placed near a warm stove. The date of the occurrence is not given, but as the number containing the account was published on 16th Nov., it probably occurred a month earlier. Dr. Packard (Bulletin No. 7, "Insects Injurious to Shade and Forest Trees") infers from this that the insects mature in the autumn and hibernate as imagines. I can find no mention of them emerging (under natural conditions) late in the season, although they must often do so, as shown by the following instances. On the 9th of Oct., 1880, I found one ovipositing in an old beech. Knowing that the tree had for some time been much infested by these borers, I made a careful examination of it, and soon saw the mandibles and a portion of the head of some insect which was gnawing its way through the bark. This operation I hastened with the aid of a pocket-knife, and found that it was another large female. Last month (Oct.) I kept a careful watch for these insects, to ascertain, if possible, whether their appearance at such a late date had been an exceptional

event. On the 1st I found one upon the plank-walk of one of our streets, and on the 9th a second under some maples bordering another street. The following day I went specially to visit some old maples which are a favorite resort of these insects, and captured upon one of them a female in the act of ovipositing, while upon the same tree were the bodies of three or four which had evidently very recently perished in the performance of such act. In another tree were a number of holes from which specimens had apparently but lately emerged. Although this species is so common, I have not yet captured a male (nor even seen one except in a collection), yet Dr. Harris, if I remember correctly, describes them as swarming around the ovipositing females. I may here add that on the 30th Sept. I saw one of their chief enemies, viz., a fine female *Rhyssa lunator* Fab., flying actively about.

5. *Urocerus nitidus* Harris. The abdomen of this species terminates in a triangular point like that of the preceding one, and very unlike the long spear-shaped horns of the two following. The females agree in nearly all respects with that described by Kirby (see vol. ix., page 148) as *Sirex juvencus* Linn., but the antennæ are longer than the head and thorax, instead of "shorter than the thorax." Harris describes it, however, as differing "from the European *U. juvencus* in the much greater brilliancy of its color and in having shorter antennæ." The female is a handsome insect of a deep greenish-blue color; the head and thorax rough and hairy, but the abdomen smooth and glossy; the antennæ are black and the legs yellow. Harris states that the males are unknown, but I have been so fortunate as to secure several. The head, antennæ, thorax and four anterior legs resemble those of the female. The posterior pair of legs are much swollen, and are black, with the exception of the thighs. The abdomen is flattened; the fourth, fifth, sixth and seventh segments are of a deep orange, or reddish-yellow color, and the last segment is less sharply pointed than that of the female. This species appears to be most abundant in the latter part of Sept. and the beginning of Oct., during which period I captured ten females and three males, as follows: Sept. 21st, female; 23rd, male and female; 24th, female; 26th, female; 29th, 2 female; 30th, female; Oct. 1st, male; 2nd, male and female; 8th, female; 18th, female. I have also two males of which the date of capture is not recorded. They were taken about the beginning of Sept. The females measure from three-fourths of an inch to one and one-eighth

inches in length ; the wings expand from one and one-eighth to one and three-fourth inches. The males are from nine-sixteenths of an inch to one and one-eighth inches long, with about the same expanse of wing. All the above specimens were taken in the city, generally in the morning upon the sidewalks or fences. The majority of them were under or near maples, and one was taken upon a tree box, which has led me to think that they may perhaps attack these trees, although I could find no evidence of their having done so. Probably they may have issued from the pine timber or lumber of which there is so much about the city.

6. *Urocerus albicornis* Fab. I captured a female of this species on the 22nd of Aug., and another on the 26th. Both specimens were taken in the centre of the city, and about the same time other specimens were observed flying up and down the street. One was seen to hover for some time about a telegraph pole, and all the specimens seen were within fifty yards of this pole. The insect was at some distance above the ground, so that the pole at that point could not be inspected. The presence of the insect on it may have been accidental, and all the specimens may have flown from the lumber yards.

7. *Urocerus bizonatus* Stephens is a handsome species, larger and stouter than the preceding one and readily distinguished by its yellow legs and antennæ, the yellow lumps behind the eyes, and the two yellow bands across the abdomen, from which it derives its name. I cannot yet record it as occurring here, although one day about the end of Aug. I saw upon a house a *Urocerus* which appeared to be this species. It flew away, however, before I could closely observe or capture it. There is a specimen in the collection of the late Mr. Billings, but it may not have been taken here. Kirby (vol. 7, page 159) records it as taken in Lat. 65° and on the journey from New York. I have received from British Columbia two fine specimens taken by Mr. A. J. Hill, C. E., Can. Pac. Ry. Kirby gives the length of his specimens as eighteen lines and their expanse of wing as twenty-five lines. These are the measurements of my larger specimen ; the length including the ovipositor, without which it is only an inch long. Has the male been described? I imagine it must be very similar in appearance to the specimen described by Harris as *U. abdominalis*.

The males of all the species seem to be rare, even those of our commonest species being seldom seen.



Not having a monograph, or even a catalogue of the Uroceridae, nor access to a good entomological library, I do not know how these insects are at present classified.

---

#### A CARD.

After twenty years work on North American Moths, and being more or less constantly employed in determining material, I find my time so taken up with it that it excludes other occupation. From this fact, and the expense and time demanded by the necessary correspondence, I am obliged to make a charge for my labor. All specimens will be returned in future, and a charge of ten dollars per hundred or ten cents a specimen will be made for labelling them, exclusive of transport and postage.

A. R. GROTE, New Brighton, Staten Island, N. Y.

October 1, 1882.

---

#### ALYPIA OCTOMACULATA.

BY H. H. LYMAN, MONTREAL, P. Q.

Last June I was in Boston, from the 14th to the 30th, and during this time *Alypia octomaculata* was in season and very abundant. Had I chosen to carry a net in the public gardens and uptown streets, I suppose I could have taken a couple of hundred specimens, always provided that I wasn't "run in" as a lunatic. As it was, I contented myself with carrying a supply of pill boxes, and succeeded in taking about thirty-five specimens. During two days I was visiting a friend about seven miles from the city, but did not see a single specimen of this species; but in those streets in which there were small plots of grass in front of the houses, they were very common. The spot where I took the most of those I captured was a plot of grass about ten feet by seven, in which there was a *Syringa* between two *Deutzias*, both species of shrubs being in blossom. The *Alypias* constantly frequented the latter, and were then easily taken with a pill box, but though they occasionally alighted on the leaves of the *Syringa*, I never saw them visit the flowers.

DESCRIPTION OF THE PREPARATORY STAGES OF  
PYRAMEIS ATALANTA, LINN.

BY W. T. EDWARDS, COALBURGH, W. VA.

EGG.—Barrel-shaped, the ends narrowing equally and rounded; the base flattened over a little space; from the edge of this start nine vertical and straight ribs, at first low, but gradually rising in elevation and after the middle rapidly, till at the top they are very prominent, and terminate abruptly about the rim of the depressed summit; these ribs are thin and grooved on both sides perpendicularly to the surface of the egg; between them the surface is a little excavated, and smooth; color green. Duration of this stage 5 days in May, 3 to 4 in July.

YOUNG LARVA.—Length .08 inch; cylindrical, tapering posteriorly from 4th segment; each segment rounded; color greenish-brown, semi-translucent; furnished with ten rows of black curved hairs, of which two are close together on middle of dorsum, two are lateral above spiracles, one is partly in line with, partly below spiracles, and one below this; on 2 is a sub-oval black chitinous patch, with four hairs on either side the medio-dorsal line, three others in vertical line below the patch; 3 and 4 have five hairs on each side in vertical line, but from 5 to 12, while there are five hairs, they form two lines, the 1st, 3rd and 5th being in front part of the segment; the anal segment shows two hairs on the side, and a black dorsal patch, on either half of which are about five hairs; two small hairs over each foot and proleg; on 2 to 4 the hairs are curved forward, on the other segments back, but on all the lowest row is turned down; so on 2 to 4 the next row is turned down; head rounded, black, with a few black hairs. Duration of this stage in May 4 days, in August 3.

After 1st Moulting.—Length .12 inch; wholly black-brown; armed with 7 rows of short, slender, branching black spines, head rounded, bi-lobed, the vertices rounded, black, thickly covered with simple, irregular-sized black branching spines, each ending in black hair; on 2 is a chitinous dorsal bar with simple spines. Duration of this stage in May and August 2 days.

After 2nd Moulting.—Length .3 inch; very nearly as at preceding stage. To next moult 2 to 4 days.

After 3rd Moulting.—Length 4 inch; color more black; each segment several times creased and on the ridges so caused are many minute whitish

tubercles ; in line with spiracles a macular greenish-yellow band, more or less pronounced, the spots or patches lying on either side the junctions of the segments ; the spines longer in proportion than before, but slender, and black ; head brown. To next moult 3 days.

After 4th Moult.—Length .6 inch ; in from 3 to 4 days the larva reaches maturity.

MATURE LARVA.—Length 1.3 inch ; cylindrical, obese, the middle segments much thickened, all well rounded ; color usually velvet-black, thickly sprinkled with fine yellow points, caused by little tubercles ; in line with spiracles a series of greenish-yellow patches lying on either side the junctions of the segments, and forming a macular band ; but this is variable, sometimes being obsolete, or nearly, at others nearly, and even quite, continuous ; under side smoky-brown ; armed with 7 rows of moderately long, slender, branching spines, which are usually black ; but in some examples are pale yellow-white, and more or less reddish at base, especially on anterior segments ; one of these rows is dorsal, three lateral ; the dorsal spines run from 5 to 12 ; the 1st lateral from 3 to 13 ; the 2nd lateral from 3 to 13 ; the 3rd from 5 to 12 ; besides these are smaller spines along base and over feet ; on 2 is a collar of 12 small spines, 6 on dorsum, 3 on either side ; feet black, pro-legs smoky-brown ; head rounded, bilobed, the vertices rounded, thickly covered with sharp conical black simple spines, of varying size, each tipped with black hair ; color dull black. From 4th moult to pupation 5 to 6 days.

Chrysalis.—Length .85 to .95 inch ; cylindrical, the abdomen stout ; head case moderately produced, bevelled transversely and equally on both sides, the ocellar projections not prominent ; mesonotum high, rounded, and bears on summit a small nose-like ridge ; the dorsal tubercles rather large, more or less gilded, the lateral, in two rows, minute, black ; color varies ; usually reddish-gray, more or less densely reticulated with black ; the lighter colored caterpillars make light colored chrysalids—greenish-gray with usually a bronze sheen over dorsal area ; this is sometimes seen in the darker examples ; the whole surface covered with a delicate bloom. Duration of this stage about 7 days.

There is much variation in the color of the caterpillars after 3rd moult. What I describe above I have found to be the usual color at Coalburgh. But some examples have the whole upper side spotted with yellow, covering fully half the surface ; others are yellow-green, more or less specked brown, and sometimes there are patches of brown on the

sides. Usually these last have a confluent, instead of macular, yellow band, along the side, and the spines are always light, whitish, or yellow-white, with or without red at base. So the head is brown instead of black in these green examples, and many of the spines on head are white.

But English authors describe the larva of *Atalanta* as considerably unlike the foregoing.

Mr. Stainton, Manual Brit. But., 1857, gives it as "yellowish-gray, with a pale yellow lateral line," and says nothing of any other color.

Westwood & Humphreys, in Brit. But., p. 55, say: "The caterpillar is of a dusky green color with a yellowish dorsal line and also a pale line on each side above the feet."

Mr. Edwin Birchall, in Ent. Mo. Mag., vol. 13, p. 210, 1877, writing from the Isle of Man, says that the butterfly is very common there and almost everywhere in the British Islands, and that in the Isle of Man the larvæ had swarmed in every lane, in 1876; and goes on to say: "The larva varies in color remarkably, but may generally (perhaps always) be classed under one or other of the following descriptions, and yet the color of some of them is so far intermediate that the variation can scarcely be called simply dimorphic.

"1. Ground color gray-green, varying to dingy white, the lateral stripe not very distinctly marked. *This is, I think, the typical form, and the only one that I have seen in England.*

"2. Ground color intensely black, the lateral stripe white or yellow."

Now it is a noticeable fact that my larvæ at Coalburgh were nearly all black in last stage, the lateral stripe usually macular, and greenish-yellow. A few examples were yellow-green instead of black, about 5 per cent. of the whole, and in these the lateral stripe was more continuous than in the black ones, and about 5 per cent. were mottled black and yellow. Here were three distinct types of larva. I have noticed the same thing in larvæ of previous years here, but how it is in other parts of the United States I do not personally know. Dr. Harris says: "The full grown ones are generally of a brown color more or less dotted with white." Mr. Birchall says the British type is gray-green varying to dingy white. This last color I have never met with, and the other authors quoted lead me to believe that the usual color is gray-green, or yellow-gray, or dusky green, but not black. Whereas so far as I know, the American type is black, and the gray-green or yellow are the exceptions.

Mr. Newman also says that the females of *Atalanta* have a small round

white spot in the scarlet band on fore wings. Mr. Birchall, however, says : " The white spot sometimes found on the upper surface of the scarlet band is not indicative of the female sex ; it was present in about one tenth of the specimens (he raised upwards of 100 butterflies), was produced from both forms of larvæ, and in about equal numbers of both sexes. It varies greatly in size, in some specimens being a barely discernible speck." None of my butterflies, at Coalburgh, showed this white spot, nor have I any example from any locality which shows it. I asked Mr. Lintner to examine his specimens and report on this spot. He writes : " I have but five, and one of the females has an extra white spot in the band in the second median interspace."

*Atalanta* is one of the few species of butterfly which are found the world over. In West Virginia, there are three broods of the larvæ, the first in May and early June, the second in July and early August, the third late in September, and the butterflies from the last larvæ hibernate, hiding probably in hollow trees, crevices of outhouses and barns, perhaps among rocks, ready to come forth in warm days of winter or early in the spring. I always see them about the wild plum blossoms, which are almost the earliest of the year. In two or three years of the last fifteen, it has been an easy matter to find the caterpillars in considerable numbers, but the present season, 1882, has been remarkable over all for their great abundance. I brought in, one day with another, in June, at least 150, and could have had a thousand. We have here Nettles, *urticæ*, which the books mention as the food plant of this species, but the False Nettle, *Boehmeria cylindrica*, is almost invariably selected by *Atalanta* ♀ for depositing her eggs. *Grapta Comma* feeds on the same plant in preference to nettles, and sometimes *G. Interrogationis* larvæ are found on it also. The winter of 1881-82 was exceedingly mild, and apparently the mildness was the cause of great destruction of hibernating butterfly larvae and chrysalids, in this section. Experiments show that larvae of *Argynnis* and *Satyrus* kept at a low artificial temperature through the winter months are healthy, and it is to be presumed that mild weather, which allows but semi-torpidity, and more or less activity, must be disastrous in many cases. Besides, a mild winter encourages predaceous insects, spiders, birds, etc., which destroy larvae and chrysalids. Certainly butterflies were never so scarce since I have collected, as in the season just past, and many species usually very common here were altogether wanting. In the case of hibernating imagos, a mild winter may not be unfavorable for their

preservation. They are supposed to be well out of reach of many sorts of enemies in their hiding places. Some years ago, the late Dr. L. K. Hayhurst, in charge of a construction force on one of the railroads running south from Sedalia, Mo., wrote me that his men had cut down a hollow tree, which broke with the fall and disclosed quite a number of butterflies, of different species, in hibernation. For myself, I have never seen a butterfly in that condition.

The larvae of *Atalanta* are remarkable for the construction of cases or pouches in which from the first stage to last they live concealed, and finding them so plenty, I set myself to watch their operations. But first I read up the history so far as books at my disposal gave it. The accounts in these books are very meagre, and but half correct. The fullest is given in Newman's Nat. Hist. of Br. But., pp. 62-3, where we read: "The egg is solitary, laid *here and there on the leaves* of the stinging-nettle; almost immediately after emerging from the egg, the little caterpillar *draws together the leaves* of the nettle and feeds in concealment; as it increases in size, it requires more space, and *continues to increase the size of its domicile* up to the period of pupation; I have never met with it feeding exposed. . . . When full-fed, it constructs a somewhat more elaborate retreat; it gnaws through the petiole of a leaf, or eats the main stalk of the nettle within a few inches of the top, not quite separating it; the part thus almost separated falls over and completely withers, and *this withered portion is formed into a compact retreat*, secured from casualties of weather and from the inspection of birds; *from the roof of this the caterpillar suspends itself* . . . and in two days becomes . . . a chrysalis," &c. (The italics in all the quotations given are mine.)

Dr. Harris, Ins. 1862, p. 294, says: "It deposits its eggs in May upon the youngest and smallest leaves of this plant (Nettle), not "here and there," as Newman has it, "*being cautious to drop only one upon a single leaf*," As soon as the caterpillar is hatched, *it spins a little web to cover itself, securing the threads all around to the edges of the leaf, so as to bend upward the sides and form a kind of trough in which it remains concealed. One end of the cavity is open, and through this the caterpillar thrusts its head while eating. It begins with the extremity of the folded leaf, and eats downwards, and as it gradually consumes its habitation, it retreats backwards, till at last, having, as it were, eaten itself out of house and home, it is found to abandon its imperfect shelter, and construct a new one. This is better than the first; for the insect has become larger and stronger, and withal, more*

skilful from experience. The sides of the larger leaf . . . are drawn together by silken threads, so that the edges of the leaf meet closely and form a light and commodious cavity, which securely shelters and completely conceals the included caterpillar. This in time is eaten like the first, and another is formed in like manner. At length the caterpillar, having eaten up and constructed several dwellings in succession, and changed its skin three or four times, comes to its full size, leaves off eating, and seeks a suitable place in which to undergo its transformations," &c. "The butterflies from the first brood appear in July, and from the second in September" (in Mass.)

Mr. Scudder's account is very brief, Butterflies, p. 110: "The caterpillar constructs a somewhat similar though more perfect nest (i. e., than what is called a Tiger Swallow-tail,—whatever that may be, some Asiatic species we may suppose), by fastening together the opposite edges of a nettle-leaf, the tip of which it eats when too lazy to go from home, until there is barely enough left for shelter; its weight causes the leaf to droop, so that the nest is easily discovered."

The only information contained in Westwood & Humphrey's British Butterflies, 1848, on the habits of the larva of *Atalanta* is this: According to Sepp., the caterpillar, after it is hatched, selects a Nettle-leaf, which it draws together with threads into a roundish, hollow form, leaving for the most part an opening into the interior both before and behind, thus serving both for shelter and food until almost devoured, when it selects a fresh leaf, and proceeds with it in the same manner, one caterpillar only being found on a single leaf, thus indicating a peculiar liking for a solitary life."

Boisduval and Leconte, 1833, say: "It lives isolated on Nettle, and is almost constantly concealed between many leaves drawn together by some threads."

(To be Continued.)

## NEW SPECIES AND NOTES ON STRUCTURE OF MOTHS AND GENERA.

BY A. R. GROTE, A. M.

(Continued from Page 218.)

CAMPOMETRA AMELLA Guen., 3, 25, pl. 18, fig. 8.

This genus and species I have accidentally omitted from the "New Check List." I have never identified the species with certainty. For

some time I have conjectured it was the same as *Eubolina Stylobata* Harvey. With regard to the genera separated from *Homoptera* by Gueneé, I have merely insisted on the validity of *Zale* in former papers. But I am averse to throwing them together until we know the early stages upon which Gueneé seems to have relied, using Abbot's drawings. Another reason with me has been (as I have pointed out) that *Homoptera* is a term used in another Sub-order of Insecta. Probably *Pheocyma* will have to be adopted, as the insect I have identified as *Lunifera* (figured by Gueneé) does not seem to me to differ generically from our other species arranged under *Homoptera*.

The type of *Eubolina Impartialis* recalled to me the *Homoptera Stylobata* and *Mima* of Harvey, by the less completely lined secondaries, and I have grouped the species near *Homoptera*, where I am satisfied they are better placed, though probably higher than *Homoptera* and leading to it. Unfortunately I made no study of the genus and cannot be certain that the forms are correctly associated. *Impartialis* will probably occur in Texan collections; when I receive a specimen I shall examine it with a view to settle its relationship with *Campometra* and the species referred to *Eubolina* in the "New Check List." Among the genera I have never seen and which I cannot form any opinion upon from the descriptions are *Thaumatopsis* and *Homophoberia*. Although Mr. Smith does not mention *Cilla Distema*, I do not think this can be the former. Mr. Smith seems to have published his "Synopsis" without knowing a large number of my generic types. But he seems to have all of Mr. Morrison's, and, while following my reference of *Eutricopsis* to *Melideptera*, he rehabilitates *Eucalyptera* as distinct from *Scolecocampa* on the position of the labial palpi; this did not seem to me essentially different, and the two insects have as close a general resemblance as *Plagiomimicus* and *Polenta* and agree in other characters almost exactly; I cannot now re-examine them, but as the claw on the front tibiae of *Tepperi* is overlooked by Mr. Smith, and the exposed cup-like clypeal structure of *Plagiomimicus*, I feel certain that the "Synopsis" is both unreliable and partizan, and the determined use of Boisduval's and Treitschke's genera when they have not the sanction of priority, confirms my belief that it is written with a bias. Every omission to make a complete and faultless diagnosis on my part is made much of, while the generic descriptions of other writers, wanting in every point: such as accuracy of statement, circumstantiality, completeness, comprehension of the real affinity of the type (e. g. *Polenta*, etc.) are



passed upon as if already well described. So that it seems to me that Mr. Smith's refusal to recognise certain proposed genera is not the result of their want of given characters but of their authorship. Genera such as *Rhododipsa* (not "Rhododispa," and of the few names, "Hypsoropta," "Autoplaga," "Pangrapha," "Pseudoglossa," "Lepidomis," "Nolophana," "Panapodia," "Meliclipiria," "Macrohypena," "Shinia," etc., are by Mr. Smith wrongly written) Bull. U. S. G. Surv., vol. 3, 797, are sufficiently described when the eyes, tibiae, clypeus and palpi are noticed comparatively. But an author who considers the color of *Sanguinea* and *Florida*, and their pattern, the same, must be manufacturing his case or be possessed of an honest disregard of differences. Here, also, Mr. Smith unites *Porrina* and *Rhodophora*, although, joined to other differences of armature and vestiture, the palpi are "horizontal" in one case and slightly "drooping" in the other. The palpal difference is *all*, so far as I can see, to separate *Eucalyptera* from *Scolecocampa*, and yet Mr. Smith considers them beyond question distinct, while *Porrina* and *Rhodophora* are united. I do not verify even this palpal difference of *Eucalyptera* and cannot consider the genera distinct. As to *Metahadena* it appears now that it has a claw, and the distinction between it and *Oncocnemis* is in order; the character is not given by its author, whose diagnosis gives no single distinctional character from *Homohadena*.

#### YRIAS CLIENTIS, n. s.

Size moderate, a little larger than Gueneé's figure of *Progenies*. Rather light brown with both wings crossed by a number of dark brown, nearly equally distinct, transverse lines, a little uneven and oblique, bent superiorly; the median lines most distinct. On costa the dark costal dots are relieved by a pale yellowish shade, obtaining especially centrally. An apical black V-shaped mark, enclosed by pale streaks, giving the effect of an ocellus. Body untufted, cylindrical. Beneath paler, with three faint shade bands on hind wings and two, the inner faint, on fore wings. Fringes brown. Arizona. *Expanse* 28 mil.

#### YRIAS REPENTIS Grote.

I referred this species originally to *Homopyralis*, but it rather belongs to this genus, not previously described from North America. This species is known by the running inwards of the t. p. line. *Expanse* 26 mil. Arizona.

## YRIAS CRUDELIS, n. s.

♂ ♀. Smaller than the preceding; of a more blackish brown color. The subterminal line is inaugurated by a black shade picked out by a following clay-colored edging. The t. p. line is edged on both sides by a similar clay-colored costal shade, and there is a light spot on cell in place of reniform. The median shade is diffuse inferiorly. The lines are dark and tolerably distinct, relieved at the middle of inner margin of secondaries by a pale shade. Beneath glistening, not much paler than above. *Expanse* 20 mil. Arizona. Coll. B. Neumoegen, Esq.

A number of specimens, varying but little in size or appearance.

(To be Continued.)

## A NEW STATE ENTOMOLOGIST FOR ILLINOIS.

Prof. Cyrus Thomas, to whom we are indebted for six out of the eleven valuable reports which have been issued by the State of Illinois on noxious and beneficial insects, has removed to Washington, and Prof. S. A. Forbes, of Normal, Illinois, has been appointed State Entomologist in his place. We heartily congratulate Prof. Forbes on his well-deserved promotion, and also congratulate the authorities of the State in that they have secured the services of one so competent, thorough and painstaking as Prof. Forbes has shown himself to be in his published papers on natural science.

## DESCRIPTION OF A DIPTEROUS PARASITE OF PHYLLOXERA VASTATRIX.

\*DIPLOSI? GRASSATOR, n. s.

BY REV. T. W. FYLES, COWANSVILLE, P. Q.

LARVA, one-tenth of an inch in length—pointed at the head—rounded and blunt at the hinder extremity. First three segments the color of amber, and semi-transparent: the rest of the body salmon-colored. Nine sets of hooks, or tentacles, in place of feet, the two first in pairs, the remainder in threes. The larva has the habit of holding itself erect, by means of peculiar anal protuberances which seem to cling by suction. The

\*This insect is referred to the genus *Diplosis* in deference to an opinion expressed by Prof. C. V. Riley, when in Montreal in August last.

body has minute hairs thinly scattered over it. On the sides of the head, which is small and black, there are bristle-like palpi, pointing forwards. The larva is full fed by the end of August.



Fig. 25.

In the accompanying figure, drawn by myself from nature, the larva is shown at *a*, the pupa at *b*, and the imago at *c*, all highly magnified. The natural size of the perfect insect is given at *d*.

PUPA, dark brown, about 9-100 of an inch long. The antennæ cases form a striking feature, projecting on either side about one-sixth the length of the pupa, and giving a flattened appearance to the head. A pair of setæ mark the position of each spiracle, and there is a rounded protuberance at the hinder extremity.

IMAGO.—*Wings*, semi-transparent—beautifully opaline—three-ribbed—having the form of the blades of a propeller—fringed with long hairs. Balancers conspicuous. *Antennæ*, setaceous, 24 jointed, having a circlet of hairs around each joint. *Eyes*, large and black. *Thorax*, reddish brown, with a peculiar hump on the back, behind the wings. *Legs*, long and hairy. *Abdomen*, salmon-colored—has two lines of hairs extending lengthwise on the under side. The perfect insect appears early in September.

[This insect was reared by us about the same time as those by Mr. Fyles. It was very common in the neighborhood of London this year, infesting the gall-inhabiting type of the Phylloxera. The following notes in reference to it may be of interest, omitting the description already so well given by Mr. Fyles :

About the middle of August my attention was directed to the foliage of some grape-vines, Clinton and other varieties, which were suffering from an attack of the gall-inhabiting type of Phylloxera. On opening some of the older galls they were found to be free from living lice and occupied by one, or in some instances two, small, brown chrysalids, and a number of the empty skins of the young lice. On further examination many of the galls were found to contain the larvæ of this same insect.

The egg is deposited by the parent fly in the gall, or at its entrance. Each gall is usually occupied by several full grown lice, and from 50 to 500 minute yellow eggs, which are gradually deposited and as gradually hatched. The young larva of our new found friend is very active, and groping about within the hollow of the gall, seizes on the young lice as hatched and sucks them dry. We could find no evidence of its attacking the parent lice, as long as the newly-born and tender progeny were in sufficient abundance to furnish it with a constant supply of fresh food. In some instances one larva, in others two were found in a single gall; but in no instance have we found living lice with the chrysalids, an evidence that this insect does its work thoroughly. A sufficient number of galls have not yet been examined to determine with any accuracy the proportion occupied, but they appear to be sufficiently numerous to materially check the increase of this destructive pest.—[ED. C. E.

---

#### CORRESPONDENCE.

DEAR SIR: In the last number of the CANADIAN ENTOMOLOGIST, at p. 219, by the omission of quotation marks at the beginning and end of the piece of poetry, I am credited with the authorship of these lines. This is a mistake; my signature should have come after the word ENTOMOLOGIST on the previous page, and the whole of the subsequent part is a quotation from the Dublin Penny Journal. By making this correction as soon as possible, you will greatly oblige yours truly, J. FLETCHER.

---

DEAR SIR: In reply to Dr. Hagen's note I would say that Staudinger's *errata* does not alter my position (which can be proved by Staudinger's preferring *Scabriuscula* to *Pinastri*—I took the *Papilio* as better known), but merely shows that he would have still preferred *Sinon*, if *Podalirius* had not really been "*Vetustius*." A reference to Staudinger's "Preface" proves his position and my own. If this note of Dr. Hagen's is intended as a *quid pro quo* by the good Doctor for my finding himself and Mr. W. H. Edwards insufficiently citing Ochseneimer, I don't think it a success. *Habet?* A. R. GROTE.

---

Rev. W. J. Holland, of Pittsburg, Pa., wishes to correspond with any one in Canada desiring to exchange Coleoptera or Lepidoptera.

DEAR SIR : In a recent number of the CANADIAN ENTOMOLOGIST is a short note by Mr. J. Alston Moffat, part of which concerns two species of *Cyllene*, *pictus* and *robinia*. As there appears to be some difficulty in properly distinguishing these species, it is probable that a note in the ENTOMOLOGIST would assist in making more generally known the characters published by me a short time since (Trans. Am. Ent. Soc., 1880, p. 134, pl. ii., fig. 8).

If we examine the under side of the two species, noting the form of the prosternal process, it will be observed that this in *robinia* is nearly square, so that the front coxæ are moderately widely separated. The second joint of the hind tarsi is densely pubescent over its entire surface. The male antennæ are rarely longer than three fourths the length of the body, and but little if any stouter than those of the female. Generally the W-band nearly always joins the transverse band at the suture.

*C. pictus*, however, has a narrow prosternum, nearly twice as long as wide. The male antennæ are much stouter and at least a fourth longer than the body. The W-band rarely joins the transverse band. On the hind tarsi the second joint is nearly glabrous along its middle.

The two species differ also in habitat and time of appearance, *pictus* living in the hickory and appearing in early spring, while *robinia* bores the locust and appears in the autumn. Hoping these few notes will prove acceptable to your readers, I remain, yours truly,

Philadelphia, Dec., 1882.

GEO. H. HORN.

---

A CORRECTION.

In the October (1879) number of the CANADIAN ENTOMOLOGIST appeared a short note by the writer on the larvæ of *Lachnosterna fusca*. These larvæ have, by subsequent rearing to the perfect state, proven to belong to *Allorhina (Gymnetis) nitida*.

L. O. HOWARD.

---

DEAR SIR : I am satisfied from a recent examination of the imago reared from it, that the larval description on page 14, vol. 12 of CAN. ENT., should apply to *Agrotis Incivis* Guen., instead of to *A. Lubricans* Guen.

G. H. FRENCH, Carbondale, Ills.

# INDEX TO VOLUME XIV.

- Ablepharon Hemici, 197  
 A card, 228.  
 A correction, 239, 240.  
 Acronycta lepusculina, 221.  
 Actias luna, development of, 98.  
 Aeshna heros, 56.  
 Agonoderus comma, 104.  
     " pallipes, 104.  
     " rugicollis, 105.  
 Agrotis annexa, preparatory stages of, 207.  
     " *Dollii*, n. s., 216.  
     " *hospitatis*, n. s., 184.  
     " incivis, 240.  
     " lubricans, 240.  
     " niveilinea, 216.  
 Aletia argillacea, 9, 99, 150.  
 Alypia octomaculata, 228.  
 Amara interstitialis, 7.  
 Amer. Assoc. Adv. Sci., meeting of, 136.  
 Ancyloxypha leua, n. s., 5.  
 Annual Meeting Ent. Soc. Ont., 137, 140, 177.  
 Antaplaga, 74.  
 Anthomyia betae, 96.  
 Anthomyidae leaf mining, 96.  
 Antigaster mirabilis, 35.  
 Anytus sculptus var planus, 183.  
 Apanea inquaesita, 170.  
     " list of species of, 170.  
 Apatura celtis, 53.  
     " flora, 25.  
     " herse, 53.  
     " lycaon, 53.  
 Aphididae, notes on, 13.  
     " of Florida, 88.  
 Aphis loniceræ, 13.  
 Apple-tree pest, a new, 30.  
 Argynnis alcestis, 51.  
     " columbina, 151.  
     " cybele, 23, 51.  
     " diana, 22, 51.  
     " idalia, 20, 51.  
 Arsilonche albovenosa, 197.  
     " Henrici, 170.  
 Ashmead, Wm. H., articles by, 35, 88.  
  
 Bessula, 74.  
 Birds, revised check list of, 140.  
 Book notices, 118, 139, 220.  
 Bowles, G. J., articles by, 101, 138.  
 Brachymyia, n. g., 77.  
     " lupina, n. s., 77.  
     " nigripes, n. s., 78.  
 Brachypalpus pulcher, n. s., 79.  
 Bucculatrix ambrosiæ-foliella, larva of, 153.  
 Buprestis striata, 7.  
 Butterflies, list of, taken in Dacotah and Montana, 6.  
 Byssodes obrussata, 111.  
  
 Cabbage butterfly, English, 1, 7, 18, 39, 99, 218.  
     " " Southern, 1, 18.  
  
 Callipterus, American species of, 14.  
     " hyperici, 13.  
     " trifolii, 14.  
     " ulmifolii, 13.  
 Callopteryx, 178.  
 Campometta amella, 234.  
 Capis, n. g., 20.  
     " *curvata*, n. s., 25, 100, 119, 139.  
 Catocala polygama var. amida, 120.  
     " Walshii, 47.  
 Catocalæ, list of, taken at Frankford, Pa., 59.  
     " of Illinois, 119.  
 Chalcididae of Florida, 35.  
     " on some, 48.  
 Chalcozona liberta, 7.  
     " virginensis, 7.  
 Chambers, V. T., articles by, 153, 180.  
 Chariclea, 183.  
 Chermes alni, 61.  
 Chionobas tarpeia, 120.  
     " Uhleri, 4.  
     " *zaruma*, n. s., 2, 28.  
 Chora-pilates Arizonaria, 109.  
 Chortophila floccosa, 97.  
 Chrysomela elegans, 7.  
     " labyrinthica, 57.  
 Chrysopa, mouth of, 176.  
 Cicindela limbalis, 8.  
     " longilabris, 8.  
     " 12 guttata, 8.  
     " purpurea, 7.  
     " sex-guttata, 7, 8.  
     " vulgaris, 7.  
 Clytus pictus, 200.  
 Clarkson, F., article by, 223.  
 Claypole, E. W., article by, 17.  
 Clothes moths, 160.  
 Coccophagus *annulipes*, n. s., 37.  
 Cold applied to larvae, effects of, 22.  
 Colias christina, 55.  
     " eurytheme, 50.  
     " philodice, 50.  
 Colopha compressa, 15.  
 Conotrachelus nemphar, 17.  
 Conservula, 212.  
 Copacodes *Wrightii*, n. s., 152.  
 Copablepharon *longipenne*, n. s., 169.  
     " *subglacidens*, n. s., 169.  
 Coquillett, D. W., article by, 60.  
 Correspondence, 38, 60, 98, 119, 137, 180, 200, 218, 239.  
 Cucullia *Montanae*, n. s., 175.  
 Cyclica, n. g., 174.  
     " *frondaria*, n. s., 174.  
 Cyllene pictus, 200, 240.  
     " robiniae, 200, 240.  
 Cymatophora *dattari*, n. s., 173.  
  
 Debis Portlandia, preparatory stages of, 84.  
 Diplosis, parasitic species of, 146, 237.  
     " *grassator*, n. s., 237.  
 Dodge, Charles R., articles by, 30, 93.

- Dodge, G. M., article by, 39.  
 Donation, 40.  
 Dragon flies, migration of, 56.  
 Drepanodes puber, 107.  
 " sesquilinea, 107.  
 " varus, 108.  
 Drosophila aceti, 102.  
 " ampelophila, 101, 137.  
 " cellaris, 102.  
 " flava, 102.  
 " funebris, 102.  
 Dury Charles, article by, 176.
- Ecpanteria scribonia, 113.  
 Edwards, W. H., articles by, 2, 21, 28, 29, 49, 84, 120, 152, 163, 189, 194, 201, 229.  
 Ellopia bibularia, 108.  
 " endropiaria, 109.  
 " pellucidaria, 108.  
 Endropia arefactaria, 108.  
 " vinosaria, 108.  
 Entomological notes for 1881, 17.  
 " Society of Ontario, annual meeting of, 137, 140, 177.  
 Entomology, elementary work on, 118.  
 " for beginners, 41, 81, 113, 221.
- Epinyctis, 75.  
 Errata, 180, 239, 240.  
 Eucaterva variaria, 109.  
 Euchaetes, list of species of, 190.  
 Eudaemonia Streckeri, 128.  
 Eugeniomyia, n. g., 80.  
 " rufa, n. s., 80.  
 Eugonia subsignaria, 30.  
 " vidularia, n. s., 173.  
 Euleucophaeus, 214.  
 Eupelmus, 35.  
 " rosei, n. s., 36.  
 " cyniphidis, n. s., 36.  
 Eupethecia gypsata, n. s., 188.  
 Eupseudosoma floridum, n. s., 187.  
 Euptoieta claudia, 219.  
 Eustrotia flaviguttata, n. s., 187.
- Fager, D. B., articles by, 120, 130.  
 Fernald, G. H., article by, 166.  
 Fidonia notataria, early stages of, 199.  
 Field notes, 1881, 7.  
 Fletcher James, article by, 218.  
 Fota, n. g., 174.  
 " armata, n. s., 175, 181.  
 " minorata, 181.  
 Fotella, n. g., 181.  
 " notalis, n. s., 181.  
 French, G. H., articles by, 9, 33, 48, 97, 180, 207, 240.  
 Fyles, Rev. T. W., articles by, 198, 237.
- Gall mite on nettle tree, 108.  
 Gaurotes cyanipennis, 58.  
 Gehring, Geo. J., article by, 72.  
 Gelechia gallesolidaginis, 161.  
 Geometridae, North American, 100.  
 Glaucopteryx aurata, 186.  
 Goniloba tityrus, 160, 200.  
 Goodell, L. W., article by, 199.  
 Goodhue, Chas. F., article by, 73.  
 Gortyna impunctiosa, 184.  
 Grape berry moth, 178.  
 " phylloxera, 121, 144.
- Graptia comma, preparatory stages of, 189.  
 " interrogans, preparatory stages of, 201.  
 Grote, A. R., articles by, 18, 29, 32, 46, 47, 74, 106, 115, 116, 119, 128, 134, 169, 181, 195, 196, 212, 234, 240.  
 Gyros, list of species of, 195.
- Hadena atrea, n. s., 19.  
 " hausta, n. s., 217.  
 " idonea, n. s., 18.  
 Hadronyia, n. g., 78.  
 " grandis, n. s., 79.  
 Hagen, Dr. H. A., articles by, 11, 39, 180.  
 Hamilton John, article by, 104.  
 Harrington, W. H., articles by, 7, 81, 224.  
 Helionota, 110.  
 Heliophila rimosa, n. s., 216.  
 Heliothis nuchalis, 186.  
 Helotropha, list of species of, 171.  
 " sera, 170.  
 Hessian fly, 139, 142.  
 Holophora arcata, 127.  
 Homoptera edusa, 133, 180.  
 " lunata, preparatory stages of, 130, 180.  
 " nigricans, 134.  
 " Saundersii, 133, 180.
- Homopyralis miserulata, n. s., 185.  
 Hop-vine borer, 93.  
 Horn, Dr. Geo. H., article by, 240.  
 Hoy, Dr. P. K., article by, 100.  
 Hybernia tiliaria, 222.  
 Hydriomena reflexa, n. s., 186.  
 Hylobius pales, 8.  
 Hyperchiria zephyria, 215.
- Icthyura palla, n. s., 33.  
 Insects, fossil, bibliography of, 119.  
 " injurious to forest trees, 118.  
 " injurious to fruit trees in California, 139, 148.  
 " noxious and beneficial, 119.  
 " physiological arrangement of, 111, 134.
- Isosoma Allynii, n. s., 9, 48.  
 " etymi, n. s., 10, 48, 97.  
 " hordei, 98.  
 " tritici, 97.
- Ithycerus curculionides, 8.
- Jack, John G., article by, 219.
- Kellicott, D. S., article by, 161.
- Lachnosterna fusca, 17.  
 Last year's collecting, 57.  
 Leopard moth, 113.  
 Lemnias nais, 25, 50.  
 " Palmeri, 25, 50.  
 Leucania phragmitidicola, 197.  
 Libythea Bachmanni, 49.  
 Limentis ursula, 29.  
 Lime-tree measuring worm, 222.  
 Lintner, J. A., article by, 96.  
 Lobesia botrana, 178.  
 Long-tings, 81, 223.  
 Luvuosa, 175.  
 Lycæna aster, n. s., 194.  
 " pseudargiolus, 50.  
 Lyman, H. H., article by, 228.  
 Lythria fullaria, n. s., 174.

- Mamestra glacialis*, *n. s.*, 170.  
 " *gnata*, *n. s.*, 170.  
*Marmopteryx sponsata*, *n. s.*, 215.  
 Marten John, article by, 210.  
*Mategramma rubrosuffusa*, 172.  
*Meliclepiria celeris*, 171.  
*Merapioidus villosus*, 77.  
 Moffat, J. Alston, articles by, 57, 98, 200.  
 Monell Joseph, article by, 13.  
 Moths, North American, 46.  
 Mundt, A. H., article by, 56.  
  
*Nematocampa expunctaria*, 110.  
*Nematus ventricosus*, 147.  
*Neonympha areolatus*, preparatory stages of, 163.  
 " *canthus*, 165.  
*Noctuidæ*, certain forms of, 74.  
 " general characters of, 65.  
 " of North America, essay on, 220.  
 Nomenclature Zoologus, 116.  
 North American insects, oldest figures of, 11.  
  
 Obituary, 176.  
*Oncocnemis griseicollis*, *n. s.*, 19.  
*Ophion macrurum*, 43.  
 Osborn, Herbert, article by, 61.  
 Ottawa Field Naturalists' Club, transactions of, 220.  
*Oxyemesis*, *n. g.*, 182.  
 " *nubenna*, *n. s.*, 182.  
*Oxylos citrinellus*, 172.  
  
*Pædisca Scudderiana*, a gall maker, 161.  
*Papilio ajax*, 24, 26, 50.  
 " *crephontes*, 138, 180, 210.  
 " *machaon*, 21, 178.  
 " *marcellus*, 27.  
 " *marsupia*?, 177.  
 " *philenor*, 21.  
 " *podalirius*, 180.  
 " *polydamus*, 120.  
 " *sinon*, 180.  
 " *telamonides*, 27.  
 " *Walshii*, 27.  
*Pea fungus*, 150.  
*Pemphigus acris*, *n. s.*, 16.  
 " *tesselata*, 61.  
*Pheosia rimosa*, early stages of, 23.  
*Phorodon mahalek*, 13.  
*Photinus angulatus*, 8.  
*Phycidæ*, on two genera of, 29.  
*Phylloxera vastatrix*, 121, 144.  
*Pieris protodice*, 1, 18, 99.  
 " *rape*, 1, 7, 18, 39, 99, 218.  
 " *virginiensis*, 57.  
*Pipiza radicum*, 127, 146.  
*Pippona*, 75.  
*Plagiomimicus*, 75, 182.  
*Plagodes*, 109.  
 " *floscularia*, 109.  
 " *rosaria*, 110.  
*Platycerus quercus*, 7.  
*Platysamia*, 213.  
*Pleonectyptera historialis*, *n. s.*, 188.  
*Plusia precatiosis*, 60.  
 " *simplex*, 60.  
*Plum curculio*, 17.  
*Potentia*, 75.  
*Polestes annulatus*, 7.  
*Polyphemus* moth, 41.  
  
*Poplar dagger-moth*, 221.  
*Psephenus Lecontei*, 72.  
*Pseudohazis*, 214.  
*Pyrausis atalanta*, preparatory stages of, 229.  
*Pygaretia abdominalis*, 20.  
  
 Reed, E. B., articles by, 160, 180.  
 Replication of vols. 1 and 2, Can. Ent., 151.  
*Rheumaptera immediata*, *n. s.*, 184.  
*Rhyssa atrata*, 82, 223.  
 " *lunator*, 82, 223.  
*Ripogenus pulcherrimus*, 183.  
  
*Samia cecropia*, 177.  
 " *columbia*, 177.  
*Saperda discoidea*, 58.  
*Satyrus alone*, 51.  
 Saunders, W., articles by, 1, 41, 113, 118, 121, 136, 140, 176, 177, 178, 220, 221, 237.  
 Saunders, W. E., article by, 140.  
 Segments, number of larval, 52.  
*Serica sericea*, 7.  
 Siewers, Chas. G., death of, 176.  
*Siphonophora asclepiadis*, 89.  
 " *citrifolii*, 91.  
 " *rosea*, 88.  
 " *var. floridae*, 88.  
 " *rubi*, 89.  
 " *solanifolii*, *n. s.*, 92.  
 " *viticola*, 89.  
 " *dimorphism among the*, 90.  
 Skinner, Harry, article by, 20.  
 Smith, John B., articles by, 65, 100, 139, 197.  
 Southern cabbage butterfly, 1.  
*Sphyracephala brevicornis*, 218.  
*Spragueia*, 172.  
 " *on the species of*, 32.  
 " *funeralis*, 33.  
 " *pardalis*, 33.  
 " *sordida*, *n. s.*, 217.  
 State Entomologist for Illinois, a new, 237.  
*Stenosphærus notatus*, 58.  
*Stibadium*, 76.  
*Stiria*, 76.  
 Swinton, A. H., article by, 111.  
*Synedoida insperata*, 176.  
 Syrphidæ, North American, 77.  
*Systema frontalis*, 147.  
  
*Tabanidæ*, new, 210.  
*Tachycellus atrimediæ*, 104.  
*Tamila lucens*, 175.  
 " *tumida*, 186.  
*Telea polyphemus*, 41.  
*Tetracis Coloradaria*, 107.  
 " *lorata*, 107.  
*Tetranæura graminis*, *n. s.*, 16.  
 " *ulmi*, 16.  
*Thalpocharæ perita*, *n. s.*, 171.  
*Thamnomoma perfoliataria*, *n. s.*, 185.  
 " *quadrumia*, *n. s.*, 185.  
*Thecla calamus*, on eggs of, 52.  
*Therispletæ Californicus*, *n. s.*, 210.  
 " *captonis*, *n. s.*, 211.  
 " *centron*, *n. s.*, 211.  
 " *haemaphorus*, *n. s.*, 211.  
*Tinea bisellhella*, 167, 169.  
 " *flavifrontella*, 166.  
 " *pellionella*, 167, 169.  
 " *tapetzella*, 168, 169.



- Tineola biselliella*, 169.  
*Tornos escaria*, *n. s.*, 186.  
   " *interruptaria*, *n. s.*, 185.  
   " *ochrofuscaria*, 186.  
 Tortricidae, Fernald's catalogue of, 115.  
*Tortricodes bifidalis*, 66.  
*Trama griseipennis*, *n. s.*, 183.  
 Transportation of eggs and young larvae, 24.  
*Tremex columba*, 225.  
*Trichogramma pretiosa*, 147.  
*Tripudia*, notes on the genus of, 32, 172.  
   " *lixirra*, *n. s.*, 173.  
   " *versuta*, 172.  
   " list of species of, 195.  
*Tyroglyphus phyllopera*, 121, 127, 146.
- Uroceridae, on the occurrence of some species  
 of, 224.  
*Urocerus albicornis*, 227.  
   " *bizonatus*, 227.
- Urocerus nitidus*, 226.
- Vanessa antiopa*, 7.  
   " *Milberti*, 218.  
 Van Wageningen G. H., article by, 138.
- Williston, Dr. S. W., articles by, 77, 138.
- Xiphodria albicornis*, 224.  
   " *mellipes*, 225.
- Yeast as an insect destroyer, 38.
- Vrias clientis*, *n. s.*, 236.  
   " *crudelis*, *n. s.*, 237.  
   " *repentis*, 236.
- Zothea viridifera*, 217.

## LIST OF CONTRIBUTORS TO THIS VOLUME.

---

ASHMEAD, WM. H. ....	JACKSONVILLE, FLORIDA.
BOWLES, G. J. ....	MONTREAL, P. Q.
CHAMBERS, V. T. ....	COVINGTON, KENTUCKY.
CLARKSON, FREDERICK... ..	NEW YORK CITY.
CLAYPOLE, E. W. ....	YELLOW SPRINGS, OHIO.
COQUILLET, D. W. ....	WOODSTOCK, ILLINOIS.
DODGE, CHARLES R. ....	WASHINGTON, D. C.
DODGE, G. M. ....	GLENCOE, NEBRASKA.
DURY, CHARLES. ....	AVONDALE, OHIO.
EDWARDS, W. H. ....	COALBURGH, WEST VA.
FAGER, D. B. ....	CARBONDALE, ILL.
FERNALD, C. H. ....	ORONO, MAINE.
FLETCHER, JAMES. ....	OTTAWA, ONT.
FRENCH, C. H. ....	CARBONDALE, ILLINOIS.
FYLES, REV. T. W. ....	COWANVILLE, P. Q.
GEHRING, GEORGE J. ....	CLEVELAND, OHIO.
GOODELL, L. W. ....	AMHERST, MASS.
GOODHUE, CHARLES F. ....	WEBSTER, N. H.
GROTE, A. R. ....	NEW BRITTON, LONG ISLAND, N. Y.
HAGEN, DR. H. A. ....	CAMBRIDGE, MASS.
HAMILTON, JOHN. ....	ALLEGHANY, PA.
HARRINGTON, W. H. ....	OTTAWA, ONT.
HORN, DR. GEORGE H. ....	PHILADELPHIA, PA.
HOY, DR. P. R. ....	RACINE, WIS.
JACK, JOHN G. ....	CHATEAUGUAY BASIN, P. Q.
KELLCOTT, D. S. ....	BUFFALO, NEW YORK.
LINTNER, J. A. ....	ALBANY, NEW YORK.
LYMAN, H. H. ....	MONTREAL, P. Q.
MARTEN, JOHN. ....	CARBONDALE, ILL.
MOFFAT, J. ALSTON. ....	HAMILTON, ONTARIO.
MONELL, JOSEPH. ....	ST. LOUIS, MO.
MUNDT, A. H. ....	FAIRBURY, ILLINOIS.
OSBORN, HERBERT. ....	AMES, IOWA.
REED, E. B. ....	LONDON, ONTARIO.
SAUNDERS, W. (The Editor). ....	LONDON, ONTARIO.
SAUNDERS, W. E. ....	LONDON, ONT.
SKINNER, HARRY. ....	PHILADELPHIA, PA.
SMITH, JOHN B. ....	NEW YORK CITY.
SWINTON, A. H. ....	GUILDFORD, ENGLAND.
VAN WAGENEN, G. H. ....	RYE, NEW YORK.
WILLISTON, DR. S. W. ....	NEW HAVEN, CONN.