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The Canadian Entomologist.

VOL. XXII.

LONDON, AUGUST, 1890.

No. 8.

THE NOCTUIDÆ OF EUROPE AND NORTH AMERICA COMPARED.

(*Eighth and Last Paper.*)

BY A. R. GROTE, A. M., BREMEN, GERMANY.

Tribe *Catocalini*.

In this tribe the secondaries are oftenest gaily coloured (mostly yellow) and banded, still subordinated to the primaries which show, more or less adequately, the usual Noctuidous ornamentation. The abdomen is rarely tufted. On account of the shape of the primaries, the form of the abdomen, the abdominal tuftings, the pattern of the wings beneath, the approach to *Ophideres*, I regard the genus and species *Euparthenos nubilis*, Ann N. Y. Lyc. Nat. Hist., as entirely distinct from *Catocala* sp. The most important genus is *Catocala*, in Europe with 22, in North America with upwards of 100 species. A division of this genus on the peculiarities of tibial armature (as I have suggested in *Agrotis*) was stated to me as possible several years ago by Mr. Smith, and has more recently been attempted by Mr. Hulst. I must think that his observations need verifying, judging from his published opinions on the value of the forms of *Catocala*, which I have shown to be in a number of instances incorrect. The *Ophiderinæ* and *Toxocampinæ* of my Check List are probably not to be separated from this tribe, in which the anterior ventral feet of the larvæ are more or less incomplete. The genera become gradually broader winged and concolorous as we approach the next tribe.

Tribe *Pheocymini*.

This comprises the *Erebiinæ* of my Check List. The wings are marked by rivulous lines crossing both pair and recalling the Spanner

moths. The tibiæ are variously armed, but become unarmed in the weaker genera, *Homopyralis*, etc., and as we approach the *Deltoidinæ*. In Europe this tribe seems represented only by *Pericyma* and *Zethes*. As we go southward the moths of this tribe become more numerous and we find the largest *Noctuidæ* among them in *Erebus* and *Thysania*. The tribe is tropical and subtropical, and some of the species are summer migrants from the South, not breeding in the Middle and Eastern States, or Canada.

There remain to be considered certain tropical forms which are found in Florida, or accidentally on our coast, such as *Hexeris enhydria*, *Syllectra erycata* and *Brotis vulneraria*. These probably are to be separated as affording distinct tribal types, but I cannot at the moment compare their structure with that of their South American allies. The tribe *Pangraptini*, with the frail genera *Pangrapta* and *Phalaenostola*, seems to close the series and lead to the Deltoids. The North American genera must be compared here with their tropical allies. This element of our fauna comes from the south, and, as we have seen, is almost wanting in Europe.

Sub-family *Deltoidinæ*.

This sub-family was formerly regarded as belonging to the *Pyrallidæ*. In the vernacular the Deltoids are called "Snout Moths," from the long labial palpi. But Herrich-Schæffer showed that in their essential characters they conform to the Noctuid type; they are pyralidiform *Noctuidæ*. The wings are usually pointed at the tips, the colours are gray and dusty, the usual Noctuid ornamentation is hardly to be discerned. The eyes are always naked. They fall into two principal tribes. The character of this sub-family becomes again largely European. As the name "Snout Moths" refers to this sub-family, I have called the *Pyrallidæ* by the name of Sparkler Moths.

Tribe *Herminiini*.

The type of this tribe is the European *Herminia tentacularis*, to which our North American *Philometra* is related. The wings are concolorous, marked with continuous lines, reminding us of the *Pheocymini* and the *Geometridæ*. The antennæ are often furnished with sexual nodosities. The species fly in grass upon which the larvæ generally feed.

One of the most variable *Noctuidæ* known to me belongs to this tribe, *Zanclognatha levigata*. Our species resemble generally the European, but are much more numerous.

Tribe *Hypenini*.

The type of this tribe is the European *Hypena proboscidalis*. The hind wings are unicolorous and subordinate to the primaries, which show the usual Noctuid markings more or less distinctly. The body is sometimes tufted, the brush-like antennæ are simple. In *Bomolocha* the eyes are lashed, but this character has nothing to do with the hairiness or nakedness of the eye itself, which, in the *Deltoidinæ*, so far as I know, is always naked. This nakedness is a general characteristic of the lower moths. I know of only one Geometrid with hairy eyes. The genera in my Check List, down to *Hypenula*, referred to this tribe, should probably be included in the preceding.

Sub-family *Brephinae*.

The members of this small sub-family group are boreal or sub-boreal in their habitat, and resemble certain *Geometridæ*, inhabiting similar zoological zones, in their hairy body, a more or less marked diurnal flight, and the 16-footed larvæ. The ocelli are wanting, and this character excludes the Californian genus *Annaphila*, which is really related to *Eustrotia* (*Erastria*), but has a certain resemblance in colours to this sub-family and the *Catocalini*. Our single species, *Brephos infans*, is found from Labrador to New England. Another form, *Leucobrephos brephoides*, I identified originally from Hudson's Bay. It may be the same with a species described by me from Wisconsin, and, among the figures of Siberian moths which I have examined, is one which, I think, represents a form belonging to this North American genus. Europe has three species of *Brephos* Hübn. (nec. Ochs.). The name *Brephos*, like *Agrotis*, etc., was originally proposed by Hübner. Through neglect and corruption, Hübner's names became credited to other European writers. I have done my best to clear up the generic synonymy by indicating the types in my Buffalo Lists. The student is referred to these for special information on this point.

Although the Owlet moths are quite numerous in the east, yet the Western States of North America seem richer in genera and

species. The different elements among the numerous genera need bringing out, but it has been sufficiently shown here where the general lines of relationship are to be sought. Like the Hawk moths, these too have been redistributed by climatic changes, the most important of which was the Glacial Epoch. We receive a large accession from the south, but the bulk of our *Noctuidæ* show a northern parentage. The common ancestors of certain of the European and American Owlet moths of to-day had, at one time, a common sporting ground. I have shown the existence of every grade of resemblance from undistinguishable species like *Scoliopteryx libatrix* and *Dipterygia pinastri*, through slightly modified forms like *Apatela occidentalis*, *Dianthoecia bella*, *Copimamestra occidenta*, *Agrotis normaniana*, *Lithophane Thaxteri*, to forms readily distinguishable in all their stages by the experienced student. The mass of species is so great that detailed observations on each particular one must await time; but I trust I have laid down the lines by which our Owlet moths are to be studied until our information with regard to them is perfected.

Some idea of the preponderance of *Catocalinæ* in North America may be given by the statement that in Europe there are about fifty-six species belonging to about sixteen genera, while in North America there are about two hundred and fifty species belonging to about fifty-six genera. These latter figures may be changed by new observations with us, but hardly diminished. In the *Deltoidinæ* the proportions are more in conformity with the numerical relations in the typical group, the *Noctuinaæ*. The reason I have given for this preponderance of the *Catocalinæ*, lies in the physical geography of the continent, the prevailing atmospheric and ocean currents, all of which favor the introduction of southern or tropical lepidopterous forms. And we must consider the *Catocalinæ* as tropical in general character in the same way as we consider the other groups of the *Noctuidæ* as belonging to temperate regions of the earth's surface.

In a general view of the evolution of the Lepidoptera we may conceive it as represented by an inverted and spreading bell of net work, in hanging threads of unequal lengths, branching variously and in different directions, and ever widening in departure and circumference. The depending tips of the threads represent the existing species, all connected with the past, and the task before us is the tracing of the threads, always running here and there together, grouping themselves about thicker strands, converging in the hand of time. The means at our disposal for the un-

ravelling are the characters of existing species in *all* their stages, and the sadly imperfect, almost failing, record of fossil species. To add to the difficulty, the species have been distributed and redistributed, affected by geological changes, modified by differences in temperature, moulded by the winds. It is clearly impossible to arrange existing species in a linear series and thereby express also their probable descent. We can only group them according to natural characters and for purposes of convenience. Undoubtedly our categories, through their characters, correspond vaguely to the general plan of evolution. But the arrangement of our catalogues and collections must remain artificial in the main, conditioned by our own physical limitations. Our mental picture of these insects remains relatively imperfect, but enlarges, through new studies and fresh thoughts.

ERRATA ET ADDENDA.—Vol. XXI., p. 123, line 10, for *Noctuide* read *Noctuine*; id., p. 155, line 30, for *Dasychininae* read *Dasychirinae*. The first three North American genera in the list, on p. 157, I refer to the tribe *Bombycoidi*, the rest to the *Apatelini*; the tribal divisions accidentally omitted. Id., p. 189, line 34, for merely read mainly. In connection with my remarks on *Gortyna*, p. 192, I refer to my paper on this genus and *Ochria*, p. 139, written subsequently. Id., p. 229, line 19, insert "apices of the" before "still pointed primaries"; id., p. 230, line 29, for *pyramided* read *pyramidea*; id., p. 230, after *saucia* insert *clandestina*; Vol. XXII., p. 29, line 23, for *Calopharia* read *Calophasia*; id., p. 30, line 2, for form read tribe; id., p. 30, line 9, for slimy read shiny; id., id., line 17, for *Hatney* read *Hatuey*; id., p. 28, line 3, dele "or *Morrisoni*." Dr. Thaxter inclines to consider *sidus* = *vinulenta*, while I sought for it in red forms of *Walkeri*. The latter species is nearer the European *satellitii*, which *tristigmata* also resembles. Without Guenée's type I think no certainty can be obtained. While I think the outlines of a more correct classification of the family are here given, certain points remain to be discussed, such as the separation of *Ingura* as a distinct tribe, while the location of certain genera will be altered when minuter comparisons can be made and the full life history of the species is known. As nature did not produce these creatures in a linear series, one after another, we can only approximately exhibit their relations in our catalogues and collections.

A REPLY TO MR. W. H. EDWARDS.

BY H. J. ELWES, PRESTON, CIRENCESTER, ENGLAND.

I am surprised to see in the May number of the CANADIAN ENTOMOLOGIST a criticism of my paper on "Argynnis" in a style which is not easy to reply to, and which is certainly not justified by the paper itself. Mr. Edwards seems to think that no one has a right to question his opinions on butterflies until they have seen the so-called types from which his original descriptions were made, and that the practical monopoly which he has lately held in the description of new species in the United States gives him the position of an oracle. He accuses me of haste and carelessness, of not having taken the trouble to see what I could easily have seen, and implies that I have not seen the species I have written about. I will only ask those who may be interested, to read my paper* in full and not to judge from the abridgement of it which was published in the March number of *Psyche*. I will also ask them to refer to *Papilio*, Vol III., p. 152. It will there be seen that I have for seven years been collecting all available material for the better understanding of a genus which, naturally difficult in itself, has been rendered doubly so by Mr. W. H. Edwards. It will be seen that in 1883 I had publicly, as well as privately, asked him to inform me how I could identify species which had been described by him, often from very imperfect or scanty specimens—sometimes in such inaccessible publications as *Field and Forest*, and usually, if not always, without giving any characters by which the species could be distinguished from its near allies. To these questions I have received no reply. My valued correspondent, Mr. H. Edwards, "whose judgment in doubtful cases Mr. W. H. Edwards relies on above all persons," had kindly sent me a considerable number of the rarer western forms named by himself. Mr. H. Strecker, who certainly has as good an eye for, and as good a judgment of species as almost any one I met in America, sent me many more, and in various ways I had collected all the known so-called species except four, of two of which I had seen the types, so that I have, as I believe, a larger and better series than any one in Europe or in any of the collections I was able to examine in America. I did not therefore write hastily or carelessly, and the numerous queries in my synopsis show how uncertain I still felt of the proper position and specific value of many of

* A copy will be sent, as long as they last, to any Entomologist who will write for it to me at Preston, Cirencester, England.

the western forms. After having repeatedly tried to find in Mr. Edwards's published figures, all of which I have carefully studied, any help in separating these doubtful forms, I had visited and examined the collections of Mr. Holland (who, I was informed, had acquired Mr. Edwards's types), of the Harvard Museum; of Messrs. H. Edwards, Strecker, Neumogen, Hulst, Scudder and Dr. Behr, to all of whom my best thanks are due; after having gone through all the American and European literature and museums, and written to every one from whom I hoped to learn anything, and after having collected personally in Southern and Northern California and the Yellowstone Park, I am told I have no claim to know anything about "Argynnis," as I have seen mostly second or third rate collections. (Where then are the first rate ones that I did not see?)

I am pleased to learn, that whatever Mr. Edwards's opinion of my work may be, it is not shared by all of his countrymen, from three of the most able of whom I have received flattering approvals of my attempt to enable others to understand this genus, and to arrange their collections on a more rational basis. Mr. Edwards implies that I pay no regard to local variation, that I do not allow that locality is any help in deciding the name of a species, and am generally inclined to lump everything that I do not know.

Will he then see how slight a difference is sufficient in my eyes to separate a local variety, as in the case of the Himalayan form of *A. lathonia*, or a local race worthy to be called a species, such as *A. montinus*, and how I have tried to make these slight differences clear to my readers, as in the case of *A. helena*?

Let him do the same with *Chitone*, *Cipris*, *Inornata*, *Hippolyta* and others, and he will find me the most appreciative of his followers.

But when he rambles on in the way he sometimes does, failing to recognize his own species when they are sent to him for name from unexpected localities, as I am told he has done, I can only say that the fact of a butterfly being confined to one station is not enough to separate it specifically unless it has through isolation or climatic influences developed some peculiarity by which it may invariably be recognized as having come from that place. I do not blame him for describing such things twenty years ago, but I say that now, after he has himself proved by breeding the extraordinary amount of variation to which many species are subject, he has no right to expect anyone at once to recognize as a species such a

form as *Argynnis Alberta*, which he has just described from one ♂ and two ♀ sent him by Mr. Bean.

It would be useless for me to reply in detail to his remarks upon particular species, because he will always fall back upon his so-called types, whilst others must rely on his published work, if they can get it, and if not, upon the best materials they can get. No doubt there are many errors in my arrangement which only time and better knowledge can clear up. I shall welcome the criticism of any one who will show me where I am wrong, and who has better means of coming at the truth than I have, but I am quite content to live under Mr. Edwards's aspersions in such good company as that of Dr. Hagen, and hope that Mr. Edwards will think better of us both when he gets cooler.

A NEW PSEUDOSCORPION.

BY NATHAN BANKS, ITHACA, N. Y.

Upon looking over the specimens of this family, which I had collected during the past few years near Ithaca, I discovered a new species of *Chernes*, which may be characterized as follows:—

Chernes pallidus, nov. spec. Length about 2 m.m.; body ovate oblong; cephalothorax a little broader behind than in front; finely serrulate on the margin; body finely granulate and furnished with short, yellowish, clavate hairs. Abdomen pale yellowish; cephalothorax reddish near anterior end; palpi a uniform red; legs yellowish; no light median line on dorsum. No eyes; palpi stout, longer than the body; 3rd joint nearly as long as cephalothorax, and three times as long as 2nd; 4th a little shorter than 3rd; hand large and stout, fingers a little curved. Larger than *C. Sanborni* H. and *C. oblongus* Say, the palpi larger and longer, and the legs much stouter than in these species. In *C. Sanborni* H. the 3rd joint of palpi is but twice as long as the 2nd. *C. oblongus* is smooth, not granulate; one specimen, Ithaca.

The following species are also found near Ithaca: *Chernes Sanborni* H., several specimens; *Chernes oblongus* Say, more common; *Chelifer cancroides* L., in houses; *Chelifer muricatus* Say, one specimen; *Obisium bruneum* H., several specimens; *Clthionius pennsylvanicus* H., three specimens.

 ON THE LISTS OF COLEOPTERA PUBLISHED BY THE
 GEOLOGICAL SURVEY OF CANADA, 1842-1888.

BY W. HAGUE HARRINGTON, OTTAWA.

(Continued from page 140, Vol. xxii.)

- Diplochila major* *Lec.* [Rhombus]. A.O.
Calathus gregarius *Say.* L'O., St. L.
 ingratus *Dej.* N.C., C.L., O.K., O., N., R.A.
 race confusus *Lec.* B.C.
 mollis *Esch.*, *race lenis* *Mann.* B.C.
 impunctatus *Say.* St. L.
Platynus maurus *Mots.* [stygius *Lec.*]. Y.F.
 sinuatus *Dej.* A.O., St. L., B.C., C.L., T.L., O.
 extensicollis *Say.* St. L.
 anchomenoides *Rand.* B.C.
 tenuis *Lec.* St. L.
 melanarius *Dej.* St. L., B.C., C.L.
 affinis *Kirby.* M.F.
 metallescens *Lec.* O.K., O.
 deceptivus *Lec.* O.K.
 cupripennis *Say.* L'O., St. L., W., S.M.
 perforatus *Lec.* O.
 placidus *Say.* St. L., W.
 cupreus *Dej.* W., S.M., C.C.
 Bogemanni *Gyll.* [obsoletus *Say.*]. A.O., W., S.M., M.F., O.,
 N., C.R.
 race strigicollis *Mann.* B.C.
 quadripunctatus *DeG.* W., O.
 sordens *Kirby.* T.L.
 ruficornis *Lec.* N.C., N.
 retractus *Lec.* A.O., St. L., B.C., W., O.K.
 picipennis *Kirby.* St. L.
 lutulentus *Lec.* St. L.
Lebia cyanipennis *Dej.* B.C.
 viridis *Say?* A.O.
Metabletus americanus *Dej.* [borealis *Zimm.*]. B.C., N.O.
Cymindis cribricollis *Dej.* [reflexa *Lec.*]. L'O., St. L., B.C., N.O.,
 H.M., O.K., C.R.

- Chlænius sericeus* *Forst.* L'O., St. L., S.M.
leucoscelis *Chev.* [*chlorophanus* *Dej.*]. St. L.
tricolor *Dej.* L'O., St. L.
pennsylvanicus *Say.* O.K.
impunctifrons *Say.* A.O.
Agonoderus pallipes *Fab.* W.
Harpalus amputatus *Say.* W.
viridiæneus *Beauv.* St. L.
pennsylvanicus *DeG.* L'O., W., S.M.
megacephalus *Lec.* St. L.
pleuriticus *Kirby.* St. L., W., C.L., S.M., O., N.
herbivagus *Say.* L'O., N.O., W., S.M.
cautus *Dej.* B.C.
rufimanus *Lec.* St. L.
oblitus *Lec.* B.C.
basilaris *Kirby.* B.C.
ruficornis (misprint?). B.C.
Stenolophus conjunctus *Say.* B.C., S.M.
Bradycellus cognatus *Gyll.* O.K.
rupestris *Say.* W.
Tachycellus nigrinus *Dej.* [*Bradycellus*]. T.L.
Anisodactylus piceus *Mén.* B.C.
rusticus *Dej.* L'O.
californicus *Dej.* [*confusus* *Lec.*]. B.C.
Harrisii *Lec.* L'O., St. L.
baltimorensis *Say.* L'O., S.M.

HALIPLIDÆ.

- Haliphus cribrarius* *Lec.* A.O.
ruficollis *DeG.* (*immaculaticollis* *Harr.*). A.O.

DYTISCIDÆ.

- Laccophilus proximus* *Say.* C.L.
Cœlambus inæqualis *Fab.* [*Hydroporus*]. H.M.
ovoideus *Lec.* [*Hydroporus*]. Y.F.
impressopunctatus *Sch.* [*Hydroporus*]. Y.F.

- Deronectes depressus* *Fab.* [*Hydroporus rotundatus* *Lec.*]. O.K.
griseostriatus *DeG.* [*Hydroporus*]. B.C.
Hydroporus proximus *Aubé.* A.O.
sericeus *Lec.* H.M.
alpinus *Payk.* O.
tartaricus *Lec.* Y.F.
tristis *Payk.* [sub*tonsus* *Lec.*]. Y.F.
modestus *Aubé.* Y.F.
Ilybius confusus *Aubé.* H.M., N.
Coptotomus interrogatus *Fab.* A.O.
Agabus parallelus *Lec.* O.K.
seriatus *Say.* A.O., St.L.
punctulatus *Aubé.* N.
anthracinus *Mann.* [*scapularis* *Mann.*]. B.C.
infuscatus *Aubé.* B.C.
Erichsoni *G. & H.* [*nigroæneus* *Er.*] [*lutosus* *Cr.*]. B.C., N.C.,
O.K.
dissimilis *Sahl.* [*Gaurodytes longulus* *Lec.*]. Y.F.
Rhantus binotatus *Harr.* [*Colymbetes*]. B.C., S.M.
tostus *Lec.* [*Colymbetes*]. B.C.
Colymbetes sculptilis *Harr.* [*Cymatopterus*]. B.C., M., H.M., O.K., N.
Dytiscus circumcinctus *Ahr.* [*anxius* *Mann.*]. B.C., N.C.
dauricus *Gebl.* [*confluens* *Say*]. St.L., N.C., M.F., O., N.
Harrisii *Kirby.* H.M.
lapponicus [*Gyll?*]. O.K.
Acilius semisulcatus *Aubé.* H.M.
fraternus *Harr.* L'O.

GYRINIDÆ.

- Gyrinus confinis* *Lec.* M.F.
limbatus *Say.* H.M.
ventralis *Kirby.* B.C., O., C.C.
affinis *Aubé.* M.F.
pectoralis *Lec.* H.M.
borealis *Aubé.* H.M., N.
picipes *Aubé.* B.C.
Dineutes emarginatus *Say.* O.K.

HYDROPHILIDÆ.

- Helophorus lineatus* Say. Y.F.
Berosus striatus Say. W.
Philhydrus cinctus Say. A.O.
 perplexus Lec. Y.F., T.L.
Hydrobius fuscipes Linn. B.C., Y.F.

SILPHIDÆ.

- Necrophorus Sayi* Lap. [lunatus Lec.]. A.O.
 marginatus Fab. [Silpha]. A.O.
 vespilloides Hbst. [pygmæus Kirby]. A.O., M., O., N.
 tomentosus Web. [velutinus Fab.]. St.L.
Silpha surinamensis Fab. L'O., T.L.
 lapponica Hbst. St.L., B.C., N.C., N.O., C.L., M., H.M., O., N.
 trituberculata Kirby. N.C., C.L.
 americana Linn. S.M., M.F.
Choleva basillaris Say [Spenciana Kirby]. B.C., M.F., O.K.
Liodes globosa Lec. S.M.

STAPHYLINIDÆ.

- Quedius fulgidus* Fab. B.C.
 lævigatus Gyll. T.L.
Listrotrophus cingulatus Grav. W., S.M.
Creophilus villosus Grav. [Staphylinus]. St.L., B.C., N.O., C.L., O.
Philonthus æneus Rossi. S.M.
 cyanipennis Fab. A.O.
Lathrobium simile Lec. N.C.
Pæderus littorarius Grav. L'O.
Tachinus fumipennis Say (conformis Dej.). A.O.
Tachyporus jocosus Say. O.
Oxytelus pennsylvanicus Er. A.O.
Porrhodites fenestralis Zett. O.
Olophrum rotundicollis Sahlb. O.
Anthrobium pothos Mann. A.O., B.C.

COCCINELLIDÆ. •

- Anisosticta strigata* *Thunb.* O.
Hippodamia 5-signata *Kirby.* B.C., N.C., N.
 13-punctata *Linn.* L'O., N., C.C.
Coccinella trifasciata *Linn.* B.C., S.M., N.
 9-notata *Hbst.* [novemnotatem *Fab.*]. St.L.
 transversoguttata *Fab.* [5-notata *Kirby.*]. B.C., N.
Harmonia picta *Rand.* [Coccinella]. A.O., B.C., H.M., M.F., T.L.
 12-maculata *Gehl.* [Coccinella]. N.C.
Mysia pullata *Say.* S.M.
Anatis 15-punctata *Oliv.* N.O., N., R.A.
Psyllobora 20 maculata *Say.* B.C.

CUCUJIDÆ.

- Pediacus fuscus* *Er.* (*planus* *Lec.*). A.O., St.L., N.O., S.M., O., C.C.
Cucujus clavipes *Fab.* A.O.
 puniceus *Mann.* B.C.

DERMESTIDÆ.

- Dermestes caninus* *Germ.* [nubilus *Say.*]. O.
 talpinus *Mann.* B.C., N.O.
 lardarius *Linn.* A.O., S.M., N.
Attagenus piceus *Oliv.* [megatoma *Fab.*]. O.
Trogoderma tarsale *Melsh.* [inclusum *Lec.*]?. O.
Anthrenus musæorum *Linn.* (*castaneæ* *Melsh.*). A.O.

HISTERIDÆ.

- Hister abbreviatus* *Fab.* S.M.
 depurator *Say.* B.C., S.M.
 perplexus *Lec.*? L'O.
 parallelus *Say* (*Platysoma*). A.O.
Dendrophilus punctulatus *Say.* S.M.
Saprinus oregonensis *Lec.* N.O., S.M.
 fraternus *Say.* S.M.
 mancus *Say.* S.M.
 estriatus *Lec.* B.C.

NITIDULIDÆ.

- Carpophilus niger* Say. A.O.
Eपुरæa rufa Say. S.M.
 immunda Sturm. O.K.
Nitidula bipustulata Linn. S.M.
Omosita colon Linn. St.L.
 discoidea Fab. B.C.
Ips fasciatus Oliv. (4 signatus Say) [4-guttatus Fab.]. L'O., T.L.

TROGOSITIDÆ.

- Peltis ferruginea* Linn. B.C.
Calitys scabra Thunb. [dentata Fab.] B.C.
Thymalus fulgidus Er. C.R.

BYRRHIDÆ.

- Cytilus sericeus* Forst. (varius Fab.). L'O.
 trivittatus Melsh. B.C.
Byrrhus Kirby Lec. [picipes Kirby]. St.L., B.C.

DASYLLIDÆ.

- Scirtes tibialis* Guér. N.O.
Cyphon variabilis Thunb. S.M.

ELATERIDÆ.

- Adelocera rorulenta* Lec. B.C.
 profusa Cand. B.C.
Cryptohypnus abbreviatus Say [silaceipes Germ.]. A.O., B.C., S.M.
Elater nigrinus Payk. O.K., N.
 luctuosus Lec. O.
 apicatus Say. W., S.M.
Agriotes mancus Say. S.M.
 stabilis Lec. (Dolopius). A.O.
 fucosus Lec. (Dolopius). A.O., W., S.M.
 oblongicollis Melsh. S.M.
Dolopius lateralis Esch. S.M.
Sericosomus incongruus Lec. B.C., N.

- Corymbites virens* *Schr.* [*æneicollis* *Ol.*]. B.C., O.K., O., N.
resplendens *Esch.* N.
spinosus *Lec.* O.
caricinus *Germ.* [*umbricola* *Esch.*]. B.C.
ochreipennis *Lec.* O.K., N., R.A.
triundulatus *Rand.* A.O., N.O.
cruciatus *Linn.* B.C., S.M.
Suckleyi *Lec.* B.C.
æripennis *Kirby.* B.C., C.L., O.
metallicus *Payk.* O.
Asaphes memnonius *Hbst.* S.M.

BUPRESTIDÆ.

- Chalcophora virginiensis* *Drury.* S.M.
Dicerca prolongata *Lec.* B.C., W., C.L., O., N.
tenebrosa *Kirby.* B.C., M., O.
Buprestis consularis *Gory.* S.M.
Nuttalli *Kirby.* N.C., N.O., O., N., C.C.
maculiventris *Say* (*Ancylochira*). A.O., St.L., M., O.K.
rusticorum *Kirby.* C.L., S.M., H.M., O.
fasciata *Fab.* S.M.
race *Langii* *Mann.* W.
Melanophila acuminata *DeG.* [*longipes* *Say*] [*appendicula* *Fab.*]
 B.C., W., S.M., N., C.C., C.R.
Drummondii *Kirby.* B.C., N.C.
Anthaxia æneogaster *Lap.* [*inornata* *Rand.*]. B.C.
Chrysobothris dentipes *Germ.* S.M.
trinervia *Kirby.* N.C., N.O., S.M., O.K.

LAMPYRIDÆ.

- Calopteron terminale* *Say* (*Digrapha*). A.O.
Celetes basalis *Lec.* O.K.
Eros simplicipes *Mann.* B.C.
aurora *Hbst.* [*coccinatus* *Say*]. A.O., B.C.
Plateros caniculatus *Say.* S.M.
lictor *Newm.* (*mollis* *Lec.*). A.O.

- Ellychnia corrusca* Linn. A.O., St.L., N.C., S.M., M.F., O.K., T.L.,
 O., N.
race lacustris Lec. A.O., Y.F.
Pyractomena angulata Say. A.O.
Photinus ardens Lec. S.M.
Photuris pennsylvanica DeG. L'O., S.M.
Podabrus modestus Say. A.O., W.
piniphilus Esch. B.C., N.C., (allied to piniphilus).
puberulus Lec. N.O., S.M.
lævicollis Kirby. B.C.
Telephorus fraxini Say. A.O., B.C., N.C., N.O., S.M.
carolinus Fab. A.O.
nigritulus Lec. N.O.
scitulus Say. S.M.
rotundicollis Say. A.O.
Curtisii Kirby. B.C.
grandicollis Lec. B.C.

MALACHIDÆ.

- Collops tricolor* Say. O.K.
vittatus Say. C.C.

CLERIDÆ.

- Trichodes Nuttalli* Kirby. L'O.
Clerus spegeus Fab. B.C.
Thanasimus dubius Fab. L'O.
undulatus Say [Clerus]. B.C., Y.F., N.O., C.L., S.M., O.
Hydnocera humeralis Say. R.A.
Necrobia violaceus Linn. [Corynetes]. B.C., T.L.

PTINIDÆ.

- Hadrobregmus foveatus* Kirby (Anobium). A.O., O.
Dinoderus substriatus Payk. C.R.

LUCANIDÆ.

- Platycerus depressus* Lec. A.O., St.L., B.C., S.M.

(To be continued.)

PRELIMINARY CATALOGUE OF THE ARCTIIDÆ OF TEMPERATE NORTH AMERICA, WITH NOTES.

BY JOHN B. SMITH, NEW BRUNSWICK, N. J.

(Continued from page 144, Volume xxii.)

Genus SPILOSOMA Steph.

1830—Steph., Ill. Br. Ent., Haust., II., 74.

1856—Wlk., C. B. Mus., Lep. Het., III., 663.

1860—Clem., Proc. Ac. N. Sci., Phil., XII., 531.

1873—Stretch, Zyg. & Bomb., 130.

Head small, retracted; tongue short and weak, membraneous; palpi very short and feeble. Legs moderate, rather short; tibial spurs present but very feebly developed. Fore tibiæ unarmed. Antennæ moderately long, bipectinated in the male, simple or serrate in the female. The tarsal claws are toothed in all the species examined. In *virginica* the posterior tarsi only, in *vestalis* all are toothed.

The primaries have the cell somewhat shorter than usual, veins 7 to 10 on a stalk from the end of the subcostal in the order 10, 7, 9, 8; 3 to 5 are from the end of the median, 4 rather closer to 5 than to 3.

Secondaries with 6 and 7 together from the end of the subcostal, 8 from same rather past the middle, 3 to 5 from the end of the median, 4 much closer to 3 than to 5.

S. antigone Strk.1879—Strk., Rept. Chief Eng., 1878-79, V., p. 1860, *Spilosoma*.1883—Grt., CAN. ENT., XV, 9, = *congrua*.1886—Hulst., Ent. Amer., II., 162, = *congrua*.1889—Smith, Ent. Amer., V., 121, *an sp. dist. congrua*.*S. congrua* † Grt.1883—Grt., CAN. ENT., XV., 9, *Spilosoma*.1886—Hulst*, Ent. Amer., II., 15, *Spilosoma*.

1889—Soule & Elliot*, Psyche, V., 259, life hist.

Habitat—Mass., N. Y., Ga., Colorado.

My reasons for this synonymy are given in Ent. Amer., V., 121. Walker's description does not apply to *antigone* at all, while it does apply to *cunea*, a specimen of which, according to Butler, was of the "types."

S. latipennis Stretch.

1872—Stretch, Zyg. & Bomb., 133, pl. 6, f. 5, ♀, *Spilosoma*.

1874—Lint., Ent. Cont., III., 144, *Spilosoma*.

1883—Edw.*, Papilio, III., 190, *Spilosoma*.

1884—Hulst*, Bull. Bkln. Ent. Soc., VII., 120, *Spilosoma*.

Habitat—Buffalo, Albany and L. I., N. Y.; Mass., N. J.

This species seems to favor damp, almost swampy meadows. I have taken specimens in such localities very sparingly.

S. niobe Strk.

1884—Strk., Proc. Ac. Nat. Sci., Phil., XXXVI., 284, *Spilosoma*.

Habitat—Florida.

This species I do not know at all.

S. prima Slosson.

1889—Slosson, Ent. Amer., V., 40, *Spilosoma*.

Habitat—Franconia N. H., June.

Mrs. Slosson's captures at this locality indicate that there is a great deal yet to be done by the thorough collector in the mountainous parts of New England.

S. vestalis Pack.

1864—Pack., Proc. Ent. Soc., Phil., III., 125, *Spilosoma*.

1872—Stretch, Zyg. & Bomb., 133, pl. 6, ff. 7 (♂) and 8 (♀)
Spilosoma.

1876—Edw.*, Proc. Cal. Ac. Sci., VII., 22, *Spilosoma*.

Habitat—California.

Food plant—*Lupinus* sp.

S. virginica Fabr.

1798—Fabr., Ent. Syst. Suppl., 437, *Bombyx*.

1833—Harris, Cat. Ins. Mass., 591, *Arctia*.

1841—Harris*, Rept. Ins. Mass., 248, *Arctia*.

1856—Wlk., C. B. Mus. Lep. Het., III., 668, *Spilosoma*.

1857—Fitch, 3rd Rept. Ins., N. Y., *Spilosoma*.

1860—Clem., Proc. Ac. N. Sci., Phil., XII., 531, *Spilosoma*.

1862—Morris*, Synopsis, Suppl., 342, *Spilosoma*.

1862—Harris*, Inj. Insects, 350, ff. 167-168, *Arctia*.

1862—Morris in note to Harris, l. c., *Spilosoma*.

1863—Saunders, Syn. Can. Arct., 14, *Spilosoma*.

1871—Riley*, 3rd Rept. Ins. Mo., 68, f. 28, *Spilosoma*.

- 1871—Riley*, Am. Ent., II., 272, f. 170, *Spilosoma*.
 1872—Stretch*, Zyg. & Bomb., 131, pl. 6, f. 6, *Spilosoma*.
 1873—Edw., Proc. Cal. Ac. Sci., V., 187, *Spilosoma*.
 1878—Lint.*, Ent. Cont., IV., 143, *Spilosoma*.
 1880—Saund.*, CAN. ENT., XII., 56, f. 9, *Spilosoma*.
 1883—Saund.*, Fruit Insects, 271, f. 281, *Spilosoma*.
 1884—Bean*, Papilio, IV., 66, *Spilosoma*.
 1887—Bruce*, Ent. Amer., III., 140, *Spilosoma*.
 1888—Dimmock, A. K., Psyche, IV., 281, *Spilosoma*.

Habitat—U. S. generally, Canada, Nova Scotia, H. B. Terr.

This species is the most widely distributed of the genus; its bibliography is very much more extensive than above given, if the economic literature be taken into account. The larva is omnivorous.

Genus HYPHANTRIA Harris.

- 1841—Harris, Rept. Ins. Mass., 255.
 1860—Clem., Proc. Ac. N. Sci., Phil., XII., 530.
 1862—Harris, Inj. Insects, 358.
 1873—Stretch, Zyg. & Bomb., 204.
 1876—Moeschl., Stett. Ent. Zeit., XXXVII., 297.

Head small; tongue weak and short; palpi mere rudiments. Antennæ moderate in length, shorter and simple in the female, bipectinated in the male. Legs short and rather slender. Spurs of middle tibiæ very short and weak; posterior tibiæ with small terminal spurs only; anterior tibiæ with a small spine each side of tip. Claws simple.

Primaries with 7 to 10 on a stalk, 10 very close to the base of the stalk; 7, 8 and 9 close together near the apex; 3, 4 and 5 from the end of the median; 4 and 5 from the same point, or on a short stalk, 3 very close to 4.

Secondaries, 8 from subcostal past the middle; 6 and 7 on a long stalk from end of subcostal; 4 and 5 from the same point from end of median; 3 somewhat remote from 4.

Despite its superficial resemblance to *Spilosoma* this is really a strongly marked genus.

H. cunea Dru.

- 1770—Drury, Ex. I., XVIII., f. 4, *Bombyx*.
 1816—Hübner, Verzeichniss, 184, *Cynia*.

- 1825—Hübner, Zutraege, 203, ff. 405, 406, *Cycnia*.
 1837—Westw., ed. Dru., I., 34, *Spilosoma*.
 1856—Wlk., C. B. Mus., Lep. Het., III., 669, *Spilosoma*.
 1856—Fitch*, 3rd Rept. Ins., N.Y., 384, *Hyphantria*.
 1860—Clem., Proc. Ac. Nat. Sci., Phil., XII., 531, *Hyphantria*.
 1862—Clem., in Morris Syn., 352, *Hyphantria*.
 1862—Morris, Synopsis, 343, *Spilosoma*.
 1865—Wlk., C. B. Mus., Lep. Het., XXXII., 352, *Hyphantria*.
 1873—Stretch*, Zyg. & Bomb., 205, pl. VIII., ff. 18-20, *Hyphantria*.
 1875—Butler, Cist. Ent., II., 32, *Hyphantria*.
 1881—Graef., Bull. Bkln. Ent. Soc., III., 14, *Spilosoma*.
 1881—French, Bull. Bkln. Ent. Soc., III., 31, *Spilosoma*.
 1887—Riley*, Bull. X., Div. Ent., U. S. Dept. Agr., *Hyphantria*.

H. punctatissima A. & S.

- 1797—Abb. & Sm.*, Ins. Ga., II., 139, pl. 70, *Phalæna*.
 1825—Hübner, Zutraege, 203, *pr. syn.*
 1837—Westw., ed. Drury, I., 34, *pr. syn.*
 1841—Harris*, Rept. Ins., Mass., 255, *Hyphantria*.
 1862—Harris*, Inj. Ins., 358, *Hyphantria*.
 1862—Morris, note to Harris, l.c., *pr. syn.*
 1871—Saund.*, CAN. ENT., III., 36, *Hyphantria*.
 1881—Graef., Bull. Bkln., Ent. Soc., III., 14, *pr. syn.*

H. congrua Wlk.

- 1856—Wlk., C. B. Mus., Het., III., 669, *Spilosoma*.
 1860—Clem., Proc. Ac. N. Sci., Phil., XII., 532, *Spilosoma*.
 1862—Morris, Synopsis, Suppl., 343, *Spilosoma*.
 1868—Grt. & Rob., Trans. Am. Ent. Soc., II., 72, *Spilosoma*.
 1873—Stretch, Zyg. & Bomb., 130, *Spilosoma*.
 1875—Butler, Cist. Ent., II., 33, = *cunea*.
 1883—Grt. †, CAN. ENT., XV., 9, *Spilosoma*.
 1889—Smith, Ent. Amer., V., 121, = *cunea*.

H. punctata Fitch.

- 1856—Fitch, 3rd Rept. Ins., N. Y., 387, *Hyphantria*.
 1862—Morris, Synopsis, Suppl., 344, *Spilosoma*.
 1874—Stretch, Zyg. & Bomb., 204, *Hyphantria*.
 1875—Butler, Cist. Ent., II., 33, *pr. syn.*

- 1881—Graef, Bull. Bkln. Ent. Soc., III., 14, *pr. syn.*
 1881—French, Bull. Bkln. Ent. Soc., III., 31, *pr. syn.*

H. textor Harris

- 1828—Harris*, New Engl. Farmer, VII., 33, *Arctia*.
 1833—Harris, Cat. Ins. Mass., 591, *Arctia*.
 1841—Harris*, Rept. Ins. Mass., 255, *Hyphantria*.
 1856—Fitch*, 3rd Rept. Ins., N. Y., 387, *Hyphantria*.
 1856—Wlk., C. B. Mus., Lep. Het., IV., 834, *Euproctis*.
 1860—Clem., Proc. Ac. N. Sci., Phil., XII., 530, *Hyphantria*.
 1862—Morris, Synopsis Supplt., 344, *Spilosoma*.
 1862—Harris*, Inj. Ins., 358, pl. VII., ff. 10-12, *Hyphantria*.
 1862—Morris, in Harris l. c. note, *Spilosoma*.
 1865—Walk., C. B. Mus., Lep. Het., XXXII., 351, *Hypantria*.
 1870—Riley*, Am. Ent., I., 59, *Hyphantria*.
 1871—Riley*, 3rd Rept. Ins., Mo., 130, f. 55, *Hyphantria*.
 1871—Walsh*, 2nd Rept. Ins., Ills., 18, *Hyphantria*.
 1871—Saund.*, CAN. ENT., III., 69, *Hyphantria*.
 1873—Stretch*, Zyg. & Bomb., 206, pl. VIII., f. 21 (♂), *Hyphantria*.
 1875—Edw.*, Proc. Cal. Ac. Sci., VI., 187, *Hyphantria*.
 1875—Butler, Cist. Ent., II., 33, *Hyphantria*.
 1881—Johnson*, CAN. ENT., XII., 18, *Hyphantria*.
 1881—Graef, Bull. Bkln. Ent. Soc., III., 14, = *cunea*.
 1881—French, Bull. Bkln. Ent. Soc., III., 31, = *cunea*.
 1881—Riley, Gen. Index to Mo. Reports, 55, = *cunea*.
 1883—Saund.*, Fruit Insects, 71, ff. 66-68, *Hyphantria*.
 1888—Dimmock*, A. K., Psyche, IV., 280, *Hyphantria*.

H. candida Wlk.

- 1864—Wlk., C. B. Mus., Lep. Het., XXXI., 291, *Spilosoma*.
 1868—Grt. & Rob., Trans. Am. Ent. Soc., II., 84, *pr. syn.*
 1875—Butler, Cist. Ent., II., 33, *an sp. dist?*
 Habitat—United States and Canada.

An elaborate list of food plants is given in Bull. X. of the Division of Entomology, U. S. Dept. of Agriculture, to which reference is made above. The synonymy is the generally accepted one, except as to *congrua*, which is added for the first time. In Mr. Grote's list of 1882, *textor* and *punctata* stand without number but in Roman letters, and therefore not as synonyms. There is no doubt at all of the identity of all

these forms. Prof. Riley has proved that to demonstration, if proof were required to the statements of earlier writers.

Genus EUPSEUDOSOMA Grt.

1865—Grt., Proc. Ent. Soc., Phil., 240.

This genus I do not know autoptically. Mr. Grote, describing a male, gives the character, from which the following notes are made: Body stout; finely scaled, squamation close and short; head prominent, eyes large; tongue moderate, palpi finely scaled, not exceeding the front; legs rather stout, finely scaled, provided with minute spurs; antennæ long, biserrate, tapering to the tips, the serrations short, acute and rather distant; primaries large, triangulate, apices produced, costa very straight, external margin oblique; discal cell open; veins 3, 4 and 5 very nearly from one point, 2 not greatly removed from 3.

Unfortunately, Mr. Grote does not describe the arrangement of the costal series, but it is probably not different from *Spilosoma*. The venation of the secondaries is not described. Our only described species is:

E. floridum Grt.

1882—Grt., CAN. ENT., XIV., 187, *Eupseudosoma*.

Habitat—Florida.

Said to be closely allied to the Cuban *E. niveum*.

Genus EUCHAETES Harris.

1841—Harris, Rept. Ins., Mass., 257.

1860—Clem., Proc. Ac. Nat. Sci., Phil., XII., 532.

1862—Harris, Inj. Insects, 360.

1873—Stretch, Zyg. & Bomb., 185, *syn. spec.*

1882—Grt., CAN. ENT., XIV., 196, *syn. spec.*

Pygarctia Grt.

1871—Grt., CAN. ENT., III., 124.

Head moderate or rather large, closely applied to the thorax; eyes large, but not prominent. Palpi slender, not exceeding the middle of the front; third joint moderate. Tongue long, corneous. Antennæ long, in the ♂ rather lengthily bipectinated. Legs with rather close vestiture, posterior but little the longer, spurs normal. Vestiture hairy, but rather close. Abdomen exceeding secondaries, cylindric, obtusely terminated.

Primaries with 10 out of the subcostal before the end, 7 to 9 on the

same stalk, 8 and 9 dividing just before the apex; 6 out of the same point with the stalk bearing 7-9; 3, 4 and 5 close together from the end of the median.

Secondaries: Subcostal rather long, forking to give rise to 6 and 7 unusually close to apex; costal very short from the subcostal beyond its middle; 3, 4 and 5 very close together out of the end of the median.

These studies were made on *E. egle*. In Mr. Grote's paper on the genus in CAN. ENT., XIV., 196, is an excellent table of the species at that time known, which renders their recognition easy. Several have been since described. From what we know of the early history of some of the species, dimorphism occurs in the genus, and some of the described forms may yet prove synonyms.

E. abdominalis Grt.

1871—Grt., CAN. ENT., III., 124, *Pygarctia*.

1873—Grt., Buff. Bull., I., 34, *Pygarctia*.

1882—Grt., Papilio, II., 111, *Euchaetes*.

1882—Grt., CAN. ENT., XIV., 196, *Euchaetes*.

Habitat—Alabama.

E. bolteri Stretch.

1885—Stretch, Ent. Amer., I., 106, *Euchaetes*.

Habitat—Texas.

E. collaris Fitch.

1856—Fitch, 3rd Rept. Ins., N. Y., 265, *Hyphantria*.

1862—Morris, Synopsis, 344, *Spilosoma*.

1864—Pack., Proc. Ent. Soc., Phil., III., 130, =*egle*.

1868—Grt. & Rob., Tr. Am. Ent. Soc., II., 75, =*egle*.

1873—Stretch, Zyg. & Bomb., 188, pl. 8, f. 5 ♂, *Euchaetes*.

1874—Lint.*, Ent. Cont., III., 146, *Euchaetes*.

1877—Van. Wag.*, CAN. ENT., IX., 171, *life hist.*

1880—Jewett*, CAN. ENT., XII., 228, *Euchaetes*.

1882—Grt., CAN. ENT., XIV., 196, *Euchaetes*.

1883—Edw.*, Papilio, III., 146, *Euchaetes*.

E. antica Wlk.

1857—Wlk., C. B. Mus., Lep. Het., VII., 1745, *Tanada*.

1868—Grt. & Rob., Tr. Am. Ent. Soc., II., 75, =*egle*.

1873—Stretch, Zyg. & Bomb., 188, *pr. syn.*

1875—Butler, Cist. Ent., II., 37, *pr. syn.*

E. sciurus Bdv.1868—Bdv., Lep. Calif. (Ann. Soc. Ent., Belg., XII.), 79, *Arctia*.1869—Grt. & Rob., Tr. Am. Ent. Soc., III., 174, = *L. acrea*.1873—Stretch, Zyg. & Bomb., 188, = *collaris*.1875—Butler, Cist. Ent., II., 37, = *collaris*.

Habitat—Canada, New York, Ohio, California.

Food plant—*Apocynum androsæmifolium*, and *Asclepias* sp.*E. egle* Drury.1773—Dru., Exot. II., pl. XX., f. 3, *Bombyx*.1837—Westw., ed. Drury, II., 38, *Spilosoma*.1841—Harris*, Rept. Ins., Mass., 257, *Euchaetes*.1856—Wlk., C. B. Mus., Lep. Het., III., 669, *Spilosoma*.1860—Clem., Pr. Ac. Nat. Sci., Phil., XII., 352, *Euchaetes*.1862—Harris*, Inj. Ins., 359, ff. 172-174, *life hist.*1862—Morris, Synopsis, 343, *Spilosoma*.1862—Clem., in App. to Morris, 352, *Euchaetes*.1869—Harris*, Ent. Corresp., 288, pl. 2, f. 5, (larva), *Euchaetes*.1872—Strk., Lep. Rhop. et. Het., I., 3, *Euchaetes*.1872—Lint*, Ent. Cont., II., 136, *Euchaetes*.1873—Stretch, Zyg. & Bomb., 186, pl. 8, f. 4, *Euchaetes*.1874—Pack., Rept. Geol. Surv., 1874, 558, *Euchaetes*.1880—Andrews*, Psyche II., 271, *Euchaetes*.1880—Jewett, CAN. ENT., XII., 230, *life hist.*1882—Grt., CAN. ENT., XIV., 196, *Euchaetes*.1883—Hy. Edw.*, Papilio, III., 147, *Euchaetes*.1884—French*, CAN. ENT., XVI., 221, *Euchaetes*.

Habitat—New York, New Jersey, Mass., Maine, Ills., Colorado, Canada.

Food plant—*Asclepias cornutus*, etc.*E. eglenensis* Clem.1860—Clem., Proc. Ac. Nat. Sci., Phil., XII., 533, *Euchaetes*.1875—Butler, Cist. Ent., II., 37, ? = *egle*.1882—Grt., CAN. ENT., XIV., 196, *Euchaetes*.1882—Grt., Papilio, II., 111, *Euchaetes*.1883—Hy. Edw.*, Papilio, III., 147, *Euchaetes*.

Habitat—Texas.

Food plant—*Asclepias* sp.

(To be continued.)

A MONTH ON VANCOUVER ISLAND.

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

But little seems to have been written on the fauna of this interesting island, and therefore I hope that a few notes bearing on the subject may not be without interest to the readers of the CANADIAN ENTOMOLOGIST. It was my good fortune to spend nearly a month in the vicinity of Victoria last summer, and I append some account of observations made at the time.

The Cicindelidæ are represented only by two species of *Omus* and by *Cicindela oregona*, the latter flying on the beach. *Omus audouinii* also frequents the beach, hiding under logs high enough up to be out of the way of the water, while *O. dejeanii* dwells in the woods, and may be found under damp logs.

Two species of *Cychrus*—*angusticollis* and *marginatus*—are found in the heavy forest, and may be dug out of very rotten logs, or found in hollow roots of trees. They both seem to be rather common in places, as I dug over fifty *angusticollis* and a number of *marginatus* out of a single log. The former species emits a very strong and unpleasant odor when disturbed by handling.

Carabus oregonensis seems to prefer rather more open spots, and I took it mostly in the lanes around the outskirts of the town. These specimens are larger than those from Oregon and Washington, and have lighter colored elytra—resembling a specimen shown to me as coming from Sitka. Many other Carabidæ are common, especially *Blethisa*, *Notiophilus*, *Leistus*, *Nebria* and *Bembidium*.

Seashore collecting yields a rich return here, and nearly every log thrown up by the waves out of reach of the tides has its colony of beetles underneath. They are of various species and represent nearly all the large families, though, perhaps, Staphylinidæ are the most abundant. The large *Hadrotus crassus* may be seen under any log or bunch of kelp, which is damp enough to suit. Then we see *Cafius* represented by three species and numerous specimens of a little *Aleochara*, these living mostly in seaweed, along with *Cercyon fimbriatum*, a widely distributed species which I found in plenty at San Diego. The little Trichopterygid with the formidable name—*Motschulskium sinuatocolle*—may be seen on the under surface of logs on the beach, and the omnipresent *Dermestes* looks out for whatever the sea may give up of its dead.

Occasionally a good *Elaterid* is found. I got my only specimen of

Corymbites carbo on the beach, and in dead wood *Hadrobregmus gibbicollis* makes its burrows. The curious little Malachiid known as *Endeodes collaris* runs on the salt sand, and an occasional *Ceruchus* may be seen under the drift.

I found no maritime Chrysomelids, but the Tenebrionidæ furnish an *Eleodes* and a *Coniontis* together with an occasional *Phaleria*. Anthicidæ were rare here, though common further south, but in the Rhynchophora some very interesting species were found.

In this group I found *Agasphærops nigra* and *Amnesia decorata* both on the beach, and once came across a little colony of *Emphyastes fucicola*, one of the most curious looking weevils I have ever seen. The testaceous color of this species seems to be shared by a great many others, which are strictly confined to a life on the beach. *Elassoptes marinus* is common under logs, boring in them from the lower surface, in company with a species of *Rhyncholus*.

Just back of the beach, near the park, is a nearly level space overgrown with various plants, a large majority of which are leguminous, and in the pods of these breed *Apion antennatum* and a species of *Bruchus*. With a sweep net vast numbers of these may be taken, along with numerous individuals of a species of *Ccutorhynchus*. In the lanes the sweep net may be used to great advantage, and some good species are certain to be taken—mostly Elateridæ in June, the month in which my work was done. These Elaterids form one of the most striking features in the fauna of the island, and are numerous both in species and individuals. *Corymbites* and *Athous* seemed the most plentiful of the larger forms, while *Dolopius* and *Megapenthes* represented the smaller.

Serica anthracina and *Odontæus obesus* were the only Scarabæids of note that I found, and these both, but rarely *Lepturæ* were the commonest longhorns, though a few others came to hand in beating: *Eumichthus ædipus* on flowers, *Molorchus longicollis* and *Xylotrechus annosus* on willows.

Chysomelidæ are also rather backward in showing themselves. I took only one *Donacia* by careful search, and the only Cryptocephalids seem to be *Diachus auratus* and *D. catarius*. I took *D. auratus* in the mountains of Arizona in 1888 and have *D. catarius* from Michigan, so these forms are both very widely distributed. *Plagioderæ oviformis* occurs on low ground with *Prasocuris vittata* and the familiar green of *Crepidodera helxines* shines on the willows.

In the meadows I found a few specimens of *Epicauta puncticollis*, but that was all I saw of the Meloidæ. We could hardly expect to find many of them so far north however.

Having a love for Rhyncophora I took pains to get as large a series as possible, and was rewarded by finding quite a number of species. *Rhynchites bicolor* lives on roses there, as I believe it does everywhere in North America, in fact I doubt if there is a spot on this continent where roses grow, that *Rhynchites bicolor* does not inhabit too. Besides *A. nigra* and *A. decorata* previously mentioned, other species of Otorhynchids may be found, and of these *Amnesia granicollis* and *Sciopithes obscurus* are the most plentiful. The former is found in moss or around the roots of grass under logs, while the latter lives on various bushes, preferring blackberry, I think. In company with the *Amnesia* may be found large numbers of a species of *Sitones*, which may some day require the attention of the economist. The injury done to the roots of grass by this little beetle must, I think, be considerable.

I took one *Plinthodes taeniatus* from a rotten log, and two or three *Trichalophus didymus* on low ground among a lot of willows. *Apion* has already been spoken of, *Lepyryus* is common on willow with *Dorytomus brevicollis*, *D. mannerheimii*, *Magdalis salicis* and *Orchestes niger*.

Sweeping in a field yielded a fine specimen of *Trachodes quadrituberculatus*, one of *Phytonomus setigerus* and two or three of a new *Anthonomus*. *Ceutorhynchus* furnished two or three species, *Pelenomus* one, and *Phytobius* one, probably *P. velatus* Beck, a very interesting species of wide distribution, occurring in Michigan and Illinois as well as in Europe. I found no signs of *Centrini* and no *Sphenophorus*. The Scolytidæ taken were all of two species—*Scolytus unispinosus* and *Hylesinus aspericollis*.

There seems to be a preference among water-beetles for small bodies of water, and often after sifting the waters at the edge of a lake or stream with little or no success, I have thoroughly cleaned out a little spring or puddle and found it swarming with them. This experience, repeated so often before, was gone through again at Victoria and I made quite a collection of aquatics in the course of a couple of hours. The species were few in number—not over twenty probably—but there were a good many examples of some of them. The genera *Bidessus*, *Deronectes*, *Agabus*, *Dytiscus*, *Helophorus*, and *Hydrobius* hold the bulk of the species.

Before closing I wish to speak of the results of sifting, a method of collecting which is sadly neglected by many collectors, but which yields some of the rarest and most interesting species. I had expected a good deal of material to result from the use of the sieve here and was not disappointed. Putting in a good-sized bundle of moss and rubbish I shake it over a white cloth and out tumble the beetles faster than I can take care of them—little Staphylinidæ in abundance, now and then a *Tychus cognatus* or *Batrissus zephyrinus*, dozens of *Cyphon exiguus* and single specimens of various kinds. Once in a while some weevil falls out or a *Simplocaria*, *Bembidium* is racing around the cloth, and so are the little—almost invisible—Trichopterygidæ, in which the fauna of the Island is rich. Many Latridiidæ also fall through the wires.

I would recommend this Island as a fine field for investigation by any Entomologist who wishes to spend his summer in a spot charming in itself and rich in insect life. While the fauna of the Island is in some degree marked by one of the peculiarities of the Pacific coast—i. e. a less number of species occupying a given small area than is the case in the East—there are enough to keep one always happy by finding something new or of interest, and material from this region is in good demand among students of our North American fauna, therefore duplicates find a ready exchange. My own work was done mostly in the Coleoptera, but insects of other orders seemed to be plentiful, with the exception of Lepidoptera. There may be more of these however at other seasons of the year.

THE ANNUAL MEETING OF THE ENTOMOLOGICAL SOCIETY OF ONTARIO

will be held in the rooms of the Society, at London, on Wednesday, August 27th, at 9.30 a. m.

THE ENTOMOLOGICAL CLUB OF THE A. A. A. S.

will meet in a room to be assigned by the local committee in the Capitol building at Indianapolis, Indiana, Wednesday, August 20th, at 9 a. m., when members will register and obtain the Club badge. Members intending to contribute papers will send the titles to the President, Prof. A. J. Cook, Agricultural College, Michigan, or F. M. Webster, Lafayette, Ind. It is to be hoped that members will contribute freely, not only to the proceedings of the Club, but also to those of Section "F".

F. M. WEBSTER, Sec. Ent. Club A. A. A. S.

Mailed August 6th.