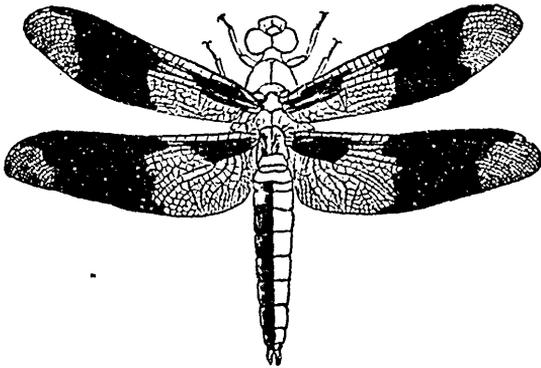




The  
**Canadian Entomologist**

VOLUME XXIX.

No. 5.



LIBELLULA TRIMACULATA.

EDITED BY

REV. C. J. S. BETHUNE,

HEAD MASTER OF TRINITY COLLEGE SCHOOL,

PORT HOPE, ONTARIO.



MAY, 1897.

LONDON:

LONDON PRINTING AND LITHOGRAPHING COMPANY.

1897.

## EXCHANGE.

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

**N. A. LEPIDOPTERA.**—Exchange desired. Also a lot of exotic Coleoptera, named and unnamed. What offers? Will collect in other orders.—E. V. RIPPON, 129 Hazleton Ave., Toronto.

**KERNES.**—Desired from North America. Will return identified material. E. E. BOGUE, Agr. Expt. Sta., Stillwater, Oklahoma.

**LEPIDOPTERA** desired from all parts of N. America. Will collect in other orders in exchange. C. H. TYERS, 227 Front Street East, Toronto.

**LEPIDOPTERA.**—Exotic and native cocoons and pupæ. Preserved larvæ. Especially Rhoplocera. Correspondence invited. W. S. KEARFOTT, 24 South Water St., Cleveland, Ohio.

**WILL COLLECT** in many orders of Entomology and Herpetology of Arizona. Address DR. R. E. KUNZE, Phoenix, Arizona.

**I OFFER** perfect specimens of named diurnals from Central America and Northern South America, in papers, for diurnals from Northwest, Western and Southwestern States. LEVI W. MENGEL, Reading, Pa.

**WILL COLLECT** any Aquatic insects to exchange for Odonata and Plecoptera, nymphs or imagoes; nymphs preferred. Will determine nymphs or imagoes in these orders for duplicates. JAMES G. NEDHAM, Cornell University, Ithaca, N. Y.

**COLLECTORS OF AQUATIC COLEOPTERA** should save all the Aquatic Hemiptera taken with the beetles, dredging or at light. I will give exchange for all such Hemiptera in any order, or purchase. CARL F. BAKER, Auburn, Alabama.

**COLEOPTERA.**—Exchange desired; only perfect specimens given and received. Will also collect in other orders in exchange for Coleoptera of N. A. R. J. CREW, 105 Oak St., Toronto, Ont.

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

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

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

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

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

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

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

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

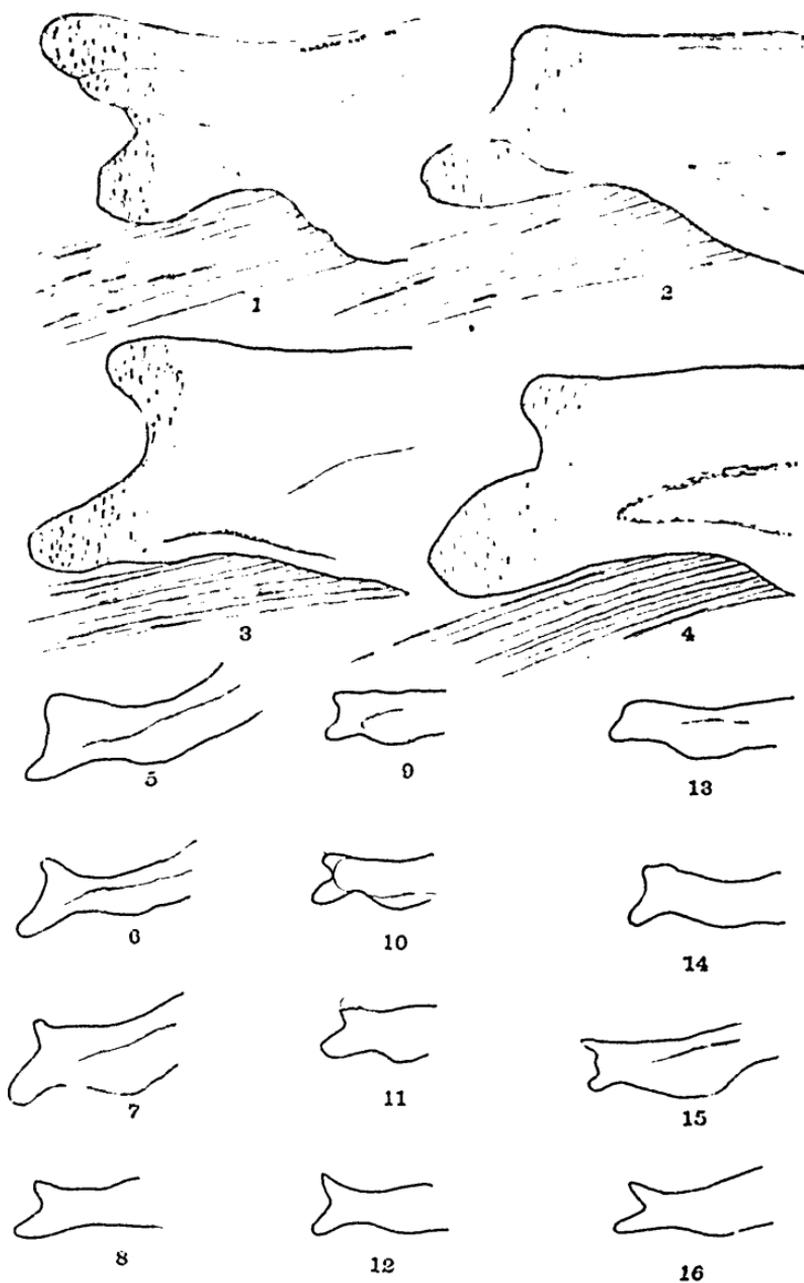
**WANTED.**—Diptera of the families Sarcophagidæ and Muscidæ (sensu stricto) from all localities. Will purchase or exchange for insects of any order. GARRY DEN HOUGH, M. D., 542 County St., New Bedford, Mass.

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

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

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

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



GENITALIA OF CALLIMORPHA.

# The Canadian Entomologist.

VOL. XXIX.

LONDON, MAY, 1897.

No. 5.

## CALLIMORPHA AGAIN

### *Larva of Haploa fulvicosta and notes on the male genitalia.*

BY HARRISON G. DYAR, PH. D., NEW YORK.

The difficulty of defining species in this genus is increased by the constancy of the local forms or races. I have elsewhere referred (*Ent. News*, VII., 218) to the race of *fulvicosta* which Mr. O. D. Foulks has discovered at Stockton, Md. Mr. Foulks was so kind as to send me over 100 hibernated larvæ, from which I bred a long series of moths. The type form is large, the size of *reversa* and *colona*, both wings immaculate yellowish-white, head, collar and the tips of the abdominal rings ochre-yellow.

In *var. A* the fore wings are nearly pure white, the hind wings much yellower, suggesting *conscita*, though never so dark as that form.

In *var. B* the ground of fore wings is white, marked faintly with ochreous bands in which the full pattern of *colona* can be traced; the costa is narrowly brown-black; the hind wings are pale ochreous. This looks like a washed-out *colona*, related to it in the same way as *var. A* is to *conscita*.

*Var. C* is only slightly yellowish on both wings, the hind wings scarcely at all darker; fore wings marked with various streaks and spots of brown-black, especially along the costa and margins, all more or less distinctly connected by ochreous shades, in which the full pattern of *reversa* can be read. This is a washed-out *reversa*, stained with the creamy yellow so characteristic of the Maryland race.

All these forms insensibly intergrade. I believe that this is practically the extent of variation in this Maryland race. There are no specimens that are true *colona*, *conscita* or *reversa*, but these forms are all strongly suggested. The view naturally presents itself that these names apply to local races rather than to distinct species. In his work on *Callimorpha* (*Proc. U. S. Nat. Mus.*, 1887, p. 338) Prof. J. B. Smith describes the genitalia of *colona*, *Lecontei*, *contigua*, *reversa* and *vestalis*. The differences shown are at best slight, and Prof. Smith assumes the

forms which he figures to be constant. In fact, they are not so. I have drawn the right side pieces of four males of the Maryland race of *fulvicosta*. They are shown in figures 1 to 4, viewed from within  $\times 50$ , the dorsal angles down. These are not specimens selected for their variation, but are all that were mounted. The only selection applied was in taking the poorest specimens for dissection. Fig. 1 shows the upper angle produced and rounded, the lower angle much more produced; fig. 2 shows the lower angle not produced, but simply rounded; fig. 3 both angles produced, the upper the most so; fig. 4 both angles produced, but the lobes of quite different shapes. There is as much variation in these specimens of *fulvicosta* as in all of Prof. Smith's "species," and I am of the opinion that the genitalia are valueless as a means of specific distinction in *Haploa*. However, I add drawings of most of the other forms and also reproduce Prof. Smith's figures.

It is possible that the larvæ, when fully known, will be of more help, yet this is doubtful, as they seem to possess all the same habits and hence are not markedly different in their colours. Very full descriptions are needed, especially of the mature larva, to test these points. The following observations were made on the larvæ sent by Mr. Foulks and on the young ones bred out of the eggs from the moths.

Normal number of stages six; hibernation in the fourth or fifth. The young larvæ that were selected for observation passed two interpolated stages between the normal II. and III. and died before reaching stage IV.

*Egg*.—Of the shape of two-thirds of a sphere, scarcely conoidal, the base flat; smooth, shining, rather dark yellow; diameter .6 mm. Reticulations obscure, visible in a strong reflected light, very narrow, linear, irregularly hexagonal, the cell areas flat, uniform, no shadows.

*Stage I*.—Head high, bilobed, the lobes blackish brown, clypeus pale, mouth brown; width .3 mm. Body pale yellowish, tubercles dusky pearly; hair short, stiff, white. Setæ single, normal, no subprimaries; feet pale. The larvæ grow considerably, becoming long and slender, the tubercles surrounded narrowly by brown.

*Stage II*.—Head black, shining, clypeus whitish, jaws brown; width .45 mm. Body whitish, warts rather small and with the shields deep shining black; hairs not numerous, but forming true warts, short, bristly, black. A wide space between tubercles i. suggests a dorsal band. Warts each narrowly edged with brown, most distinctly subdorsally, no connected marks. Subventral hairs pale.

*Stage III.* (interpolated)—Head shining black, clypeus and mouth brown; width .55 mm. Warts large, black, hairs short, bristly, black and white. Body elongated, broadly whitish between warts ii., fading to smoky black in the region of wart iii.; below this another pale band, marked with yellow, transversely annulated streaks behind wart iv., two on each segment; subventral region shaded with brown. Leg plates black. Later the appearance is more as in the next stage, though the bands are not really defined.

*Stage IV.* (interpolated) — Head black; width .65 mm. Body black, a broad diffuse dorsal gray line, joining a narrower subdorsal one. Region of warts iii. and iv. yellow spotted, joining a substigmatal gray band and subventral gray marks. Warts black; hair short.

*Stage V.* (normal III.)—Black; head .75 mm. Pale whitish dorsal, subdorsal and substigmatal lines, the subdorsal faintest; bright yellow superstigmatal line, not perceptibly joined to the substigmatal one. Warts black.

*Normal Stage V.* (from Mr. Foulks; after hibernation) — Head shining black; width 1.7 mm. Body black; dorsal line broad, subdorsal faint, stigmatal broad, substigmatal fainter, yellow, traces of a line subventrally, all more or less white spotted. Essentially as in the next stage.

*Stage VI.*—Head and warts shining black, the latter bluish; width 2.7 mm. Body deep black, the dorsal line broad, straight, narrowly broken in the incisures and centre of the segments, yellow, darker yellow or red in the centre of each segment, faint on joint 2. Traces of a subdorsal band, broken by wart ii., whitish, mottled. Lateral band broad, indented by warts iii. and iv., broken into three or four spots on each segment by transverse black lines, yellow, irregularly stained with darker yellow, connected inferiorly by mottlings and dots with a narrow substigmatal line which is yellow, mottled, broken and runs between warts iv. and v. Traces of a subventral line between warts v. and vi. on the base of each leg. Leg plates black. Venter broadly pale gray, blackish dotted. Hair very short, inconspicuous, black or black and white, stiff, pointed, not barbed. In some individuals the subdorsal whitish dots are absent, and in some the dorsal band is distinctly marked with red; otherwise there is very little variation. Corresponds well with Saunders's description of *reversa* (CAN. ENT., I., 20), and also with Riley's of *fulvosta* (Third Report Ins. Mo., 134). The forms *colona* and *conscita* have not been bred.

*Explanation of Plate xv.*

- Figs. 1 to 4.—Side pieces of male genitalia of *Haploa fulvicincta* seen from within: four examples, specimens from Maryland.
- Fig. 5.—The same, *H. clymene*, specimen from Kansas.
- Fig. 6.—The same, *H. reversa*, specimen from Texas.
- Fig. 7.—The same, *H. colona*, specimen from Texas.
- Fig. 8.—Copied from Smith's figure of *H. colona*.
- Fig. 9.—Side piece of male *H. lecontei*, var. *militaris*, specimen from Iowa.
- Fig. 10.—Copied from Smith's figure of *militaris*.
- Fig. 11.—Side piece of *H. vestalis*, specimen from Iowa.
- Fig. 12.—Copied from Smith's figure of *vestalis*.
- Fig. 13.—Side piece of *H. confusa*, specimen from Northern New York.
- Fig. 14.—Copied from Smith's figure labelled *confusa* on the plate, but described as *reversa* in the text.
- Fig. 15.—Side piece of *H. contigua*, specimen from New York.
- Fig. 16.—Copied from Smith's figure of *contigua*.

SOME ANTS AND MYRMECOPHILOUS INSECTS FROM  
TORONTO.

BY GEO. B. KING, LAWRENCE, MASS.

During the summer of 1896 I received specimens of ants collected by Mr. R. J. Crew, of Toronto, in exchange for such Coleoptera as I could find for him in my locality. He writes me that he noticed no insects with the ants other than the Coleoptera and some aphids in a nest of ants, but did not capture any.

I have found, however, upon looking them over, they contain several very interesting species of various orders: some truly myrmecophilous, some occasional, while others were brought into the nests by the ants, to be used by them for food; this will apply to a number of Hemiptera collected by *Formica subsericea*, Say.

It may appear to some who are collecting ants'-nests Coleoptera only that the finding of *Agonoderus pallipes*, Fabr., and *Otiorynchus oratus*, L., is merely occasional. The position in which these Coleoptera are found with the ants here in Massachusetts, and the frequently finding them with various species of ants, lead me to believe that they are more than incidental or casual visitors.

I am not familiar with the scattered literature treating upon the

Formicidae found in Canada. I will give, however, all that I know of, taken from Dr. Dalla Torre's Catalogue of Hymenoptera, Vol. vi., 1891 :

*Stigmatomma binodosum*, Prov.

*Pogonomyrmex badius*, Latr.

*Leptothorax Canadensis*, Prov.

*Dolichoderus borealis*, Prov.

*Dolichoderus obliteratus*, Scudd.

*Formica arcana*, Scudd.

Mr. Crew has not as yet found any of the above species at Toronto. The following is a list of those found by him :

Tribe CAMPONOTIDÆ.

*Camponotus ligniperdus*, Latr., var. *pictus*, For.

“ *herculaneus*, L., sub-sp. *pennsylvanicus*, Deg.

“ *marginatus*, Latr., var. *nearcticus*, Em.

*Formica rufa*, L., sub-sp. *integra*, Nyl.

“ *exsectoides*, For.

“ *pallide-fulva*, Latr., sub-sp. *Schaufussii*, Mayr.

“ *pallide-fulva*, Latr., sub-sp. *nitidiventris*, Em.

“ *fusca*, L., var. *subsericea*, Say.

“ *lasioides*, Em., var. *picca*, Em.

*Lasius niger*, L., var. *americanus*, Em.

“ *niger*, L., var. *neoniger*, Em.

“ *flavus*, De G., sub-sp. *myopes*, For.

“ *claviger*, Rog.

Tribe DOLICHODERIDÆ.

*Tapinoma sessile*, Say.

*Dolichoderus plagiatus*, Mayr.

“ *Taschenbergi*, Mayr.

Tribe PONERIDÆ.

*Ponera coarctata*, Latr., sub-sp. *pennsylvanica*, Buckl.

Tribe DORYLIDÆ.

*Solenopsis molesta*, Say.

*Myrmica scabrinodis*, Nyl., var. *sobuleta*, Meinest.

“ *scabrinodis*, Nyl., var. *Schencki*, Em.

*Cremastogaster lineolata*, Say.

The following are the miscellaneous insects found with Mr. Crew's collection of ants sent me.

*Coloptera.*

## CARABIDÆ.

*Stenolophus conjunctus*, Lec.—With *Myrmica scabrinodis*, Nyl., var. *Schencki*, Em.

*Agonoderus pallipes*, Fabr.—With *Myrmica scabrinodis*, Nyl., var. *Schencki*, Em.

## OTIORHYNCHIDÆ.

*Otiorynchus ovatus*, L.—With *Formica fusca*, L., var. *subsericea*, Say.

I have found this species in Massachusetts with :

*Formica fusca*, L., var. *subsericea*, Say ;

*Aphaenogaster fulva*, Rog.; and

*Lasius americanus*, Em.

## STAPHYLINIDÆ.

*Scopæus exiguus*, Er.—With *Formica fusca*, L., var. *subsericea*, Say.

*Aleocharini* g. et sp.—With *Solenopsis molesta*, Say.

## PSELAPHIDÆ.

*Ctenistes piceus*, Lec.

## SCYDMENIDÆ.

*Scydmenus bicolor*, Lec.

These two last species were collected by Mr. Crew in company with ants ; but he did not at the time of capture deem it important to save any, so we cannot give the names of the ants. *C. piceus* was found March 23, 1895, and *S. bicolor*, Dec. 4, 1895.

*Hymenoptera.*

## PROCTOTRYPIDÆ.

*Proctotrypes californicus*, Holmgr.—With *Formica fusca*, L., var. *subsericea*, Say. This, with a few other species of my own finding, are in the collection of the National Museum at Washington, by request of Prof. Howard.

## ANDRENIDÆ.

♀ *Halictus confusus*, Smith.—With *Formica fusca*, L., var. *subsericea*, Say.

## CYNIPIDÆ.

♀ *Figitodes 5-lineatus*, Say.—With *Tapinoma sessile*, Say.

I have found *Aphaenogaster fulva*, Rog.; *Lasius flavus*, L., and *Lasius americanus*, Em., to collect oak galls late in the fall. Two individuals came out of one lot of galls collected by *L. flavus*, L., in about two weeks after I collected them, and have been determined by Mr. Ashmead as *Periclistus piratus*, O. S. The ants lap the galls.

*Diptera.*

## STRATIOMYDÆ.

*Nemotelus globus*, Low.—With *Tapinoma sessile*, Say.

## MUSCIDÆ.

*Ochthiophola polystigma*, Meigen.—With *Tapinoma sessile*, Say.

*Hemiptera.*

## CICADIDÆ.

Nymph of *Tettigonia*, sp.—With *Myrmica scabrinodis*, Nyl., var. *Schencki*, Em.

## NABIDÆ.

Larva of *Coriscus*, probably *ferus*.—With *Formica fusca*, L., var. *subsericea*, Say.

## LYGÆIDÆ.

*Nysius thysus*, Wolff.—With *Formica fusca*, L., var. *subsericea*, Say.

## CAPSIDÆ.

*Miris affinis*.—With *Formica fusca*, L., var. *subsericea*, Say.

## THRIPIDÆ.

A handsome species of Thrips.—With *Camponotus nearcticus*, Em.

## ARANEINA.

*Furolithus*, sp.—With *Tapinoma sessile*, Say.

Quite a large quantity of a yellow seed unknown to me came in a mixed lot of ants in one vial. Mr. Crew states that he does not remember mixing any of the species found, but put each colony into separate vials. The following are the species from one vial, that contained the seeds :

*Formica pallide-fulva*, Latr., sub-sp. *nitidiventris*, Em.

*Formica fusca*, L., var. *subsericea*, Say.

*Formica lasioides*, Em., var. *picea*, Em.

*Myrmica scabrinodis*, Nyl., var. *Schencki*, Em.

The last species seemed to predominate greatly in numbers. So far as I know, this is the first time that any of the species here mentioned have been listed as being found in company with ants. In the determination of these insects I have received valuable assistance from Prof. Herbert Osborn, Prof. L. O. Howard, Mr. Ashmead, Mr. Coquillett, and Mr. Blanchard ; and not only for these, but for many others not yet published that I have found to inhabit ants' nests in Massachusetts.

## ENTOMOLOGICAL SOCIETY OF ONTARIO.

We have great pleasure in announcing that a branch of our Society has recently been formed in the City of Quebec, with the following officers: President—Rev. T. W. Fyles, F. L. S., Professor of Biology in Morrin College.

Vice-President—Miss Macdonald, Principal of the Girls' High School.  
Secretary-Treasurer—Col. Crawford Lindsay.

Council—Messrs. D. H. Greggie, Richard Turner, J. E. Treffry, Miss Bickell, Miss Winfield.

With such an enthusiastic and experienced entomologist as the President, and such an able corps of officers, the Branch will no doubt do excellent work, and serve to unite together all those interested in this department of natural science in the neighbourhood of Quebec. We trust that the new Branch may have a long and useful career.

The Toronto Branch of the Society held its first annual meeting on Friday, April 2nd, in its room, 451 Parliament street. The election of officers for the ensuing year resulted as follows:

President—Mr. E. V. Rippon.

Vice-President—Mr. R. J. Crew.

Secretary-Treasurer—Mr. Arthur Gibson.

Librarian-Curator—Mr. T. G. Priddey.

Council—Messrs. C. T. Hill and C. H. Tyriss.

The reports of the Secretary-Treasurer and the Librarian-Curator for the past year were read and adopted. They stated that twenty-four regular meetings had been held, at which papers relating to the study of insects were contributed by the members. The number of volumes in the library, including bulletins, pamphlets, etc., is 98, all relating to entomology, and all gifts to the Society. A fair collection of insects has already been formed through the kindness of members in presenting specimens, and will no doubt be largely increased during the coming season. The finances of the Society were shown by the Treasurer's report to be in a satisfactory condition.

The President, in his address, congratulated the members on the good work done during the year, and on the success which had attended the Society's operations. He hoped that during the coming season each member would take a special interest in some particular species of insect, and would endeavour to work out its life history; he also trusted that much attention would be paid to the study of those species which are beneficial or injurious to mankind.

## THE COLEOPTERA OF CANADA.

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

## XXIII. THE CERAMBYCIDÆ OF ONTARIO AND QUEBEC. --(Continued.)

## TETROPIUM, Kirby.

This genus is easily recognized among its neighbours by the fact that the eyes are divided by a deep emargination into an upper and a lower portion, these parts being connected only by a narrow band from which the granulations or lenses have been lost. The Canadian *T. cinnamopterum*, Kirby, is brown, the wing-covers often much lighter than the head and thorax; the entire body is pubescent. Length .50-.70 inch. The head and thorax are slightly shining, distinctly punctured, the punctures regular, usually close but distinctly separated. Elytra opaque or extremely feebly shining. Sculpture much finer than that of the prothorax. The sexes differ especially in the somewhat shorter antennæ and the broader and more strongly rounded prothorax of the female. The species occurs on or under bark of pine logs.

## ASENUM, Esch.

Two species are recorded from Canada. They are stout brown insects with short antennæ (from about one-third to one-half the length of the body), elytra sometimes yellowish. The thorax is about as broad, in its widest part, as the base of the elytra; the punctuation coarse and close on the pronotum, much finer on the wing-covers. The principal differences separating the two forms must be looked for in the prothorax, which is rounded on the sides in *mestum*, Hald., and distinctly angulated near the base in *atrum*, Esch. The distinctness of the elytral costæ seems an evanescent character, since certain specimens of the former species approach the latter very closely in that respect. In length *A. mestum* (fig. 16) ranges from .45 to .60 inch, while specimens of *atrum* are known which slightly exceed the greater measurement and others which scarcely reach the lesser. In the larval stage *A. mestum* is known to infest pine and spruce, and the beetles may be found on lumber piles.



FIG. 16.

## CRIOCEPHALUS, Muls.

Contains larger species than the preceding genus, with coarsely granulated eyes which are not hairy. The prothorax is variably sculptured, sometimes roughened and with deep impressions on the disk.

Two are recorded from our region. They are both rather elongate brown insects and separate thus :

Thoracic impressions deep, elytra finely punctured, third joint of hind tarsi two-thirds longer than wide, emarginate for about one-half its length. Sides of prothorax rounded, somewhat roughened.

.90-1.10 in. . . . . *agrestis*, Kirby.

Thoracic impressions fainter, elytra coarsely punctured, third joint of hind tarsi about as long as wide, cleft nearly to the base.

Prothorax very finely punctured, sides rounded, hardly roughened.

.94 in. . . . . *obsoletus*, Rand.

These insects are found about lumber piles in the northern and mountain regions of North America. *C. agrestis* is known to depredate on pine and spruce.

#### PHYSOCNEMUM, Hald.

*P. brevilineum*, Say, is .50-.75 inch long, black, somewhat shining, elytra sometimes bluish or with a faint reddish tinge along the suture. The upper surface is uneven, the prothorax with deep median longitudinal impression which is convex at bottom and limited on each side by an elevation, which is smoother than the external thoracic margin. Elytra distinctly closely punctured and ornamented with a few narrow, short, raised white lines; the median region on each wing-cover is depressed and limited exteriorly by a smoother linear area, which extends from the humerus towards the apex. Thighs suddenly and strongly dilated near their tips. Hind legs very long. The larva is known as an elm borer.

#### RHOPALOPUS, Muls.

An easily recognized species, *R. sanguinicollis*, Horn, belongs here. It has been found on cherry trees. Length .62-.75 inch, colour black opaque, surface granulate; prothorax red, tips of elytra sometimes brownish. The thighs are less suddenly clavate than in *Physocnemum*, and the tibiae are stouter. The extreme shortness of the prothorax will separate it easily from most of its neighbours.

#### GONOCALLUS, Lec.

Differs from the adjoining genera by the slender thighs. *G. collaris*, Kirby, is black, shining, elytra sometimes with metallic lustre or clouded with fuscous, the prothorax red, legs sometimes reddish. The upper surface is punctate, the antennae very slender. Length .35-.47 inch.

## PHYMATODES, Muls.

Contains a number of species, all of rather small size and usually bright colour. The prothorax is rounded, usually sparsely punctured and shining. Elytral punctuation distinct, often rather coarse, surface usually shining. The following arrangement of species is taken from Mr. Leng's synopsis :

## A. Elytra without narrow cross-bands.

b. Thorax dark, elytra of lighter shade before the middle.

.35-.50 in. . . . . *dimidiatus*, Kby.

bb. Thorax rufous with broad black stripe. .25 in. . . *maculicollis*, Lec.

bbb. Thorax yellowish ; surface metallic.

c. Larger species, .50-.52 in., elytra and legs yellow, more or less marked with blue. . . . . *variabilis*, Linn.

cc. Smaller species.

Elytra blue, antennæ dark. .20-.32 in. . . . *amænus*, Say.

Elytra piceous, thorax with more or less distinct dark lateral blotches. .34-.36 in. . . . . *thoracicus*, Muls.

AA. Elytra with two narrow white or yellowish cross-bands.

Usually rufous, elytra dark, except at base. .25-.36 in. (Fig. 17.) . . . . . *varius*, Fab.

These insects are usually to be met with in beating.

*P. variabilis* has been recorded as depredating on oaks, while *amænus* bores in grapevines. *P. varius* is believed to live as a larva in black oak, but I know of no breeding record.



Fig. 17.

## CALLIDIUM, Fabr.

Two of the species are metallic green or blue, the other is brown or yellowish. They are mostly flatter than *Phymatodes*, and with heavier antennæ, especially in the male. The colour affords a primary means of separating them, *C. æreum*, Newm., being entirely testaceous or brownish, while *antennatum*, Newm., and *janthinum*, Lec., are metallic blue or green above. The last named has the thorax deeply punctured, not impressed, while in *antennatum* impressions are present and the thoracic punctuation is finer. All the species vary much in size, *æreum* from .34 to .50 inch, while the others run from .25 to .55 inch, *janthinum* averaging a little smaller. It is reported *æreum* has been bred from chestnut, while *antennatum* depredates on pine.

## HYLOTRUPES, Serv.

The two species of this genus are very different in appearance. *H. bajulus*, Linn., is blackish, pubescent above, more thickly on the prothorax, where the hair is whitish, almost covering the surface except on the elevated median line and the two raised callosities, which are thus rendered very conspicuous. The elytra have two indistinct transverse fasciæ of whitish pubescence, one in front of the other behind the middle, the latter sometimes wanting. Length, .72 to .88 in. Depredates in pine and juniper. *H. ligneus*, Fabr., is extremely variable, the thorax usually black, less hairy than in *bajulus*, and with five callosities. Elytra yellowish or reddish, with a large blackish blotch occupying usually the apical third, and an elliptical spot of the same colour but varying in size between this blotch and the base. Bores in juniper in the larval state, perhaps also in pine, as the beetle is found on piles of lumber or on freshly constructed fences. Length, .30 to .45 inch.

## MERIUM, Kirby.

*M. proteus*, Kirby, is .45 to .60 inch long, thorax metallic blue or violaceous, shorter than usual, varying in shape according to sex, densely punctured and rather opaque at sides, but shining and with only a few large punctures at middle. Elytra usually greenish metallic, densely and coarsely punctured, generally with two raised longitudinal yellowish lines before the middle, the side margin also yellowish in some specimens. Thighs reddish yellow, except at base and apex, which, with the tibiæ and tarsi, are blackish. Beneath shining black with a violaceous tint.

## CHION, Newm.

Here belongs *Chion cinctus*, Drury, a large beetle of a brownish colour (fig. 18), sparsely clothed with whitish pubescence, each elytron usually with an oblique blotch of a yellowish colour near the base. The prothorax is nearly round, and bears a small spine on each side. The elytra are each bispinose at tip. The male antennæ greatly exceed the body in length. The species reaches a size of from .75 to 1.5 inch. It is known to breed in hickory. The name *garganicus*, Fabr., catalogued as a variety, refers to the spotted form.

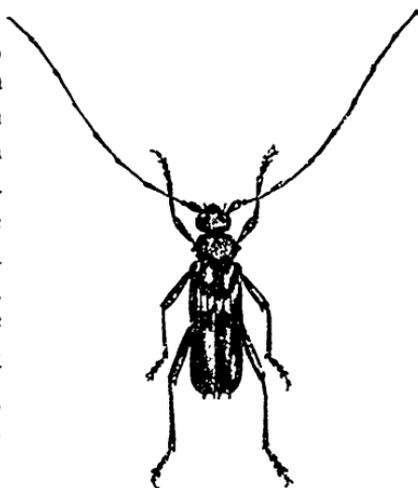


FIG. 18 (after Harris).

## EBURIA, Serv.

The two pairs of raised white spots (looking like Ichneumon eggs) on each elytron will easily serve to distinguish this genus. The only Canadian species is *E. quadrigeminata*, Say, which is of a yellowish colour, the thorax with sharp lateral spine and two distinct discal callosities. The elytra are bispinose at apex, the middle and hind femora have each two long spines at tip. The ivory spots of the elytra are situated on the costæ, the outer one of each pair being the larger, this difference in size being much better marked in the posterior pair. Length, .90-1.20 inch. Breeds in hickory, ash, and honey locust.

## ROMALEUM, White.

Contains two large species, among the most bulky of the Canadian Longhorns. Both are pubescent insects of robust build, the prothorax rounded at sides and without lateral spine, the elytra spinose at apex, tip of thighs unarmed, antennæ spinose internally. *R. rufulum*, Hald., is fulvous with uniform pubescence of the same colour. Length, .88-1.15 in. *R. atomarium* is darker, brownish, with irregularly mottled pubescence, and reaches a slightly larger size. It has been found under bark of walnut, while the larva has been bred up on hackberry.

## ELAPHIDION, Serv.

The Canadian species of this genus are smaller and less robust than the preceding, and may be distinguished therefrom by that character alone. *E. villosum* is the well-known oak-pruner, and does, at times, considerable damage by ovipositing in twigs of oak trees, the larvæ then eating out the inner portion, so that the twig becomes weakened and may be blown off in a strong wind. Its depredations are not confined to oak, however, as Mr. Chittenden has recorded many other food plants. The table of species is an adaptation of the characters presented by Mr. Leng:

- A. Antennal spines large, thighs spinose at tip, body above with irregular vestiture of gray pubescence. .60-.75 inch.
- AA. Antennal spines small.
  - b. Above clothed with mottled gray pubescence, elytra bispinose at tip.
    - c. Sides of prothorax rounded. .70.....*incertum*, Newm.
  - cc. Sides of prothorax hardly rounded; nearly cylindrical.
    - Prothorax scarcely longer than wide. .70 in. *villosum*, Fabr.
    - Prothorax distinctly longer than wide. .70  
in .....*parallelum*, Newm.

- bb. Above nearly glabrous, shining testaceous. Form very elongate, elytral spines long. .43-.45 in. . . . . *unicolor*, Rand.



FIG. 19.



FIG. 20.



FIG. 21.

It is stated that *F. villosum* and *E. parallelum* are not distinct, but they are included in the above table, as their amalgamation has not yet been generally accepted.

The figures 19, 20 and 21 represent the three stages of *F. villosum*.

#### TYLONOTUS, Hald.

Represented by *T. bimaculatus*, Hald.; of a brownish colour. .45 to .60 in. long. Each elytron with two rather large, somewhat rounded yellowish spots, one in front of the middle, the other sub-apical. The thighs are yellowish except at base and apex, rather strongly clubbed. The antennæ are bisulcate (more distinctly on the third and fourth joints), the thorax is thickly punctured with smoothish median line and two rather large dorsal callosities. The elytra are coarsely, rather sparsely, punctured. Pubescence thin, yellowish. The larva bores in ash; beetles have been found under bark of the white or paper birch.

#### HETERACHTHES, Newm.

Easily recognized by the elongate form, shining surface and extremely small second antennal joint. The thighs are strongly clubbed, the antennæ long and heavy. *H. quadrimaculatus* is .30 to .45 in. long, brown or testaceous with two paler spots on each elytron, one in front of and one just behind the middle. The male specimens have the spots indistinct. Head closely, elytra and thorax very sparsely, punctured. Length, .30 to .45 inch. It has been bred from hickory limbs.

#### GRACILIA, Serv.

*G. minuta*, Fabr., does not occur on any of the Canadian lists, but has been described and figured (in the CANADIAN ENTOMOLOGIST, vol. xxiii, p. 102), by Mr. J. F. Hausen. His figure (fig. 22) and description are here reproduced. "It is of a uniform reddish-brown, the legs being somewhat lighter, with rather sparse cinereous pubescence, giving it a heavy appearance. The antennæ are ciliate, and the head, thorax and

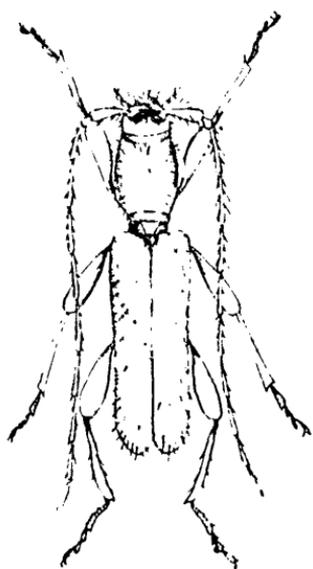


Fig. 22.

elytra furnished with flying hairs. Rather variable in size, .18-.27 in." It was taken by Mr. Caulfield, emerging from a barrel of some kind of dye. The species is supposed to have been introduced from Europe. It has been bred from white birch.

PHYTON, Newm.

A small pale insect, *P. pallidum*, Say, belongs here, and is perhaps doubtfully a true member of the Canadian fauna. It is a trifle under one-fourth of an inch long, of a yellowish colour, the prothorax broad in front of the middle, but narrowed in front and (much more so) behind, the surface with indefinite darker markings. Elytra with four oblique brownish bands, of which the one just behind the middle is broad, the remainder narrow. I have beaten it from palmetto blossoms in Louisiana. It has been bred from hickory and from *Cercis canadensis*.

OBRIMUM, Serv.

The only Canadian form is *O. rubrum*, Newm, which is one-fourth of an inch in length, shining reddish-testaceous, the head broader than the prothorax, which bears an obtuse dilatation each side near the middle, and has the base and apex nearly equal. The elytra are more closely punctured than the thorax. Thighs strongly clubbed.

NOTES ON PHILÆNUS.

BY CARL F. BAKER, AUBURN, ALABAMA.

*Philænus spumarius*, L. — From various localities in the New England States I have large series of the typical form of this species, and also specimens representing the well-marked varieties, *leucocephala*, L., and *lineata*, Fabr.

*Philænus abjectus*, Uhl. — A portion at least of the material recorded under *Lepyronia angulifera* in the Prelim. List Hemip. Colo. belongs to this species. I have taken it at Fort Collins, Colo., and in the adjacent foothills, in May and June. The specimens from this locality are uniformly darker than the type.

*Philænus lineatus*, L.—I have a large series of this species from the North-eastern U. S., the specimens of which are identical with the typical European form. It seems probable that true *lineatus* is confined to the Eastern U. S. In American publications three distinct species have been confused under this name,—true *lineatus*, the *bilineatus* of Say, and a new species from New England which I shall call *americanus*.

The genus presents two types of elytral venation, one simple and regular, with three or four distinct apical cells, while in the other the elytra are distally irregularly reticulated. *Lineatus*, *spumarius*, *campestris*, *exclamationis*, etc., fall into the first group, while the second group appears to be strictly American, including *abjectus*, *bilineatus* and *americanus*.

*Philænus bilineatus*, Say.

1831. Say, Journ. Acad. Nat. Sci. Phila. VI., 304 (*Aphrophora bilineata*).

1872. Uhler, List Hem. Colo. and N. M., 472 (*Ptyelus lineatus*).

1876. Uhler, List Hem. region west of Miss. R., 347 (*Philænus lineatus*, var. *bilineata*).

1877. Uhler, Rep. on Ins. Coll. in 1875, 458 (*Philænus lineatus*).

1878. Uhler, List Hem. Dak., Ind., Mont., 510 (*P. lineatus*).

1895. Goding, Syn. and Cat. N. A. Cercopidæ (*P. lineatus* in part).

1895. Gillette & Baker, Prelim. List Hem. Colo., p. 70 (*P. lineatus*).

This is the very common western species, heretofore referred to *lineatus*. Say's colour description is a very good one. It is a larger, more robust species than *lineatus*, with the elytra broader in proportion to the width. The face is very much more strongly convex as viewed from the side than in *lineatus*. There are also other minor differences.

I have specimens of a small male variety from Northern Colorado in which the head and thorax are darker, and the elytra, except the usual costal markings, black.

*Philænus americanus*, n. sp.

Resembling *bilineatus* in size and form as viewed from above. It has the flatter face of *lineatus*, which it resembles very closely in colour. It, however, differs very markedly in the elytral venation, which is very weak and distally broken up into irregular reticulations. The vertex is longer in proportion to length of pronotum than in *lineatus*. Length, 6 mm.

I have before me nine specimens, all very uniform in characters, sent by Prof. A. P. Morse, of Wellesley College, from the following localities: Dover, Mass., June 26; Wellesley, Mass., Aug. 8; Thompson, Conn., Aug. 4.

TWO NEW PARASITES FROM *EUPOEYA SLOSSONIAE*.

BY WILLIAM H. ASHMEAD, WASHINGTON, D. C.

The two new hymenopterous parasites described below were bred by Dr. Harrison G. Dyar, from the larva and cocoons of *Eupoeya Slossoniae*.

*PELECYSTOMA*, Wesmæel.*Pelcystoma eupoeyiae*, n. sp.

♀.—Length, 4.5 mm. Head, thorax and abdomen above brownish-yellow; collar above, the middle mesothoracic lobe anteriorly, the lateral lobes and the metathorax, fuscous or blackish; head beneath mouth parts, pronotum, thorax at sides and beneath, tegulae, legs and venter, white; the tarsi more or less and the femora toward apex with a decided yellowish tinge; stemmaticum dusky, the ocelli pale; occiput with two dusky spots. Antennæ 48-jointed, slender, much longer than the body, the scape and pedicel somewhat dusky, the flagellum pale brownish-yellow. Mesonotum smooth, trilobed, the metanotum shagreened. Wings hyaline; the costa, stigma, poststigmatal and basal veins pale yellowish, the other veins dusky; second abscissa of radius about three times as long as the first, the second submarginal cell, therefore, long, longer than the first and almost as long as the third. Abdomen as long or possibly a little longer than the head and thorax united. Segments 1-3 coarsely longitudinally striated, the following almost smooth, but opaque; the first segment is scarcely as long as the second and third united, the third about half the length of the second, the fourth and following shorter, subequal; ovipositor distinctly exerted, scarcely as long as the basal joint of hind tarsi, the tip black. Type, No. 3648, U. S. N. M.

Described from a single female specimen.

*CRYPTURUS*, Gravenhorst.*Crypturus Dyari*, n. sp.

♀.—Length, 6.5 to 8.5 mm. Head and thorax marked with white, the abdomen black banded with white; antennæ with a broad white annulus; palpi and legs fulvous. Antennæ 29-30-jointed, black; the apex of joint 6, joints 7-11 entirely, and base of 12th joint, white. Clypeus, a spot above, spot on cheeks, anterior orbits extending to back of eyes, collar above, large spot just before the hind angles of pronotum, two abbreviated median lines on mesonotum, spots on mesonotum ridges that extend to scutellum, the scutellum, the postscutellum, the tegulae, a spot

beneath, a large spot on mesopleura just above the mesosternal suture, spot at base of hind wings, the blunt but prominent metathoracic tubercles and rather broad bands at apex of all abdominal segments, white. Head sparsely punctate; thorax punctate, the mesonotum medially somewhat rugoso-punctate, laterally more evenly and less closely punctate, the mesopleura medially with some coarse transverse striæ, just back of which is a smooth polished spot, but above and below closely punctate; metathorax with only the basal transverse carina present and which is sinuate medially, the basal enclosure thus formed finely rugulose, but beyond it the surface is rather coarsely rugose; the white metathoracic tubercles are short, blunt and wider or longer than high. Wings hyaline, the stigma lanceolate, brownish, the other veins black; areolet quadrate in position but open behind. Abdomen shining, but under a strong lens exhibiting a very fine coriaceous punctuation.

♂. —Length, 7 mm. Agrees well with the female, except the face below the antennæ, including the semicircular labrum, is entirely white, the mandibles with a white spot at base, the antennæ entirely black, not ringed with white, 29-jointed, the front coxæ and trochanters whitish, while the hind tibiæ, except near base, their spurs and their tarsi, are black. Type, No. 3649, U. S. N. M.

Described from one male and three female specimens.

The two previous species known in our fauna were described by the writer and from the male sex only. The *males* of these three species may be tabulated as follows:

A. Head and thorax with rufous markings.

Legs rufous; hind tibiæ, except at base, and their tarsi, black; tibial spurs red (Texas).....(1) *C. texanus*, Ashm.

AA. Head and thorax with white markings.

Legs rufous, the coxæ white with black markings; second joint of hind trochanters, tips of hind femora, apical two-thirds of their tibiæ, black; their tarsi, except extreme base of first joint and more or less of the last joint, which are black, white (Michigan).....(2) *C. albomaculatus*, Ashm.

Legs fulvous, anterior coxæ and trochanters white, hind tibiæ, except at base, their spurs and tarsi, entirely black, their femora not tipped with black.....(3) *C. Dyari*, Ashm.

## NOTES ON PREDACEOUS HETEROPTERA, WITH PROF. UHLER'S DESCRIPTION OF TWO SPECIES.

BY A. H. KIRKLAND, ASSISTANT ENTOMOLOGIST TO THE GYPSY MOTH COMMITTEE, AMHERST, MASS.

During the month of May, 1896, while making field observations in Malden and Medford, Mass., upon the insects known to attack the gypsy moth (*Portñetria dispar*), I found that many of the common predaceous bugs upon emerging from hibernation greedily availed themselves of the food supply offered by the tent caterpillar and destroyed large numbers of this insect. *Podisus placidus*, *P. sericeiventris*, *P. modestus*, *Dendrocoris humeralis*, *Euschistus fissilis*, *E. tristigmus*, *E. ictericus*, *E. politus* n. sp., *Meneles insertus* and *Diplodus lividus* were often found feeding upon partially grown tent caterpillars. *Podisus placidus* and *P. sericeiventris* enter the tents and prey upon the inmates, but the other species generally attacked the larvæ while they were feeding. The species of *Euschistus* are the least predaceous and it is probable that they naturally feed more upon plants than upon insects.

When feeding, these Pentatomids insert the setæ only, and not the sheath, into the body of the caterpillar. I have watched them very carefully under a hand lens and my observations fully agree with those of Mr. Marlatt, as given in the Proceedings of the Entomological Society of Washington, Vol. II., p. 249. I have seen *P. placidus* extend its setæ beyond the end of the beak to a distance equal to the length of the last rostral joint. When the setæ are inserted in a strongly chitinized part the struggles of the larva often pull them from the sheath. In such cases the beak is drawn through the fore tarsi in the same manner that an ant cleans its antennæ, and thus the setæ are forced back into the sheath. I have also removed the setæ of *P. cynicus* from the sheath by means of a fine needle applied along the labrum and have seen them replaced in the same manner.

In the Report of the Massachusetts Board of Agriculture for 1896 I have published, with illustrations, notes on a part of the early stages and habits of some of these Heteroptera and the life history of *P. placidus*. This insect was first brought to the attention of entomologists through some very interesting notes published by Prof. Saunders in the CANADIAN ENTOMOLOGIST, Vol. II., p. 15. The nymphs of this species, at first thought to be *Stiretrus anchovago* (Fab.) (*fimbriatus*, Say), were found attacking the larvæ of the currant sawfly, *Pteronous ribesii* (Scop.). Walsh,

on page 33 of the volume cited, corrects the identification and refers the insect to *Podisus spinosus* or *modestus* or to an allied species. Later specimens sent to Prof. Uhler (not Ulke) were found to represent a new species and were named *Arma placidum* (CAN. ENT., Vol. II., p. 93). Prof. Saunders also gives notes upon the predatory habits of this insect in the Report of the Entomological Society of Ontario, 1871, p. 31.

I have been unable to find the original description of the species. Through correspondence with Prof. Uhler I learn that he cannot recall the circumstances connected with the publication of the description, were such a description published, and he has very kindly sent me the following characterization of the species together with a description of *Euschistus politus*:

*Podisus placidus*, Uhler.—“Of a narrower and more oval form than *P. serieiventris*, with a head somewhat tapering anteriorly, and rounded at tip instead of being truncated, and with the humeral angles rounded off and very moderately prominent. Colour pale testaceous, stained with pale brown and punctate with darker brown. Head much longer than wide, depressed, remotely punctate, the edge reflexed, brown; each side of tylus is a slender brown line which is triangularly expanded on the base of the vertex; occipital margin dark brown in the middle, pale and narrowly callous each side; a pale callous line extends back from each ocellus; throat whitish testaceous; cheeks with a slender black line before each eye; eyes brown, bordered with testaceous behind; antennæ pale brown, paler at base and on the last two joints; the basal joint testaceous, very short, the second longest, third scarcely more than half the length of the second, fourth about three-fourths as long as the second, fifth a little shorter than the fourth; rostrum stout, pale testaceous, reaching upon the posterior coxæ, the apical joint narrow, about as long as the preceding one, brown. Pronotum with the sides straighter than usual, the lateral margin narrowly callous, pale ivory-yellow, and with a few indented points and small teeth before the middle; the submargin with a brown line, surface with wavy, transverse pale lines between the pale brown marbling, more generally brown behind the middle; post-humeral margins slightly sinuated; anterior margins callous, having a small group of coarse punctures behind each eye; punctures sunken, brown, mostly not close together in the transverse series; posterior margin truncate. Scutellum long, bluntly rounded and margined with white at tip, punctures in short transverse series, grouped in about three

spots at base. Corium slenderly bordered with pale testaceous, more broadly covered with brown at base and on the disk, the veins posteriorly yellow; membrane pale bronze. Legs minutely speckled with red, the tibiæ and tarsi a little stained with brown. Under side finely punctate, the sternum with two series of black points. Connexivum depressed, punctate, the outer edge ivory white, callous and marked with two black points at each incisure of the segments; the upper surface yellow, with the black points more linear. Length to end of abdomen,  $8\frac{1}{2}$  to  $10\frac{1}{2}$  mm. Width of pronotum,  $4\frac{2}{3}$  to 6 mm.

“Through the kindness of many friends I have had an opportunity to examine specimens from the Provinces of Quebec, Ontario, and Columbia, in British America; from nearly all of the New England States, besides Illinois, Iowa, Michigan, and Colorado. The genital segment of the male is deeply excavated, and with two short processes on the middle. The tergum is often bright red, which colour becomes brownish in more mature specimens. The humeral angle is usually more or less black. In some specimens there is a series of minute black dots each side of the venter, and a few obscure spots distributed over the ventral surface.”

*Euschistus politus*. New sp.—“Pale dull fulvous, or rufo-fulvous, suboval, with the humeral angles almost rounded and very moderately prominent. Head narrow, as in *E. tristigmus*, Say, deeply and finely punctate, the tylus prominent at tip and a little longer than the lateral lobes, the lateral lobes deeply sinuated, with the outer margin blackish. A black line extends from the eye to base of antennæ; antennæ clay yellowish; the basal joint short, hardly reaching the apex of head, marked with a few black points; second joint longer; third a little longer than the second; fourth longer, dusky at tip; fifth a little longer than the fourth, fusiform, blackish excepting at base; rostrum pale testaceous, slender, with the setæ piceous, reaching to the posterior coxæ. Pronotum much wider than long, polished, closely and finely punctate with brown; the lateral margins very slightly sinuated, smooth, ivory white; the submargins blackish; humeral angles triangularly rounded; posthumeral margins almost straight. An obsolete, callous, imperfect curved line extends between the humeral angles. Scutellum narrow and bluntly rounded at tip, where it is also slenderly margined with white; the surface is less densely punctate in small spots. Wing-covers closely punctate; membrane a little brownish, the veins and numerous dots darker brown. Legs pale yellow, remotely dotted with brown. Beneath pale greenish,

finely punctate, highly polished, the pleura with a row of fine black dots, and an extra dot outwardly; connexivum acute, the intersegmental sutures indented and marked with a black dot. Tergum black, the sutures, exteriorly, with a double black spot. Length to end of abdomen, 9 to 10 mm. Width of pronotum,  $5\frac{1}{2}$  to 6 mm. A pair of these insects taken in Massachusetts have been kindly given to me by Mr. A. H. Kirkland. Other specimens have been sent to me for examination from Rhode Island, Pennsylvania, and the District of Columbia. I have found it once, July 4, in a sandy pine woods district in southern Maryland. Only a few specimens have thus far been reported. It seems to be of rather uncommon occurrence."

### GRAPTA INTERROGATIONIS.

BY ARTHUR J. SNYDER, N. EVANSTON, ILL.

Under the title "Notes on *Vanessa Interrogationis*," in the February number of CAN. ENT., Mr. W. F. Fiske gives some interesting statements corresponding to observations made here. I kept bait for moths on the trees in and near my yard from the beginning of the year 1896, and captured Noctuids during January, February, and March.

Diurnals came to the bait for the first time on April 12th. *Vanessa Antiopa* led the van, followed closely by the *Graptas* and *Pyrameis Atalanta*. In a few days *Interrogationis* and *Atalanta* were abundant. *Grapta Comma* appeared on the 17th of April.

April 24th I made the following note in my record: "Previous to this date all the *Grapta Interrogationis* were hibernating specimens and of the form *Fabricii*. This evening (my observations were made from four p.m. 'till dusk) all were of the dark form *Umbrosa*, but also all old hibernating specimens."

On the 25th both *Umbrosa* and *Fabricii* were seen. During the last of April and first part of May *Graptas* were exceedingly abundant.

On May 7th saw the first *Grapta* depositing eggs on elm. Captured the ♀ and found it to be *Umbrosa*. A single butterfly procured from these eggs was of the form *Umbrosa*.

Soon the eggs and larvæ of *Graptas* were abundant on the elm trees and shrubs, especially on the low branches of young trees. One could hardly turn over a bough of one of these without finding several larvæ.

Mr. Fiske came near proving a point concerning which many of us are interested, but the weak point is this: Did he examine the leaves of the branch of elm on which he netted the ♀ *Umbrosa*? If not, how does he know that there were no eggs upon the limb at the time of confining the ♀ there?

I have frequently found upon the same limb larvæ of *Graptas* in several stages of maturity, small ones just hatched, and others almost ready to pupate.

I am inclined to think that *Umbrosa* and *Fabricii* may be obtained from eggs laid by one ♀, just as Mr. W. H. Edwards has succeeded in raising imagoes of *Papilo Oregonia* and *Bairdii* from eggs laid by a single individual.

To prove these points just as we would have them, both sexes should be reared, each form paired with its kind, and *vice versa*, and the results noted. The second generation of specimens thus observed should settle the question.

While I cannot positively answer Mr. Fiske's question as to where the immense number of *Umbrosa* came from, the observations made here go to prove that the uncommon appearance of the species was not confined to one locality, but the "wave" probably extended over the entire eastern United States. It is my opinion that the preceding autumn was an unusually favorable one for the *Graptas*, for both *Umbrosa* and *Fabricii* were common here in August, 1895.

*Grapta Comma* was very abundant here in the autumn of 1892, but did not appear in great numbers again until the spring of 1896.

*Papilio Ajax* is very rare here in ordinary years, but in 1895 suddenly great numbers of badly worn specimens appeared and remained for some days. Every collector captured examples, I think, but hardly any one secured a perfect specimen.

The nearest point at which the food plant of *Ajax* is found, so far as I have been able to ascertain, is on the Michigan side of Lake Michigan. In this case the butterflies may have been carried from their usual haunts by winds.

Insects undoubtedly migrate, sometimes suddenly and in immense numbers, as has been noted of *Danais Archippus* and *Callidryas Eubule*, and sometimes slowly, taking years to reach a certain locality hitherto unknown to the species.

*Chrysophanus Helloides* is moving eastward. A few years ago it

was considered a Rocky Mountain species, but lately specimens have been taken in Iowa, Illinois, and Indiana.

Another question is why the form *Fabricii* should appear before *Umbrosa* and then later on both forms appear at the same time?

The broods of *Interrogationis* seem very irregular as to time of appearance, but there are at least two annual broods here.

### A NEW *CELIOXYS* FROM NEW MEXICO.

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

*Celioxys menthae*, n. sp.—♂. Length 9½ mm., black with the legs and base of abdomen ferruginous. Pubescence scanty, dull white, rather dense and tinged with ochraceous on face. Head rather large; vertex shining, with large, well-separated punctures; mandibles bifid at ends, ferruginous except tips and extreme base; antennæ black, flagellum faintly rufescent beneath towards the end; mesothorax shining, with extremely large, well-separated punctures; a band of dull white pubescence at base of scutellum and a patch above base of wings; scutellum shining and sparsely punctured, without any trace of a keel, rounded behind, with a very small tubercle at the middle (representing the median tooth of *aperta*, etc.), lateral teeth large, flattened and rounded at tips; enclosure of metathorax distinct, very finely granular, with a basal series of large pits; tegulae apricot colour; wings dusky hyaline, the apical margin broadly smoky, nervures piceous, stigma fuscous, marginal cell more produced at tip than in *atilis*; coxæ more or less darkened, legs otherwise entirely bright ferruginous, with the pubescence extremely scanty; abdomen shining, segments 2-5 with transverse sublateral grooves; punctures sparse, largest and densest at sides, rather small and numerous on dorsum of first segment, absent on dorsal middle of segments 2-5, except for an apical row and on 2 an imperfect basal one; sixth segment with sparse minute punctures. Hair-bands very narrow and interrupted dorsally, so as to be inconspicuous. First segment except the extreme base entirely ferruginous; second and third segments, and fourth more or less, ferruginous at sides, venter ferruginous except apex. Apex with six teeth, of the terminal ones the lower are the longer.

*Hab.*—Deming, N. M., at flowers of garden mint in Mrs. Bristol's garden, July 9, 1896. (Ckll. B. 45.) Very distinct by the sparsely punctured (in parts impunctate) abdomen with its rufous first segment. Nearest, perhaps, to *C. texana*, Cr.

There is a *Celioxys* taken by Prof. Townsend on the Gila R. in numbers, which I could not definitely identify. A specimen sent to Mr. Fox comes back marked "near *mæsta*." Very possibly the species is new, but I do not at present care to give it a name, as there are several closely allied forms which I have not seen, and it may be one of them.

Mailed May 1st, 1897.