

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

Coloured pages/
Pages de couleur

Covers damaged/
Couverture endommagée

Pages damaged/
Pages endommagées

Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée

Pages restored and/or laminated/
Pages restaurées et/ou pelliculées

Cover title missing/
Le titre de couverture manque

Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées

Coloured maps/
Cartes géographiques en couleur

Pages detached/
Pages détachées

Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)

Showthrough/
Transparence

Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur

Quality of print varies/
Qualité inégale de l'impression

Bound with other material/
Relié avec d'autres documents

Continuous pagination/
Pagination continue

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

Includes index(es)/
Comprend un (des) index

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

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.

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	12X	14X	16X	18X	20X	22X	24X	26X	28X	30X	32X
						/					

The Canadian Entomologist.

VOL. III. LONDON, ONT., NOVEMBER, 1871.

No. 10

DESCRIPTIONS OF LEPIDOPTERA FROM ALABAMA.

BY AUG. R. GROTE, DEMOPOLIS, ALA.

CATACLYSTA ROBINSONII Grote. ♂ ♀ I refer this species to Lederer's Section C.: veins 8 and 5 of the secondaries present. Primaries bright golden brown. The median whitish grey space is tolerably narrow and well defined: inwardly bounded by the outwardly arcuate white transverse anterior line: outwardly by the white transverse posterior line which is angulated on the m. nervules. Both the lines are a little uneven. From the distinct and regularly arcuate white transverse anterior line to the base of the wing, the surface is entirely golden brown. On the gray median space there is a blackish stain at the extremity of the discal cell, preceded and defined inwardly by a C-shaped white shade line. Outside the transverse posterior line, the wing is terminally dark golden brown, but becomes dark greyish over the median nervules opposite the angulation of the line; the brown colour obtaining again, over the internal angle. A distinct white sub-apical rounded line (following the shape of the external margin, and allowing, at the apex, the brown scales to appear beyond it), is shortly discontinued. Fringes dark grey. Secondaries powdered with black scales, and these are aggregated in a little cluster before the internal margin. Before the external margin the wing is linearly free from the dark scales, and beyond, on the margin, lies a double series of velvety-black dots, between which, and alternating with them, is a row of brilliant scales, the whole not very conspicuous. Beneath, the hind wings are paler, with an incomplete median band; the marginal series of black and scintillate dots is repeated, but the black dots are single. The fore wings are dark greyish beneath, the two median lines dark, and not very distinct, the median space, posteriorly, is stained with blackish, and the white semi-circular mark of the upper surface is distinctly repeated. Apically, the wing is shaded with brown, and here the terminal white line is distinctly repeated. Exp. 18-19 m. m. Coll. Peabody Academy of Science, & C. T. Robinson.

I took a pair of this pretty species in July near Demopolis.

ERRATUM.—The top line on page 126 of this volume should be placed in the same position on page 125.

MICRO-LEPIDOPTERA.

BY V. T. CHAMBERS, COVINGTON, KY.

Continued from Page 166.

LITHOCOLLETIS.

The following species, which have been described by Drs. Clemens, Packard and Fitch, I have not met with. But for the convenience of those who may not have access to the writings of these gentlemen, I condense the following account:—

1. *L. Argentifimbriella* Clem. has been already mentioned at p. 57. It mines the under surface of leaves of the Chestnut Oak, and must resemble *L. caryac-albella* or *L. lucidicostella*. At p. 57, *ante*, it is suggested that *L. querci-albella* Fitch may be the same insect. Dr. Fitch states that it mines the leaves of the White Oak; and other species of the genus mine both the leaves of the White and Chestnut Oaks indifferently. But Dr. Clemens says that *Argentifimbriella* makes a tent mine on the under side, has a cylindrical larva, and pupates suspended in a thin web in the mine like *L. lucidicostella*. Dr. Fitch describes the larva of his *querci-albella* as being flat, mining the underside (which no known flat *Lithocolletis* larva does except *L. ornatella*, which makes a flat mine), and as making a tent mine (as I understand Dr. Fitch's description), which no known flat larva of the genus does. He also states that it pupates in an oval cocoon (like that of *L. basistrigella*, as I understand his description), and no known flat larva makes such a cocoon.

L. basistrigella Clem. makes just such a mine and cocoon as Dr. Fitch describes, and in the same kind of leaves, but the larva is cylindrical, and the imago is not at all like Dr. Fitch's description of his *querci-albella*. Again no known flat larva produces an imago at all akin to the group to which *querci-albella* belongs, according to Dr. Fitch's description. All flat larvae known—at least in this country—produce imagines of some shade of yellow (*Sec. B.*, *ante*), except *Hamadryadella*, which is of a very distinct group from *Lucidicostella*, &c., to which *querci-albella* would belong, as described by Dr. Fitch. He also says that it resembles the European *L. clerckella*, but *L. clerckella* is not now recognised as a *Lithocolletis* at all, but is known as *Cuniostoma scitella*. It seems to me, therefore, that we must await the rediscovery of the species before we can assign it a place among the American species of *Lithocolletis*.

Argyromiges Morrisella Fitch, and *A. Uhlerella* I consider, as already stated, to be only varieties or worn specimens of *Lithocolletis robiniella* Clem., a variety of which, as Dr. Clemens states, mines the leaves of a species of *Lepedeza*.

2. *Argyromiges (Lithocolletis) Ostensackenella* Fitch (*Rep.* 5, sec. 333), is no doubt a good species, and from Dr. Fitch's description, must resemble *L. ambrosiella*, *ante*. Larval history unknown.

3. *L. Fitchella* Clem. *Argyromiges quercifoliella* Fitch.

Pale saffron; 5 costal and 2 dorsal streaks and an apical spot, but no basal streak. Head and thorax white. It seems to resemble *L. argentine-tella* in the arrangement of the costal and dorsal streaks, and it mines the upper surface of White Oak leaves. Larva cylindrical.

At p. 54, *ante*, it is stated that Dr. Fitch has described 7 species; but there was an error in the count. The true number is 6, and that includes his *Anacampsis robiniella*, *Argyromiges querci-albella*, *A. Uhlerella*, and *A. Morrisella*, none of which can be considered good species. There only remains, therefore, his *L. Ostensackenella* and *L. Fitchella*.

4. *L. acrifereella* Clem. Larva cylindrical, and mines Oak leaves. Imago reddish-saffron with 4 costal and 3 dorsal streaks, an apical spot but no basal streak. The first thin costal and the first dorsal streak internally dark-margined; the second dorsal dark-margined by a line curved above.

5. *L. obstrictella* Clem. Larva cylindrical, and makes a tent mine on the under side of Oak leaves. Reddish orange with three silvery fasciæ dark-margined externally. An apical spot, but no basal streak.

6. *L. tubiferella* Clem. The larva and mine have been already described. It mines the upper surface of Oak leaves. It is pale saffron with slightly oblique white fasciæ both dark-margined externally; no apical spot, nor basal streak.

The following species are named and described by Dr. Packard (*Guide* p. 353), and I am unacquainted with these except from his descriptions, which are necessarily brief. He gives no account of their structure, but all of the three species, differ so widely in the habits of the larvæ and pupæ and in the ornamentation of the imagines, as to suggest great doubts whether there are not correlated structural differences which separate them from *Lithocolletis* pupæ.

7. *L. geminatella* Packard, is said to be dark slate gray without prominent markings, but with a round black spot on the middle of the dorsal

margin (like a *Bucculatrix*?), and an apical ocellus. The larva is pale livid reddish (unlike any known *Lithocolletis* larva, but not unlike some *Gracillariæ*). It feeds on leaves of Apple and Pear trees *between two leaves, or in a fold of a leaf*. (This is very unlike a *Lithocolletis*.)

8. *L. curvilineatella* Packard. This larva is unknown. The pupa was found in a long slender cocoon, attached to the bark of an apple tree. (This is like a *Bucculatrix*, but not like a *Lithocolletis*). The imago is pale whitish with yellowish scales, with an apical ocellus in the wings, and a roundish spot on the middle of the dorsal margin. (Like a *Bucculatrix*.)

9. *L. nidificansella* Pack. is said to be silvery white with an apical ocellus; three oblique golden costal streaks, and spotted with gold below the costa. The pupa is suspended in a thin web, outside of the leaf between its edges, which are drawn towards each other. This is very different from the habit of a *Lithocolletis* pupa.

The two species of Dr. Fitch, these three (?) of Dr. Packard, the seventeen species of Dr. Clemens, and the fifteen species which I have described in these papers, make the total number of described American species of *Lithocolletis* up to this time, thirty-seven.

L. tritaneanella, ante p. 110, is scarcely sufficiently characterized to distinguish it from the European *L. trifasciella* as described and figured by Stainton, *Nat. His. Tin. v. 2*. As compared with Stainton's figure, this species is more golden, the fasciæ are straighter, with much narrower dark margins, and in this species the only dark dusting is a small spot at the apex. Still, if there is much variation, this may be the same species. In *Trans. Lond. Ent. Soc., Sec. 2, v. 2*, is a figure of *trifasciella* not nearly so well executed as Stainton's, but more nearly resembling this species. It, however, has a dorso-apical patch of dusting, which is wanting in this species.

What do Mr. Stainton, Dr. Clemens and others, mean by "the spring brood" and "the fall brood," &c., of *Lithocolletis* and allied genera? I confess I do not know. I know what it means when applied to some insects, because, as to such, there is "a time for all things"—a time when they are found only in the larval state, a time when they are found only in the pupal state, and a time when only the imago can be found. Indeed this seems to be the case with most moths, even with the *Micros*. For instance, many (not all) species of *Gracillaria* are found as moths, only in the fall, or in the spring and fall, and the larva only is found at midsummer. But in the genera, *Lithocolletis*, *Phyllocnistis*, *Tischeria*, *Cemiostoma*,

and *Parectopa* Clem. (which is a *Gracillaria*), which seem to me to be nearly related to each other, I have not yet found it so. For instance, take *L. robiniella* Clem. It hibernates beneath bark, and is found abroad on the wing, early in Spring, (so early that there are no flowers, and I cannot imagine what it lives on) and in Summer. But the mine and larva, are not found until the middle of July, (and then, and always, only in the *older leaflets*; I have never found them in young and tender leaflets). It remains in the larval state, not exceeding three weeks, and in the pupal state not so long. Six weeks will cover the time from the hatching of the egg to the development of the imago, at which period many of the old brood still remain alive; and from that time, until the fall of the leaves in Autumn, the insect may be found in all its stages, and in gradually increasing numbers in all. Many are still in the larval state, when the leaves fall, and doubtless perish. Others survive as pupæ probably; as do other non-hibernating species. *L. robiniella* is the only *Lithocolletis* which I know to hibernate, though I suspect that *L. salicifoliella* also does, from the fact that I have found it abroad late in October. Of the allied genera, all the species of *Phyllocnistis* known to me, winter over as imagines, except *P. viriodendronella* Clem., and, perhaps, that does also. All the others, so far as I know their habits, pass the winter as larvæ or pupæ. They begin to appear sometimes as early as March, usually in April, and towards the latter part of May they begin to oviposit. From the first to the middle of June, the first pupæ are found, and, shortly afterwards, the first imagines, whilst yet their ancestors are still alive; and from that time, until the fall of the leaves, they may be found in constantly increasing numbers, in all of their stages, and the different broods overlap, so that there is no line to be drawn between them.

But, if the phrases "spring brood," "summer brood," &c., only mean that there is a certain number of generations descended from a given pair in one season, then we can only arrive at the number of generations, by breeding them, or *by guesses*, founded on the length of time, passed in the larval and pupal states. I write about one degree south of Dr. Clemens, and I think it probable that there are as many as four here, and certainly not less than three; and the number increases as we go southward. I have taken *L. Ulmella*, or a closely allied species, at Columbus, Georgia, late in November—a month after it had disappeared here. And I have found *Parectopa robiniella* Clem. actively mining Locust leaves at New Orleans in December; and if there is any cessation of its broods there at all, it can not exceed two months.

NOTES ON THE LARVA OF HALESIDOTA MACULATA, *Harris*.

BY W. SAUNDERS, LONDON, ONT.

Three specimens of this larva were taken Sept. 16th, feeding on Oak. Length, 1.30 in. ; cylindrical.

Head large, slightly bilobed, black with a faint white streak down the front, as far as the middle, where it becomes forked, a branch going towards each of the palpi. Mandibles black, palpi white at base, tipped with black.

Body above black, thickly covered with tufts of bright yellow and black hairs. On the second, third and fourth segments, the hairs are mixed, yellow and black; those of the second and third segments overhanging the head. From the fourth to the eleventh segments inclusive, is a dorsal row of black tufts, the largest of which are on the tenth and eleventh; the fourth and eleventh segments have also a black tuft on each side, near the base. The hairs on the sides of the body, from the fifth to the tenth segments inclusive, are all bright yellow, while those on the sides of the twelfth and thirteenth, are mixed with black. On the third, fourth, eleventh and twelfth segments, are a few long, spreading, yellow hairs, much longer than those on the other portions of the body.

The under surface, is a little paler in colour, especially between the prolegs; feet black and shining, with faint lines of a paler hue; prolegs pale yellow, faintly tipped with reddish brown

In a few days after their capture, these larvæ entered the chrysalis state, within a yellowish grey oval cocoon, constructed of silk, interwoven with the hairs of the larva; the perfect insect appeared on the 4th of June following.

INSECTS OF THE NORTHERN PARTS OF BRITISH AMERICA.

COMPILED BY THE EDITOR.

From Kirby's Fauna Boreali-Americana: Insecta.

(Continued from page 176.)

167. BYRRHUS CYCLOPHORUS *Kirby*. — Length of body $3\frac{1}{4}$ lines. One specimen only taken.

Body underneath and limbs dull ferruginous, above black with some cinereous hairs intermixed. Antennae piceous: elytra with two deep black subinterrupted stripes, and inscribed in the middle with traces of a

circle formed of pale, or cinereous hairs, common to both. The circle is probably more distinct in recent specimens. [Taken at Grimsby, Ont., by Mr. Pettit, and at Toronto by Mr. Couper; north shore of Lake Superior by Agassiz's Expedition.]

[118.] 168. *BYRRHUS VARIUS Fabr.*—Length of body $2\frac{3}{4}$ lines. Several specimens taken in the journey from New York to Cumberland-House.

Body underneath black. Head and prothorax bronzed, the gloss obscured by glittering hairs, above the scutellum is a patch of golden ones: scutellum channelled, covered with paler hairs: elytra slightly furrowed, bronzed, with the alternate interstices of the discoidal furrows green-bronzed, spotted with little velvety patches of black hairs. [Belongs to *Cytilus*; not uncommon throughout Canada.]

[119.] FAMILY HYDROPHILIDÆ.

169. *HYDROBIUS FUSCIPES Linn.*—Length of body 3 lines. A single specimen taken in Lat. 65° .

Body oblong, convex and rather vaulted; underneath black, very minutely and thickly punctured with a pale short decumbent hair planted in each puncture; above slightly bronzed, more conspicuously punctured, naked and rather glossy. Head slightly impressed on each side between the eyes; palpi pale rufous, last joint dusky at the tip: antennae rufous with a black knob: sides of the prothorax with two or three groups of larger punctures: elytra furrowed with thickly punctured furrows, dusky rufous at the sides; legs dark rufous, base of the thighs black. This is smaller than my British specimens, the furrows of the elytra are rather deep, and their sides more conspicuously rufous. [Taken in Canada.]

[120.] 170. *HYDROBIUS MARGINELLUS Fabr.*—Length of body $1\frac{2}{3}$ line. Two specimens taken in Lat. 54° .

Body subelliptical, convex, minutely punctured, black; above glossy. Palpi and antennae dusky rufous; knob of the latter black: sides of the prothorax, and the anterior margin dusky rufous: elytra with a single furrow adjoining the suture; sides dusky rufous: tarsi rufous.

171. *HYDROBIUS MELANOCEPHALUS Oliv.*—Length of body $2\frac{1}{4}$ — $2\frac{1}{2}$ lines. Two specimens taken in Lat. 54°

[121.] Body subelliptical, minutely punctured; underneath black, somewhat hairy with very short inconspicuous hairs, above lurid or dirty yellow, glossy, more conspicuously punctured. Head black with a quadrangular yellow spot before each eye; nose gibbous separated from the

front by a transverse angular line; palpi and antennae dirty-yellow, the latter with a black knob: prothorax with a dark, discoidal, subquadrangular spot, which does not reach the anterior margin: shoulders with a dusky line: tibiae and tarsi dusky rufous.

Var. B. Larger, dusky rufous above, spots before the eyes larger and subtriangular: black spot on the prothorax wider but not so near the anterior margin; shoulders of the elytra without a dusky line. [This and the preceding are European species; Kirby's descriptions of them are not sufficiently definite to enable them to be identified with any of the species described by Le Conte in his "Synopsis of the *Hydrophilidae* of the United States." (Pro. Acad. N. S., Philada., June, 1855).]

[123.] FAMILY HISTERIDÆ.

172. *HISTER PAYKULII* Kirby.—Length of body $3\frac{1}{2}$ lines. One specimen taken in the journey from New York to Cumberland-house.

Body black, glossy. Head circumscribed by a rather deeply ploughed furrow; antennae piceous with a pale knob; mandibles longer than the head: prothorax rather wider behind, seemingly quite smooth, but under a strong magnifier it appears thickly covered with very minute lightly impressed punctures; it is circumscribed on all sides, by a deepish furrow, between this furrow and the lateral margin is another abbreviated one less impressed; elytra besides a distinct marginal furrow have three discoidal subpunctured ones running from the base to nearly the apex; between the external discoidal furrow and the margin is a series of punctures near the apex, representing what is called the marginal furrow, and between the internal one and the suture are the traces of three others, the first just discernible, drawn, but interruptedly, from the base to the apex; the second consisting of three or four punctures near the apex, and the third parallel with the suture, consisting also of punctures, sometimes confluent, and extending from the apex not quite half the length of the elytrum; the surface of the elytra is covered with minute punctures very lightly impressed, so as not to be discoverable except under a good magnifier: the cubit or anterior tibia is armed with three teeth, the last of which appears cleft from its being furnished at the apex with two short truncated transparent bristles, the two other teeth have only one such bristle.

[Synonymous with *H. depurator* Say (Ent. Works ii. 261), a species found in Canada, and taken by Agassiz's Expedition on the north shore of Lake Superior.]

173. *HISTER HARRISII* Kirby.—Length of body $3\frac{1}{4}$ lines. One specimen taken in the journey from New York to Cumberland-house.

Body black, glossy, thickly punctured, the punctures on the upper surface being most conspicuous. Head circumscribed; antennæ and palpi nearly of a mahogany colour; mandibles longer than the head; nose slightly impressed: prothorax with two furrows at the lateral margin, both nearly reaching the base, the inner one, as usual, when arrived at the anterior margin, with the corresponding one on the other side forming one furrow surrounding the prothorax on three sides; just above the scutellum is a punctiform impression: the elytra, including the submarginal one, have seven distinct furrows, the two next the suture being anteriorly abbreviated and very short, especially the first; from the base of the first, or external discoidal one, an obsolete furrow runs obliquely towards the submarginal one; the four discoidal entire furrows when arrived near the apex of the elytra are bent towards the suture: cubit piceous, armed with five teeth, the three outer ones obtuse. [Taken at Grimsby, Ont., by Mr. Pettit.]

[125.] LAMELLICORNIA.—FAMILY COPRIDÆ [SCARABÆIDÆ.]

174. ONTIOPHAGUS LATEBROSUS *Fabr.*—Length of body, ♂ $3\frac{1}{2}$ lines; ♀ $3-3\frac{3}{4}$. A single specimen of the ♀ taken in the journey from New York to Cumberland-house; a ♂ taken in New England by Prof. Peck.

The species of this little interesting genus, remarkable for the great variety of processes resembling horns, that arm the head of the males, are as widely dispersed as those of any genus of beetles; they are to be found in every climate from the frigid to the torrid zone, nor do they increase in size as they recede from the former and enter the latter, for the most minute species are to be found in Southern India, where they abound, while the largest seem to inhabit temperate climates.

♂ Body entirely black, except the hands or anterior tarsi, which are rufous: gloss obscured by hairs. Nose at the apex bent upwards, forming a vertical, triangular, acute tooth; on the vertex are two obsolete transverse ridges: the prothorax is rough with little granules, and anteriorly sends forth a longish wide horn truncated at the end and overhanging the head: the two angles of the apex are elevated, and the space between them is deflexed, and bidentate: the cubits are armed with four sharpish teeth.

The female differs from the male merely in having the shield of the head more distinctly notched on each side, and the apex of the nose rounded and reflexed, but without any triangular horn or tooth; in having two distinct ridges on the vertex, and in having no prothoracic horn, which

is replaced by a transverse emarginate ridge in the middle. [Quite common everywhere throughout Canada; generally found under the droppings of horses or cattle.]

[126.] 175. *ONTHOPHAGUS SCABRICOLLIS* Kirby.—Length of body 4 lines. A single ♀ specimen taken in Canada by Dr. Bigsby.

This is so like the last insect that I felt at first disposed to consider it as merely a variety. The following differences in their character induce me however to consider them as distinct. Not to mention the difference of size, the female of *O. latebrosus* has a distinct notch on each side of the head, of which there is no trace in *O. scabricollis*, the ridges of the vertex of the latter are more elevated, the prothorax is larger in proportion and much rougher, with larger and more numerous granules, and the four teeth of the cubit, which in the former are long and acute, in the latter are shorter and obtuse.

176. *TRON ARENARIUS* Fabr.—Length of body 3 lines. Taken by Capt. Hall in Nova Scotia.

[127.] Body oblong, black, without any gloss. Head covered with cinereous varioles; nose a little reflexed, rounded with a slight tendency to be obtusangular; antennæ ferruginous; prothorax with a wide rather obsolete dorsal channel; sides with two impressions, one near the anterior angle, and the other basilar in the disk; base lobed; lateral margin fringed with ferruginous bristles: elytra slightly furrowed, interstices with each a series of elevations crowned with brown bristles, the elevations of the alternate series are minute; anterior tibiæ with three acute teeth, they are also serrated at the base. [An European species, not found in Canada.]

177. *PELIDNOTA PUNCTATA* Linn.—Taken by Dr. Bigsby in Canada, near Lake St. Clair. [Abundant, and often very injurious to the foliage of the grape-vine throughout the Western peninsula of Ontario; it does not occur, however, as far east as Toronto. For description and illustrations, see "First Report on the Noxious Insects of Ontario," Saunders's Report, page 106; or Harris's "Insects injurious to Vegetation," p. 25; Fitch, Riley, Packard, etc.]

[129.] 178. *CAMPTORHINA ATRACAPILLA* Kirby.—Length of body $5\frac{1}{4}$ lines. Taken in Canada by Dr. Bigsby, and in Nova Scotia by Capt. Hall. [Synonymous with *Serica vespertina* Schonh., a species taken commonly throughout Ontario, and, according to Dr. Le Conte, in the Middle, Southern, Eastern and Western States, as far as Lake Superior. For description *vide* Say's Ent. Works, ii., p. 143.]

Genus *DIPLOTAXIS* Kirby.—Labrum transverse, lanceolate, anteriorly emarginate. Mandibles very short, trigonal, incurved, truncated and concavo-convex at the apex; molar space small, irregular, channelled? Maxillæ very short, incurved, incrassated at the base; apex armed with three short, stout, conical teeth. Labium very short, transverse, entire, separated by a faint line from the mentum. Mentum quadrangular, rather wider than long. Palpi maxillary four-jointed, very minute, cylindrical; second and third joints thicker, equal in length, obconical; last thickest and longest, lanceolate-ovate, acute. Palpi labial three-jointed; first joint obconical; second subcylindrical; third nearly as long as the other two, but scarcely thicker, conical. Antennæ ten-jointed; scape elongato-obconical; pedicel nearly spherical; third and fourth joints conical; fifth and sixth nearly top-shaped; seventh pateriform; the three last forming a short ovate knob.

[130.] Body between oblong and ovate, not hairy. Head inserted, subtriangular with the vertex of the triangle truncated; rhinarium transverse, vertical, widely emarginate; nose transverse, distinct, anterior margin reflexed and subemarginate; no distinct postnasus or afternose; canthus septiform, cleaving; prothorax transverse with an anterior sinus of its whole width to receive the head: scutellum short, triangular, somewhat rounded at the vertex: podex and part of the penultimate dorsal segment of the abdomen uncovered: legs thus located ::; cubit tridentate; tarsi filiform, slender; claws bipartite, the interior lobe the shortest and widest, and very obtuse; the exterior very slender and acute.

179. *DIPLOTAXIS TRISTIS* Kirby.—Plate v., fig. 3.—Length of body 5—5½ lines. Several specimens taken in Lat. 54°. Taken also in Nova Scotia by Capt. Hall.

[131.] Body dark chestnut, more or less grossly punctured above and below. Head thickly punctured with a pair of impressions between the eyes; nose subemarginate; antennæ and palpi rufous: prothorax thickly punctured, slightly impressed at the four angles: scutellum impunctured: elytra rather paler than the head and prothorax, with nine rows of punctures, viz., a single one at the suture, four arranged in pairs at the disk, and four in the sides; the interstices between the rows are also irregularly punctured; the four posterior tarsi, especially the intermediate pair, are longer than the tibiæ.

Obs. In more recently disclosed specimens the body is often entirely pale-chestnut and sometimes rufous. [Common throughout Ontario. "Middle States and Lake Superior, not rare." *Le Conte.*]

[132.] 180. RHIZOTROGUS FERVENS *Gyll.*—Two specimens taken in Lat. 54°; a variety in Canada by Dr. Bigsby. [Synonymous with *Lachnosterna fusca* Frohl; the common May Beetle, or Cockchafer, of Canada. "A very common and, through Atlantic America, widely extended species, embracing several races, to which, however, no definite characters can be given." (Le Conte). For description and figure see Harris's Injurious Insects, page 30.]

[133.] 181. RHIZOTROGUS DRAKII *Kirby.*—Length of the body $9\frac{1}{4}$ to $11\frac{1}{4}$ lines. A single specimen taken in the journey from New York to Cumberland-house. Varieties B and C, by Mr. Drake in Massachusetts.

This species is extremely similar to the last, it differs principally in having the sides of the scutellum more thickly punctured, the ridges of the elytra, except the sutural one, are scarcely discoverable, and the podex larger and rounder at the apex: the tarsi also are longer in proportion: the knob of the antennæ in all the specimens is longer.

B. Much larger, and the elytra appear somewhat more thickly punctured, but it is scarcely distinct.

C. Like A, but the ridges of the elytra are all discernible. [A race of the preceding species.]

DESCRIPTION OF A SPECIES OF AGROTIS FROM CANADA.

BY AUG. R. GROTE, DEMOPOLIS, ALA.

Agrotis repressus, Grote. Hind tibiæ with two, middle tibiæ with one pair of spurs; fore legs unarmed. Palpi prominent, porrect; 3rd joint elongated. Body somewhat flattened, much as in *A. clandestina*. Squamation lustrous, silky. Unicolorous pale testaceous or greyish-brown. Fore wings and thorax concolorous; the first are without markings, except a short dark dash on the cell in place of the orbicular, and two similar superposed marks at the extremity of the cell, in place of the reniform spot. Three pale ante-apical dots on costa. Veins subobsoletely marked with darker scales. Secondaries pale with a testaceous tinge, darker shaded outwardly. Beneath paler, powdered with greyish and brownish scales; faint traces of discal marks. Caputal scales dark testaceous. Antennæ simple. Exps. 35 m. m. Length of body, 15 m. m.

Appears nearest allied to *A. brunnicollis* and *A. clandestina*. Smaller than the latter, without the lateral abdominal dots, and with longer palpi and obliterate ornamentation of the primaries above.

Lent me, with chrysalis, by Mr. William Saunders, and ticketed: "from larva, 135;" together with specimens of *A. clandestina*, ticketed: "from larva, 131." This species reminds me of *Amphipyra inornata*, but it cannot be the same, although I fancy, in certain lights, that the hind wings are warmer tinted within vein 2. From recollection of the type in Mr. Saunders's collection, I cannot consider *A. inornata* a variety of *A. pyramidoidea*, as has been suggested.

NOTES ON THE LARVA OF AGROTIS DEPRESSUS. Grote.

BY W. SAUNDERS, LONDON, ONT.

In the previous paper Mr. Grote describes a new species of *Agrotis*, under the name of *depressus*, which was sent him from my collection some time ago; he also refers to *Agrotis clandestina* as received from me. This latter species was first determined for me by Mr. C. V. Riley, of St. Louis, Mo., and subsequently by Francis Walker, Esq., of the British Museum, Mr. Riley has figured and described the larva in his first report on "The Noxious Insects of Missouri," p. 79, and my own description was published in the present volume of the CAN. ENT., p. 35.

I now give a description of the larva of *Agrotis depressus*, Grote, which I have reared for two summers past, having found it feeding on the grape vine. It is a yellowish green larva sparingly covered with very fine brownish hairs. Length 1.25 to 1.40 inches, nearly cylindrical.

Head rather under medium size, somewhat flattened in front, slightly bilobed: green, with a few short fine hairs. Mandibles tipped with dark brown.

Body above, yellowish green, a little paler between the segments, with a dorsal and two lateral stripes of yellowish white, the lower one rather most prominent, running through the spiracles and extending posteriorly nearly around the anal lid. On each segment are several minute whitish dots, slightly raised, but scarcely visible without a magnifier, from each of which arises a single fine hair. Spiracles yellowish, ringed with black.

The under surface is of a deeper shade of green than the upper: feet and prolegs green, faintly tipped with brown.

This larva may be found full grown from the 10th to the 25th of June, the moths appearing early in July.

MISCELLANEOUS NOTES.

NEW MODE OF ATTRACTING LEPIDOPTERA.—We beg to direct the attention of our readers to the following new method of attracting Lepidoptera, which appears to be wonderfully successful in France, and trust that it will be tried next year in this country. We translate the account from *Les Petites Nouvelles Entomologiques* No. 37, page 148 :—“ Among the various methods employed in the collection of Lépidoptera, the most successful, both as regards the quantity and freshness of the specimens which it enables one to procure, and as regards the number and rarity of species—the most successful, we say—is that which consists in employing some bait for the attraction of Lepidoptera. Everyone knows, indeed, the mode of pursuit indicated by the title of “sugaring” (*miellec*), and no one is ignorant how very productive it is. But this method is not the only one which consists in the employment of baits, and it is by no means the most productive. There is one other in particular, which is only known to some Entomologists, who are unwilling to divulge, even to their friends, the secret of the richness of their collection. One of our colleagues tells us that he had seen this mode of collection practised for some years, but without being able to obtain the secret of it. He saw a large quantity of nocturnal Lepidoptera taken in this way, and among them some rare species.

“This plan consists in suspending to trees, by means of twine, some apples half dried in an oven, known in commerce by the name of ‘*pommes au four, pommes tapées*,’ etc. These apples diffuse a strong odour of *Reinette*, an abnormal odour of some fruits in this state of desiccation. From twilight, the Lepidoptera came hovering in swarms about this bait, which, after a little while, was literally covered with Noctuadæ, Geometers, etc., in a complete state of immobility. The collector had nothing more to do than to plunge the apple into a wide-necked bottle, charged with Cyanide of Potassium to kill them. He visited in this manner all his baits, and collected in half an hour more than he had collected in a week by means of ‘sugaring.’

“Some Entomologists, having discovered the ingredient by means of which they communicated this abnormal odour to apples, and being more desirous of benefitting their colleagues, and aiding the progress of science, than of preserving a monopoly of certain captures, have communicated to us the result of their investigations, and we are happy to make it known

to our readers, in spite of the reproach of indiscretion which some will apply to us.

"It suffices to dip these apples into *Nitric Ether*, and then to suspend them, by means of twine, to the branches of trees at a convenient height for the ready introduction of the insects into the bottle of Cyanide. As in the case of 'sugaring,' the best places are forest glades, edges of woods, sides of roads adorned with trees or hedges, etc.

"Lepidoptera are so much attracted by the odour of this Ether, that they attach themselves to the apple, and suffer themselves to become completely intoxicated by the vapour, remaining in such a perfect state of immobility as to permit, without difficulty, the introduction of the apple into the bottle, and the collection of Lepidoptera in a most perfect state of freshness."

In the subsequent number of *Petites Nouvelles Entomologiques* (Oct. 15, 1871), we find the following result of experiments with this mode of attracting moths:—

"M. Fallon has tried, in the forest of Senart, the mode of collecting by means of Nitric Ether, of which we spoke in our last number, and has communicated to us a curious observation on the matter. He tried this method three days running, and on the third day he saw, in twenty minutes, his baits literally covered with moths. But the first day not a single moth came, and the second day he scarcely saw any. This shows Entomologists possessed of little patience, whom want of success at first might discourage, that ill-success may be accidental.

"M. Fallon conjectured that the cause of the absence of moths during the first and second days of his trial, might be attributed to the proximity of vines, and the maturity of the grapes, which drew away the moths. This appears to be undoubtedly the case, though it is not perhaps the only cause; we should as readily ascribe the fact, in part, to a too great abundance of Ether vapour during the first days. Indeed, the vapour of Nitric Ether, sufficiently diluted, has a very decided odour of *Reinette*, but when it is in large proportion, the Ether character of the odour predominates too much, and it has but slightly the odour of *Reinette*. In this condition, Nitric Ether can have but few attractions for moths."

INQUILINOUS MOTH LARVA IN OAK GALLS.—I have lately bred the moth from the little *Tineidous* larva, referred to on page 119, as infesting acorns injured by a pip-like gall. It is a little speckled gray species belonging to the genus *Gelechia*, and which I had previously bred from various other oak galls, and especially from that of *Cynips g. centralis*, O.S.

This little moth may possibly be one of Clemens's species, but on comparing it with the European *G. geminella*, Linn., in Mr. Stainton's collection, I found it so very similar that I have no doubt of the identity of the two, especially as their species is said to breed from Oak buds. It may, I think, safely be added to the list of insects common to both continents. It so closely resembles the well known *Tinea granella*, Linn., that the two, upon a casual glance might easily be confounded. The larvæ of the two species differ materially, however: That of the latter is a very general feeder, and I have even bred it from the dry corks of bottles containing poisonous substances: it is of a uniform dirty-white, or tallow colour, the head with dark-brown jaws, and its brown border showing plainly through a semi-transparent honey-yellow cervical shield. That of the little *Gelechia*, on the contrary, is deep carneous and more pilose, and though the head and shield are of the same honey-yellow colour, the latter has darker posterior and lateral margins.—C.V. RILEY, St. Louis, Nov. 1, 1871.

DESTRUCTION OF THE WALSH CABINET IN THE CHICAGO FIRE.

We have no reason to suppose that the great Chicago fire consumed any considerable number of noxious insects, with the exception of that very familiar and domestic species known, in scientific language, as the *Cimex lectularius*. If these had been the only insects destroyed, resignation would have been an easy virtue. But, as if it were ordained that no kind of interest should escape grief and loss from that great calamity, so the science of entomology was put under heavy contribution, by the destruction, not only of many small amateur collections of insects, but also by the ruin of the large collection belonging to the Chicago Academy of Science, and over and above all, in value and importance, was the admirable cabinet of insects purchased by the State from the heirs of the late Benj. D. Walsh, of Rock Island, and which had been deposited in the Academy for safe keeping. The value of this collection consisted not only in the large number of species represented, but still more in the scientific accuracy with which they were labelled and classified. About a tenth part of this cabinet, which happened to be at the residence of the writer, consisting mostly of duplicates of Coleoptera and Lepidoptera, which had been set aside for the Industrial University, is all that is left of this famous Cabinet. When we consider the long years of patient toil and research of which this cabinet was the result, the thought of its irrevocable destruction becomes too painful to be dwelt upon, especially by the professed entomologist, to whom this cabinet was invaluable for purposes of reference.—*Prairie Farmer*.

NOVA SCOTIAN HYMENOPTERA.—In a collection of Nova Scotian Insects, entrusted to me by J. Matthew Jones, Esq., of Halifax, Nova Scotia, are the following species, which Fred. Smith, Esq., of the British Museum, has kindly named. I hope, shortly, to forward a list of additional species :—

<i>Allantus Zona?</i> Klug.	<i>Nomada Americana</i> , Kirby.
<i>Ammophila urania</i> , Klug.	<i>Andrena vicina</i> , Smith.
<i>Vespa arenaria</i> , Fabr.	<i>Halictus parallelus</i> , Sauss.
<i>Vespa borealis</i> , Klug.	<i>Bombus vagans</i> , Smith.
<i>Odynerus alboplicatus</i> , Sauss.	" <i>terricola</i> , Kirby.
<i>Sphecodes dichroa</i> , Smith.	" <i>ferrens</i> , Fabr.
<i>Megachile obtusa</i> , Smith.	" <i>ornatus</i> , St. Farg.

Nov., 1871.

F. WALKER.

PIERIS RAPE PARASITE.—It will doubtless be an interesting item of intelligence to many of the readers of the *Naturalist*, that the parasite, so anxiously looked for, as the only hope of preserving the cabbage crop of our country from the destruction threatened it by the ravages of *Pieris rape*, has already entered upon its labours, and in so efficient a manner as to promise immediate beneficial results.

During the latter part of September, I was informed that a number of chrysalids of *P. rape*, which had been collected by a gentleman in this city, with a view of obtaining specimens of the imagines for drawing, instead of disclosing the butterfly, gave out a number of small flies from each. Some of them having been brought to me in compliance with my request, I was delighted to find them to be of the genus *Pteromalus* which includes so many of our valued parasitic friends, and probably of the species which has been found so serviceable in Europe, in destroying the several cabbage butterflies there existing—viz., the *Pt. puparum* of Linnæus.

From the close resemblance which many of the *Pteromali* bear to one another, it is not safe to assert positively that we have really been favoured with the importation of the European parasite, to aid in the work of subjugation of the European pest, but should further examination prove this to be the case, it will be not only a most interesting event in its scientific aspect, but also in the pecuniary results which must necessarily follow it.

In another number, I may give your readers the observations—quite limited, I regret—which I have been able to make on this welcome parasite.—J. A. LINTNER, *N. Y. State Museum of Nat. Hist.*

[We have also raised this parasite in considerable abundance, and also received specimens from Vermont. We have likewise reared a Dipterous parasite from the cocoons. Eds.]—*American Naturalist*.

VARIA FROM *Petites Nouvelles*.—The collections of Coleoptera (Longicorns and Anthribidæ) of the learned author of Geneva, Prof. Lacordaire, now form a part of the Museum at Brussels.—The numerous collection of Curculionidæ of M. A. Deyrolle is now the property of the Philadelphia Museum. However, the types of Lacordaire, A. Deyrolle, M. Jekel, etc., which are deposited in this collection, as well as of the numerous series of species which compose it, will be placed by M. Agassiz at the disposition of Entomologists in cases of serious need. [Query by Ed. C. E.:—Is this collection in the Museum of Comp. Zool. at Cambridge, Mass., or in that of one of the Societies at Philadelphia? Perhaps some American Entomologist can inform us.]—During the siege of Paris, Dr. Boisduval, although much engaged every day in attending the sick and wounded, nevertheless continued his work upon the Sphinges; he laboured ardently upon it during the whole continuance of the siege, in spite of the shells and projectiles which exploded all round his house, and fell upon the Val-de-grace and the Pantheon, the tremendous concussion of which shattered the glass of his cabinets! This work, now completed, will fill up one of the gaps in the *Suites a Buffon*, and will form the fourth volume of the Natural History of Lepidoptera. It will include the Sphinges, Castnidæ and Agaristidæ, and will be published on the same plan as the first volume, which treats of Papilios, Pierides, etc. The learned doctor intends to continue his work till he completes the remaining volumes.

ENTOMOLOGY.—Mr. Roland Trimen, F.L.S., F.Z.S., read a note on a curious South African grasshopper, *Trachypetra busfo*, White, which mimics with much precision the appearance of the stones among which it lives.

He commenced by observing that some tendency existed to separate too widely those cases of mimicry where one animal imitated another from those in which an animal closely resembled either some part of a plant or some inorganic object; and expressed the opinion that these two sets of cases were wholly one in kind, the evident object in all being the protection of the imitator.

Describing a visit paid to the vicinity of Grahamstown in search of this insect, he observed that it was a work of considerable difficulty to distinguish the grasshoppers from the stones, and he was engaged for half an hour in careful search over a known station of the species before discovering an example. He noted the further most interesting fact, that, in certain spots (often only a few square yards in extent) where the stones lying on the ground were darker, lighter, or more mottled than those generally prevalent, the *Trachypetra* found among such stones varied similarly from the ordinary dull ferruginous-brown colouring in imitation of them.

It was pointed out that the close imitation of the stones was mainly effected by the modification of the dorsal shield of the prothorax, which is, with the whole thorax, much flattened and widened, and is further much produced posteriorly, and has its surface roughened or granulated in close resemblance to the surface of the stones.

In conclusion, he called attention to the bearing of the case of this insect on the question of the origin of species; and in putting the alternative whether the peculiar station of the *Trachypetra* had been specially prepared for it immediately before or simultaneously with the creation of the insect, or whether, on the contrary, the insect had been very gradually modified by natural selection in imitation of the stones for the purpose of concealment, he expressed his decided opinion in favor of the latter hypothesis.

Specimens of the insect were exhibited in association with some of the stones among which they were captured, and the very close resemblance between stones and insects excited general remark. Mr. Trimen observed that in nature the mimicry was more effective, the colours of the dead insects having faded considerably, and the shrinking of the abdomen having caused the hind legs to be much more apparent than was the case in living examples.—*Nature*.

NEW ENTOMOLOGICAL BOOKS.—The 14th fasciculus of Mulsant's "Opuscula Entomologica" is just published. The 3rd volume of the "Natural History of the Hemiptera of France" will be ready in a few days, and will contain four tribes. M. Mulsant has published the new edition of his "History of the Lamellicorns of France," as well as the 1st part of the "Staphylinidæ." A new edition of the "Iconography and Natural History of Larvæ of Lepidoptera," by M. M. Duponchel and Guenee, is about to be issued: the work gives descriptions and figures of a great number of the larvæ of European Lepidoptera, of course including English species; these figures are contained in ninety-three plates, excellently coloured: the work is published in forty fasciculi, at one franc each. Of the Iconography and Description of unpublished Lepidoptera of Europe, by P. Milliere, twenty-five fasciculi have been published, and these contain more than a thousand descriptions of larvæ, pupæ and perfect insects, with the plants on which the larvæ feed, and other details of their life-history; the work is worthy the support of all lovers of the science; nothing can exceed the delicacy and finish of the figures.—*Newman's Entomologist*.

EXCHANGES, &c.

The undersigned would be pleased to open communications with any Entomologist in Canada, United States or England with a view to exchanging specimens. Address JAMES COLWELL, care of A. CHOUN, Kingston, Ont.

THE undersigned would be pleased to correspond with Lepidopterologists (Southern and Western U. S. preferred), with a view to exchanges. Address EDW. L. GRAEF, 40 Court St., Brooklyn, N. Y., U. S.

LEPIDOPTERA, &c.—I have a collection of Birds' Eggs, Lepidoptera (including some from Florida) and Coleoptera, duplicates of which I should like to exchange, giving preference to the two first named.—JOSEPH E. CHASE, Lock Box 46, Holyoke, Mass.

An American Entomologist, who has made a speciality of Lepidoptera, would like to correspond with collectors in any part of the world.—Address H. K. MORRISON, care of E. K. BUTLER, 68, Pearl-street, Boston, Mass.

ADVERTISEMENTS.

CORK AND PINS.—We have a good supply of sheet cork of the ordinary thickness, price 16 cents (gold) per square foot; and a full supply of Klæger's pins, Nos. 1, 2, 5 and 6, price 50 cents (gold) per packet of 500.

CANADIAN ENTOMOLOGIST, Vols. 1 and 2.—We have a few copies left of these volumes—No. 1 of vol. 1 being deficient, however, and out of print. Price \$1.25 (gold) each.

LIST OF CANADIAN COLEOPTERA.—Price 15 cents each, embracing 55 families, 432 genera, and 1231 species. (For labelling cabinets).

PRINTED NUMBERS, in sheets, 1 to 2000, for labelling cabinets. Price 10 cents each set.

These prices are exclusive of cost of transportation, and orders will please state whether the package is to be sent by mail or express.

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.