

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. VI.

LONDON, ONT., JUNE, 1874.

No. 6

ON SOME OF OUR COMMON INSECTS.

16.—THE GOOSEBERRY SAW-FLY (*Nematus ventricosus*, Klug.)

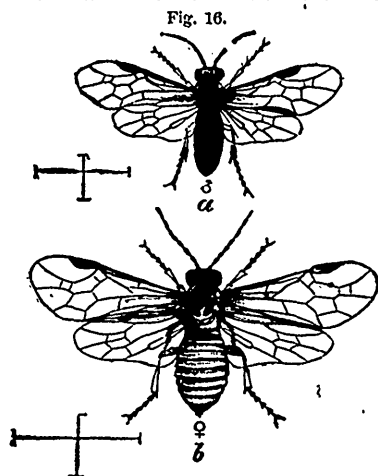
BY THE EDITOR.

This prolific pest, known also in the larval state as the Currant Worm, is now so widely disseminated, and, at this particular season of the year, so abundant and destructive, that it may well be classed among our commonest insects, and is one in which all cultivators of the gooseberry and currant must take some interest.

The Saw-flies, the parents of this troublesome brood, usually spend the winter in the chrysalis state, enclosed in a tough, papery-looking, silken cocoon, sometimes on and sometimes under the surface of the ground, and occasionally fastened on the stems of the currant or gooseberry bushes on which they have been feeding, or in some sheltered spot near by. They make their appearance very early in the season, usually about the third week in April, but sometimes a week later, depending on the temperature; and by the time the gooseberry bushes are bursting into leaf, these enemies have paired, and the females are ready to deposit their eggs on the new and tender foliage. The gooseberry bushes develop leaves before the currant bushes, and whether it is from this cause alone or from a preference for the gooseberry foliage, we know not, but we find that the gooseberry is the first attacked, and often, if let alone, many bushes will be stripped quite bare of foliage before the eggs deposited on the currant are hatched; on this account the gooseberry bushes require the first attention.

Both male and female flies are represented in fig. 16, but magnified. The upper one (*a*) is the male, *b* the female; the hair lines below show

their natural size. The male is nearly as large as the common house-fly,

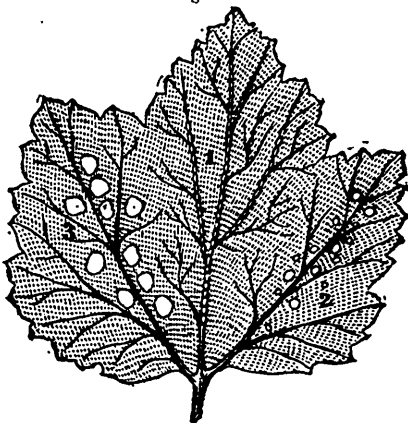


but with a more slender body and glossier wings. Its head is black, spotted with dull yellow, with the antennae brownish black; the thorax or anterior portion of the body is black, with a yellow spot at the base, and in front of each of the fore wings; the abdomen or hinder portion is black above, yellowish underneath and at the tip. Its legs are bright yellow; the wings glossy, with black or brownish black veins. The female is larger than the male and differs from it chiefly in the color of the body, being mostly yellow, instead of black. These flies

are active only during the warmer parts of the day; at other times they are quiet, indeed almost torpid.

The eggs are laid on the surface of the larger veins or ribs on the underside of the leaves; they are arranged in long and regular rows, as shown in fig. 17, each female depositing about a hundred or more. We have counted as many as 118 squeezed from the body of a female just escaped from the chrysalis, and as the eggs are then very soft and easily ruptured, it is probable that some of them were broken in counting, and thus escaped notice. This process of egg-laying is continued throughout May, so that you have eggs hatching almost daily during the latter part of the month, on bushes which are, perhaps, covered with worms from half an inch to an inch long. It is probable that the female fly lays her stock of eggs at one time, and that the subsequent deposits are made by those who have escaped later from the pupa state. The eggs, as found on the leaves, are about one-twentieth of an inch long, four times as long as broad, rounded at each end, and having a

Fig. 17.



whitish glossy surface. As squeezed from the body of the insect they are not much more than half this size, which indicates that they must expand considerably after being laid. The exterior of the egg is thin and elastic, and contracts and shrivels up as the young larva escapes; the usual duration of the egg stage is from a week to ten or twelve days.

The larvae or worms, when first hatched, are about one-twelfth of an inch long, with a greenish white, semi-transparent body and a large head, having a dark round spot on each side. At first they eat small holes in the leaf on which they are placed, as shown at 2 and 3, fig. 17, feeding in company, from 20 to 40 on a leaf, the soft parts of which they soon consume, leaving nothing but the frame-work; as they increase in size they eat the veins as well down nearly to the foot-stalks, and, travelling from leaf to leaf, they soon strip the branch on which they have been located, when they spread to other parts of the bush, which is sometimes stripped quite bare of foliage by these marauders in a few days.

Fig. 18 represents the larva nearly full grown. It is then about three-fourths of an inch long, with a black head and a bluish green body,

Fig. 18.



becoming yellowish on the hinder segments and on the sides. Its whole upper surface is thickly covered with small, shining black tubercles or raised dots, from each of which arises a single black hair. Low down on each side, in a line with the spiracles, is a row of larger black tubercles from each of which there arises several short black hairs; the terminal segment has a patch of black above. The under surface is pale bluish green, growing yellowish towards the extremities,

with a few faint brownish dots; feet nearly covered with patches of black. Prolegs—of which there are seven pairs—pale greenish. After the last moult, just before entering the chrysalis state, it becomes of a uniform plain green color, tinged with yellow.

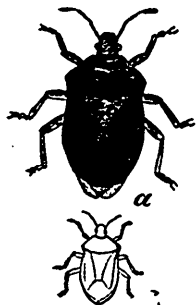
Having completed its growth, its chief concern now is in the selection of a suitable place in which to pass the chrysalis stage of its existence.

Such a spot having been fixed on, the larva begins to contract the length of its body and to spin a cocoon over itself, which, when finished, is nearly oval, smooth, of a brownish color and papery texture, and within this it changes to a small brown chrysalis, from which the fly escapes late in June or early in July. Shortly after this eggs are again deposited, from which another brood of worms are hatched; these complete their growth before summer closes, and in most instances change to chrysalids before winter, and thus these tormentors lie dormant until spring comes round again.

There may possibly be more than two broods during the season; it is certain that there are not many weeks during the whole of summer when you cannot find the larvae on the bushes in some stage of their growth. It is well known that the flies composing the separate broods do not all appear at one time; some are weeks later than others, and their progeny are later in proportion; but whether this tardiness in maturing on the part of some specimens is sufficient to account for the almost continual presence of the larvæ from May to September, we are unable at present to decide.

The Saw-fly has natural enemies, but, unfortunately, they do not as yet appear anywhere in sufficient numbers to materially lessen its increase. One small parasitic insect attacks the egg, and there are two other species which prey upon the larva. Besides these we have another friend in a member of the Heteroptera or true bug family, see fig. 19. This insect is about the size of a common Lady-bird, with the head, thorax and legs black, and the abdomen red, with an elongated black spot in the centre, crossed by a whitish line. On approaching one of the worms they thrust into it their sharp proboscis and quietly suck its juices until it shrivels up and dies. In the figure this insect is magnified; the outline below shows its natural size.

Fig. 19.



It is fortunate that we have a remedy which is sure and speedy, and while it brings sudden death to the worm, does not injure either the bushes or fruit. We refer to powdered Hellebore, which is best used by mixing two tablespoonfuls of the powder in two or three gallons of water, and showering it on the bushes with a watering pot.

ON TWO NEW SPECIES OF NOCTUIDÆ.

BY H. K. MORRISON, OLD CAMBRIDGE, MASS.

Hydracia semiaperta. Nov. sp.

Antennae serrate. Collar arched, ochreous at its base, brown above. Behind the collar the usual longitudinal sharp-edged thoracic crest. Abdomen with a thick, short tuft on its first segment. ♀ with an extended ovipositor. Anterior wings above brown, with ferruginous shades. All the transverse lines dark brown, regular and distinct. Half line present. Interior line undulate above the median nervure; at the latter point it is bent inwardly, and advances in a nearly straight line to the inner margin. Median shade very distinct, broad, not clearly defined along its edges, strongly angulated on the median nervure, and then nearly touching the reniform spot. Exterior and subterminal lines obliterated on the costa, below distinct, sub-parallel, broadly undulating, the former dentate between the median branches.

Ferruginous stains on the median and subterminal spaces, particularly just before the subterminal line and between and beyond the ordinary spots. Terminal space in fresh specimens showing a purple reflection. Orbicular spot small, ferruginous, ringed with brown. Reniform spot long and narrow, pure white, crossed by the black nervules, its upper half frequently more or less overspread with ferruginous shades. Nervules black, with irregularly occurring white atoms. Fringes long, edged with a basal and exterior black line.

Posterior wings dark fuscous, lighter at the base; a black line at the base of the brown fringe.

Beneath, the most conspicuous feature is the broad, black, wan exterior line, which extends over both wings. Discal dots present. On the anterior wing, before the exterior line, the wings are blackish. The costa subterminal and terminal spaces of the anterior, and the whole of the posterior wings violaceous brown, sprinkled with numerous black atoms.

Expanse, 34 to 37 m. m. Length of body, 16 m. m. *Hab.* Mass., New York. Not uncommon. Coll. of H. K. Morrison.

In color this species most nearly approaches *sera*, G. & R.; in the form of the spots, *lorca*, Guen.

The white reniform spot is not a sexual character, as in *nictitans*, Linn., but common to both sexes.

The regular, distinct, median lines, particularly the broad angulated median shade, the white reniform, and the continuous exterior line beneath, afford a ready clue to its determination.

Hadena congermana. Nov. sp.

Palpi, vertex, the upper portion of the collar, and the tegulae ferruginous brown. The basal portion of the collar, a broad, dorsal, thoracic band, and the abdominal tufts dull ochreous. Anterior wings uniform dull red, with the nervules brown. The transverse lines, with the exception of the subterminal, almost entirely obliterated, represented by white dots on the costa and nervules, but in some cases the ground color is slightly lighter along the ordinary course of the lines. Subterminal line more distinct, showing the usual \approx -shaped marking between the median nervules, set off and followed by a lighter line. Terminal space lighter than the rest of the wing, particularly at the apex and internal angle, where are formed irregular ochreous spots. Orbicular spot reduced to a pale dot, encircled with brown. Reniform as in the common *sputator* Grote (*Eul. Buf. Soc. Nat. Sci.*, vol. i, p. 190), kidney-shaped, with an internal brown annulus following the shape of the spot. Posterior wings white at the base, with a broad, diffused light fuscous terminal band. Beneath the wings are yellowish white, with reddish atoms terminally and traces of the exterior line. Expanse, 35 to 38 m. m. Length of body, 18 m. m.

A rare species. *Hab.* New York, and one specimen taken at Beverly, Mass., June 24, 1867, by Mr. Edward Burgess, who has generously given me this and many other interesting species of Noctuidæ.

A very detailed description of this species is not necessary; it is another member of the same little closely related group of *Hadena*, of which *dubitans*, Walk., and *sputator*, Grote, are the only species. It is the smallest of the group (expanding 35 to 38 m. m., while *sputator* expands 42 to 46 m. m., and *dubitans* 48 to 50 m. m.) but it resembles nearest in color *dubitans*, the largest.

Its best character is the orbicular spot, reduced merely to a whitish dot, surrounded with a brown ring. In the other species the orbicular, although obscured by the ground color, is of the usual size. It can be easily distinguished by the dull red ground color of the anterior wings, the almost white posterior wings, the dorsal thoracic band, and the white conspicuous reniform.

THE PRESERVATION OF CATERPILLARS BY INFLATION.*

BY SAMUEL H. SCUDDER.

Many persons are deterred from collecting caterpillars by the difficulty and expense of preserving them in the ordinary way. The easy and inexpensive method of blowing up and mounting the pellicle is so little known in this country, that at the last meeting of the American Association, only one entomologist besides myself had ever seen the operation; since then others have tried it, and been delighted with its simplicity. In the hope of inducing all our entomologists to experiment for themselves, the following explanation of the process has been prepared.

It should be premised that caterpillars may be prepared in this way, so as to retain their colors far better than by any other method, and often to be fit subjects at any subsequent time for the artist's pencil; the most delicate processes may be preserved uninjured, and the examination of hairy or spiny appendages made even more readily than during life. Specimens taken from spirits, unless absolutely naked, are always difficult to examine from the matting of the hairs; and the internal organs can seldom be studied, even in the rudest manner, unless the greatest care has been bestowed upon their preservation; in fact, no specimen can be fitted by any process for the study of both internal and external organizations, and for the latter, no method of preparation compares with that of inflation.

The instruments necessary for the operation, besides the tools* in the hands of every entomologist, are a small tin oven, a spirit lamp, a pair of finely pointed scissors, a bit of rag, a little fine wire and a straw.

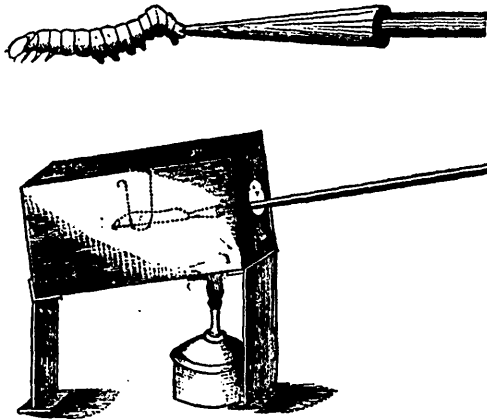
The oven is simply an oblong tin box, about $2\frac{1}{2}$ inches high, $2\frac{1}{2}$ inches wide, and five inches long; the cover is of glass, and one end of the box is perforated by a circular hole $1\frac{1}{4}$ inches in diameter. It would be well to have this end of glass, and the opposite end should be movable; the oven rests upon an open standard of twisted wire or riveted tin plates, as in the woodcut (fig. 20.) No soldering should be used upon the oven or standard, as it would soon be melted. Mr. Riley suggests that there would be an advantage in having the front end of the standard higher than the back, as he has shown in the sketch. He also proposes

*From advance sheets of the *American Naturalist*.

a movable wire loop, indicated in the woodcut by the dotted line,* but this would seem superfluous.

The wire should be very fine and annealed; the best is that wound with green thread and used for artificial flowers. It should not be more

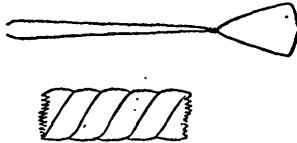
Fig. 20.



than half a millimetre in diameter; the cut represents it magnified nineteen diameters (fig. 21).

The straw. Mr. Goossens, of Paris, my courteous instructor in this art, who possesses a collection of nearly a thousand species of inflated caterpillars, uses nothing but ordinary wheat straw, choosing stout, dry pieces of various sizes, the cross section of which is perfectly circular;

Fig. 21.



with these he inflates the smallest micros and the largest sphingidae.—

Various modifications have been suggested; a glass tube drawn to a fine point, and provided with a pair of spring clips to attach to the caterpillar, is a favorite form; the Germans use this largely, and sometimes attach the caterpillar by threads passed around the anal prolegs. Dr. LeConte informs me that Dr. Gemminger uses a finely pointed tube with an elastic bulb attached, like a rubber syringe. Mr. Riley suggests (as his drawing represents) still another mode, which is to pierce a piece of soft wood along the grain with a fine heated wire

* The engraver should have made this loop hang from the edges of the oven.

and then sharpen to a point the tube thus formed, to be inserted in the caterpillar; a tube is also inserted in the other end (see fig. 21.) For myself I prefer the simple straw.

The operation. Kill the subject by a drop of ether or by a plunge in spirits; if it be a hairy caterpillar, it should remain at least half an hour in alcohol, and then rest on bibulous paper for forty-eight hours; otherwise the hairs drop off in the subsequent operation. Then placing the caterpillar in the left hand, so as to expose its hinder extremity beyond the gently closed thumb and first two fingers, enlarge the vent slightly at the lower edge by a vertical cut with the scissors; next lay the larva either upon bibulous paper on the table, or upon soft cotton cloth held in the left hand, and press the extremity of the body with one finger, always with the interposition of cloth or paper, so as to force out any of the contents of the rectum; this process is continued from points successively farther back, a slight additional portion of the contents of the body being gently pressed out with each new movement. Throughout all this process great care should be taken lest the skin should be abraded by too violent pressure, and lest any of the contents of the body soil its exterior or become entangled in the hairs or spines; to avoid the latter, the caterpillar should be frequently removed to a clean part of the cloth or paper. When a portion of the intestinal tube itself becomes extruded, it should be seized with a pair of strong forceps, and, the head remaining in the secure hold of the left hand, the tube should be forcibly but steadily torn from its attachments; with this most of the contents of the body will be withdrawn, and a delicate pressure passing from the head toward the tail will reduce the subject to a mere pellicle.

The alcohol lamp is now lighted and placed in position beneath the oven; a straw is selected, of the proper size to enter the enlarged vent, and the tip, after being cut diagonally with sharp scissors, is moistened a little in the mouth (to prevent too great adhesion of the skin to the straw) and carefully introduced into the opening of the caterpillar; the process may be aided by blowing gently through the straw. When the skin is slipped upon all sides of the straw to the distance of nearly a quarter of an inch, without any folding of the skin and so that both the anal prolegs protrude, a delicate pin (Edelston and Williams, No. 19, is best) is passed through the anal plate and the straw.

By this time the oven will be sufficiently heated to commence the drying process, which consists simply in keeping the caterpillar in the

oven, extended horizontally upon the straw by blowing gently and steadily through the straw, as one uses a blow-pipe. Too forcible inflation will make the caterpillar unsightly by distending unnaturally any spot that may have been weakened or bruised in the previous operation; the caterpillar should be kept slowly but constantly turning, and no harm will result from withdrawing the creature from the oven and allowing it to collapse, to gain breath or rest; only this relaxation should be very brief. The caterpillar should be first introduced into the oven while inflated by the breath, and so placed that the hinder extremity shall be in the hottest part, directly above the flame, for it is essential that the animal should dry from behind forward; yet not altogether, for as soon as the hinder part has begun to stiffen (which can readily be detected by withholding the breath for a second) the portion next in front should receive partial attention, and the caterpillar moved backward and forward, round and round over the flame. During this process any tendency of the caterpillar to assume unnatural positions may be corrected—at least in part—by withdrawing it from the oven and manipulating it; during inflation, the parts about the head should be the last to dry and should be kept over the flame until a rather forcible touch will not cause it to bend.

To secure the best results, it is essential that the oven should not be too hot; the flame should not be more than an inch high, and its tip should be one or two inches from the bottom of the oven.

When the skin of the caterpillar will yield at no point, it is ready for mounting. The pin is removed from the straw and the caterpillar skin, which often adheres to the straw, must be gently removed with some delicate, blunt instrument, or with the finger nail.

A piece of wire a little more than twice the length of the caterpillar is next cut, and, by means of forceps, bent as in fig. 21, the tips a little incurved; a little shellac* is placed at the distal extremity of the loop, the wire is held by the forceps just beyond this point, so as to prevent the free ends of the wire from spreading, and they are introduced into the empty body of the caterpillar as far as the forceps will allow; holding the loop and gently opening the forceps, the caterpillar is now pushed over the wire with extreme care, until the hinder extremity has passed half-way over the loop, and the shellac has smeared the interior sufficiently to hold

* To prepare this, the sheets of dark shellac should be preferred to the light, and dissolved in forty per cent. alcohol.

the caterpillar in place when dry: the extremities of the parted wires should reach nearly to the head. Nothing remains but to curve the doubled end of the wire tightly around a pin with a pair of strong forceps and to place the specimen properly labelled, in a place where it can dry thoroughly for two or three days before removal to the cabinet.

For more careful preservation and readier handling, Mr. Goossens employs a different method, placing each specimen in a glass tube, like the test tube of the chemist. The wire is first bent in the middle and the bent end inserted in a hole bored in the smaller end of a cork of suitable size, so as nearly to pass through it; the loops are then formed as above; both ends of the cork are varnished, and a label pasted around the portion of the cork which enters the tube, thus guarding both specimen and label from dust, and the latter from loss or misplacement. After two or three days the cork with the caterpillar attached is placed in its corresponding tube, and the tube may be freely handled.

Modifications of this system will occur to every one. Dr. Gemminger uses a syringe for the extraction of the contents as well as for the inflation of the emptied skin. For an oven, the Vienna entomologists employ an ordinary gas-chimney, open at both ends and inserted in a sand bath, which prevents, perhaps, the danger of too great heat.

TRANSLATION OF THE SYNOPSIS OF THE GENERA OF EUROPEAN MYCETOPHILIDÆ.

BY FRANCIS WALKER, LONDON, ENGLAND.

The Diptera, generally considered, are less attractive than other orders of insects, and appear to be more insignificant, but are the most useful on account of their excessive abundance and of their purification of matter and thereby of the atmosphere. In like manner, the Diptera may be divided into more or less numerous and beneficial tribes, and the work assigned to the former is the removal of decaying substances. The fungus race is in subjection to the Mycetophilidæ, and are the means for the development of the perfect state of the latter, according to the law whereby degradation precedes the attainment of a higher state, and this law is exemplified in minerals, plants and animals. In like manner the

Mycetophilidæ among themselves exhibit much difference in utility and beauty, the former quality being exemplified by *Mycetophila* with its skipping and shuffling movements; the latter by the graceful form of *Macrocera* when it rests on a shady paling. The four following sub-families of Mycetophilidæ are distinguished from the others by each of them including more than one genus:

Sub-family MYCETOBINÆ.

- A—Brachial vein and cubital vein forming a sessile fork... 1 MYCETOBIA
 B—Brachial vein and cubital vein forming a petiolated fork.
 a—Base of this fork nearer to the base of the wing than is
 the base of the 2nd hind areolet..... 2 DITOMYIA
 b—Base of this fork more distant from the base of the wing
 than is the base of the 2nd hind areolet..... 3 PLESIASTINA

Sub-family CERATOPLINÆ.

- A—Mouth elongated like a beak.. 1 ASINDULUM
 B—Mouth not elongated like a beak.
 a—Antennæ dilated; palpi not bent together..... 2 CEROPLATUS
 b—Antennæ not dilated; palpi bent together..... 3 PLATYURA

Sub-family SCIOPHILINÆ.

- A—Costal vein extending to the tip of the wing 1 SCIOPHILA
 B—Costal vein not extending to the tip of the wing.
 a—Base of the 4th hind areolet much nearer to the base of
 the wing than is the base of the 2nd hind areolet. 2 EMPHERIA
 b—Base of the 4th hind areolet a little nearer to the base of
 the wing than is the base of the 2nd hind areolet.
 *—Second hind areolet with a very long petiole..... 3 POLYLIPTA
 * *—Second hind areolet with a moderately long petiole..... 5 EMPALIA
 c—Base of the 4th hind areolet in a transverse line with the
 base of the 2nd, or very near the base of the
 wing..... 6 TETRAGONEURA
 d—Base of the 4th hind areolet much more distant from the
 base of the wing than is the base of the 2nd hind
 areolet..... 4 LASIOSOMA

Sub-family MYCETOPHILINÆ.

- A—Three ocelli on the front.
 a—Abdomen with seven segments.

- *—Proboscis not elongated.
- †—Costal vein extending beyond the tip of the cubitus.
- ‡—Basal part of the cubital vein and middle transverse vein equally long.
- §—Auxiliary vein not extending to the costal vein..... 1 SYSTEMMA
- §§—Auxiliary vein extending to the costal vein 3 ANACTINIA
- ‡‡—Basal part of the cubital vein longer than the middle transverse vein.
- §—Base of the 4th hind areolet under the base of the cubital vein..... 2 LEPTOMORPHUS.
- §§—Base of the 4th hind areolet nearer to the base of the wing than is the base of the 2nd hind areolet..... 4 BOLETINA
- §§§—Base of the 4th hind areolet more distant from the base of the wing than is the base of the 2nd hind areolet... 6 PHTHIRIA
- ††—Costal vein not extending beyond the tip of the cubitus..... 7 GLAPHYROPTERA
- **—Proboscis elongated..... 5 GNORISTE.
- b—Abdomen with six segments.
- *—Hind vein forked.
- †—Fork long..... 8 LEJA
- ††—Fork short..... 9 COELOSIA
- **—Hind vein not forked.
- †—Middle discoidal vein forked..... 10 AENEMIA
- ††—Middle discoidal vein not forked..... 11 AZANA
- B—Three ocelli: one on the inner border of each eye; the third in the middle of the fore front.
- a—Costal vein extending much beyond the tip of the cubital vein.
- c—Two ocelli; one on the inner border of each eye.
- a—Base of the 4th hind areolet nearly in a transverse line with that of the second hind areolet..... 25 MYCETOPHILA.
- b—Base of the 4th hind areolet much more distant from the base of the wing than is the base of the 2nd hind areolet..... 26 DYNATOSOMA
- c—Base of the 4th hind areolet much nearer to the base of the wing than is the base of the 2nd hind areolet.... 27 CORDYLA
- †—Petiole of the second hind areolet long..... 20 EXECHIA
- ††—Petiole of the 2nd hind areolet short..... 24 MYCOTHERA
- ***—No 4th hind areolet.

-
- †—Fore cubital areolet moderately broad.....21 ZYGOMYIA
 ††—Fore cubital areolet very narrow.....22 SCEPTONIA
 ‡—Hind vein not forked.
 ‡—Hind vein forked.....23 EPICYPTA
 *—Base of the 4th hind areolet in a transverse line with that
 of the 2nd hind areolet.....12 DACOSIA
 **—Base of the 4th hind areolet more distant from the base
 of the wing than is the base of the 2nd hind areolet.18 ANATELLA
 b—Costal vein extending a little beyond the cubital vein....19 PHRONIA
 c—Costal vein not extending beyond the tip of the cubital.
 *—Base of the 4th hind areolet a little nearer to the base
 of the wing than is the base of the 2nd hind
 areolet.
 †—Petiole of the 2nd hind areolet very short.....14 RYMOSIA
 ††—Petiole of the 2nd hind areolet moderately long.....15 ALLODIA
 **—Base of the 4th hind areolet much nearer to the base of
 the wing than is the base of the 2nd hind areolet.
 †—Costal vein ending much before the tip of the wing..13 BRACHYPEZA
 ††—Costal vein ending a little before the tip of the
 wing.....16 BRACHYCAMPTA
 ***—Base of the 4th hind areolet and that of the 2nd about
 equally distant from the base of the wing.....17 TRICHONIA
 ****—Base of the 4th hind areolet much more distant from
 the base of the wing than is the base of the 2nd.
-

NOTES ON COLLECTING LEPIDOPTERA.

BY G. M. DODGE, GLENCOE, DODGE CO., NEBRASKA.

In collecting *Catocalas* at Ohio, Ill., I have found them, during July, invariably abundant upon Black Locust (*Robinia pseudacacia*), which, at that time, exudes considerable sap from the holes made by borers. Last season I pinned rags, dipped in molasses, to three or four of these trees, and from the middle to the last of July obtained from them over thirty *Catocalas* of ten species. On suitable evenings I would visit the trees with a lantern and cyanide bottle; several times between sunset and ten

o'clock, p. m., earlier or later, I had little success. I seldom used a net, preferring that a specimen should escape rather than capture it in a damaged condition.

In August and September decayed apples or pomace from the cider mill, spread upon trunks of trees, will attract the late species of *Catocala* such as *cara*, *concombens*, &c., and a host of the lesser Noctuidæ.

Limnitis misippus and *ursula* are also very fond of the juice of apples. I have often seen the former species feeding upon apples that were being sun dried, and both may be observed around apple trees upon which the fruit is over-ripe. Upon more than one occasion, by wetting my fingers with apple juice, and holding them near an *ursula*, as it sat upon a leaf above me, I have induced it to leave its perch and alight on my hand, where it would remain until the last drop was sucked up. Where the rarer species of this genus are found, it would seem that apple might be successfully used as a bait.

The objection to cyanide offered by Mr. Norman, in No. 1, Vol. vi, does not seem to me a sufficient reason for discarding it. Although cyanide certainly "renders the moths rigid," the difficulty can be overcome. My *Catocalas*, taken in the evening, remained in the bottle all night, and next morning were transferred to a close box. At noon they were soft enough to spread without difficulty.

NEW CANADIAN NOCTUÆ.

BY AUG. R. GROTE,

Curator of Articulata, Buffalo Soc. of Natural Sciences.

Perigrapha Normani, Grote.

♂ ♀. The eyes are hairy, the tibiæ unarmed. The collar is cut out in front and there is a slight tuft in front, on the dorsum of the thorax, while the sides of the patagia are determinate. Dark leather brown; thorax concolorous, with the inner edge of the patagia with a more or less obvious bordering of dark scales. Forewings shining leather brown, deepening in tint over costal region, somewhat darker mottled. Lines distinct, continuous, geminate, with lilac-grey centers distinctly con-

trasting. Basal half line bent on median vein, continued to internal nervure. T. a. line nearly even, slightly outwardly arcuate, very slightly notched on costal and median veins. Orbicular very indistinct; it appears large, spherical, outlined by a ringed shade of a lighter brown than the ground color. Reniform large and wide, with a distinct darker inner annulus, and with an enclosed blackish stain on the median vein inferiorly. T. p. line like the first two transverse lines, exserted round the reniform, nearly even. There are three grey ante-apical costal dots, while the apices are distinctly washed with a grey shade, which obtains beyond the subterminal line over costal region on the terminal space. Terminal line very vaguely indicated. Hind wings whitish, with a vague fuscous terminal shade and the veins stained with blackish, darker in the female, fringes whitish. Beneath pale, with a common line appearing by blackish nervular dots and streaklets; a discal point on secondaries, which have whitish fringes, while beneath the fringes of the fore wings are brown (as above) and contrast. *Expanse*, 32 m. m. St. Catharines, George Norman, Esq.

Matuta. N. g.

Habitus of *Taeniocampa* and *Perigrapha*; the thoracic and caputal squamation is woolly. The eyes are, however, naked and lashed, not hairy, as in allied genera. The hind and middle tibiae are spinose, and the form is not flattened, as in *Glaca* (*Cerastis*, Led.) The ♂ antennae are simple, not pectinate, as in *Pachnobia*. The fore wings are broad, entire and widen outwardly, with full and rounded external margin. In color the species resembles *Ceramica picta*; the lines are obsolete, except the subterminal, which, with the ordinary spots, is grey. The thorax has the collar distinctly lobed, as in *Perigrapha*, and the sides are well defined; there seems to be no dorsal tuft, while the wings are broader than in that genus. The habit is that of *Taeniocampa* and *Lithophane*; the perfect insect has been taken by Mr. Geo. Norman, in May.

Matuta. Catherina, Grote.

♂. Dark and deep red brown; the fore wings are brighter colored outside of the t. p. line, and at base below the median vein. The median transverse lines are hardly to be made out against the blackish red brown color of the wing; the t. p. line is seen to be single and regularly interspaceally scalloped and accented on the nervules. The stigmata contrast by their grey color; the orbicular well sized, spherical; the reniform

proportionate and enclosing a blackish inferior stain as in allied genera. The subterminal line is quite distinct, being indicated by a line of powdery greyish scales, like the stigmata. There is an extremely fine grey, wavy terminal line *before* the margin, formed by the outer edging of the deeper tinted marginal line which appears as interspaceal points. Fringes light brown, cut by a fine darker hair line (preceded by a pale line) without the middle. Hind wings pale, much soiled with fuscous and with the pale fringes ruddy tinted. Beneath fuscous, with a rufous tinge, both wings rather dark, with discal marks and a broad, vague, common shade line. Thorax like fore wings; collar above with indistinct pale edging; palpal tips pale, as is the front, else the head is rufous. *Expanse*, 32 m. m. St. Catharines.

Besides the foregoing, Mr. Geo. Norman has secured specimens, in beautiful condition, of the following Noctuæ, on Catkins, in May :

Lithophane vulgaris, G. & R. (*socia* of my List); *Lith. disposita*, Morr.; *Lith. Bethunei*, G. & R.; *Lith. ferrealis*, Grote (allied to the European *L. semi-brunnea*, Haw); *Lith. laticinerea*, Grote.; *Morrisonia vomerina*, Grote; *Actinotia ramosula* (Guen.) and *Taeniocampa alia* Guen. These species are mostly additions to the Canadian lists. It is improbable that *Taeniocampa instabilis* occurs in N. Am.; and *T. alia* has probably been mistaken for it.

The following species of European Noctuæ are credited to North America with apparent certainty :

- Agrotis augur* (Fabr.)
- “ *baja* (W. V.)
- “ *cnigrum* (Linn.)
- “ *plecta* (Linn.)
- “ *fennica* (Tausch.)
- “ *confusa* (Treits.)
- “ *sauvia*, Hubn.
- “ *segetum* (S. V.)
- “ *suffusa* (S. V.)
- Mamestra grandis* (Boisd.)
- “ *brassica* (Linn.)
- Hadena arctica*, Boisd.
- “ *rurea* (Fabr.)
- Dipterygia pinastri* (Linn.)
- Euplexia lucipara* (Linn.)

Heliophila pallens (Linn.)
Pyrophila tragopoginis (Linn.)
Xanthia gilvago (W. V.)
Scoliopteryx libatrix (Linn.)
Plusia gamma (Linn.)
 " *ni*, Hubn.
Anarta cordigera (Thunb.)
 " *melanopa* (Thunb.)
Heliothis armigera, Hubn.
Euclidia cuspidea (Hubn.)

Besides the foregoing, other species are occasionally attributed to North America, such as *Hyppa rectilinea*, for which *H. xylinoides* is mistaken; *Agrotis nigricans*, for which *Agr. tessellata* is mistaken, etc. With the exception of the boreal species of *Anarta*, the foregoing list embraces all the European species I feel as yet at all sure are properly credited to North America.

ANNUAL MEETING OF THE MONTREAL BRANCH.

The first annual meeting of the Montreal Branch of the Entomological Society of Ontario was held on May 6th, 1874, when the following officers were elected for the ensuing year:

W. Couper, President; G. J. Bowles, Vice-President; F. B. Caulfield, Secretary-Treasurer; G. B. Pearson, Curator; Council—W. Hibbins, sen., C. W. Pearson, P. Knetzing.

The reports of the Council and Secretary-Treasurer were read, and on motion adopted. The Branch, although young, is in a prosperous condition, the expenses of the past year having been met, leaving a small balance on hand, and the list of members is gradually increasing. Owing to the lateness of the season but little field work has been done, but some rare captures have been made already. The Branch meets as usual at the residence of the President, No. 67, Bonaventure Street, Montreal, P. Q. All business communications to be addressed to the Secretary-Treasurer, F. B. Caulfield, 254, St. Martin Street, Montreal, P. Q.

CORRESPONDENCE.

A THIRSTY SPIDER.

DEAR SIR,—

On the sixth of April my attention was drawn to a small black spider running on the inside of my window-sill. In the course of its travels it came to a drop of water that had trickled from the window pane, when it stopped and commenced drinking.

Wishing to see what it would do, I touched it with my finger, when it set off at a great rate; passing near another drop, it ran to it and again commenced drinking, this time turning out of its path in its eagerness to reach the water.

I have sometimes seen Lepidopterous larvæ drinking, but had never observed a spider doing so before.

F. B. CAULFIELD, Montreal, P. Q.

DYSAUXES MEDIASTINA.

DEAR SIR,—

Dysauxes mediastina, Hubner, Zutrage, figs. 505, 506, must be erased from the list of American Lepidoptera, the locality assigned to it by Hubner being erroneous. The figures quoted above are excellent representations of an Australian insect which I have received from New South Wales. This is not the only erroneous locality which has crept into Hubner's writings, as those who have studied the volumes will have discovered.

Yours truly,

R. H. STRETCH, San Francisco.

PLATYSAMIA COLUMBIA, *S. I. Smith*.

DEAR SIR,—

In March last I found a cocoon on a maple tree, in the east end of this city, which bore a very close resemblance to *P. cecropia*, only it was not much more than half the size. I compared it with Mr. Bowles' description of *columbia*, and as it differed in some respects, I supposed it to be *cecropia*. All doubts were, however, removed by the appearance of the imago on the 13th May, which proved to be a fine male specimen of *columbia*. I believe this is the first that has been taken in Montreal.

C. W. PEARSON, Montreal, P. Q.

EDITORIAL SUMMARY.

We have received from our esteemed friend, J. A. Lintner, of Albany, N. Y., No. 3 of his Entomological Contributions, from the 26th Annual Report of the New York State Museum of Natural History, 8vo., 76 pp., with many cuts. These yearly contributions are valuable additions to our Entomological literature, giving us in terse language the facts and observations recorded by one of our most accurate and pains-taking fellow laborers. The present No. is divided into 12 chapters, in each of which much will be found to interest the practical Entomologist. The first is on the larva of *Eudryas unio* and allied forms. Then follow—"Transformations of some Bombycidae," "Descriptions of Larvae of some Bombycidae and Noctuidae," "Notes on New York Bombycidae and Noctuidae," "Descriptions of New Species of Cucullia," &c., &c. We trust Mr. Lintner will receive every encouragement from the directors of the New York State Museum in the prosecution of his valued labors.

The promised list of the Noctuidae of North America, by Aug. R. Grote, has come to hand. It is a goodly octavo pamphlet of 77 pages, with one colored plate illustrating eleven new species. The first 58 pages are occupied with the catalogue proper, which is conveniently indexed and gives evidence throughout of great care and labor in its compilation; the remaining pages are filled with descriptions of some 35 species, many of which are new. As stated in our last, this list will appear in the forthcoming number of the *Bulletin of the Buffalo Society of Natural Sciences*. For the convenience of Entomologists, separate copies have been struck off, which may be had by remitting \$1.50 to the Secretary, L. F. Harvey, M. D.

Psyche.—The first number of this little Entomological monthly has appeared. It is nicely printed on good paper, and we doubt not, from the array of names of noted Entomologists composing the Cambridge Entomological Club, of which this is to be the organ, that it will be well sustained.

The Butterflies of North America, by W. H. Edwards.—Part 1 of the second series is just at hand, with five beautifully colored plates, in which the drawing and coloring are both elegant and faithful. We know of no illustrations so charming and correct as these are. If all the succeeding parts of the forthcoming volume equal in design and execution that which we are now noticing, vol. 2 will be a fitting sequel to vol. 1. Figures of the larva and egg in several instances accompany those of the perfect insect.