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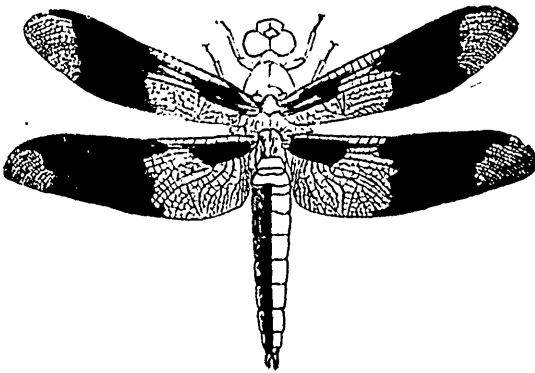
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# Canadian Entomologist

VOLUME XXIX.



LIBELLULA TRIMACULATA.

EDITED BY THE

Rev. C. J. S. Bethune, M.A., D.C.L.,

HEAD MASTER OF TRINITY COLLEGE SCHOOL,

PORT HOPE, ONTARIO.

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ASSISTED BY

Dr. James Fletcher and W. H. Harrington, Ottawa;

H. H. Lyman, Montreal; and Rev. T. W.

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London, Ont.:

The London Printing and Lithographing Company, Limited.

1897.

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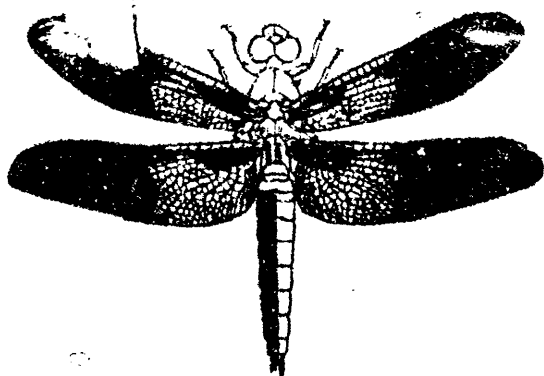
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The  
Canadian Entomologist

VOLUME XXIX.

No. 1.



*LIBELLULA TRIMACULATA.*

EDITED BY

REV. C. J. S. BETHUNE,

PORT HOPE, ONTARIO.



JANUARY, 1897.

LONDON:

LONDON PRINTING AND LITHOGRAPHING COMPANY.

1897.

## EXCHANGE.

Subscribers are invited to make liberal use of this column. Notices over three lines are liable to be shortened if necessary. All insertions free to subscribers.

**COLEOPTERA.**—Exchange desired with collectors in other regions. Invertebrate and reptiles in alcohol, and bird skins also received. HARVEY N. DAVIS, 21 George street, Providence, R. I., U. S. A.

N. A. LEPIDOPTERA not in my collection wanted; offer Manitoba Lepidoptera and Coleoptera. Send lists to A. W. HANHAM, Bank of B. N. A., Winnipeg, Man., Can.

LEPIDOPTERA.—I have for exchange duplicates collected last summer, also cocoons of *Cecropia* and *Polyphemus*. J. TOUTH, 156 South Water St., Chicago, Ill.

WANTED.—The 2nd and 3rd Report of the Ent. Soc. of Ontario. Address HOWARD EVARIS WEFID, Agricultural College, Miss.

LEPIDOPTERA FROM MINNESOTA.—To exchange for the same from other localities. Send lists to H. W. EUSTIS, 31 Elbert St., Augusta, Ga.

WANTED.—Live pupæ (cocoons) of *Attacus Columbia*, *Gloveri*, *Ceanothi*, etc. for such of *Saturnia Pyri*, *Pavonia*, *Spini*, etc. HERMANN ATCH, Ellersfeld, Germany

COLEOPTERA.—Will exchange for species not represented in my cabinet *Coccinellidæ* and *Cicindellidæ* especially desired. Good returns. FREDERIC ORMOND, 59 Eustis Street, Boston, Mass.

CANADIAN ICHNEUMONIDÆ.—Will be glad to purchase undetermined material: this family, particularly from the vicinity of Quebec. Will determine or exchange specimens if parties prefer. G. C. DAVIS, Agricultural College P. O., Michigan.

COLEOPTERA.—Wanted, *Halpilidæ*, *Gyrinidæ*, and *Rhynchitidæ*, named or unnamed; also *Atelabus genalis*. Good returns of named N. American Coleoptera. RALPH HOPPING, Redstone Park, Kaweah, California.

Correspondents desired in any part of the world who will collect *Hesperidæ* (either named or unnamed) in exchange for N. H. Lepidoptera. W. F. FISKE, Mast Yan N. H., U. S. A.

TENTHREDINIDÆ AND UROCERIDÆ wanted from all parts of the United States and Canada, especially the south and south-west, either by purchase or exchange. Will name specimens for privilege of retaining duplicates. ALEX. D. MACGILVERAY, Cornell University, Ithaca, N. Y.

WANTED.—Diptera of the families *Sarcophagidæ* and *Muscidæ* (sensu stricto) from all localities. Will purchase or exchange for insects of any order. GARRY DE HOUGH, M. D., 542 County St., New Bedford, Mass.

HYMENOPTERA.—Fossors and Bees wanted from West and South (named unnamed). Offer in return good American and European Col., Lep. or Hym. S. DUNNING, 43 Niles St., Hartford, Ct., U. S. A.

HEMIPTERA AND HYMENOPTERA.—Liberal exchange for named or unnamed specimens. Also offer Coleoptera, or pay cash. Will determine *Jassidæ*. CARL BAKER, Auburn, Alabama.

VANCOUVER ISLAND.—Lepidoptera for sale or exchange—*C. gigas*, *M. Taylori rhodope*; *New noctuidæ*. W. H. DANBY, P. O. Box 314, Victoria, British Columbia.

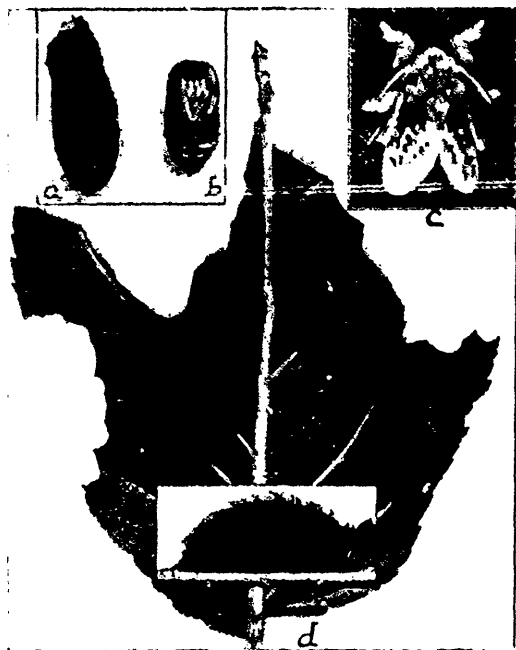
EUROPEAN COLEOPTERA.—I have a large quantity of European Coleoptera which I wish to exchange for American. Lists furnished. PAUL J. ROELOFS, 90 Rue de Straelen, Antwerp, Belgium.

COLEOPTERA.—I wish to exchange for N. A. species not already in my cabinet Canadian especially desired. Good returns. H. F. WICKHAM, Iowa City, Iowa, U. S. A.

LEPIDOPTERA.—Exchanges wanted (especially *Diurni* and *Crepuscularia*) with collectors everywhere. I offer North and Central American specimens. JOHN L. HEAL, 811 Morse Ave., Station "Y," Chicago.

HYMENOPTERA.—Will name parasitic species for privilege of retaining duplicates or will exchange; *Braconidæ* especially desired in order to complete a monograph on N. A. species. Address, WM. H. ASHMEAD, 1821 Q Street, N. W., Washington, D. C.

Offer specimens of diurnals from India, Japan, Mexico and Central America, cocoons, pupæ and crystalids. LEVI W. MENGEL, Reading, Pa.



THE CRINKLED FLANNEL MOTH, MEGALOPYGE CRISPATA, PACKARD.

# The Canadian Entomologist.

Vol. XXIX.

LONDON, JANUARY, 1897.

No. 1.

## THE CRINKLED FLANNEL MOTH (MEGALOPYGE CRISPATA, PACK.).

BY M. V. SLINGERLAND, CORNELL UNIVERSITY, ITHACA, N. Y.

September 3rd, 1895, I received several nearly full-grown specimens of the curious, sluglike caterpillars of this beautiful moth, so aptly named by Professor Comstock, "the crinkled flannel moth." The cunning brown caterpillars were placed in a cage here at the insectary, where they fed freely on apple leaves, although they were feeding on quince when found at Worcester, Mass. Since Dr. Packard described the insect in its different stages in 1864, its life-history has been worked out in detail by Dr. Lintner (Ent. Contrib., II., p. 138, 1870), and recently by Dr. Packard (Proc. Am. Phil. Soc. for 1894, p. 275). In this last paper Dr. Packard has described and figured in detail the extra two pairs of abdominal legs (seven pairs in all) possessed by the caterpillars, and some curious lateral glandular processes.

It is now our practice here at the insectary to photograph, so far as possible, every stage, phase, and habit of any insect that we may study. It is not often, however, that we have as good a subject as the crinkled flannel moth proved to be. The main object of this note is to introduce some of the lifelike pictures we were able to secure of this interesting and beautiful insect.

As shown at *a* on the plate, three of the cunning little caterpillars posed for their photograph, which represents their natural size and brings out their characteristic appearance much better than any other figures we have seen. They spun their tough brown cocoons (represented natural size at *a* on the plate), with the tightly fitting and ingenious door at one end, on September 5th. Upon prying open the door of one cocoon, the male pupa (shown natural size at *b* on the plate) was revealed. As the cage was kept in our warm office, the development of the insect was doubtless abnormally accelerated, for on December 21st and 24th the pupæ pushed open the little doors, worked their way nearly out of the cocoon, and the moths emerged. We aimed our "Premo" at one of the

male moths as it was resting quietly and naturally on the muslin cover of the cage, with the result as shown at *c* on the plate. We were somewhat loath to kill such a pretty, daintily bedecked creature, but — well, he now fills an honoured place in our collection here at the University. Figure *c* on the plate well represents this pretty creature (twice natural size) as he now looks in the collection. Imagine the lighter portions of the figure to be of a delicate straw-yellow colour and the darker waves and crinkles of a rich brown shade, and you have a faint conception of this crinkled flannel moth.

I do not know that the insect has ever done enough damage to make it of economic importance. It certainly has a wide range of food plants, as shown by Mr. Beutenmüller (*Ent. Americana*, III., 180), who lists twenty-five different plants, and the cranberry has since been added in Massachusetts. Briefly stated, its life-history seems to be as follows: The eggs are laid about July 1, and hatch in a week or ten days; the caterpillars feed during July and August, pupating in September; some of the moths may emerge in the fall, but doubtless most of them hibernate as pupæ, the moths appearing in June and some laying their eggs.

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#### TORONTO BRANCH OF THE ENTOMOLOGICAL SOCIETY OF ONTARIO.

It is with much gratification that we announce the formation of a branch of our Society in Toronto. In the month of February last a number of entomologists in Toronto, feeling their isolation and need of co-operation, met together and decided to form an organization for the promotion of the study of entomology. They accordingly established "The Toronto Entomological Society," with Mr. E. V. Rippon as President, and Mr. Arthur Gibson, Secretary. Regular meetings have been held on the first and third Fridays of each month, and recently a room has been engaged at 451 Parliament Street, where the books and collections are kept and the meetings held, and which is open at all times for the use of the members. For the last ten months the Society has been very successful and its members full of enthusiasm; much satisfactory work has been accomplished, and great pleasure has been derived by the members from meeting with kindred spirits, comparing specimens, discussing questions that arise from time to time, and giving and receiving much assistance in many ways.

Recently the desirability of affiliating with the old-established Entomological Society of Ontario was brought before the members, and after



full deliberation it was decided to become incorporated with it as a "Branch," in accordance with the terms of our Constitution. It will therefore be known, from the beginning of the New Year, as "The Toronto Branch of the Entomological Society of Ontario." It is hoped that every one interested in entomology, living in Toronto or the neighbourhood, will join the "Branch," and thus become members of our Society. The next meeting will be held on Friday evening, January 8th, at 8 o'clock, when visitors will be heartily welcomed.

The Montreal Branch has been in active operation for over twenty-three years, and held its 200th meeting a few months ago. We hope that in time to come the Toronto Branch may be able to boast of a similar record, and that each year as it goes by may find it growing and prospering, and doing good work for the furtherance of the science of entomology in the Dominion of Canada.

#### BREPPOS MIDDENDORFI, MEN.

On April 25th, 1896, I made a very lucky capture of a perfect specimen of this rare and beautiful moth. The afternoon being sunshiny and warm — one of our first spring days — I had gone out to look for beetles in a piece of wood along the Red River, a few miles from the city. This locality had proved rich in Carabidæ in 1894, about the same date. Greatly to my disgust, I found the place transformed, all logs and "brush" having been cleared away the previous season, and hardly a beetle of any kind was to be found.

The moth in question was first seen to alight on the bank of a cutting leading down to the river; when disturbed from there by my investigations as to its identity, it flew up and down the roadway for a little while, and then hovered about some patches of mud, occasionally resting on the mud in the sunshine, very much after the manner of some of our butterflies. By this time I had got near enough to it to discover that it was something quite new to me, and my desire to capture it was therefore increased ten-fold. I had no net with me; in fact, I was only provided with a rather narrow-necked cyanide bottle for Coleoptera (the neck of my bottle was not an inch in diameter). That I was able, after several futile attempts, to get the mouth of the bottle down over it as it sat in the road, without damaging it in any way, was a matter of surprise at the time and congratulation whenever I have thought of it since. I certainly never made a more lucky capture. To Prof. John B. Smith I am indebted both for the identification and for his generosity in returning the specimen to me.

A. W. HANHAM, Winnipeg, Man.

## ON THE MEXICAN BEES OF THE GENUS AUGOCHLORA.

BY T. D. A. COCKERELL, MESILLA, N. M.

The Mexican species of this beautiful genus may be readily separated by the following table :—

- A. Hind spur of hind tibia minutely ciliate or simple. = AUGOCHLORA, s. str.
1. Entirely copper colour, with tints of carmine. . . . . *flammea*, Sm.
  2. Head and thorax dark indigo blue, abdomen black with some green reflections. . . . . *nigrocyanea*, Ckll.
  3. Head and thorax green. . . . . 4.
  4. Abdomen black, size small. . . . . *seminigra*, Ckll.  
Abdomen crimson. . . . . *ignita*, Sm.  
Abdomen green, without hair-bands. . . . . 5.
  5. Hind margins of abdominal segments broadly black; large blue-green species, with fuscous nervures. . . . . *Binghami*, n. sp. ♂.  
Hind margins of abdominal segments narrowly or not black; smaller, more yellowish-green species. . . . . 6.
  6. Small, wings dusky, nervures fuscous. . . . . *aurifera*, n. sp.  
Medium size, nervures dull testaceous. . . . . 7.
  7. Face broad, emargination of eyes deep. . . . . *labrosa*, Say.  
Face narrow, emargination of eyes shallow. . . . . *pura*, Say.
- B. Hind spur of hind tibia pectinate. = AUGOCHLOROPSIS,  
subg. nov. . . . . (type, *subignita*).
1. Head and thorax black, abdomen ferruginous. . . . . *aspasia*, Sm.  
Head and thorax green. . . . . 2.
  2. Abdomen crimson. . . . . *subignita*, Ckll.  
Abdomen brassy, with dense short fulvous pubescence beyond basal segment. . . . . *aurora*, Sm.  
Abdomen green, of the same colour as head and thorax, with two narrow bands of yellow pubescence. . . . . *splendida*, Sm.
- C. Hind spur of hind tibia not yet described.
1. Bright green, agreeing only with *splendida* in having abdominal hair-bands, but these are white. . . . . *viridana*, Sm.
  2. Small piceous species; margin of mesothorax, postscutellum, most of enclosure of metathorax, and bases of second and third abdominal segments shining green. . . . . *tisiphone*, Gribodo.

*A. labrosa* is cited from Mexico by its describer, but I have not seen it from that country. Mr. Robertson sends it to me from Illinois. There are two species found in Texas, which may be expected also across the

Mexican border. One of them is what passes for *A. sumptuosa*, Sm., in this country, and indeed agrees with Smith's description; but Col. Bingham finds that a co-type in the British Museum belongs to Section A above (spur minutely ciliate), while our insect belongs to Sect. B. It is just possible that the B. M. co-type is not identical with the true type of *sumptuosa*; if this is not so, our *sumptuosa* will have to be renamed. The other Texan species referred to was recorded by Cresson as *A. lucidula*, Sm., but it differs from that, and is referable to *A. humeralis*, Patton, of which it may perhaps constitute a geographical race. I have several specimens collected by Prof. C. H. T. Townsend at Beeville, Texas, Aug. 29, 1896, on a species of Compositæ. Col. Bingham's studies at the British Museum show that *A. humeralis*, which belongs to Sect. B, cannot be identical with *A. fervida*, Sm., as Robertson has supposed, since that belongs to Sect. A. Also, Patton was wrong in referring *lucidula*, Sm., which belongs to Sect. B, to *viridula*, Sm., which is of Sect. A. I will now describe the two new species indicated above:—

*Augochlora Binghami*, n. sp. (subg. *Augochlora*, s. str.)—♂. Length about 12 mm., brilliant bluish-green, the face a yellower green. Face narrowing below, eyes deeply emarginate; sides of face with conspicuous, partly appressed, silky white pubescence; cheeks with long white hairs. Clypeus, supraclypeal area and middle of vertex with sparse, inconspicuous black hairs. Clypeus rather prominent, subcancellate with very large close punctures, its anterior margin and the upper half of the labrum whitish, mandibles wholly dark. Vertex finely and very closely punctured. Antennæ reaching to base of wings, piceous, flagellum obscurely rufescent beneath, last joint conspicuously hooked. Mesothorax shining, with very distinct rather small close punctures, much densest at the sides, where a minute cancellation results. Parapsidal grooves distinct. Prothoracic keel fairly strong. Enclosure of metathorax fairly well defined, irregularly wrinkled, its hind margin gently curved, not angled. Posterior truncation strengthened, bounded below at sides by an acute ridge, which ascending readily fails. Pubescence of thorax sparse, grayish-white, black and conspicuous on dorsum. Tegulæ shining piceous, anteriorly whitish, apically green and punctured. Wings smoky-hyaline, apical margin darker, stigma dull testaceous, nervures fuscous, marginal cell minutely pendiculate. Legs green with black tarsi, pubescence short and pale. Abdomen shining, closely punctured, hind margins of segments broadly

purplish-black. No hair-bands, but a very fine glittering pile all over, longer pale hairs at base of first segment, sparse black hairs on dorsum of hindmost segments and at tip. Punctuation of second segment conspicuously closer than that of first. Venter piceous, first three segments with blue reflections. End of third segment with a large dark brown brush of hair, shaped like the tail of a fish; *i. e.* deeply emarginate, the sides diverging and ending in a point.

*Hab.*—San Rafael, Vera Cruz, March 13, on flowers of plant No. 4, which is papilionaceous (C. H. T. Townsend).

This beautiful species is named after Lt.-Col. Bingham, without whose notes on the British Museum types I should not have attempted this paper.

*Augochlora aurifera*, n. sp. (subg. *Augochlora*, s. str.)—♀. Length about  $7\frac{1}{2}$  mm, green; head and thorax dullish, rather a bluish-green; abdomen shining, a yellow green, with the hind margins of the segments very narrowly coppery. Face fairly broad, emargination of eyes deep. Pubescence of head and thorax sparse and inconspicuous, dirty whitish, some black hairs on thoracic dorsum; lower part of face in certain lights canescens. Clypeus with close punctures of unequal size, supraclypeal area more finely punctured, vertex coarsely granular. Labrum and margin of clypeus black. Mandibles notched within, stout, rufescent medially. Glossa very long and narrow, coming to a fine point. Antennæ black, flagellum slightly rufescent beneath. Mesothorax very closely, finely, and uniformly punctured. Enclosure of metathorax conspicuously longitudinally, or rather radiately, sulcate. Truncation shining, finely malleate, with a median groove. Tegulæ shining piceous, the margin subhyaline. Wings smoky, stigma dull testaceous, nervures fuscous, marginal cell appendiculate. Legs piceous-black, with brownish pubescence; only the anterior femora show any green. Abdomen shining, with minute, not very close, punctures; pubescence very sparse, no hair-bands. It requires a strong lens to see the abdominal punctures.

*Hab.*—San Rafael, Vera Cruz, March 9, on flowers of plant No. 6 referred by Dr. Rose to the genus *Melopodium*. The hind legs, base of thorax and abdomen, and ventral surface of abdomen, carry considerable quantities of the orange pollen. Another specimen differs by being much bluer, the punctuation a little coarser, the stigma fuscous; but it is evidently the same species. It is from San Rafael, March 14, on flowers of plant No. 5, a *Vernonia*. Both were collected by Prof. C. H. T. Townsend.

## THE COLEOPTERA OF CANADA.

BY H. F. WICKHAM, IOWA CITY, IOWA.

XIX. THE CHRYSOMELIDÆ OF ONTARIO AND QUEBEC — (*Continued*).  
TRIBE IX. — GALERUCINI.

This tribes includes a number of species which are, as a rule, easily distinguished by the peculiar appearance given by their soft integuments and usually somewhat elongate form. A number of them are pubescent, while others, on account of the peculiar sculpture of the surface, are quite opaque, the effect on the eye being, at first glance, the same in each case. The elytra in our species are longer than the abdomen, the prothorax is margined, the antennæ approximate, inserted on the front, the hind legs with rather slender thighs, not fitted for leaping. It will be remembered in this connection that I consider the Halticini as a distinct tribe.

Many of the Galerucini are extremely injurious, the striped cucumber beetle being well known and dreaded by gardeners; its congener, *Diabrotica longicornis*, which has lately been found by Mr. Harrington in the Eastern Provinces, is a notorious pest to corn in the United States. In the Northeastern States the imported elm-leaf beetle, *Galerucella anthomelæna*, Schr., is doing much mischief, but I cannot find that it is reported from Canada. If found, it may be distinguished from all our other species of *Galerucella* by the colour of the antennæ, which are fuscous above and pale beneath, while the elytra are comparatively finely and equally punctate. It is yellowish above, the head with one dark spot, the thorax with three, the elytra with a short inner stripe (sometimes wanting), and a long one from the humerus; legs pale, each femur with a small dark spot.

The tribe has recently been worked up in an excellent paper by Dr. Horn, and this has been closely followed and freely used in the preparation of the following pages. In order to avoid the constant repetition of quotation marks and statements of acknowledgments, it is well to say that the differential characters brought out are in almost every case those used by the Doctor, and that while I have not scrupled to change the arrangement of his tables where it seemed to me more likely to serve the purpose of the present article, I have, on the other hand, found it impossible to improve on most of his expressions, and have therefore used them entire. With this acknowledgment of the source of whatever is good in the paper, we may proceed to separate the genera occurring in Canada, thus:—

- A. Anterior coxal cavities open behind.
- b. Claws simple or bifid.
- c. Tibiæ without terminal spurs; epipleura of elytra extending nearly to apices.
- d. Antennæ longer than one half the body; claws deeply bifid.  
 Third antennal joint shorter than fourth; large species . . . . . *Trirhabda*.  
 Third joint longer than fourth; small species . . . . . *Galerucella*.
- dd. Antennæ less than half as long as body; claws simple or narrowly bifid . . . . . *Monoxia*.
- cc. Tibiæ (middle and posterior) with terminal spurs, outer edge more or less carinate . . . . . *Diabrotica*.
- bb. Claws appendiculate (*i. e.* with broad dilatation at base).  
 Epipleura not distinct, tibiæ without spurs . . . . *Phyllobrotica*.  
 Epipleura distinct, all the tibiæ with spurs . . . . . *Luperodes*.
- AA. Anterior coxal cavities closed behind.  
 Large species, tarsal claws bifid, tibiæ without spurs . . . *Galeruca*.  
 Smaller species, claws appendiculate, tibiæ with spurs . . *Cerotoma*.

I have omitted *Scelolyperus* from the above table, although the Southern Californian *S. maculicollis*, Lec., is in the Society list. The genus belongs in the group with open anterior coxal cavities, appendiculate claws and well-defined epipleura. In the scheme it would precede *Luperodes*, from which it differs in having no tibial spurs. The species above mentioned is about one-fourth of an inch in length, head and under surface black, thorax either yellow with three dark spots or entirely black, elytra bluish or greenish. Antennæ two-thirds as long as the body, piceous, with three basal joints pale beneath.

#### TRIRHABDA, Lec.

Large insects, of rather elongate-oblong form, usually of somewhat opaque surface, the thorax in most cases spotted, the elytra bluish-greenish, or brownish, with yellowish stripes. They are to be taken during the summer months by sweeping rank herbage in lanes and meadows, and may often be taken in numbers on the golden-rod. Dr. Horn has thus separated our species:

- A. Surface of body without any trace of metallic lustre in the markings, these being opaque or brownish.

- b. Elytral punctures so dense as to be indistinct as such.  
 Yellow vittæ of elytra attenuate to apex. .30-.40  
 in..... *tomentosa*, Linn.  
 Yellow vittæ broad, parallel and entire. .28-.38  
 in..... *canadensis*, Kby.
- bb. Elytral punctures dense, but distinctly separate. Elytra normally vittate as in *canadensis*. .26-.36 in..... *virgata*, Lec.
- AA. Surface of body with metallic lustre; if not in the markings of the elytra, at least on those of the head and thorax. Punctuation of elytra comparatively rough.  
 Elytra entirely blue, except border. .20-.32  
 in..... *flavolimbata*, Mann.  
 Elytra with outer border and discal vitta yellow.  
 .20-.28 in..... *convergens*, Lec.

#### GALERUCELLA, Crotch.

This genus, as now understood, contains species formerly distributed partially in *Adimonia* and partially in *Galeruca*. Many of them are quite common, and are to be found in the sweepings of meadows, on water lilies, *Sagittaria*, *Eupatorium*, or occasionally on the leaves of deciduous trees, as in the case of *G. cavicollis*, which I have taken abundantly on wild cherry. All but three of the North American species have been recorded from Canada, and Dr. Horn's table is here reproduced almost in full, though some portions are transposed, and the remainder made to include the non-vittate specimens of *G. americana*, so as to render identification a trifle more easy when reference cannot be had to detailed descriptions. The limit of variation in some of the vittate forms is very wide, and has resulted in the multiplication of nominal species. It is believed that the table will now cover any cases likely to be met with in the Provinces of Ontario and Quebec. In case of the occurrence there of the elm-leaf beetle, a reference to the first page of this article will result in its proper identification.

#### A. Colour red.

- Elytra more coarsely punctured, intervals between punctures distinct, surface shining. .18-.22 in..... *cavicollis*, Lec.  
 Elytra finely and densely punctured, surface rather opaque.  
 .18-.22 in..... *rufosanguinea*, Say.
- A. Colour yellowish, brownish or piceous, elytra vittate or not.
- b. Elytra normally vittate.

- c. Elytra scarcely explanate at sides, middle coxæ separated.  
 Elytra convex, coarsely punctate; thorax more or less shining, spotted indistinctly if at all. .14-.26  
 in . . . . . *americana*, Fabr.  
 Elytra less convex, more closely and less coarsely punctate, thorax opaque with three spots. .20-.24  
 in . . . . . *sexvittata*, Lec.
- cc. Elytra distinctly explanate, middle coxæ contiguous.  
 Sutural vitta joined by next at or behind the middle. .14-.20 in . . . . . *notulata*, Fabr.  
 Vitta next to the sutural very short, basal. .14-.20  
 in . . . . . *notata*, Fabr.
- bb. Elytra not vittate, often with lighter side margin.  
 d. Form convex, elytra coarsely punctate . . . . . *americana*, var.  
 dd. Form not notably convex.  
 e. Middle coxæ separated, thorax angulate at middle, sub-sinuate behind, hind angles obtuse. .18-.24  
 in . . . . . *nymphææ*, Linn.
- ee. Middle coxæ contiguous, hind angles of thorax distinct.  
 Thorax coarsely, not very closely, punctate. *notulata*, var.  
 Thorax densely punctured and opaque. .18-.22  
 in . . . . . *decora*, Say.

## MONOXIA, Lec.

*M. consputa*, Lec. (*guttulata*), has been recorded on the Society's list. It is a small insect, .14-.18 in. long, of a somewhat oblong form resembling some *Galerucella*, but with shorter antennæ; yellowish or reddish-yellow in colour, elytra often with numerous very small black spots. It is common on the plains to the westward, but I have seen no specimens from Ontario or Quebec, and it is just possible that an immaculate specimen of *Galerucella notulata* has been mistaken for it.

## DIABROTICA, Chev.

Here belongs the striped cucumber beetle (*D. vittata*, Fabr., Fig. 1), so common on and often injurious to cucumber and squash vines. It is a little less than one-fourth of an inch in length, yellow above; head, scutellum, and three elytral stripes (one common sutural, one discal on each wing-cover) black. Basal joints of antennæ partially yellowish, legs with dark tarsi and knees, front tibiæ and tips of middle and hind tibiæ also



FIG. 1.



dark. The twelve-spotted *Diabrotica*, *D. 12-punctata*, Fabr. (Fig. 2), in life is pale greenish above, turning to yellowish in old cabinet specimens; antennæ dark, with three basal joints pale, head black, scutellum dark, each elytron with six black spots. Legs dark, basal half of femora pale. Size a little greater than the preceding. Mr. Harrington has recently found *D. longicornis*, Say, in the Eastern Provinces. It may easily be distinguished by its smaller size and immaculate green, fading to yellowish, elytra.



FIG. 2.

#### PHYLLOBROTICA, Chevrolat.

These are very pretty insects, marked with yellow and black. Two have been recorded from Canada, but as there is a chance of error in determination I herewith include *limbata* as well, since its other recorded distribution seems to indicate a more northern range than is found in *discoidea*. All three have yellow head and thorax. Dr. Horn thus defines them:

Elytra yellow, with two oval piceous spots on each (Fig. 3), .22-.28 in.....*decorata*, Say.

Elytra piceous, sides and suture yellow.

Thorax with moderately deep fovea each side. .14-.26

in.....*discoidea*, Fabr.

Thorax with transverse depression. .14-.26 in...*limbata*, Fabr.

#### LUPERODES, Motschulsky.

Contains one Canadian species, *L. meraca*, Say, an elongate insect, .20 in. long, dark blue or blue-black above, piceous beneath, thorax nearly equal in length and breadth, hind angles acute and prominent, disk convex, smooth, elytra sparsely punctate. Legs yellow, basal half of femora piceous. It has been reported by Mr. Chittenden as feeding on the witch-hazel, while on another occasion he found it in great numbers on the flowers of the wild rose, the petals of which served as food.

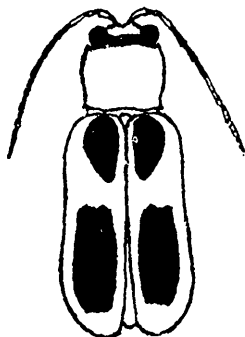


FIG. 3.

#### GALERUCA, Geoffroy.

*G. externa*, Say, represents the genus in North America, and while commoner to the eastward, has been reported from Canada. It is a robust insect, easily known from our other Galerucini by the large size (.27-.44 in.) and broadly oval form. The colour is blackish, outer margin

of elytra yellowish, upper surface coarsely and closely punctate. Elytra with four more or less well-marked costæ. The food-plant of this beetle is still unknown to me, for, while I have collected a great many specimens, they were always found under logs or stones.

CEROTOMA, Chevz.

Represented by *C. trifurcata*, Forst. (*caminea*, Fabr.), resembling somewhat the common *Diabrotica 12-punctata* in form, but shorter. Head and under side of body black, upper surface of thorax and elytra yellowish or occasionally red. Elytra marked with black, as shown in fig. 4, this pattern being often reduced or added to by the greater or less extension of the yellow. Length, .14-.20 inch. Mr. Chittenden records the bush-clover, *Lespedeza*, as a food plant, and remarks that legumes form the chief food of the species. My own captures have been, for the most part, made by overturning boards and chips in patches of meadow land during the middle of spring.



FIG. 4.

A GENERIC REVISION OF THE HYPOGYMNIIDÆ  
(LIPARIDÆ).

BY HARRISON G. DYAR, NEW YORK.

Before the generic names of our moths can become permanent, it is necessary that all the described genera should be compared, but specially the older genera of Europe. To make a beginning in this matter, I have drawn up the following synoptic table of the Hypogymniidæ, based on the characters used in Hampson's Moths of India, adding thereto the species found in Europe and in North America. The types of the genera are recognized as determined by Kirby.

Probably but few, if any, changes will be necessary from this list, as the African and South American species for the most part belong to other genera, or else have later dates than the generic names here defined.

I exclude two genera given by Hampson, viz.: *Retarda* and *Thiacidas*. The latter seems to me to be a Noctuid, perhaps one of the *Apatelidæ*, while the former has the venation of the *Tineides* and is without frenulum; it probably represents a new family type.

In the *Tentamen*, Hübner gives the three plural terms, *Hypogymnæ*, *Leucomæ*, and *Dasychiræ*, all referring to this family. As these appear to be the first plural terms, one of them must stand for the family. The

term Liparidæ as used by Herrich-Schäffer, Kirby, etc., and the Lymantriidæ of Hampson cannot stand. Grote at first used Dasychiæ, as in his list of 1882. Later he selected Leucomidæ (Syst. Lep. Hild., 1895), and finally Hypogymnidæ (Syst. der Nord. Schmett., 1896). Dasychiridæ is unavailable as the generic term becomes synonymous, and the first of Hübner's terms may best be retained.

Two new generic terms seem necessary. The two European species of *Ocneria* are not congeneric, as one has two pairs of spurs on the hind tibiæ and the other but one. The latter may be separated under the term *Parocneria*, type *detrita*, Esp. The same is the case with our species of *Notolophus*. All the European species which I have seen, and our *antiqua* and *vetusta*, have one pair of spurs, as stated by Hampson. The larvæ have black heads. Two other species, *leucostigma* and *definita*, have two pairs of spurs, and may be called *Hemerocampa*. The larvæ have pale heads.

I add to the synopsis a partial list of species. Kirby and Hampson may be consulted for details, and for the genera not specifically mentioned.

1. Primaries with vein 10 from the accessory cell..... 2.  
    Primaries with vein 10 from beyond the accessory cell.... *Mardara*.  
    Primaries without accessory cell, or rarely with one with vein 10  
       before the accessory cell or joined to vein 11..... 12.
2. Palpi porrect..... 3.  
    Palpi upturned..... 11.
3. Hind tibiæ with no spurs..... *Varmina*.  
    Hind tibiæ with one pair of spurs..... 4.  
    Hind tibiæ with two pairs of spurs..... 6.
4. Female with well-developed wings..... 5.  
    Female with the wings useless, largely aborted.... *Hypogymna* (2).  
    Female with aborted wings..... *Notolophus* (3).
5. Robust, the palpi not or but slightly exceeding the  
    front..... *Gynaephora* (1).  
    Fragile with small body, the palpi considerably exceeding  
    the front..... *Pantana*.
6. Primaries short and broad..... 7.  
    Primaries more produced..... 9.
7. Female with well developed wings..... 8.  
    Female with aborted wings.... *Hemerocampa* (7).

8. Fore tarsi with lateral tufts of hair on the joints..... *Cifuna* 5  
 Fore tarsi without these tufts..... *Aroa* 5
9. Fore tarsi smooth haired; palpi long..... *Laelia* (4) 6  
 Fore tarsi more roughly haired or tufted..... 10. 6
10. Palpi not reaching beyond the front..... *Orgyia* (5) 1  
 Palpi reaching beyond the front..... *Olene* (6) 1
11. Palpi slight, closely approximated to the front and not  
 reaching the vertex..... *Daplasa* 1  
 Palpi reaching the vertex..... *Numenes* 1  
 Palpi reaching above the vertex..... *Pida* 1
12. Primaries with veins 7 to 10 stalked..... 13 2  
 Primaries with veins 8 to 10 stalked..... 23 2  
 Primaries with vein 10 from the cell, or rarely stalked with 11.... 24 3
13. Palpi upturned..... 14 3  
 Palpi porrect..... 17 3
14. Primaries with the apex rounded..... 15 4  
 Primaries with  $\tau$   $\approx$  apex acute..... *Topomesa* 4
15. Primaries with vein 10 given off near the apex..... *Heracula* 4  
 Primaries with vein 10 given off nearer the cell than vein 7..... 16 5
16. Female with well developed wings..... *Lymantria* (8) 5  
 Female with aborted wings..... *Enome* (9) 6
17. Posterior tibiæ with two pairs of spurs..... 12 6  
 Posterior tibiæ with one pair of spurs..... 21 6
18. Palpi short..... 16 7  
 Palpi long..... 22 7
19. Vein 5 of secondaries absent..... *Leucoma* (12) 7  
 Vein 5 of secondaries present..... 23 8
20. Primaries with vein 10 given off near the apex..... *Euproctis* (13) 8  
 Primaries with vein 10 nearer the cell, or with vein 7..... *Cispi-* 9
21. Palpi very minute..... *Perins* 9  
 Palpi rather long..... *Paroeneria* (10) 9
22. Antennæ of female with long pectinations..... *Imau* 10  
 Antennæ of the female with short pectinations..... *Ocneria* (11) 10
23. Vein 5 of secondaries near lower angle of cell; palpi  
 very long..... *Dactylorhynch* 11  
 Vein 5 near upper angle of cell; veins 3 and 4 united.... *Gazelin* 11
24. Palpi porrect..... 13 12  
 Palpi upturned..... *Arctornis* (10) 12

5. Palpi long; hind tibiæ with two pairs of spurs . . . . . *Himala*.  
 Palpi short; hind tibiæ with one pair of spurs . . . . . 26.
6. Secondaries with veinlets between vein 1 and margin. . . . . *Dendrophleps*.  
 Secondaries without supplementary veinlets . . . . . *Stilpnotia* (15).

1. Genus GYNÆPHORA, Hübner.

Type *selenitica*, Esp. Also, *ladacensis*, Moore (Hampson I., 435, as Lachana); *rossii*, Curt., and probably *groenlandica*, Hom., which I have not seen.

2. Genus HYPOGYMNA, Hübner.

Type *morio*, Linn.

3. Genus NOTOLOPHUS, Germ.

Type *antiqua*, Linn. Also, *gonostigma*, Linn.; *ericia*, Germ.; *postica*, Walk.; *viridescens*, Walk.; *turbata*, Butl.; *vetusta*, Boisd.; *cana*, Hy. Edw.; *gulosa*, Hy. Edw.

4. Genus LAELIA, Stephens.

Type *coenosa*, Hübn. Also 12 Indian species.

5. Genus ORGYIA, Ochs. (= *Dasychira*, Hübn.)

Type *fascellina*, L. Also *pudivunda*, L.

6. Genus OLENE, Hübn. (= || *Dasychira*, Hampson = *Parorgyia*, Packard).

Type *mendosa*, Hübn. Also *abietis*, Den. & Sch.; *cinnamomea*, G. R.; *achatina*, A. S.; *leucophæa*, A. S.; *plagiata*, Walk.; and 18 Indian species.

7. Genus HEMEROCAMPA, Dyar.

Type *leucostigma*, A. S. Also *definita*, Pack.

8. Genus LYMANTRIA, Hübn.

Type *monacha*, L. Also *dispar*, L., and 14 species from India.

9. Genus ENOME, Walk.

Type *ampla*, Walk. Also ten other Indian species. Hampson makes this a section of *Lymantria*, but I regard it as a higher group.

10. Genus PAROCNERIA, Dyar.

Type *detrita*, Esp.

11. Genus OCNERIA, Hübn.

Type *rubea*, Fab.

12. Genus LEUCOMA, Hübn., Tent. (= *Porthesia*, Steph.)

Type *similis*, Fuessl. Also two Indian species.

13. Genus *EUPROCTIS*, Hübn. (= *Artaxa*, Wlk.)  
 Type *chrysorrhæa*, L. Also fifty-three Indian species. See  
 Hampson for the generic synonymy.
14. Genus *ARCTORNIS*, Germ. (= || *Leucoma*, Steph. = || *Laria*, Schr.)  
 Type *L-nigrum*, Müll. Also eight Indian species.
15. Genus *STILPNOTIA*, Westw. & Hump. (= *Leucosia*, Ramb. = *Charala*,  
 Moore = *Caragola* Moore = *Nymphyxis*, Grote.)  
 Type *salicis*, Linn. Also six Indian species listed under *Caviria*,  
 Walk., which, however, is a South American genus, and not  
 strictly congeneric with the Indian forms.

### CATALOGUE OF THE PHYTOPHAGOUS AND PARASITIC HYMENOPTERA OF VANCOUVER ISLAND.

BY W. HAGUE HARRINGTON, F. R. S. C., OTTAWA.

The following list is based upon a very interesting collection made, chiefly at Cedar Hill, near Victoria, by the Rev. G. W. Taylor, F.R.S.C., but includes such other species as I have found described, or recorded from Vancouver Island. Even with such additions it is a short list in comparison with those that could be compiled from much less extensive areas in Ontario. British Columbia has, as yet, had but few resident entomologists, and its rich fauna is, in consequence, but poorly known. Butterflies and beetles have been fairly well collected, but in other directions there are almost unexplored fields for investigation.

I have found but little literature relating to the Hymenoptera of Vancouver Island, and but scanty records of species captured there. Lord, in his interesting narrative of a Naturalist in British Columbia, has an appendix enumerating the insects secured by him, with descriptions of a few new species. Cresson, in a paper entitled *Descriptions of Ichneumonidæ*, chiefly from the Pacific Slope of the United States and British North America (*Proc. Acad. Nat. Sci., Phil.; Nov., 1878*), described about twenty-five species from the Island, contained in the collections of the late distinguished entomologists, Mr. H. Edwards and Mr. Crotch. The late Abbé Provancher described a few species in the *CANADIAN ENTOMOLOGIST* (Vol. XVII., p. 114), and in the *Additions to his Petite Faune Entomologique du Canada* credits the Island with some thirty-five species, mostly new forms contributed by Mr. Taylor and Mr. Fletcher. The types of some of those species are now in my collection, through Mr. Fletcher's kindness, and have been found very useful for comparison.

Kirby, in his List of the Hymenoptera in the British Museum, records several species of Tenthredinidæ and Uroceridæ. To Mr. Taylor, however, is due a large proportion of our knowledge of the Hymenopterous fauna. In Vol. XVI. and XVII. he published a list of eighty-one species, from the vicinity of Victoria, and he continued to collect there and sent specimens to Mr. Fletcher and myself until he came to reside in Ottawa a few years ago. He then brought his collection with him to this city, and on his return to the Pacific Coast he placed all the remaining Hymenoptera in my hands, on the condition that I should prepare a list of them for publication, in revision and enlargement of his own earlier list, in which there are some errors in determination.

The collection has proved to be a most interesting one, and to contain quite a number of new insects. It is, as might be expected, deficient in the smaller forms, such as Cynipidæ, Braconidæ, Chalcididæ, and Proctotrypidæ. As time has permitted, I have proceeded with the determination of these insects, and have published descriptions (CAN. ENT., Vol. XXVI.) of some new species. The Aculeata require further study, especially such genera as *Andrena*, *Halictus*, *Osmia*, etc., before a satisfactory list can be made of them. Mr. Taylor is now resident at Nanaimo, and it is to be hoped that his duties will afford him opportunity to collect in that district. The publication of a list (even though imperfect) of the recorded species may perhaps stimulate others to join with him in a more systematic collection of the Hymenoptera of Vancouver Island, which offers so rich a field for study. The fauna is evidently a very extensive one, containing many species occurring in the Pacific States, while in the northern portion of the Island and on the mountains there should be a large intermingling of species inhabiting Alaska and the Rocky Mountains. It would not require much effort to increase many-fold the number of species at present known. The order Hymenoptera is so rich in species, and the conditions of the occurrence of the species are so varied, that it will long be possible to discover forms new to science, even in Ontario, where the fauna is so much better known. In the vast and diversified regions of the Pacific Slope, such new and undescribed species must be almost unlimited.

#### TENTHREDINIDÆ.

*Trichosoma Taylori*, *Prov.*—Common on the Island and throughout B.

C. I took it at New Westminster, and have examples from Tacoma (Wickham) and the Rocky Mountains (Bean). Probably only a

Western form of *T. triangulum*, under which name Taylor records it. Cocoons very frequently parasitized.

*Trichiosoma vittellina*, Linn.—Kirby (*List Hym. Brit. Musm., Vol. I., p. 10*) records a ♂ of this European species from the Island (Dr. Lyall) and a ♀ from the Rocky Mountains. Perhaps all our forms belong to one boreal species. They certainly do not vary so much as the insects included in *Cimbex americana*.

*Abia Kennicotti*, Nort.—One ♀ received by Mr. Fletcher, dated 4th June.

*Hylotoma McLeayi*, Leach.—One ♀ received by Mr. Fletcher, dated 2nd June.

*Euura* sp.—Two specimens in condition not favorable for determination.

*Cladius pectinicornis*, Fourn.; *Cladius isomera*, Harris.—One ♀ from Mr. Wickham.

*Pontania nevadensis*, Cress. (*Nematus*).—Marlatt; Rev. N. A. Nematinae, p. 30.

*Pteronus mendicus*, Walsh (*Nematus*).—Two ♀ received by Mr. Fletcher; also one ♀ from Mr. Wickham.

*Pteronus vancouverensis*, Marlatt.—Rev. N. A. Nematinae, p. 70.

*Pachynematus coloradensis*, Marlatt.—One ♀ received by Mr. Fletcher.

*Pachynematus palliventris*, Cress. (*Nematus*).—One ♀ received by Mr. Fletcher apparently belongs to this species.

*Dolerus collaris*, Say.—One ♀.

*Dolerus sericeus*, Say.—Eight ♀, seven ♂; a very common species, generally more robust and pubescent than Ottawa examples.

*Monophadnus atratus*, Hargtn.—Type ♂ in my coll.

*Phymatocera nigra*, Hargtn.—One ♂. April.

*Hoplocampa halcyon*, Nort.—Taylor; CAN. ENT., Vol. XVI., p. 92.

*Labidia opimus*, Cress.

*Allantus opimus*, Cr.; *Labidia columbiana*, Prov.—Originally described from V. I. collection of Crotch; redescribed from Taylor's collection. Appears to be common. Four ♀, four ♂. The *A. originalis* of Taylor's list, and probably identical with that species.

*Allantus elegantulus*, Cress.—Five ♀, one ♂; June. Also to Fletcher four ♀, two ♂; labelled May and June.

*Taxonus parens*, Prov.—Type ♂ in my coll. Probably the ♂ of *Strongylogaster rubripes*, Cress., from Col.



*Strongylogaster distans*, *Nort.*—Common in April and May. I have eight ♀ and six ♂ specimens, and Mr. Fletcher has six ♀ s. The abdomen of the male is entirely red, except base of first segment and basal plates, but the female has the remaining segments more or less marked with basal black spots.

*Strongylogaster* (?) *marginata*, *Prov.*

*Selandria marginata*, *Prov.*—Type ♀ in my coll. Mr. Fletcher has also six ♀ and four ♂ from Cedar Hill. May and June.

*Tenthredo erythromera*, *Prov.*—Type ♀ in my coll.

*Tenthredo nigrisoma*, *Hargtn.*—Types ♀ in my coll. One taken by Taylor, 5th June, 1888; the other, also at Victoria, by Wickham.

*Tenthredo nigricosta*, *Prov.*—Type ♀ in my coll.

*Tenthredo rubricus*, *Prov.*

*Allantus rubricus*, *Prov.*—Type ♀ and another in my coll.; one also examined for Mr. Fletcher. The antennæ are not those of an *Allantus*, and the insect is apparently a variety of *T. mellina*, with antennæ slightly shorter and pale markings less conspicuous.

*Tenthredo ruficoxa*, *Prov.*—Type ♀ in my coll.

*Tenthredo rufopedibus*, *Nort.*—Recorded by Taylor as common in spring, but not in his collection; probably the species I have determined as *T. variata*.

*Tenthredo terminalis*, *Prov.*—Type ♀ in my coll.

*Tenthredo variata*, *Nort.*—Three ♂ specimens. May and June. Mr. Fletcher has also one ♂.

*Tenthredo varipicta*, *Cress.*—*Prov.*; *Add. Faune Hym.*, p. 14. Two females taken 28th May and 4th June, received by Mr. Fletcher.

*Tenthredopsis Evansii*, *Hargtn.*—Mr. Fletcher has one ♂ taken in May.

*Synairema pacifica*, *Prov.*—Type ♀ in my coll. Apparently a species of *Macrophya*; the coxæ are shorter than usual, but the femora reach to tip of abdomen. Head coarsely punctured; in shape and sculpture resembling *Macrophya*; antennæ wanting. Thorax coarsely but more sparsely punctured, and scutellum polished, with a few shallow punctures. Appears to be closely related to *M. bicolor*, *Cress.*, but has first segment black.

*Pamphilus pacificus*, *Nort.*—Kirby; *List Hym. Brit. Musm.*, Vol. I., p. 348.

*Macroxyela*, sp. nov.? One ♀ labelled as captured on oak. May 12th, 1896.

## URO CERIDÆ.

*Urocerus abdominalis*, *Harris*.—Two specimens; probably males of *albicornis* or *flavicornis*.

*Urocerus albicornis*, *Fabr.*—One ♀.

*Urocerus apicalis*, *Kirby*.—*List Hym. Brit. Musm., Vol. I., p. 377, ♂*; probably the male of *cæruleus*.

*Urocerus cæruleus*, *Cress.*—♀ described from V. I. coll., H. Edw. Mr. Fletcher has taken it at New Westminster, B. C.

*Urocerus caudatus*, *Cress.*—One ♀ and one ♂.

*Urocerus cyaneus*, *Fabr.*—One ♀.

*Urocerus flavicornis*, *Fabr.*—One ♀. Recorded by Taylor as "common in autumn."

*Urocerus flavipennis*, *Kirby*.—Five ♀. A large, handsome insect, but probably a form of *albicornis*.

*Urocerus Morrisoni*, *Cress.*—One ♀. This is doubtless a *var. of caudatus*.

*Urocerus varipes*, *Smith.*—One ♀. Very close to *cyaneus*.

## ORYSSIDÆ.

*Oryssus Sayi*, *Westw.*—One ♀. Also a ♂ of *var. occidentalis*, *Cress.*

## CYNIPIDÆ.

*Ibalia ensiger*, *Nort.*—One ♀ received by Mr. Fletcher.

*Onchylia Provancheri*, *Ashm.*—One ♀; 4th June.

## EVANIIDÆ.

*Aulacus pacificus*, *Cress.*—♀ described from V. I. coll., Crotch.

## ICHNEUMONIDÆ.

*Ichneumon atrox*, *Cress.*—One ♀; 6th June. Also one ♀ to Mr. Fletcher.

*Ichneumon cæruleus*, *Cress.*—Taylor; *CAN. ENT., Vol. XVI., p. 91.* One ♀ to Mr. Fletcher.

*Ichneumon cestus*, *Cress.*—Three ♀. Species was described from V. I. coll., H. Edw. A common species, easily recognized by single black band on abdomen. Mr. Fletcher has numerous examples from Mr. Danby.

*Ichneumon compar*, *Cress.*—♀ described from V. I. coll., H. Edw.

*Ichneumon creperus*, *Cress.*—Three ♂.

*Ichneumon difficilis*, *Cress.*—This insect was described from Cal., but a *var.?* is noted from V. I. coll., H. Edw.

*Ichneumon inconstans*, *Cress.?*—One ♂.

- Ichneumon infucatus*, *Cress.*—Cat. Hym. N. Am., p. 185. One ♂ received by Mr. Fletcher.
- Ichneumon insolens*, *Cress.*—Taylor, *loc. cit.*: "One specimen bred from chrysalis of *Vanessa antiopa*."
- Ichneumon lividulus*, *Prov.*—One ♀ received by Mr. Fletcher, labelled *Ich. grandis*, determined by Mr. Brodie. Seems, from the partially rufous legs, etc., to belong rather to this species.
- Ichneumon longulus*, *Cress.*—Taylor, *loc. cit.* A specimen so labelled, received by Mr. Fletcher, is, however, only the ♂ of *cestus*, varying a little from typical coloration.
- Ichneumon nuncius*, *Cress.*—Three ♂s; also four received by Mr. Fletcher.
- Ichneumon occidentalis*, *Hargtn.*—Type ♀ in my collection.
- Ichneumon otiosus*, *Say.*—Taylor, *loc. cit.*: "My only specimen was unfortunately destroyed during the process of examination."
- Ichneumon rufiventris*, *Brullé.*—One ♀ labelled *insolens* apparently belongs to this species.
- Ichneumon russatus*, *Cress.*—Two ♀s. Type was from V. I. coll., H. Edw.
- Ichneumon sagus*, *Cress.*—One ♀ received by Mr. Fletcher.
- Ichneumon salvus*, *Cress.*—The ♂ was described from V. I. coll., H. Edw.
- Ichneumon scibilis*, *Cress.*—One ♂.
- Ichneumon seminiger*, *Cress.*—Taylor, *loc. cit.* Not seen.
- Ichneumon sequax*, *Cress.*—Type ♀ was from V. I. coll., H. Edw. Taylor (*loc. cit.*) says: "Very common; one specimen was bred from the chrysalis of a *Lycæna*."
- Ichneumon Taylori*, *Hargtn.*—Type ♀ in my collection.
- Ichneumon vancouverensis*, *Prov.*—Type ♂ was from coll. Taylor, who says (*loc. cit.*), "This fine insect is abundant, and I have bred it in some numbers from the pupa of a *Bombyx*." Not seen, but answers to description of *neutralis*, Cr., from Cal.
- Ichneumon variegatus*, *Cress.*—One ♂ to Mr. Fletcher.
- Opismenus pacificus*, *Cress.*—♀ ♂ described from V. I. coll., H. Edw.
- Amblyteles hudsonicus*, *Cress.*—Two ♀s. One of these is a *var.* with the head and thorax above rufous. Mr. Fletcher also has one ♀.
- Amblyteles nubivagus*, *Cress.*?—One ♂ *var.*?
- Amblyteles perluctuosus*, *Prov.*—One ♀.

## BOOK NOTICES.

Rules for regulating nomenclature with a view to secure a strict application of the law of priority in entomological work; compiled by Lord Walsingham and John Hartley Durrant (Merton rules). Longmans, Green & Co., London., New York, and Bombay; 2nd Nov., 1896; 18 pages. Price sixpence.

The rules are for the most part a good statement of current practice, with the suggestion of a considerable number of signs to facilitate brevity of reference without loss of accuracy. These may advantageously be adopted.

Rules 7, 20, 21, 24, 25, 29 and 30 imply a much more rigidly classical attitude in regard to names than is prevalent in America. The authors would have all names according to the rules of Latin orthography, and would change those that are not, even so radically as *gypsodactylus* for *cretidactylus*. Names with similar sound are rejected; e. g., *Ucetia* invalidates *Eusesia*; also those which involve a false proposition, or are offensive politically, morally, or by irreverence.

Rule 12 defines publication as including the possibility of purchase. If the rule be not extended, it would invalidate all species published in Government or private papers which are distributed without charge.

The definition of a genus by designation of type without description is not referred to, and apparently is condemned by implication.

The case of restriction of a heterotypical genus to one type by the successive removal of species to other genera by subsequent authors is not explicitly stated, and might well be added to rule 42.

A few rules about the formation of family names might have been added, for example:

1. Family names shall be formed by adding —idæ to the stem of some genus included in the family.
2. The generic name so used must be a valid one.
3. The first generic name used in a plural form shall be the one so used for the family type unless it be invalid, in which case the next generic name included in the family, which has been used in a plural sense, shall be substituted according to the rule of priority.

HARRISON G. DYAR.

MONOGRAPH OF THE BOMBYCINE MOTHS: *I. Notodontidæ*; by Alpheus S. Packard, M. D., National Academy of Sciences, Vol. VII.

This magnificent work is, without doubt, an immense credit to the author, and will take a permanent place among the triumphs of American Lepidopterology. It is not my intention to discuss matters of general classification or nomenclature here. My reasons for differing on certain points as to the latter have all been given elsewhere, and the merits of the Comstock-Dyar classification have been insisted upon by Dr. Dyar. Dr. Packard's work, as a whole, with its superb technical execution, has a value which could have been only enhanced by his attention to points of nomenclature, which I believe cannot be properly contradicted, and by his adhesion to a scheme of general classification, which I believe cannot be adequately gainsaid. I can here, out of my present limited knowledge, merely mention a few points, which may be of general or only of particular interest. There are a few errors in authorities. I do not know why my *Notodonta stragula* and *Schizura leptinoides* and *S. eximia* are given to Grote and Robinson (plates). Nor do I know why my name is placed in brackets after *Heterocampa Belfragei*. I described the latter as a *Heterocampa*, and have no responsibility for its having been placed under *Litodonta*, a reference which never occurred to me. I differ from Dr. Packard as to the validity of *Litodonta*. The costa is straighter, the primary fuller outwardly over internal angle, apex sharper, while the antennal structure is decisive, as compared with *Heterocampa subrotata*; the orange spots are peculiar. *H. subrotata* is a miniature *obliqua*, and is placed next in my list. *H. celtiphaga* is founded on obscurely marked and small specimens, probably not different specifically. *Litodonta* may be a more specialized form, from the character of the female antennæ; the discovery of the larva will be attended with interest. The unhappy influence which Mr. Walker has exercised is very apparent, and the synonymy of *Schizura ipomeæ* exhibits this at its worst. I do not insist upon the validity of *S. telifer* as a species; the black streaks are very distinct in both sexes and our nomenclature was invented to designate such forms, if not as species then as varieties. With regard to *Hyparpax*, and in connection with Dr. Packard's remarks upon *H. erophoroides*, I again draw attention to my previous statements as to Abbot and Smith's plate, that the figure of the female *aurora* at least approaches that form. The late Mr. Hy. Edwards sent me at one time a damaged specimen (I think without head or feet) of a well-sized pink

and yellow moth from Colorado, resembling this genus or *Anisota rubicunda* in colours. I would not describe it, but returned it as a probably new Noctuid. The figure of *Euhyparfax* distantly recalls the specimen, which must be in coll. Central Park Museum. The figure (Plate VI., 14) certainly does not look like a Ptilodont, rather like an Agrotid, but, especially an uncoloured figure, may be deceptive.

A short classification of the *Melalophidae* may be found in 'Entomologist's Record,' VIII., 107, but I find since that *Phalera*, Hübn. Verz., 147, 1816, is preoccupied by *Phalera*, Latreille, 1804. Another name must be used for the genus of *bucephala* and the subfamily of which I made it the type. As to *Datana*, I rather missed an allusion to the fact that Grote and Robinson first drew attention that there were many closely allied species, and to the characters of the uneven margin, differences in the lines and general tinting which serve to distinguish the moths. One paper in Vol. VI. of the Proceedings Ent. Soc., Phil., was an answer to the criticism passed by the late Mr. Walsh upon our previously described *Datana perspicua*. There is still a memorandum in my note-book of a reference in this genus which I do not seem to have published and which I do not find in either Packard or Dyar.

A. RADCLIFFE GROTE, A. M.

PRELIMINARY NOTES ON THE ORTHOPTERA OF NOVA SCOTIA; by Harry Piers. Transactions of the N. S. Institute of Science, Vol. IX., 1896.

So little attention is paid to Entomology in the Maritime Provinces that we gladly welcome this contribution to the subject and are much pleased that Mr. Piers intends to devote some years to the study of the order Orthoptera. The paper before us gives some very interesting notes on the habits and range of fourteen common species of cockroaches, crickets, and locusts, and describes more at length the ravages committed by *Melanoplus atlantis* on Sable Island, a hundred miles off the coast of Nova Scotia in the Atlantic Ocean.

C. J. S. B.