

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- Coloured covers/  
Couverture de couleur
- Covers damaged/  
Couverture endommagée
- Covers restored and/or laminated/  
Couverture restaurée et/ou pelliculée
- Cover title missing/  
Le titre de couverture manque
- Coloured maps/  
Cartes géographiques en couleur
- Coloured ink (i.e. other than blue or black)/  
Encre de couleur (i.e. autre que bleue ou noire)
- Coloured plates and/or illustrations/  
Planches et/ou illustrations en couleur
- Bound with other material/  
Relié avec d'autres documents
- Tight binding may cause shadows or distortion along interior margin/  
La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure
- Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/  
Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.
- Additional comments:/  
Commentaires supplémentaires:

- Coloured pages/  
Pages de couleur
- Pages damaged/  
Pages endommagées
- Pages restored and/or laminated/  
Pages restaurées et/ou pelliculées
- Pages discoloured, stained or foxed/  
Pages décolorées, tachetées ou piquées
- Pages detached/  
Pages détachées
- Showthrough/  
Transparence
- Quality of print varies/  
Qualité inégale de l'impression
- Continuous pagination/  
Pagination continue
- Includes index(es)/  
Comprend un (des) index
- Title on header taken from: /  
Le titre de l'en-tête provient:
- Title page of issue/  
Page de titre de la livraison
- Caption of issue/  
Titre de départ de la livraison
- Masthead/  
Générique (périodiques) de la livraison

This item is filmed at the reduction ratio checked below/  
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	12X	14X	16X	18X	20X	22X	24X	26X	28X	30X	32X
						✓					

THE CANADIAN  
ENTOMOLOGIST.

VOLUME XXI.

---

EDITED BY THE

Rev. C. J. S. Bethune, M. A., D. C. L.,  
PORT HOPE, ONTARIO.

---

ASSISTED BY

J. Fletcher, Ottawa; J. M. Denton, E. B. Reed  
and W. E. Saunders, London.



London:  
FREE PRESS PRINTING CO.

1889.

## LIST OF CONTRIBUTORS TO THIS VOLUME.

AARON, E. M. ....	PHILADELPHIA, PA.
ASHMEAD, W. H. ....	WASHINGTON, D. C.
BETHUNE, REV. C. J. S. (EDITOR) ..	PORT HOPE, ONT.
BEUTENMULLER, WM. ....	NEW YORK.
BREHME, H. H. ....	NEWARK, N. J.
CLARKSON, FREDERICK. ....	NEW YORK.
COCKERELL, T. D. A. ....	WEST CLIFF, COL.
COOK, PROF. A. J. ....	AGRICULTURAL COLLEGE, MICH.
DAWSON, PERCY M. ....	MONTREAL.
DENTON, S. W. ....	WELLESLEY, MASS.
DYAR, H. G. ....	RHINEBECK, N. Y.
EDWARDS, W. H. ....	COALBURGH, WEST VA.
ELLIOTT, R. ....	PLOVER MILLS.
FLETCHER, JAMES. ....	OTTAWA.
FRENCH, PROF. G. H. ....	CARBONDALE, ILL.
FYLES, REV. T. W. ....	SOUTH QUEBEC.
GEDDES, GAMBLE ....	TORONTO.
GROTE, A. R. ....	BREMEN, GERMANY.
HAGEN, DR. H. A. ....	CAMBRIDGE, MASS.
HAMILTON, DR. JOHN. ....	ALLEGHENY, PA.
HARRINGTON, W. HAGUE. ....	OTTAWA.
HOWARD, L. O. ....	WASHINGTON, D. C.
JOHNSTON, JAMES. ....	HAMILTON.
KELICOTT, DR. D. S. ....	COLUMBUS, OHIO.
KILMAN, ALVA H. ....	RIDGEWAY.
LYMAN, H. H. ....	MONTREAL.
MCNEILL, JEROME. ....	MOLINE, ILL.
MOFFAT, J. ALSTON. ....	HAMILTON.
SCUDDER, S. H. ....	CAMBRIDGE, MASS.
SKINNER, DR. HENRY. ....	PHILADELPHIA, PA.
SMITH, PROF. J. B. ....	NEW BRUNSWICK, N. J.
TRENHOLME, E. C. ....	MONTREAL.
VAN DUZEE, E. P. ....	BUFFALO, N. Y.
WYLLY, MRS. ....	INDIA.

# The Canadian Entomologist.

VOL. XXI.

LONDON, JANUARY, 1889

No. 1.

## HEMIPTERA FROM MUSKOKA LAKE DISTRICT.

BY E. P. VAN DUZEE, BUFFALO, N. Y.

This list is presented as a slight contribution to our knowledge of the geographical distribution of the North American Hemiptera. As our literature of this order is by no means overburdened with faunal lists, I trust that the present will find sufficient excuse for its appearance in the matter it contains. I have made every effort to have the list as accurate and complete as possible, under the circumstances. The material was accumulated during a brief collecting tour in the Muskoka Lake District of Canada, in the interval from July 25th to August 3rd, 1888. The particular localities being in the vicinity of Bracebridge, along the Muskoka River to the Lake, and some of the adjoining islands, and along the road from Bracebridge to South Falls.

For the information of such as are not conversant with the physical features of this beautiful Lake District, I will add that it lies in the metamorphic belt reaching eastward from the Georgian Bay. The surface is somewhat rugged, with bold, rocky bluffs from one hundred to two hundred feet in height, skirting the river and lowlands; the latter presenting a good depth of soil, which is elsewhere very thin, in many places quite insufficient to cover the rocks. Coniferæ, poplars, birches, and a few oaks form the bulk of the timber on the rocky highlands, with the addition of maple, hickory, beech, basswood, etc., on the deeper soils. The undergrowth is largely hazelnut, with blueberry, raspberry, viburnum, spiræa, and other bushes interspersed. Away from the cultivated areas very little grass is to be found; but carex, cyprus and glyceria take its place to a large extent. The bane of this land is the ever-recurring "bush-fire," and to an entomologist a "burned district" is a wilderness indeed.

The Hemiptera taken were largely such as might have been expected from this locality, but were more numerous in individuals than I had

anticipated; the Homoptera especially, seemed proportionately more numerous than farther south, and included many rarities.

I am indebted for a number of the species here enumerated, to the kindness of Mr. A. H. Kilman, who was one of our party, and who passed over to me any luckless Hemipter that perchance found lodgment in his indefatigable umbrella. To Mr. P. R. Uhler, I am under renewed obligations for the determination of some of the more difficult forms, especially in the Capsidæ.

#### HETEROPTERA.

##### *Scutelleridæ.*

*Homæmus ænifrons* Say. Occasional on sedges and weeds on the lowlands.

*Eurygaster alternatus* Say. Abundant with the last.

##### *Corimelænidæ.*

*Corimelæna atra* Am. and Serv. One nymph taken.

*Corimelæna pulicaria* Germ. A single example.

##### *Pentatomidæ.*

*Podisus spinosus* Dall. Taken here as elsewhere on trees and bushes, but more rarely than the next.

*Podisus modestus* Dall.

*Neottiglossa unidata* Say. Common.

*Cosmopepla carnifex* Fab.

*Mormidea lugens* Fab. One example.

*Euchistus fissilis* Uhl.

*Euchistus tristignus* Say. Occasional.

*Banasa calva* Say. Abundant on the arbor-vitæ.

##### *Coreidæ.*

*Alydus eurinus* Say. Frequent on flowers of the Canada thistle in old fields.

*Protocor Belfragei* Hagl. = *Tetrarhinus Quebecensis* Prov. One nymph swept from weeds.

##### *Berytidæ.*

*Neides muticus* Say. Common.

*Corizus punctiventris* Dall. Larger and darker coloured than examples from Buffalo.

*Corizus nigristernum* Sign. Less abundant than the preceding. At Buffalo it is the common form.

*Lygæidæ.*

- Nysius grænlandicus* Zett. Scarce.  
*Cymus luridus* Stål. Three examples, swept from a low swampy spot by the roadside, near South Falls.  
*Cymus angustatus* Stål. Not common.  
*Cymus claviculus* Hahn. Abundant everywhere on the lowlands.  
*Blissus leucopterus*, Say. One brachypterous example, swept from the borders of an oat field on Muskoka river, near the lake.  
*Geocoris borealis* Dall. Taken with the preceding. This appears to be but a dark variety of *G. bullatus* Say.  
*Ligyrocoris sylvestris* Linn. Very abundant in the cultivated districts.  
*Peliopelta abbreviata* Uhl. One small, short-winged example captured.

*Capsidæ.*

- Brachytropis calcarata* Fall.  
*Trigonotylus ruficornis* Fall.  
*Miris affinis* Reut.  
*Collaria McIlleurii* Prov. These four species were not uncommon where cultivation had prepared the way for them. The latter was just coming to perfection.  
*Hadromena pulverulenta* Uhl. (MS.) Two examples.  
*Diommatus congrex*. Uhl. Rare.  
*Phytocoris eximus*. Reut. Occasional.  
*Phytocoris pallidicornis* Reut. Abundant, and of large size.  
*Phytocoris colon*. Say. One example.  
*Neurocolpus nubilus* Say. Common, and as a rule, deeply coloured.  
*Calocoris rapidus* Say. A single specimen.  
*Melinna modesta* Uhl. Beaten from pine trees.  
*Lygus pabulinus* Linn.  
*Lygus pratensis* Linn.  
*Lygus flavonotatus* Prov. A few taken.  
*Lygus invitus* Say. Common.  
*Lygus intersectus* Uhl. (MS.) Abundant.  
*Coccobaphes sanguinarius* Uhl. Not uncommon on maple and beech trees, especially near South Falls.  
*Pæciloscytus unifasciatus* Fab. Numbers taken on the cultivated uplands south of Bracebridge, and elsewhere.  
*Pæcilocapsus lineatus* Fab. Rare.

- Largidea opaca* Uhl. (MS.) Smaller and slighter than New York examples.
- Campptobrochis grandis* Uhl. Common. Apparently of nocturnal habits, as I took several flying around the candle at our camp; some of these individuals were extremely dark, even approaching an almost uniform piceous black; others were as pale as those taken near Buffalo.
- Ncoborus Petitii* Uhl. (MS.) Several pale examples.
- Fulvius anthocoroides* Uhl. One example.
- Monalocoris filicis* Linn. Common everywhere on ferns.
- Hyaliodes vitripennis* Say. This neat little species was taken frequently on pines, and occasionally on other trees and bushes.
- Pilophorus amœmus* Uhl. Common on pine trees.
- Globiceps flavomaculatus* Fab. One example taken. This species was erroneously cited as occurring at Buffalo, in my list of Capsidæ from that locality (CAN. ENT., xix., p. 72, 1887). The insect there referred to was the next, which superficially resembles the *flavomaculatus*.
- Mimoceps gracilis* Uhl. (MS.) A few swept from grass and weeds near a rivulet among the hills.
- Mecomma gilvipes* Uhl. (MS.) Three examples taken with the preceding.
- Macrolophus seperatus* Uhl. Three examples.
- Stiphrosoma stygica* Say. Scattering.
- Labops hesperia* Uhl. A few brachypterus examples swept from an oat field on the flats near the mouth of the river.
- Idolocoris agilis* Uhl. Common on the lowlands.
- Orthotylus alternatus* Uhl. Common on bushes, especially the hazelnut.
- Macrotylus guttatus* Uhl. (MS.) One example of this elegant little Capsid was swept from briars growing on a rocky hillside near the river.
- Rhinocapsus Vanduzeei* Uhl. (MS.) Not uncommon among rank weeds in damp situations.
- Psallus variabilis* Fall. A single example.
- Psallus antennatus* Uhl. (MS.) Several taken.
- Plagiognathus obscurus* Uhl.

*Agalliastes associatus* Uhl. One example of the typical form occurred to me while sweeping near South Falls.

*Anthocoridae.*

*Dolichomerus elongatus* Reut.

*Dilasia fuscata* Reut. Two examples taken from a log of hard maple; they occurred under loose bark where there was a slight fungoid growth.

*Triphelps insidiosus* Say. Common.

*Anthocoris musculus* Say.

*Tingitidae.*

*Galeatus Peckhami* Ashm. (*Sph.rocysta Peckhami*, Ent. Am., vol. iii., p. 156). Swept from low weeds—probably a dwarf vaccinium or a species of aralia, which were growing together—among pines on a rocky island. I am indebted to Mr. Uhler for this generic reference. The three examples taken agree in every respect with Mr. Ashmead's description, and I think there can be no doubt of their identity.

*Corythuca arquata* Say. (?). The small form, which is probably a distinct species, occurred abundantly on birches everywhere. I have taken it from osier bushes at Machias, N. Y., also at Pine Swamp, near New Haven, Ct. If distinct it would seem to be the northern analogue of *C. arquata*.

*Corythuca marmorata* Uhl. One example.

*Aradidae.*

*Aradus quadrilineatus* Say.

*Aradus rectus* Say.

*Reduvioidae.*

*Coriscus subcoleoptratus* Kirby.

*Coriscus inscriptus* Kirby. Common.

*Coriscus fesus* Linn.

*Sinea diadema* Fab. Scarce.

*Opsicætus personatus* Linn. Bracebridge. One example.

*Hydrobatidae.*

*Hygrotrechus remigis* Say.

*Limnotrechus marginatus* Say. Abundant in favorable localities.

*Limnoporus rufoscutellatus* Latr. One example.

*Metrobates hesperius* Uhl. Muskoka Lake. On pleasant afternoons, when the surface of the water was smooth, these insects would congregate in immense numbers, closely covering an area of several yards in extent. A breeze, sufficient to slightly ruffle the surface, would quickly disperse them, but whither I failed to discover, as I was unable to detect any along the shore. The majority of the specimens taken were immature; they differ from the adult in having five, pale yellow spots in addition to the pronotal—one on the centre of the metanotum, one above each anterior, and another before each posterior coxa.

*Salididae.*

*Salda interstitialis* Say. Common along the shores of the river and lake.

HOMOPTERA.

*Cicadidae.*

*Cicada canicularis* Harris. The familiar shrilling of this species was frequently heard in the heat of the day among the tree tops.

*Membracida.*

*Enchenopa binotata* Say. Apparently rare.

*Ceresa bubalus* Fab. Common, but mostly of the small dark coloured variety, with blunt thoracic horns.

*Ceresa dieros* Say. Occasional.

*Telamona coryli* Fitch. Abundant on the hazelnut. The females are frequently of an almost uniform brownish-ferrugineous, with but slight indications of the pale bands, thus approaching closely the next, from which it probably is not distinct.

*Telamona tristis* Fitch. Common with the preceding.

*Telamona fagi* Fitch. One example.

*Telamona reclinata* Fitch. Three examples. Variable both in colour and form of the crest; this being sometimes sharply angled behind, or again obtusely rounded; and the posterior edge may be either sloping or almost vertical. The present examples are very dark in colour, the pale areas being much obscured by fuscous punctures.

*Carynota marmorata* Say. Numbers taken from a small poplar bush (probably *P. grandidentata*), on the uplands south of Bracebridge.

My examples correspond with Say's short description, except that the tip of the thorax extends to, and in some cases beyond, the apical areole. According to the characters given by Say, it must belong here and not to *Cyrtosia*, where it is placed by Dr. Fitch.

*Smilia camelus* Fab. Two examples beaten from oaks  
*Cyrtosia vau* Say. Not infrequent on trees.

#### FULGORIDÆ.

##### Sub-family *Cixiidae*.

*Cixius stigmatus* Say. Not common.  
*Cixius pini* Fitch. Occasional on various low bushes ; rarely on pine.  
 Near Buffalo I have taken it only on vaccinium.  
*Oliarus quinquelineatus* Say. More abundant than the preceding forms.

##### Sub-family *Delphacidae*.

This family was well represented, but I have not studied the material taken.

##### Sub-family *Achelidae*.

Two undetermined species of this family occurred in single examples.

##### Sub-family *Derbidae*.

*Otiocerus Coquerbertii* Kirby. Not uncommon on maple and beech trees.  
*Otiocerus Degerii* Kirby. Beaten from oak and beech trees. Another small and probably undescribed form occurred, which I had the misfortune to lose while in the field.  
*Anotia* sp. One example taken among bushes on the bank of the river at Bracebridge. It is, perhaps, a variety of *Bonneti* Kirby.  
*Lamenia vulgaris* Fitch. Abundant and of large size.

##### Sub-family *Issidae*.

*Bruchomorpha ovalata* Newm. Abundant in damp grassy localities, especially on the lowlands. One example has the elytra fully developed. They are long and narrow, somewhat surpassing the

abdomen in length; sides parallel, not widened at tip; of a deep smoky-brown colour, almost opaque. Nerves very strong and simple, the radial and two ulnar nerves run straight and undivided to the transverse nerve, which crosses the elytra a little beyond the tip of the clavus, forming three large cells on the base of the corium; the second ulnar is forked at the transverse nerve, the first ulnar is twice forked beyond the transverse, and between this and the radial is a short nerve from the transverse to the costa; these forming seven apical cells, of which the medial is small and triangular, and the next inner the largest and rectangular; the claval nerves unite beyond the middle, the resulting nerve joining the claval suture just before its apex.

*Peltonotus histrionicus* Stal. One example. Occurs also at Buffalo.

#### *Cercopidæ.*

*Lepyronia quadrangularis* Say. Rare.

*Aphrophora quadrimotata* Say. Very abundant on the lowlands, but mostly immature; the imagines were just beginning to appear.

*Aphrophora parallella* Say. Common on pines.

*Aphrophora saratogensis* Fitch. Rather more abundant than the preceding, with which it occurred and which it greatly resembles; it is, however, readily distinguished by the more obtuse head, clearer markings, and concolorous punctures.

*Clastoptera obtusa* Say. Very common on the blueberry.

*Clastoptera proteus* Fitch. With the last.

#### *Bythoscopidæ.*

*Idiocerus pallidus* Fitch. Abundant on willows, birches, etc.

*Idiocerus suturalis* Fitch. On low poplar bushes near the river; even more abundant than the preceding.

*Idiocerus lachrymalis* Fitch. Numbers of this, our largest species, occurred on birch and other trees.

*Idiocerus alternatus* Fitch. Scarce. It is with slight misgivings that I place this insect here, although I believe future study will justify the reference.

*Agallia novellus* Say. As abundant at Muskoka as in New York; on grass and weeds.

*Agallia flaccida* Uhl. But few of this common species were seen at Muskoka.

*Agallia siccifolia* Uhl. Not uncommon in dry pastures.

*Pediopsis viridis* Fitch. Apparently rare.

*Pediopsis variabilis* Fitch. Examples occurred of varieties *A.* and *C.* of Fitch, and a single specimen of a uniform ferrugineous, with pale yellow elytra crossed from the shoulder to the apex by a broad ferrugineous band.

*Pediopsis minor* Fitch. Two examples.

*Pediopsis fenestratus* Fitch. A common species on birch trees.

#### *Tettigonidae.*

*Oncometopia costalis* Fab. Very abundant among coarse weeds and grass, particularly near South Falls, where the pretty striped nymphs occurred with the newly developed imagines.

*Diedrocephala coccinea* Forst. Not uncommon on blackberry bushes.

*Diedrocephala mollipes* Say. Common.

*Diedrocephala novæboracensis* Fitch.

*Helochara communis* Fitch. Common.

*Euacanthus orbitalis* Fitch. A few examples taken.

*Gypona 8-lineata* Say. The form named *flavilineata* by Dr. Fitch occurred abundantly on various trees and bushes. I place this variety with *8-lineata* Say, as it seems impossible, on a superficial examination, to find any constant characters for separating the two forms, although they have every appearance of being distinct species. Some of the examples taken exhibit no indications of the yellow lines on the head, pronotum and scutellum, while all are extremely variable in the elytral venation. A careful study of our northern species of *Gypona* is needed.

#### *Jassidae.*

*Acocephalus vitellinus* Fitch. One example.

*Grypotes unicolor* Fitch. Not uncommon.

*Cicadula (Macrosteles) quadrilineata* Forbes. A few examples of this common species occurred on cultivated lands. Near Buffalo it is

quite variable, some individuals corresponding very closely with Mr. Uhler's description of *Jassus divisus*, with which this may prove identical.

*Thamnotettix eburata* n. sp. Form and aspect of *clitellaria* Say, to which it is closely related. Above brown with a large white discal spot, beneath white; venter marked with black and yellow ♂, or whitish ♀. Vertex pale yellow, whitish on the base, slightly suffused with ferruginous on each side near the eye; a central impressed line extending about half way to the apex. Face whitish, slightly tinged with yellow. Antennæ white, setæ brown. Pronotum and scutellum dark ferruginous or fuscous, the latter paler with a transverse impressed black line before the apex, behind which the edges are narrowly yellow, and slightly calloused. Hemielytra;—Clavus fuscous, the common disc with a large, obtusely cordate, ivory white spot which is slightly suffused with yellow; behind this spot is a dark area. Costal half of the corium milky white, almost opalescent, tip broadly fuscous; discal half brownish ferruginous, paler posteriorly, and shading to fuscous along its junction with the white costal area. Beneath and legs white, immaculate; small spines at tip of the tibiæ and tarsal joints slightly embrowned; claws black. Venter black, posterior edge and disc of the segments yellow; the latter with a central black line, represented by dots on the three basal segments; convexium yellow; tergum black. Wings milky hyaline, veins faintly brownish. The female differs from the male in being somewhat paler, in having the discal spot of the elytra more yellowish, and the abdomen pale yellow or whitish. In the venation of the elytra and other structural features this species agrees very closely with *clitellaria*. The ♂ has the last ventral segment slightly concave posteriorly; valves obtusely triangular, black; plates white, sparsely covered with long concolorous hairs. The ♀ has the last ventral segment black, with the lateral margins pale; as in *clitellaria* it is deeply incised each side of the middle, leaving a central tongue, which is minutely emarginate at tip; pygofers pale, suffused with brown toward the central groove, and fringed with long pale hairs. Length, ♂ 5 mm.; ♀ 5½–6 mm. A male was swept from grass near a rivulet at Bracebridge; also taken in the vicinity of South Falls.

*Athasanus striola* Fall. Occurred abundantly near South Falls, on a low meadow overgrown with swamp grasses ; here they were of large size, measuring in some cases 6 mm. to tip of the elytra ; elsewhere, scattering and of normal-size.

*Allygus irroratus* Say. Taken in moderate numbers. Both the normal form and the large variety, with the vertex produced and flattened, occurred together here as elsewhere ; the variety predominating in moist situations.

*Jassus immistus* Say. Common among low bushes and briars. This pretty insect seems to be congeneric with a form occurring near Buffalo, of which I have seen specimens in the National Museum labelled *Scophoideus jucundus* Uhl. A third and undescribed species occurred to me at Muskoka.

*Platymetopius acutus* Say. Moderately abundant.

*Deltocephalus debilis* Uhl. Rare. Occurs also at Buffalo.

*Deltocephalus configuratus* Uhl. Abundant here as elsewhere.

*Deltocephalus sayi*. Fitch. Scarce.

*Deltocephalus inimicus* Say. Very common on cultivated lands.

#### *Typhlocybidæ.*

Several species of these minute insects occurred ; but as the North American species have been but little studied they are omitted from the present list.

#### *Psyllidæ.*

*Psylla carpini* Fitch. Abundant on the blue beech.

#### *Aphididæ.*

Want of time precluded any attempt at collecting the *Aphididæ* and *Coccidæ*.

In addition to the 141 species here enumerated a number of doubtful forms were taken, belonging mostly to the Homoptera ; giving a total of something over 150 species as the fruits of ten days collecting.

## FURTHER NOTES ON CHIONOBAS JUTTA.

BY REV. THOMAS W. FYLES, SOUTH QUEBEC.

Our President has asked me what methods I adopted for the raising of *C. jutta* from the egg. I will endeavour to describe them.

As it is well known that larvæ of the genus *Chionobas* feed on grasses, my first care was to determine what grasses were to be found in the haunts of *Jutta*, and to notice the circumstances under which they grew. I found several, all rooted in the sphagnum of the swamp. I took home roots of every kind, and potted them in sphagnum, being careful to close the hole in the bottom of each flower pot with a cork, and to soak the plants thoroughly with rain water. I soon had a number of thriving plants. I placed the pots containing these—so near together that some of the blades of every plant intermingled with blades of the rest—in a box of convenient size; and I filled up the interstices, to the level of the rims of the pots, with sphagnum. I then made a slight, arched lattice over the top of the box, and stretched a piece of green netting over it. My cage was then ready. When *Jutta* was pretty well worn, *i. e.*, about the 12th of June, I captured two or three females, and placed them in my cage. On the 17th of that month I found a number of eggs, not laid on the blades of grass, but scattered over the netting. When the larvæ appeared, I placed, by means of a camel's hair pencil, a few of them on each plant; but I soon found that they congregated on the sedge. This then, I concluded, was their favourite food-plant. I kept the cage on the seat of an open window with a north-western aspect; and, whenever it rained I removed the covering of the box, and let the insects have the benefit of the shower. In dry times I occasionally sprinkled them at sunset with soft water.

In August I noticed that my insects were seriously decreasing in number. As their habits were unknown I thought it possible that the vanished specimens had buried themselves in the sphagnum, and would in due time again appear; but a wounded larva, that had evidently been nipped by a foe, at length aroused my suspicions. I procured fresh plants of sedge, placed upon them all the larvæ I could find, and then spread a large sheet of paper, and upon it pulled all the old bedding to pieces. The result was that I found, not the lost larvæ, but several very well grown specimens of *Lithobius Americanus*. I consider this creature therefore a

foe to be guarded against. On the approach of winter the care of *Jutta* became perplexing—the more so as I was about to leave for England. I at length resolved to place the case, near a window, in a outer passage leading to a dairy. There it would be, I thought, sufficiently removed from the warmth of the house, and would escape the crushing weight of the winter's snow. I left the larvæ supplied abundantly with sedge growing in well soaked sphagnum. On my return in February only six of the larvæ remained. They were torpid, but fresh and plump. A mild day came, and one of the larvæ revived; but the mild day was followed by a bitter night, and the adventurous larva perished. When the others began to revive I moved the cage into a room where the temperature could be better regulated. Of the remaining larvæ one afterwards died and four went into chrysalis. The chrysalids were naked, unattached, and lay on the surface, or just below the surface of the sphagnum. I sent one of them to Mr. W. H. Edwards, and one I preserved as a specimen. The other two produced butterflies. The first of these appeared on the 31st of May, and was crippled. I thought that perhaps I had kept the chrysalis too dry, and I sprinkled the one remaining with fresh water. Next day a beautiful and fully developed female *Jutta* presented itself, crowning my efforts with success. It was as large as the largest specimens I had taken in a state of nature. The only difference I could perceive—and it was hardly perceptible—was that the insect raised in captivity was of a somewhat paler brown than the others.

---

### ONE WORD MORE ABOUT RILEYA.

BY L. O. HOWARD, WASHINGTON, D. C.

(See Mr. Ashmead's communication in December CAN. ENT.)

Without entering further into the discussion of priority, beyond stating that Mr. Ashmead is wrong in his points (1), that my original communication was read after the publication of his synoptical table, (it was read two days before the receipt of the number of *Entomologica Americana*, in which the table was published), and (2), that his full description was published before mine; (mine was published nine days before the receipt of the Kansas bulletin). I wish to say just a word in reply to his supposi-

tion as to the identity of *Lonchocerus* Dahlbom and *Rileyæ* Howard. His statement that I had not consulted the European literature is, of course, uncalled for and absurd. I had not only familiarized myself with the European descriptions, but had sent specimens to Dr. Mayr, who so ably monographed the European Encyrtinæ some years ago, and whose opinion corroborated my own as to the novelty of this form. Mr. Ashmead's comparison of Thomson's description with my own must have been most hurried, as they differ so widely that I would advise him to retract his expressed opinion for the sake of his entomological reputation.

I tabulate here the differences which can be noted from comparison of the two descriptions and my figure of *Rileyæ*. The quoted portions in the *Rileyæ* column are from the description, and the unquoted portions can be verified from the figure. *Lonchocerus*, by the way, is nothing but a synonym of *Mira*, if Thomson is right in supposing that Dahlbom founded the genus for Dalman's *Encyrtus platycerus*. Dahlbom's genera in the Encyrtinæ were described, however, without any indication of types.

## RILEYÆ HOWARD.

"Face \* \* \* gently rounded, and has a strong, glistening, transverse, clean-cut ridge just above the insertion of the antennæ."

Antennal club not jointed.

Mesoscutum transverse, "highly polished."

"The mesoscutellum has a strong tuft of erect, black hairs" at tip only.

Wings not shortened; when closed reaching considerably beyond tip of abdomen.

"The stigmal vein is given off immediately at the juncture of the submarginal with the costa." Consequently there is *no* marginal vein.

Abdomen flattened ovate, cutely pointed behind, "highly polished."

## LONCHOCERUS DAHLBOM.

"Caput subtriangulare, vertice sat lato, lateribus tereti, medio subacuto."

"Clava 3-articulata."

"Mesonoto [mesoscutum] haud transverso, dense albo-sericeo."

"Scutellum dense holocericeo-pubescentis."

"Alæ abbreviatæ, Thorace vix superantes."

"Stigmate [marginal vein] lineari, distincto."

"Abdomen subglobosum, dense albo-pubescentis."

In conclusion, I wish to apologize for the slip (or misprint) in the use of "1887" for "1888." The change does not alter the relative order of the events, and the date of reading the paper is unimportant.

## POPULAR AND ECONOMICAL ENTOMOLOGY.

## WINTER COLLECTING.

BY JAMES FLETCHER, OTTAWA.

At the last annual meeting of the Entomological Society of Ontario, it was decided that every month there should be at least one short article upon the above subject. The Council consider it wiser not to increase the size of the CANADIAN ENTOMOLOGIST at the present time, but to take two pages from the space we now devote to Scientific Entomology. It is true the space at our disposal is all too small to accommodate the valuable articles sent in by our friends, but the demands are so frequent for articles of the nature mentioned, that it has been decided to try the experiment of having them regularly, and it is thus hoped to largely extend the influence of the Society by inducing more lovers of nature to take up Entomology as a study, and by providing agriculturists and horticulturists with short and simple accounts of their insect enemies and the latest discovered remedies. It has been suggested that the winter is an inappropriate time of the year to begin such a series of articles; but upon slight consideration this will be found to be not at all the case. In the continuous chain of nature, great interest will be found at every link and thing unexpected, strange and of marvellous beauty will appear at every point. Even in Canada, snow and ice-bound for so many months in the year, there is much collecting which can be done in the winter. A favorite occupation of the writer is to go off collecting with a congenial companion upon snow-shoes. The charm of this pleasant exercise in which, supported by the light snow-shoes, one can visit places inaccessible during the summer, is in no way diminished by being able to take home with you specimens which will afford ample occupation for many evenings. Starting off in a straight line many objects of interest are met with as we go along, across field and fences, through woods and swamps and over rivers, hills or even mountains, all levelled and smoothed down to an even surface by their thick covering of ice and snow. In passing through the woods and swamps cocoons are eagerly looked for on the slender boughs of trees and shrubs. It is seldom that we are not rewarded with cocoons of the large Emperor moths. In crevices of bark and beneath moss, many hibernating insects are discovered of several orders. Larvæ of moths and chrysalids of butterflies, beetles and hemiptera. One of our annual trips is to a certain

tree for the pretty little homopteron, which forms galls on the leaf of the hackberry (*Psylla Celtidis-mamma*, Riley), and which passes the winter in a torpid state beneath the scales of the bark of the hackberry, the color of which it closely resembles. In passing through the swamps, tufts of moss are pulled from any exposed hummocks to be picked to pieces at home when they have thawed out. Here will be found many treasures which we have not found in any other way. Every cluster of leaves adhering to a deciduous tree or swelling upon a stem has to be examined for the cause, and if it prove to be the work of insects, must be put into the bag for examination. The only apparatus necessary for these expeditions is a bag slung over the shoulders and a stick with a hook on one end and a spike on the other; the bag acts as a large pocket, and saves the inconvenience of unbuttoning your coat, when, perhaps, the thermometer is below zero. The hook on the stick is useful for pulling down boughs or pulling yourself out of a hole; the spike for prying off pieces of bark or digging into old stumps.

Objects of great interest, some of which can be better collected, and from which the insects can be more successfully bred when collected in the winter time, are the various kinds of plant galls. These require little trouble, all that is necessary is to put them away in glass jars and keep them closed. After a time the occupants begin to emerge, and to the surprise of the uninitiated, although each kind is made by only one kind of insect, from the galls will be produced perhaps half a dozen distinct species. These are most of them parasites upon the gall-maker, or what are known as inquilines or guest flies. The gall-maker produces the gall upon the plants. In this gall some of these guest flies deposit their eggs, and the young grubs feed upon the substance of the gall, or others again live as parasites, either upon the grubs of the gall-makers or their guests. Watching these as they emerge and making notes upon them, will be found most entertaining at a time of the year when there is little active life out of doors. A further zest is added to this department of study from the fact that so little has been done in this line, that many of the flies so bred will be new to science.

Other places which may be visited in the winter, are groves of evergreens where much will be found to repay the collector. Amongst the leaves of the pines are cases of larvæ, and in the leaves themselves are the burrows of the caterpillar of a tiny moth. Beneath the bark are numerous scolytid bark-borers, and from the solid wood beneath may be ex-

tracted the large grubs of the timber borers; to obtain these last, however, an axe will be found necessary. In the garden the horticulturist will find plenty of work with which to occupy himself profitably. The egg masses of the tent caterpillars should now be collected and destroyed as well as those of the Tussock moths. Clusters of dead leaves should be removed from apple trees and their stems cleared of the scales of the oyster-shell bark louse and other small insects which winter in rough places on the bark or amongst the buds.

In addition to the above work out of doors, much is to be done during the winter to prepare for the work of the coming season. Apparatus and storing boxes for specimens should be prepared well beforehand, or, perhaps, when the time comes to use them, opportunities will be lost. Some simple elementary book should be procured and read at leisure. In our library at London, we have for the use of our members, many books of this nature which can be borrowed by applying to the librarian. We should recommend to beginners Kirby & Spence's Entomology, Packard's Entomology for Beginners, and Comstock's Introduction to Entomology.

---

#### PHILIP HENRY GOSSE.

On Thursday the 23d of August, Philip Henry Gosse, departed this life at St. Marychurch, near Torquay, Devonshire. He was born at Worcester, on the 6th of April, 1810, and early displayed a taste for natural history. In 1827, he was engaged as clerk in the extensive mercantile house of Messrs. Slade, Elson, Harrison & Co., of Carbonear, Newfoundland. In June, 1835, he removed with his friend, Mr. G. E. Jacques, (now living at Cowansville, P. Q.,) to Lower Canada. He bought a farm one mile east from Waterville, on the River Coaticook. During the summer he cultivated his land, and in the winter he taught the Compton village school. At this time he collected the materials for his first work, the *Canadian Naturalist*. The rough life of a Canadian farmer, in a comparatively new settlement, was ill-suited to this young man of refined tastes; and the "noisy politics" and "martial alarms" of the times must have jarred on his ear, attuned as it was to the music of nature. Then, too, the people of the neighborhood were not of a class to appreciate his studies. They were wont to speak of him as "that crazy Englishman."

who goes about picking up bugs." It was well for him that as a naturalist, to use his own words, he could find "gratification in any scene and at any season," and that in Mr. Jacques, in whose house he boarded, he had a congenial friend. In Chapter viii. of his work, he draws a gloomy picture of an Eastern Township farmer's life; but in the preface (which breathes the modesty and piety which characterized him through life), he says:—"During a residence of some years in the Lower Province, the author has felt it to be no common privilege to be able to solace himself by these simple but enchanting studies \* \* \* and even now the recollection of those pleasant scenes sheds forth a lustre which gilds the edge of many a dark cloud."

In March, 1838, Mr. Gosse left Compton, and settled in Alabama for about six months. His observations at this period afforded the subject matter of his *Letters from Alabama, chiefly relating to Natural History*. He returned to England in the spring of 1839, and published the *Canadian Naturalist* during the summer. On the 10th of August, 1844, he sailed for Jamaica, to study the natural history of that island. After a residence there of two years, he went back to England, and published the result of his investigations, under the title of *The Birds of Jamaica, A Naturalist's Sojourn in Jamaica, and An Atlas of Illustrations*.

From January, 1852, to the time of his death, Mr. Gosse's residence was at St. Marychurch, where he had a delightful residence which he named "Sandhurst." Attached to this were extensive conservatories, including a vinery, fernery, orchid houses, etc.

For some years, he was engaged in preparing works for the S. P. C. K. After that he devoted himself to the microscopic study of the British Rotifera. In 1856, he was elected a Fellow of the Royal Society. He was an indefatigable worker, usually in his study by four o'clock in the morning in the summer, and by six o'clock in the winter, and producing on the average two works in the year. His books must number about forty; and among the scientific papers of the Royal Society upwards of fifty are from the pen of Mr. Gosse.

Among his works are:—*Tenby, A Sea-side Holiday; The Aquarium; Actinologia Britannica; A History of the British Sea Anemones and Corals; The Wonders of the Great Deep; The Romance of Natural History; Life in its Lower, Intermediate, and Higher Forms; Land and Sea, and A Year at the Shore*.

Always of a religious turn of mind, he delighted in sacred history and Biblical studies ; and a number of words of a sacred and historical character proceeded from his pen. The last of these, published in 1884, was entitled, *The Mysteries of God, a Series of Expositions of Holy Scripture.*

One cannot often point to a life more pleasantly and usefully spent than that of Philip Henry Gosse.

THOMAS W. FYLES.

---

## CORRESPONDENCE.

---

### DANAIS ARCHIPPUS.

*Dear Sir :* I send you my season's observations on the movements of *D. archippus* in this locality. The spring of '88 was an unusually backward one here, cool, dry weather prevailing, which will, of course, affect all the dates more or less. I commenced by watching for the appearance of milk-weed *Asclepias cornutus* in two places where it grows in abundance ; one, a flat to the west of the city, protected on the east and north by a high bank ; the other to the east along the foot of the Niagara escarpment, a very warm spot when the wind is not north-east. On the 4th of June, I could not see a sign of its coming through the ground ; on the 5th, I went to the country, about 26 miles north of this ; they had more rain there, and *A. cornutus* was from three to six inches high ; on the 7th, I saw my first *D. archippus* of the season, but they did not appear in any great numbers whilst I remained. On my return, I visited the west end on the 26th, there were a few flying about the weed, which was then from ten to fourteen inches in height with blossom clusters not yet expanded. I captured three—two males and a female, and saw a larva about one inch long and as thick as a wheat straw. In the same locality, on 3rd of July, I counted seven on the wing at one time, flying vigorously, and took two males, and felt sure from their movements the others were the same. On the 5th went east, milk-weed in full bloom, *archippus* abundant ; captured two males, and suspected all the others to be the same ; could find no larvæ ; took fresh hatched *Milberti* and saw plenty of fresh *Atalanta*. Went west on the 7th, not many on the wing, and could find very few larvæ. Was at Guelph for ten days on the 16th, and visited the Agricultural College. Prof. Panton showed me chrysalids reared in confinement.

On the 21st, at the west end, captured a freshly hatched male; found no larvæ; leaves of weed showing little signs of being eaten. 25th, same place; butterflies plentiful; freshly hatched mingling with old broken ones; took a fresh female. East on the 27th; butterflies not plentiful; saw a few larvæ nearly full fed. 28th, west; not so plentiful as on the 25th. From the 2nd to the 18th of August, I was in the vicinity of Brantford—25 miles west from Hamilton; there were few *D. archippus* to be seen, but all were fresh; yet there was an abundance of *asclepias*. On the 20th, was at the west end; larvæ scarce; saw one not half an inch long; took one full fed, which suspended that night, and pupated the following night; there were very few *archippus* about the milk-weeds, which were now four and a-half and five feet high. From the 1st to the 17th of September I was 16 miles south of here; there I saw several fresh *archippus*, but not a single stalk of *asclepias*. On the 21st was at the west end; *archippus* had completely deserted the milk-weed; I saw some feeding in a garden some distance away. My impression has been for a good while that the butterflies care but little for the milk-weed to feed at; that they are there for breeding purposes principally; that they are but light feeders, with a great fondness for loitering in open woods, where there is apparently nothing for them to feed on. My last observation was made on the 15th of October; the milk-weeds were still green at top, but the lower leaves were all decayed. I have seen no butterflies since the 21st of September.

J. ALSTON MOFFAT, Hamilton.

#### SOME COLEOPTERA NEW TO COLORADO.

*Dear Sir:* Dr. John Hamilton has been good enough recently to examine some Coleoptera which I collected in Custer County, Col., and among them he finds five specimens new to the State List. One, *Ditylus obscurus*, was obtained in the eastern portion of the county, the other four are from near Swift Creek, at 8,000 to 8,500 feet altitude, and are as follows: *Aphodius brevicollis*—which Dr. Hamilton says was previously known only by a single specimen found in Nebraska; *Hister Harrisii*, Kirby; *H. subopacus*, Lec.—three specimens obtained; and *Lebia vivida*, Bates. Among my beetles from Eastern Custer Co. was also an example of *Pityophagus verticalis*, which Dr. Hamilton says was previously known by a single specimen only.

Sept. 7th, 1888.

T. D. A. COCKERELL, West Cliff, Colorado

Mailed January 4th.