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The Canadian Entomologist.

VOL. III.

LONDON, ONT., JUNE, 1871.

NO. 2.

TO OUR FRIENDS.

WE very much regret that the new type with which the present number is printed did not reach us in time to be used for No. 1. There had been so much delay in beginning the volume, that we thought it best to use such material as we had at command rather than postpone its commencement longer. The printing and general appearance of our little monthly is now as near perfection as we can hope to reach, and will in future be uniform. We trust all our readers will show their appreciation of our efforts to improve the ENTOMOLOGIST by sending a few more names to add to our increasing list of membership; and we should also feel obliged if those of our old members whose annual subscriptions are not yet paid would remit to the Treasurer as promptly as possible.

When issuing our last number, we printed an unusually large edition, intending to send a copy to every person in Ontario known to be interested in Entomology directly, or indirectly as agriculturists or horticulturists, with the hope of largely increasing our list of subscribers. When mailing we found our surplus copies not sufficient for the purpose, and intend printing an extra number of the present issue, which we shall send to all those who did not receive No. 1. For the benefit of such we append the contents of our first number, of which we still hold sufficient to supply new subscribers:

Constitution of the Entomological Society of Ontario.

Editorial.

The Plum Sphinx Moth, with 3 illustrations.

Currant Worms, with 2 illustrations.

Hints to Fruit Growers, with 3 illustrations.

Entomological Gleanings, with 1 illustration.

Miscellaneous Notes, &c.

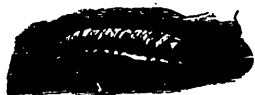
Subscriptions, one dollar (\$1.25 in U. S. currency) per annum, should be sent to the Secretary, E. B. REED, Esq., London, Ont.

ON THE LARVA OF THE PEACH BORER.

(Egeria Exitiosa.)

BY W. SAUNDERS, LONDON, ONT.

The accompanying figure, No. 11, is a faithful representation of the larva of the Peach tree Borer, an insect which in some localities is so injurious and abundant as to sadly interfere with successful peach culture. The grub from which this woodcut was prepared was found in company with several others early in March, in some gummy matter lying on the soil immediately surrounding a peach tree. One, which was somewhat smaller than the rest, was dug out of its bored channel in the tree, where it was still feeding.



No. 11.

The following description will, we hope, enable any one to distinguish this pest beyond doubt when it is met with :

Its head is of a medium size, with a depressed line down the centre dividing it into two lobes. It has a triangular piece inserted in the middle, with its base towards the mouth, and its apex terminating just under the anterior edge of the second segment. The head is also flattened, and of a reddish color, becoming darker, almost black, on its anterior edge. The jaws are black and prominent.

The body above is of a dull pale yellow, with the segments or rings of the body rather deeply cut. The second segment is of a pale reddish brown color, smooth and horny looking. On each segment there are a few minute pale reddish dots, from which arise short reddish or brownish hairs—those along the sides and on the posterior extremity being somewhat longer. A faint line runs along each side through the stigmata or breathing pores of a paler shade than the rest of the body. The stigmata are small, nearly round, and of a dull reddish color.

The under surface is very similar in color to the upper. The feet are tipped with reddish brown, and the prolegs are pale yellow, with the fringe of hooks, crowning each of a dark reddish brown.

The grub becomes a chrysalis early in the spring, from which the wasp-like moth is produced late in June or early in July, which, soon after pairing, lays its eggs on the bark of the trunk of the tree, near its base. Here the young grubs, as soon as hatched, eat their way to the inner bark, and commence their work of destruction.

To prevent the moths from depositing their eggs, some recommend

mounding the trees well up with earth, two or three feet high, early in June—others brush the trunk and main branches over with soft soap, reduced with water so as to bring it to about the consistence of paint.

A NEW SPECIES OF CEMIOSTOMA.

(*Micro-Lepidoptera*, *Tineina*.)

BY V. T. CHAMBERS, COVINGTON, KY.

[Some little time ago Mr. Chambers sent us a specimen of the insect referred to in the following communication, and desired our opinion respecting its specific position. Being unable to give any definite opinion on the matter, as we know but little of the *Micro-Lepidoptera*, we sent his note and specimen to Mr. Stainton, the great English authority on the *Tineina*. He very kindly examined the specimen, and communicated his views respecting it, through us, as noticed below.—ED. C. E.]

Your letter reached me just as I was starting to an adjoining county where a term of Court has detained me until now. As you request, I send a notice of the *Cemiostoma* for the CANADIAN ENTOMOLOGIST. I am satisfied that it is a new species, and call it *C. Albella*. It is of a glistening snowy white. There is a small tuft on the head,—the antennæ pale fuscus with the apex and basal joint, white. On the costa beyond the middle is a pale golden streak, dark margined on both sides, obliquely placed, pointing towards the anal angle, *but not produced to it*: towards the apex, on the costa, is another larger pale golden spot, with slightly diverging sides, but faintly dark margined posteriorly, though distinctly so anteriorly. The apical spot is shining silvery gray metallic with very distinct black margins anteriorly and posteriorly; behind it, at the base of the ciliæ, is an indistinct pale golden streak, which on the costal margin touches a small fuscus spot in the cilia, but which does not touch the dorsal margin. There is a minute indistinct fuscus spot at the apex of the ciliæ. Abdomen white, banded above with golden fuscus.

This would seem to be intermediate between *C. Susinella*, Higa, and *C. Spartifoliella*, Stainton, approaching more nearly to the former. Possibly it may prove to be what the late Mr. Walsh would have termed a "phytophagic species," or variety of the former. I have never seen either of those species, and I compare this insect only with the descriptions of those species contained in "Stainton's *Tineina*." The description there given of *Susinella* is very brief, and *Albella* differs from it in not having the

first costal streak produced to the anal angle; in having a pale golden streak in the ciliæ, behind the apical spot, which is not mentioned by Stainton, and in having only two faint fuscus spots in the ciliæ, one of them at the apex very indistinct, instead of two ciliary fuscus streaks pointing upwards, as Stainton says of *Susinella*; and still more in having a distinct tuft on the vertex, whilst, according to Stainton, *C. Scitella* is the only known species which possesses such a tuft, and *Scitella* cannot be mistaken for this. It is also clearly distinct from *C. Spartifoliella* and *C. Laburnella*, although it strongly resembles them.

The larva mines the leaves of the silver-leaved and Lombardy poplars, (*P. Alba* and *P. Dilatata*.) *Susinella* mines the leaves of *P. Tremula* and these are the only known poplar-feeding species. It leaves the mine in the latter part of September, and spinning about them small cables of the purest white silk, it spins its cocoon beneath them and becomes a pupa in the fall, the imago emerging in the next April. The cocoon is oval, flat, and snowy white. According to Stainton *Spartifoliella* is the only species which forms its cocoon in such situations.

If, as I believe, this insect is distinct from *Susinella*, it has not yet been observed in Europe. Yet as both of the trees upon which it feeds are imported species, *Albella* is probably a European insect. So far as I am informed this is the first time that any species of *Cemiostoma* has been observed in this country, and yet *Albella* is very abundant on both *P. Alba* and *P. dilatata*, and it is strange that it has not been observed both in this country and in Europe, if it is found there. The mine is very conspicuous, and sometimes the upper and lower cuticles of the entire leaf are separated, and the leaf deadened, but in such cases several larvæ are found in it.

Up to the date of the publication of Vol. I. of Stainton's *Tineina* but six species of *Cemiostoma* had been observed, all of which were found upon the European continent, but only three of which had been observed in England. *Susinella*, which approaches most nearly to *Albella*, has never yet been found in England, but I believe that since the publication of that work two new species have been discovered in England, and one or two in India.

A single specimen of *Albella* was sent to Mr. Stainton, (by your kindness,) who writes that he is inclined to separate it as a distinct species, but that he cannot be positive, as the specimen was slightly injured. Among four specimens examined by me I cannot discover the slightest difference.

P. S.—As no one except myself, so far as I know, is giving much attention to our "Micros," and as I have a good many new, beautiful and interesting species, if you desire it I shall occasionally notice them in the ENTOMOLOGIST.

[We shall be very glad to receive our Correspondent's communications, and trust that he will follow up the work so well begun by the late lamented Mr. Brackenridge Clemens.—Ed. C. E.]

HINTS TO FRUIT GROWERS.

Paper No. 2. BY WM. SAUNDERS, LONDON, ONT.

The gooseberry saw fly *Nematus Ventricosus*. The season of warmth and growth having opened this year early, this never-failing pest has put in its appearance also in advance of previous years; as early as the 23rd of April I found the insect on the wing preparing to deposit its eggs as soon as the foliage was sufficiently expanded. Our last number contained an enlarged figure of the fly—See fig. 4.) We now give a representation of the larva in its natural position, feeding on the leaves. (See fig. 12.) The fly deposits its white eggs in long regular rows on the under side of the leaves, chiefly on the larger veins, where



Fig. 12.

they speedily hatch, and the hundreds of voracious worms resulting are soon scattered all over the bushes. Already, May 15, the eggs are very numerous, and here and there may be found a colony of larvæ. These latter, while young, feed in company, from 20 to 40 on a leaf, which is soon riddled with the small holes they at first make, but in a few days they increase in size, and parting company spread in all directions. By keeping a close watch, and picking off the eaten leaves early in the season, the evil will be much lessened, but where the worms are numerous there is nothing so good as Powdered Hellebore, which may be readily and economically applied by mixing an ounce (previously rubbed up

with a little water to prevent its being lumpy) in a pail of water, and showering it over the bushes with a watering pot. Many people are timid about using hellebore while the fruit is on, for fear of its finding lodgment there in quantities sufficient to produce unpleasant consequences when the fruit is eaten, but if applied in the way just mentioned there need be no apprehensions on this point.

The Plum Curculio. Although we referred to this insect in our last, it will not do to pass it over in silence now, for by the time this reaches the eyes of our readers the young fruit will have formed, and jarring should at once begin and be steadily kept up every evening until the fruit is pretty well grown. The severe frost we have had has considerably injured the plum blossoms in this western section, and we believe that the crop will consequently be light, hence plum growers should be on the alert and dispute possession with the "little Turk" from the very beginning. The most convenient form of sheet to spread under the trees is that made with two pieces of cotton of the requisite size, stitched only half way up the middle, so as to allow the tree to pass to the centre, and having a strip of wood attached to each of the outer edges, so that it may be conveniently handled. Small trees may be jarred with the hand, larger ones should have a branch cut off, leaving a stump which may be struck with a mallet, or else have a hole bored in the tree, and a broad-headed iron spike inserted, which may be struck with a hammer. The accompanying figure 13 shows the Curculio in its different stages of larva, *a*, chrysalis *b*, and perfect insect *c*; the hair lines alongside of each object shows its natural size; *d* represents a Curculio working on a young plum in which one egg has already been deposited.

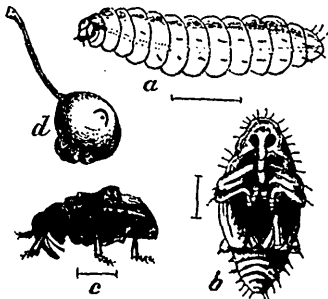


Fig. 13.

The Codling Moth *Carpocapsa pomonella*. This insect, so destructive to the apple, usually appears in Ontario from the middle to the end of June, but the season having opened earlier this year than common, we may look for them in the beginning of the month, and in a fortnight later they will probably be busy depositing their eggs about the eyes of the young apples. Excellent traps may be made for them out of common bottles—widemouth ones preferred—by partly filling them with a mixture of vinegar and water, well sweetened with sugar, and having a little rum or other strong smelling

spirit added to it. These may be fastened among the branches of the trees with cord or pieces of wire. The insects, being attracted by the smell of the compound, they are lured into the bottle and drowned, and thus the mischief they were about to perpetrate is nipped in the bud. Later in the season the wormy fruit should be carefully gathered, and either dipped in boiling water to destroy the grubs, or fed to hogs. Fig. 14 delineates the various stages of the insect: *a* section of apple attacked, *b* point at which the egg was laid and at which the young worm entered, *c* the full grown worm, *h* its head and portion of body magnified, *i* the cocoon which it spins, *d* the chrysalis enclosed in the cocoon, *f* the perfect insect as it appears when at rest, *g* the same with its wings expanded.

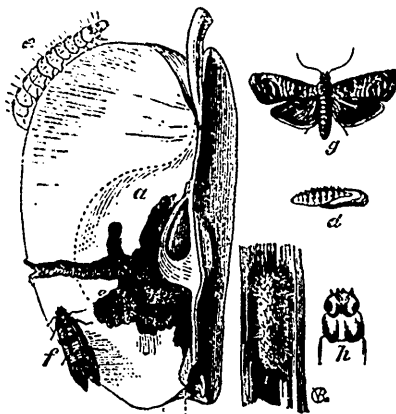


Fig. 14.

Borers. June is the month for borers of all kinds, so look out for your apple trees; prevention in this instance is far better than cure, and by taking a little pains now the entrance of the borer may be prevented. Soft soap, reduced with water to the consistence of thick paint, and applied copiously over the trunk, and a short distance up the main branches of the tree, will prevent the beetles from depositing their eggs on such at all, and besides will have the effect of cleansing the bark from many other animal and vegetable parasites.

INSECTS OF THE NORTHERN PARTS OF BRITISH AMERICA.

Compiled by the Editor.

From Kirby's Fauna Boreali-Americana: Insecta.

(Continued from Vol. II., Page 176.)

FAMILY HALIPLIDÆ.

[This family, usually regarded as a sub-family of the *Dytiscidæ*, is restricted by Leconte to the genera *Haliplus* and *Cnemidotus*; but Kirby, as will be observed, includes it in the genera *Hydroporus* and *Laccophilus*.]

93. HALIPLUS IMPRESSUS, *Latr.*—One specimen taken in Lat. 65°. Length of body $1\frac{1}{2}$ lines, nearly.

[66.] Body, reddish-yellow. Head punctured, dusky behind: prothorax yellow, depressed in the middle posteriorly, with a transverse curved series of punctures in the depression; anteriorly there are five or six black dots arranged transversely; at the base, between the central point and the margin on each side, an oblique little furrow, but not easily discoverable, is impressed: elytra pale-yellow, with a cinereous tint, nine rows of black punctures on each, those near the lateral margin being the faintest; anteriorly, in the interstices of the rows, there are also a few black punctures: the apex of the elytra is oblique, terminating in an acute point: the laminae that cover the posterior legs are punctured. [Kirby is doubtful respecting the identity of this specimen with Latreille's species, as though the latter's description agrees with it, his figure does not, for it represents the elytra with eight black spots, which are not to be found in *H. Impressus*. Le Conte puts it down as a probable synonym of *H. Immaculicollis*, Harris, a species taken in Canada, and regards its identification with Latreille's species as erroneous.]

94. HYDROPORUS NIGRO-LINEATUS, *Stephens.*—A pair taken in Lat. 65°. Length of body $2\frac{1}{2}$ in.— $2\frac{3}{4}$ lines.

Body lurid-yellow, somewhat glossy, minutely and thickly punctured: antennae dusky at the tip: prothorax with a minute black rhomboidal spot in the disk, which is marked with a punctiform impression; anteriorly it has a transverse series of punctures larger than those of the rest of its surface: elytra most numerous and minutely punctured: the suture and four longitudinal stripes not reaching the apex, nor the first and third the base, all black; the fourth, or outermost, is distant from the margin and interrupted: the alitrunk and abdomen are black. In the female, which is less glossy, the external stripe is continuous, and only the second reaches the base; and in the male the prothorax is more conspicuously punctured, and the anterior series of punctures is wanting.

[67.] 95. HYDROPORUS PARALLELUS, *Say.*—One specimen only taken. [Previously described as *H. Catascopium Say*, and subsequently as *H. Interruptus Say*: For descriptions *vide Say's Ent. Books*, ii., 98, 516, 560. Taken in Canada.]

96. HYDROPORUS LÆVIS, *Kirby.*—Length of body 2 lines. One specimen only taken.

Very like the preceding species, but smaller; it differs principally in being perfectly smooth and without punctures, even when examined under a powerful magnifier. The head has two larger vertical lurid-yellow spots, and there is a triangle of the same colour between the eyes, which at its base is dilated, and occupies the nose and mouth: the prothorax is lurid-yellow with two oblong oblique dusky spots beyond the middle; towards the base is an obtus-angular transverse impression, and on each side, at a little distance from the margin, is an oblong punctiform impression: in the elytra are six distinct narrow black stripes, none of which are confluent except at the apex; at the side, but at some distance from the lateral margin, are three black spots placed in a line, or a stripe wider than the others twice interrupted: the legs are testaceous with the posterior tibiæ black at the tip. [Placed, with a mark of interrogation, as a synonym of *H. Duodecimlineatus*, *Lcc.*, in Le Conte's list, p. 16.]

[68.] 97. *HYDROPORUS PICATUS*, *Kirby*.—Length of body $2\frac{1}{2}$ lines. A single specimen taken in Lat. 54° .

Body, dark piceous, without gloss; covered, especially above, with an infinity of punctures. Head, obscurely ferruginous, dusky behind, with a paler quadrangular spot extending to the mouth, between the eyes: antennæ ferruginous: prothorax, with its anterior half, ferruginous, marked with a discoidal punctiform impression or little furrow: elytra, with four posteriorly abbreviated punctured furrows, very difficult to be discerned, and only by looking on one side from behind: forebreast and legs ferruginous: alitrunk and abdomen black.

98. *HYDROPORUS SIMILIS*, *Kirby*.—Length of body $2\frac{1}{8}$ lines. Taken with the preceding species?

I at first regarded this as the other sex of *H. Picatus*, but upon inspecting their tarsi I found they were both males. This species is smaller, more glossy, the parts that in that are dark ferruginous, in this are much paler; the punctures on the upper surface are less numerous and larger, especially those of the basilar half of the elytra, and the four furrows, particularly the three dorsal ones, are deeper and more distinct; the disk of the prothorax also is transversely levigated and impunctured. Both these insects come very near to *H. Picipes*, but that species has not the discoidal impression in the prothorax; and its elytra are dark testaceous, striped with black.

N.B.—All the above divisions belong to Mr. Stephen's second division of the family with the sides of the prothorax rounded. [*H. Similis* has been taken in Canada.]

[69.] 99. *LACOPHILUS BIGUTTATUS*, Kirby. Length of body 2 lines. One specimen taken.

Body, very smooth, glossy. Head, dirty-yellow; palpi and antennæ dusky at the tip; manitrunk (the manitrunk is that part of the trunk that bears the arms or fore-legs: it includes the prothorax and antepectus), dirty yellow; elytra, embrowned cinereous, with a line of punctures, as in the other species, adjacent to the suture, and a pale yellow, indistinct, oblong, anterior, marginal spot: legs, dirty yellow; posterior tarsi, dusky; alitrunk and abdomen, nigro-piceous; apex of the segments of the latter reddish-yellow. This species is smaller than *L. minutus*, which it resembles, and the colour of the elytra and underside of the body differs. [Inserted as a probable synonym of *L. fasciatus* Aubè, in Le Conte's list; in Melsheimer's Catalogue it is recorded as synonymous with *L. proximus* Say and *L. Americanus* Aubè.]

FAMILY DYTISCIDÆ.

100. *COLYMBETES SEMIPUNCTATUS*, Kirby. — One specimen only taken. Length of body $3\frac{1}{4}$ lines.

Body oblong, glossy, very black, above very slightly bronzed; under a powerful magnifier the whole upper surface is most minutely reticulated, and the under covered, with longitudinal scratches. Head with a pair of vertical red crescents placed transversely, and scarcely visible except when the sun shines; upper-lip, palpi, and antennæ ferruginous; mandibles black; prothorax, anteriorly with a continuous transverse marginal series of punctures, posteriorly with one widely interrupted in the middle, and in the disk with a minute furrow; elytra with a triple dorsal series of punctures not regularly or singly arranged, with other scattered punctures interjacent, especially towards the apex, on the side the punctures, which are not numerous, are scattered without order; in the sutural series the punctures are distant and single; beyond the middle of each elytrum, not far from the lateral margin, is a red streak, not distinctly visible except in a strong light: the arms are piceous, and the four anterior tarsi ferruginous. [Belongs to *Agabus*. Taken at Grimsby, Ont., by Mr. Pettit.]

[70.] 101. *COLYMBETES (AGABUS) BICOLOR*, Kirby. — Length of body $3\frac{1}{2}$ lines. A single specimen taken in Lat. 54°.

Body nearly elliptical, convex, smooth, glossy, and very black. Reticulations more visible in the head than in the rest of the surface; a pair of round, obscure red spots in the vertex; mouth palpi, and antennæ testaceous: anterior transverse series of the prothorax with single punctures at

the sides, but scattered ones in the middle, posterior series continuous, with single and rather distant punctures; elytra, externally of a pale mahogany colour, with a double series of punctures, not numerous nor regularly arranged, which do not reach the apex; there are a very few scattered punctures besides in the side: legs mahogany-colour.

102. COLYMBETUS (AGABUS) PHÆOPTERUS *Kirby*.—Length of body $3\frac{1}{4}$ — $3\frac{1}{2}$ lines. Two specimens taken in Lat. 54° .

Body nearly elliptical, rather depressed, smooth, very black, glossy. Head with a pair of transverse obscure red spots in the vertex; mouth and antennæ testaceous: posterior series of the prothorax thickly punctured, and discontinuous in the middle: elytra brown, a little paler at the base and side: epipleura yellow: sculpture of the elytra like that of *C. Semipunctatus*, but fewer punctures in the side: legs ferruginous: body underneath longitudinally scratched. This species appears to be the American representative of *C. patulosus* (*Dytiscus politus* Marsh) which it nearly resembles, but the anterior part of the front is black, and not yellow as in that species; and the prothorax is wholly black, without a broad rufous margin. [Placed with a mark of interrogation as a synonym of *Agabus obliteratus* Lec., in Le Conte's List, p. 17.]

[71.] 103. COLYMBETES (AGABUS) BIFARIUS, *Kirby*.—Plate v., fig. 6. Length of body $3\frac{1}{4}$ lines. A single specimen taken in Lat. 54° .

Body oval, smooth, black, less glossy. Head with a pair of vertical red crescents: mouth, antennæ and palpi ferruginous: maxillary palpi with the last joint black: prothorax longitudinally acuducted, with the bead of the lateral margin rufous: elytra, at the base longitudinally, at the apex transversely, acuducted: fore-breast and legs piceo-rufous.

104. COLYMBETES RETICULATUS, *Kirby*.—Length of body $3\frac{1}{4}$ lines. Three specimens taken in Lat. 65° .

Body oblong, black, gloss obscured from its being covered as it were with a web of the finest net work, sculptured as if with the point of a needle. Head with a pair of round red vertical spots: prothorax with a yellow mesal band and lateral margin: elytra dusky-cinereous, with the side yellowish: legs ferruginous. [Not mentioned in either Le Conte's or Melsheimer's Catalogues.]

105. COLYMBETES PICIPES, *Kirby*.—Length of body $4\frac{1}{4}$ lines. Two specimens taken, one in Lat. 54° , the other in Lat. 65° .

[72.] Body oval, black, above slightly bronzed, not glossy, covered above and below like the preceding species with, as it were, a web of net-

work; but the reticulations are more minute. Upper-lip, palpi and antennæ ferruginous; a pair of oval, minute, obscure red spots mark the vertex: prothorax, with the anterior transverse series of punctures double in the middle, the posterior one not easily discernible, discontinuous in the middle: there appear no rows of punctures on the elytra, but a few scattered ones may be discovered: the four anterior legs are piceous. This species approaches *C. chalconatus*, but it is longer, less glossy, the reticulations of the surface are more distinct, no rows of punctures are discernible, as in that, on the elytra, which, as well as the prothorax, are all of one colour; and the posterior legs are black. It seems still nearer *C. ater*, but it is much smaller, less convex, and has no fenestrated spot on the elytra. [Taken in Canada.]

106. COLYMBETES ASSIMILIS; *Kirby*.—Length of body $5\frac{3}{4}$ lines. Taken in Nova Scotia by Dr. MacCulloch.

Body rather depressed, between oblong and obovate, smooth, rather glossy, black, covered above with an infinity of very minute reticulations. Head dirty-yellow; vertex black, with a pair of confluent transverse reddish spots: prothorax dirty-yellow, rather dusky in the disk, transverse punctures nearly obliterated: elytra of the same colour as the prothorax, but sprinkled with innumerable black dots, which, however, do not extend to the base and sides; a row of more distant and larger dots adjoins the suture: the fore-breast, the base and apex of the other ventral segments of the abdomen, are dirty yellow; the legs are of the same colour, but the arms are shorter than usual and piceous; the dilated posterior coxæ are sculptured with branching rugosities. This species represents *C. notatus*, which it is very like, but the elytra are wider towards the apex which gives the insect an obovate shape; the black dots of the elytra are more numerous and minute; the prothorax is without spots; and the arms, or fore-legs, are shorter and of a different colour. [Included under *Agabus* in Melsheimer's Catalogue.]

ENTOMOLOGY. No. 1.

BY WILLIAM COUPER, MONTREAL.

The approach of the season for the study of the habits of insects urges me to write a few hints for the guidance of young Canadian beginners. I find that many young persons collect insects more for the sake of recreation and pastime than for the value of the material to aid future investiga-

tion. Occasionally one may meet a tyro who can discriminate insect forms, and possess that peculiar acuteness so essential to the study of Entomology; but still he has sad defects, that is, clumsiness in the preparation of his specimens, and want of method. Now, this should be avoided, and the first determination of a young collector who wishes to be successful must be neatness in mounting his specimens, with a zealous regard for the preservation of his cabinet. In order to carry out this determination satisfactorily, the first great requisite is *patience*, the second is *quickness*; but independently of this quality, I contend that patience is the chief gift to make a successful Entomologist. Without it, he cannot grasp an abstruse subject, for being too hasty, his brain wanders to isolated points, magnifying them, to the exclusion of other more important ones, whereas he should watch patiently, and record facts as they gradually come before him.*

It is little use attempting a collection of insects unless the proper appliances are at hand to procure and secure the specimens. A proper collecting box should always accompany the net, and delicacy of handling insects (especially Lepidoptera) practiced in the field. Neatness in arrangement is a home work, but the great secret of having fine specimens is in the care taken in first handling. To help the memory, a note book should be carried in the pocket, wherein to record descriptions of the insects taken in his rambles. He will find these notes of great value afterwards, especially when he becomes an advanced student. I have found a field note book indispensable, and would recommend every young collector to take notes of his captures.

I would also suggest to our intelligent agricultural friends that such note books are highly valuable, should they take the trouble to notice and record such facts as are every season occurring on their farms. Correctly noted books of this description, coming from the hands of intelligent farmers, would be of immense service to Entomology, and would no doubt lead to discoveries which are at present hid in obscurity. Mr. Stainton says: "An agriculturist, knowing nothing of Entomology, thinks that if he is annoyed by some new 'varmin' he has only to apply to some professor of Entomology to be at once told the best way to get rid of his foe; but this is not the best mode to go to work. Those enterprising agriculturists

* "In order to keep the mind free from prejudice or one-sided views, it is necessary to examine and judge for one's self; we are very apt to conclude that because another says a thing is so, it *must* be so; it *may* be so, we grant, but look and judge for yourself; perhaps you will find it very different from what you expected."—STAINTON.

who know how much the safety of their crops depends upon the absence of the ravages of the insect hosts, and who know that 'knowledge is power,' will set *themselves* to work to obtain a practical knowledge of Entomology, in order that, when they find their wheat or any other crop affected, they may themselves be able to discover the cause of the injury, and apply the proper remedy. The Entomological agriculturist who himself lives on the spot, and sees the smitten crops day after day, will be far better able to cure the disease (if the disease be a curable one) than the cleverest agriculturist knowing nothing of Entomology would be capable of doing, even after consulting the cleverest Entomologist who knows nothing of agriculture. It is a most necessary part of the education of the agriculturist, that he should be well acquainted with Entomology, and know his friends from his foes. Some assume that all insects are hostile, and are to be indiscriminately destroyed—about as sane a proceeding as though an *ignoramus* were to pluck up his crop as soon as it appeared above ground, under the impression that what was then making its appearance was only *weeds*. We can hardly imagine that any one could possibly be so ignorant as this; but is the ignorance of those who destroy their insect friends one iota greater?"

In 1862, when I was elected a corresponding member of the Entomological Society of Philadelphia, I communicated to Mr. Cresson, the secretary, the importance of forming a cabinet of insect architecture in connection with the extensive collections of the Society. I subsequently wrote a short article on the importance of forming a collection of this nature, and on the 6th May, 1863, Mr. Cresson wrote: "We have already started our collection of insect architecture, and if you can contribute any specimens to it we will be very thankful." And on the 15th June, 1863, he further adds: "The cabinet of insect architecture recommended by you has been fully started, and the progress already made bids fair for a large collection."

Now, I wish to urge the Entomological Society of Ontario to form a similar collection, as it is a most instructive and useful branch of Entomology, serving, when the specimens are properly determined and named, to trace the parent insect to its early mode of working, besides infusing a more correct system of study, and arriving at facts. All the old Entomologists took the greatest trouble and care in describing the habitations of insects, and why should we, at this advanced age of Entomological science, confine ourselves to the collecting and study of insects only. Systematists may go on writing books describing insects, larvæ, and their habitations—and such, no doubt, are very proper and necessary—but I hold that a

thoroughly correctly named collection of the natural habitations is more instructive than all the pictures or descriptions, however faithful or accurate they may be. Every species of insect has a peculiar mode of working in its early stages, and there is a kind of non-deviation in the work which a practical eye can trace, and say: "I can name the genus or species which produced that." I am fully aware that every Entomologist will not coincide with me, nor acknowledge that all Lepidopterous insects belonging to any certain genus produce cocoons of almost similar form, but I believe they do; and without dwelling on the reason or specific causes for recently transferring the following insects to distinct genera, suffice it to say that they were at one time included under one genus. I will now state why I should separate them on the structural dissimilarity of their cocoons, for on examining them and comparing them we discover a decided difference in their forms, that is to say, the cocoon of *Attacus cecropia* is greatly different from that of *A. polyphemus*, and the cocoon of *A. luna* is to a certain degree not like the latter, while that of *A. prometha* is always differently situated and formed from any of the former. To more fully strengthen my argument that almost all species of Lepidoptera copy each other, in the formation of the coverings made by the larva, I may mention that a cocoon found by me at Québec, and which, from its likeness to that of *Cecropia*, I took to be that insect, was afterwards brought home by Mr. Bowles, and in due time produced *Samia Columbia*, a new species described by Mr. S. J. Smith in 1865. I could also give similar instances in the great family of *Hymenoptera*, but I shall leave any further remarks for another paper.

NOTES ON LEPIDOPTEROUS LARVÆ.

BY W. SAUNDERS, LONDON, ONT.

NOCTUA CLANDESTINA (*Drury*).

Young specimens of the larva of this species were found last year, about half grown, under chips and logs in open fields early in May. They had evidently wintered in the larval state, and had but lately aroused from their winter's sleep. No description of the larva was taken until May 25th, when it was full grown.

Length 1-25 inch, cylindrical.

Head: medium sized, flattened, black, with two diverging whitish lines

down the front and one across, forming a small triangle ; a patch of dots of the same color on sides ; palpi whitish, tipped with black ; mandibles black.

Body above, dirty brown, with a faint yellowish tinge ; a dorsal line of a paler hue, and a sub-dorsal yellow line, most distinct from fifth to twelfth segments, nearly obsolete on the anterior ones. The lateral lines are edged with a dull reddish color below ; and between them, from fifth to twelfth segments, is a series of elongated black spots, one on each side of the dorsal line on each segment, diverging from each other anteriorly, and shaded about their base with yellowish brown. On hinder part of twelfth segment is a patch of yellowish brown, edged behind with black. There is also a broken blackish line running through the spiracles.

Under surface paler, with a greenish shade and a few minute dark brown dots ; feet black, ringed with pale brown : prolegs dull brown, dotted on the outside and tipped with black.

One specimen was much paler, nearly dull yellow ; and others of a much darker shade. One of these became a chrysalis May 26th.

GNOPHRIA VITTATA (*Harris*).

A spinous larva found under logs early in June in company with larvæ of *Arctians*. Also found occasionally on trees and shrubs later in the month ; feeds on lichens ; one specimen found full grown 30th June.

Length .75 inch ; head black, with a few small whitish hairs.

Body above, black, sprinkled with dots and short lines of yellow ; a dorsal row of yellowish dots from fifth to twelfth segments ; color paler on sides, approaching brown as it nears the under surface ; spines simple, not branched, all black and proceeding from slightly elevated black tubercles ; in some instances two spines arise from the same tubercle, one shorter than the other.

Under surface brownish yellow ; feet yellow, semi-transparent, lightly streaked with brown ; prolegs yellowish, faintly tipped with reddish brown.

HYPHANTRIA CUNEA (*Drury*).

Hairy larva, found in the middle of a wood under a log, July 14th. Fed it for a short time on lambs quarter, *Chenopodium album*.

Length 1.75 inches ; cylindrical ; head small, bilobed, black and shining, with a faint brownish streak between the lobes, scarcely visible above, and a few short brownish hairs.

Body black, with a slight shade of brown, and sprinkled all over with very minute whitish dots, scarcely visible without a magnifier. On each

segment is a transverse row of shining black tubercles, each emitting a tuft of hairs of the same color. On each side, from sixth to twelfth segments inclusive, is a double row of orange-colored spots--those composing the lower row more conspicuous than those in the upper one. There is also a faint continuation of these spots on segments anterior to the sixth, but they are scarcely visible to the unaided eye.

The under surface is paler, of a blackish brown color: feet black and shining; prolegs brownish, with a wide ring of shining black.

This larva, in common with most of the *Arctians*, was very quick in its movements. When disturbed it would run very fast. It shortly after entered the chrysalis state, and finally produced the imago; but the date of its appearance has been lost.

MISCELLANEOUS.

NOTES FROM THE FAR EAST.--*Nematus ventricosus* very abundant here this spring. *Pieris rapæ* the same. *Meloe an. usticollis* very abundant on Halifax common about the middle of May: now totally disappeared. *Diptera* and *Hymenoptera* generally appeared early, and in tolerable abundance. J. M. JONES.

Halifax, N. S., June 4, 1871.

A PRIZE FOR ONTARIO ENTOMOLOGISTS. In June, 1868, when in Brighton, Ontario; a lad brought me from the woods two large living moths, which I am almost certain were male and female individuals of *Eacles imperialis*, Drury, (so named by Dr. Packard, but better known as *Ceratocampa imperialis*.) They had, however, become so rubbed and broken in their efforts to escape, that they were worthless as cabinet specimens. Harris has a description of the several stages of this splendid moth in his "Treatise," giving June as the time of its appearance, and the leaves of the buttonwood as the food of the caterpillar. Packard states (Synopsis of the Bombycidae, U. S.) that the larva has been taken on white pine in Rhode Island. The oak is also mentioned as one of its food plants. The Entomologists of Ontario should be on the look out for this moth, as it has not yet been placed on our list of Canadian Lepidoptera, though the allied genus *Dryocampa* is well represented in the Western Province.-- G. J. BOWLES, Quebec, P. Q.

[Mr. Bowles is not quite correct in his supposition that this is the first capture of *E. imperialis* in Canada. In 1865 it was included in the

Addenda to the Entomological Society's second list of Canadian Lepidoptera, on the strength of a specimen captured near Belleville, Ont., and sent us by Prof. Macoun for identification—a locality not far distant from Brighton. We have never heard of any other specimens having been taken in this country, but we trust collectors will be on the look out for this magnificent insect. Drury, the original describer of the species, states that it breeds "twice in the year, in June and September. According to Abbott and Smith, the larva feeds on the plane tree (*Platanus occidentalis*, L.) oak, liquidambar and pine; some are tawny color, others tawny and orange; others green. They are furnished with long rigid hairs, and the second and third segments of the body are armed with two pair of short, erect, rugose horns." Dr. Fitch mentions the pine as its almost invariable food plant in the Northern States. We trust Prof. Macoun will keep a sharp look-out for the larva during his rambles this summer.—ED. C. E.]

ERRATUM.—In the CAN. ENT., vol. 2, page 157, the dimensions of the larva of *Sesia diffinis* is incorrectly given as "length 1.5 to 1.7th inches;" it should be 1.5 to 1.7 in.—that is, one-and-five-tenths to one-and-seven-tenths of an inch.—THEO. L. MEAD, New York.

PERSONAL.—Mr. F. G. Sanborn has recently accepted a Professorship in Practical Entomology, in the Bussey Agricultural School of Harvard University. He will still continue to be connected with the Boston Society of Natural History.—Mr. Theodore L. Mead, of New York, has just started on a three months' collecting tour in Colorado, where he expects to obtain many new and rare species of insects; his address for the next two or three months will be Denver, Col.—Mr. G. W. Belfrage, of Waco, Texas, has set out on his expedition to New Mexico, as recently advertised in this journal. During his absence shares in his collections may be had at any time by paying the subscription (\$25.00) to Swenson, Perkins & Co., 80 Beaver street, New York.—Mr. C. V. Riley, State Entomologist of Missouri, has left for England on a visit to his native land; we heartily wish him a pleasant voyage and safe return.

PAPILIONIDÆ.—Mr. Wallace ("On Natural Selection," p. 189) states that no less than 130 species of Malayan Papilionidæ are now known. The exceeding richness of the Malayan region in these fine insects is seen by comparing the number of species found in the different tropical regions of the earth. From all Africa only 33 species of Papilio are known; but as several are still undescribed in collections, we may raise their number to about 40. In all tropical Asia there are at present described only 65 species; in South America, south of Panama, there are 150 species belonging to a single genus and eight groups. The Malay species belong to three

genera and twenty groups; some of them are of enormous size, e. g. *Ornithoptera Priamus* expands 8.3 inches, and *O. Helena* 7.6 in.

WHY?—*The grand secret of successful collecting*, whether by day, dusk, dark or dawn, lies in one little word—why? If the beginner, instead of clinging persistently to the delusion that the more ground he gets over the better will be the sport, would just ask himself, "Why, here?" Whenever he captures a decent insect, and would insist on a satisfactory reply or else a give-it-up from his inner man before leaving the spot, we should soon have a race of real insect hunters. I fancy I hear some one say: "Why, any fool knows that." Exactly so; and "any fool" will doubtless keep up his character for stupidity by blundering on and neglecting to act on it. *Where there is one there are more*, is true in a general sense; hence the greater reason why the above interrogatory should be answered on the spot. "Why?" here asks a string of questions: Whence from? Whither bound? Was it a female on the mission of ovipositing?—a male in quest of a virgin female?—fluttering about its food-plant?—on its way to some neighboring attraction?—on the wing of pleasure, enjoying the hot sunshine, the cool shade, or some other congenial atmospheric condition?—its proper time of flight?—seeking a place of rest?—*or*, was it disturbed, and in its flight flew it knew not where?—was it blown by the wind against its will?—under the influence of light?—*or* after somebody's sugar?—DR. KNAGG'S ("The Lepidopterist's Guide," p. 78.)

REMITTANCES

Received since issue of Vol. 3, No. 1.—M. S. R. Brighton, \$1; J. M. J., Halifax, N. S., \$1; D.W.B., St. Catharines, \$1; H.B.B., Toronto, \$1; W. H., Hamilton, \$1; Rev. V.C., North Douro, \$3; E. G., Three Rivers, P. Q., \$1; T.W.H.R., Yarmouth, N. S., \$1; D.McI., Allenford, \$1; Rev. G.B., Clifton, \$1; R.K., Dundas, \$1; S.H., Boston, Mass., \$1; A.W.W., Boston, Mass., \$1; E.B., Boston, Mass., \$1; P. S. S., Boston, Mass., \$1; J. E. C., Holyoke, Mass., \$1; G. M. L., Indianapolis, Ind., \$1; C. S. M., Boston, Mass., \$1; F. H. F., Needham Plains, Mass., \$1; W. M., Hamilton, \$1; W. H. D., Boston, Mass., \$2; J. G. B., Quebec. \$2.

EXCHANGES, &c.

COLEOPTERA, LEPIDOPTERA, &c.—Expecting soon to return to Europe, I should like to receive in exchange Lepidoptera or Coleoptera of Canada

and the United States for European. As a corresponding member of the Royal Entomological, Malacological and Linnean Societies of Belgium, and an honorary member of the Silk Supply Association of London, I am desirous to procure such species as can be obtained from the United States and Canada. I should especially like to obtain specimens of Silk-worm Moths; and should also be thankful to receive birds' skins, eggs, and nests for Europe. Early correspondence is solicited, in order to effect agreeable exchanges. Specimens may be sent packed or pinned in cigar-boxes.-- J. Q. A. WARREN, Chicago, Ill. (After June 12th, care of 54 East 12th street, New York, where all parcels may be sent.

LEPIDOPTERA.—Canadian Lepidoptera desired in exchange for British. E. H. COLLINS, *Daily News* office, Kingston, Ont.

PUPÆ AND OVA OF LEPIDOPTERA. —I am desirous to obtain, if possible, *live* Pupæ and Ova of certain Canadian and other North American Lepidoptera. Would purchase, or give in exchange, English or other European species.—CHAS. GEO. ROTHERAM WEBSDALE, 78 High-street, Barnstaple, England.

AGENTS FOR THE ENTOMOLOGIST.

CANADA.—E. B. Reed, London, Ont.; W. Couper, Naturalist, Montreal, P. Q.; G. J. Bowles, Quebec, P. Q.; J. Johnston, Canadian Institute, Toronto, Ont.

UNITED STATES. The American Naturalist's Book Agency, Salem, Mass.; J. Y. Green, Newport, Vt.; W. V. Andrews, Room 17, No. 137 Broadway, New York.

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