

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.

- | | |
|--|--|
| <input checked="" type="checkbox"/> Coloured covers/
Couverture de couleur | <input type="checkbox"/> Coloured pages/
Pages de couleur |
| <input type="checkbox"/> Covers damaged/
Couverture endommagée | <input type="checkbox"/> Pages damaged/
Pages endommagées |
| <input type="checkbox"/> Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée | <input type="checkbox"/> Pages restored and/or laminated/
Pages restaurées et/ou pelliculées |
| <input type="checkbox"/> Cover title missing/
Le titre de couverture manque | <input checked="" type="checkbox"/> Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées |
| <input type="checkbox"/> Coloured maps/
Cartes géographiques en couleur | <input type="checkbox"/> Pages detached/
Pages détachées |
| <input type="checkbox"/> Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire) | <input checked="" type="checkbox"/> Showthrough/
Transparence |
| <input type="checkbox"/> Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur | <input type="checkbox"/> Quality of print varies/
Qualité inégale de l'impression |
| <input checked="" type="checkbox"/> Bound with other material/
Relié avec d'autres documents | <input checked="" type="checkbox"/> Continuous pagination/
Pagination continue |
| <input checked="" type="checkbox"/> 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 | <input type="checkbox"/> Includes index(es)/
Comprend un (des) index |
| <input type="checkbox"/> Blank leaves added during restoration may appear
within the text. Whenever possible, these have
been omitted from filming/
Il se peut que certaines pages blanches ajoutées
lors d'une restauration apparaissent dans le texte,
mais, lorsque cela était possible, ces pages n'ont
pas été filmées. | Title on header taken from: /
Le titre de l'en-tête provient: |
| <input type="checkbox"/> Additional comments: /
Commentaires supplémentaires: | <input type="checkbox"/> Title page of issue/
Page de titre de la livraison |
| | <input type="checkbox"/> Caption of issue/
Titre de départ de la livraison |
| | <input type="checkbox"/> Masthead/
Générique (périodiques) de la livraison |

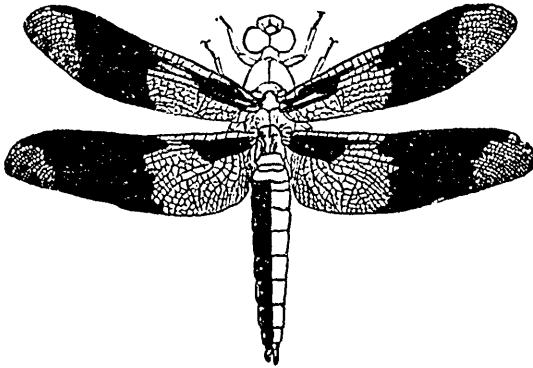
This item is filmed at the reduction ratio checked below /
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	14X	18X	22X	26X	30X
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12X	16X	20X	24X	28X	32X

The
Canadian Entomologist

VOLUME XXIX.

No. 6.



LIBELLULA TRIMACULATA.

EDITED BY

REV. C. J. S. BETHUNE,

HEAD MASTER OF TRINITY COLLEGE SCHOOL,
PORT HOPE, ONTARIO.



JUNE, 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.

LEPIDOPTERA.—I desire long series of *Plusias* from all parts of boreal North America. Will purchase or give liberal exchanges. Correspondence invited. R. OTTOLENGUI, 115 Madison Ave., New York.

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.

KERMES.—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 pupae. Preserved larvae. 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. NEEDHAM, 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.

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

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

CANADIAN ICHEUROMONIDE.—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, Halipilidae, Gyridae, and Rhynchitidae, named or unnamed; also *Attelabus* genalis. Good returns of named N. American Coleoptera. RALPH HOPPING, Redstone Park, Kaweah, California.

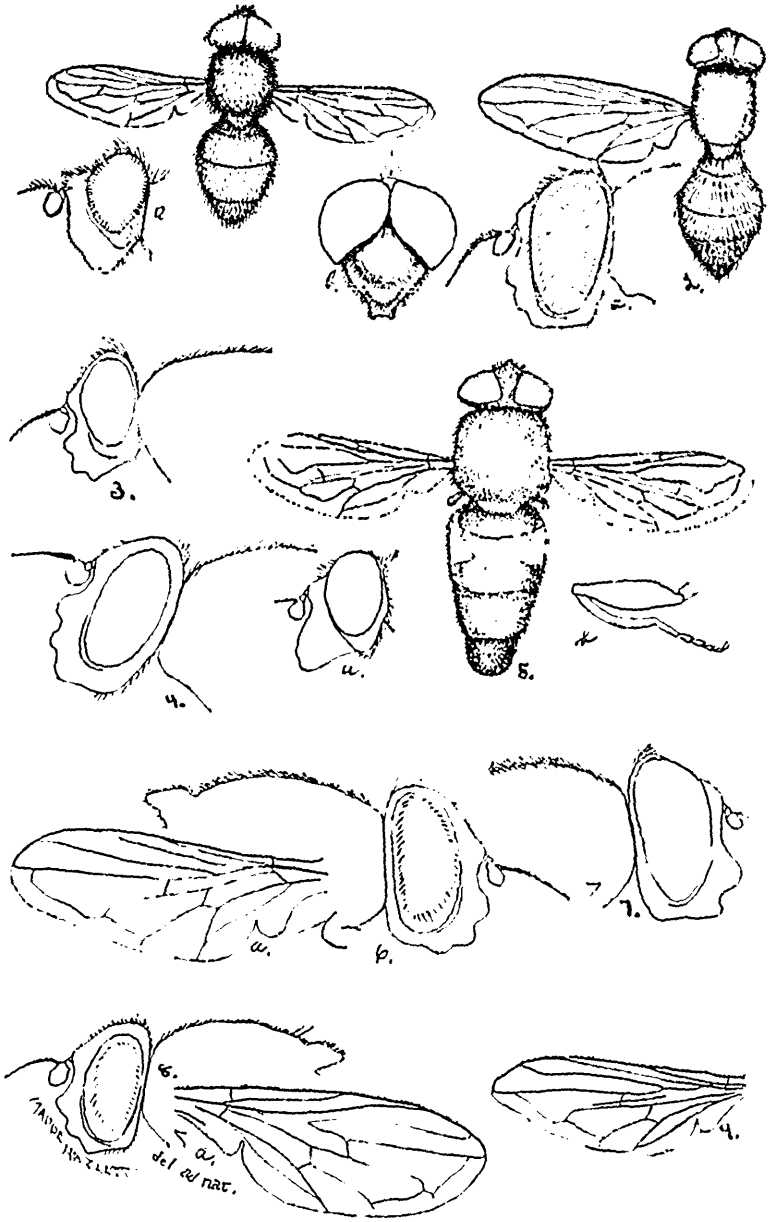
Correspondents desired in any part of the world who will collect Hesperidae (either named or unnamed) in exchange for N. H. Lepidoptera. W. F. FISKE, Mast Yard, N. H., U. S. A.

WANTED.—Diptera of the families Sarcophagidae and Muscidae (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.

VANCOUVER ISLAND.—Lepidoptera for sale or exchange—*C. gigas*, *M. Taylora*, *A. rhodope*; *New noctuidae*. 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.



NORTH AMERICAN SYRPHIDAE.

MADE IN U.S.A. del. W. H. H. C.

The Canadian Entomologist.

VOL. XXIX.

LONDON, JUNE, 1897.

No. 6.

CONTRIBUTION TO THE KNOWLEDGE OF NORTH AMERICAN SYRPHIDÆ.—II.

BY W. D. HUNTER, INSTRUCTOR IN ENTOMOLOGY, UNIVERSITY
OF NEBRASKA.

Plate V.

An interesting part of this paper will be found to deal with some material from Alaska. During the summer of 1896 Prof. L. L. Dyche, of the University of Kansas, the well-known taxidermist, made an expedition to Cook's Inlet, Alaska, and from there inland. A number of species of Syrphidæ were taken simply as a side issue, the expedition not being an entomological one at all. Unfortunately, during the long journey back many of these specimens were damaged beyond all hope of recognition. The material that came through, however, without damage, although consisting of only thirteen species, makes quite a contribution to the knowledge of the Dipterous fauna of that interesting region. Although some of the orders of insects, notably the Coleoptera, have been quite assiduously collected in Alaska, and extensive reports written upon them, in the Syrphidæ, as is the case in all of the families of Diptera, no collections of importance have been made. The whole of the literature of Dipterology contains the record of only seven species as occurring in Alaska. These are mostly from Loew's Centuries as follows:

Chrysotoxum derivatum, Walker, List, iii., 542 (Yukon River).

Platychirus pelatus, Meigen, Syst. Bschr., iii., 334 (Syrphus). Sitka, Loew.

The authority for this entry is Osten Sacken, Cat. 1872, 122, "Sitka according to Loew." I do not know where this record was made, nor indeed if it was ever made outside of letters.

Sphagina infusata, Loew, Centuries iii., 23 (Sitka, Sahlberg).

Baccha obscuricornis, Loew, Centuries iii., 117 (Sitka, Sahlberg).

Scotomyia chalcopyga, Loew, Cent. iii., 20 (Sitka, Sahlberg).

Eristalis Meigenii, O. S., West. Dipt. 337 (Yukon River).

Xylota barbata, Loew, Cent. v., 40 (Sitka).

Since none of the species taken by Prof. Dyche duplicate those above, the total number of Syrphidae known from Alaska is brought up to twenty.

These species are included in their systematic relation below. It has been thought best, however, to place them in ensemble form here.

Chilosia gracilis, n. sp.

Chilosia plutonia, n. sp.

Chilosia alaskensis, n. sp.

Melanostoma mellinum, Linn. I have also seen specimens of the species taken at Ft. Wrangel by Prof. Wickham.

Syrphus intrudens, O. S.

Syrphus mentalis, Williston.

Syrphus protritius, O. S.

Syrphus Lesueurii, Mæq.

Syrphus umbellatarum, Schiner.

Eristalis occidentalis, Williston.

Helophilus latifrons, Loew.

Helophilus Dychei, Will.

Xylota ejuncida, Say.

The preponderance of *Chilosia* and *Syrphus* forms which are known to be mountainous is conspicuous; that the three species of the former genus are all new is not surprising considering the state of our knowledge of them in this country. The occurrence of three European species out of the relatively small total number is rather remarkable, and bears out the law of the occurrence of such forms in the West rather than in the East of this country, or at least that where they occur in the East they also occur in the West. That two species of *Helophilus* should be found is entirely as would be expected of such a northern genus; although that one of them should be new, and that in a restricted group of northern forms, which are of almost circumpolar distribution, is noteworthy.

All of this Alaskan material was placed in the form of a rough draft of a paper by Dr. Williston. In a most truly generous spirit he turned the paper with the specimens over to me, advising me to make any changes that I might see fit, and giving me full permission to incorporate it in the present paper. This has been done. The additions of mine are the preceding part, the descriptions of the three new species of *Chilosia*, and several notes.

1. *Microdon viridis*, Townsend, Dipt. Baja, California, in Proc. Cal. Acad. Sci., Series 2, Vol. III., p. 615 (April 8, 1895).

I have received from Prof. Aldrich a single specimen of this characteristic species.

This specimen bears the label "Knoxville, Tenn., 2nd July, '91." In reply to a letter in which I expressed some doubt as to the correctness of this label, Prof. Aldrich has assured me that the specimen was collected by Mr. H. E. Sumner, in Tennessee and that he has no doubt but that the label is authentic and perfectly correct. The specimen on which Mr. Townsend founded the species was from San José del Cabo Baja, California.

The remoteness of this locality from that of the type was a matter of no little surprise to me and has caused me to make an unusually diligent search of the literature to ascertain whether Mr. Townsend's species might not be the same as some previously described more widely distributed one. I have found, however, that *M. viridis* is entirely unique among the species of *Microdon*, although it approaches *M. devius*, Linn., of Europe.

I found recently in the collection of the Kansas State University another specimen of this species which I have ascertained was taken by Mr. Chas. Robertson at Orlando, Florida, March 16th, 1887.

2. *Microdon megalogaster*, Snow, Kansas Uni. Quart. Vol. I, No. 1, p. 34. Plate vii., Fig. 1 (July, 1892).

Microdon bombiformis, Townsend, Trans. Am. Ent. Soc., Vol. XXII., p. 33 (March, 1895).

I have compared the types of these two descriptions in the collection of the Kansas University; there is not the least doubt but that they are the same. The type of *bombiformis* is a female and that of *megalogaster* is a male of the same species. There is only a difference in size between these two specimens. Townsend states in regard to his species, "I can hardly identify this with *megalogaster*, Snow, from the differences in the wings." The wings in both specimens are fusco-hyaline, but in the female (*bombiformis*) they are perceptibly darker along all of the veins, precisely, however, as might be expected in that sex.

The locality of the specimen described as *M. bombiformis* is Dixie Landing, Va., and that of the specimen described as *M. megalogaster*, which Snow omitted to state, is Illinois.

3. *Chrysogaster putipennis*, Loew, Centuries, iv, 58.

Numerous specimens of this species were taken by the writer at Cedar Bluffs, in Nebraska. The species has been recorded hitherto only as far west as New York. All of these specimens seem to differ from Eastern ones only in the fact that the wings are less distinctly marked.

TABLE OF THE SPECIES OF CHILOSIA INCLUDED BELOW.

- | | |
|---|----------------------------|
| 1. Eyes bare..... | 2 |
| Eyes pilose..... | 3 |
| 2. Anterior cross vein distinctly bent at base, and parallel to vein at base of the discal cell; thorax long pilose, opaque black species, wings very dark..... | <i>plutonia</i> , n. sp. |
| Anterior cross vein perfectly straight, not parallel to vein at base of discal cell; thorax very short pilose; shining olivaceous species, wings hyaline | <i>gracilis</i> , n. sp. |
| 3. Scutellum with bristles or bristle-like hairs on the margin..... | 4 |
| Scutellum without bristles on the margin; tibiae largely reddish, wings tinged with yellowish; white pilose, bluish species..... | <i>punctulata</i> , n. sp. |
| 4. Face hairy; thorax white pilose; anterior cross vein oblique; robust, shining brassy species..... | <i>pacifica</i> , n. sp. |
| Face not pilose; thorax black pilose; anterior cross vein rectangular, deep blue, shining species..... | <i>alaskensis</i> n. sp. |
4. *Chilosia alaskensis*, n. sp. Plate V., Fig. 4.

Everywhere deep blue, shining, very short pilose. Eyes pilose, arista scarcely pubescent, incrassate on the basal half, scutellum with bristle-like hairs.

Female — Eyes very short sparse pilose, appearing white from above. Front shining blue, sparsely punctured short black pilose, with a large sulcate swollen area above the antennae. Face very prominent, deeply concave below the antennae to the rounded, very prominent tubercle situated a trifle below the middle of the eyes, thence shortly but not very deeply concave to the epistomal tubercle which is only slightly less prominent than the upper, and is situated considerably above the lower eye margin. Below the lower tubercle straight, slightly receding. Cheeks narrow, lower border straight, epistoma not truncated at tip. Antennae and margin of the antennal orifice reddish-yellow, first and second joints and the narrow upper margin of the third brownish. Third joint very large, circular with the upper outer margin slightly less convex.

Ant. long, basal brown, very indistinctly pubescent. Thorax shining blackish-blue, short black pilose. Scutellum with slender bristles on the margin. Abdomen oval, wider than the thorax, everywhere shining dark blue, almost bare. On the dorsum of the abdomen the pile is black, on the margins, especially anteriorly, it is white, and on the sides of the second segment rather long. Legs black, knees and narrow base of the tibiae only lighter, short black pilose. Wings hyaline, the stigma and all the veins light luteous. L. corp. 8 mm., L. al. 8 mm.

One specimen: Cook's Inlet, Alaska; Prof. L. L. Dyche, of the University of Kansas.

5. *Chilosta plutonia*, n. sp. Plate V., Fig. 7, 9.

Allied to *C. Willistonii*. Eyes bare, arista plumose, scutellum with bristles, legs black, second and third abdominal segments opaque except the anterior corners, thorax long black pilose, wings very dark.

Male. — Frontal triangle swollen, but little shining, long black pilose. Ocellar area similarly pilose. Face not pilose, very slightly pollinose, gently concave to the tip of tubercle which is round and distinct, thence only very slightly concave to the tip of the epistoma; but little produced below the eye. Occiput long white pilose below. Antennae small, black; third joint yellowish-red, a trifle longer than broad, rectangular with the lower basal corner bulging slightly outwardly. Dorsum of thorax and pleura subshining, long, erect, black (in all lights) pilose, finely punctured. Scutellum shining, quite distinctly punctured with bristles and coarse hairs on the margins. Abdomen not wider than the thorax, opaque. There are shining brassy triangles on the anterior angles of the second and third segments; these spots extend about one-half of the width of the segment laterally and about the same distance inwardly. On the fourth segment there is a complete anterior shining band of metallic. Pile of abdomen sparse, long on the lateral margins, on the opaque portions black, on the shining portions whitish. Hypopygium shining, white pilose. Legs entirely black, long black pilose; on the anterior and middle femora the pile is long and slender, forming loose cilia, on the inner side of the posterior femora it is short and spinous. Wings very dark, especially before the anterior cross vein. L. corp. 8½ mm., al. 8 mm.

In some lights the fourth abdominal segment seems almost entirely shining, and the anterior and middle legs seem whitish pilose.

One specimen: Cook's Inlet, Alaska; Prof. L. L. Dyche.

6. *Chilosia Aldrichi*, Hunter. Plate V., Fig. 8, a.

Several additional specimens have been received from the same locality as the type, Idaho.

7. *Chilosia gracilis*, n. sp., Plate V., Fig. 3.

Eyes bare, arista plumose, scutellum with bristles on the margin, legs black.

Female. — Shining black, somewhat greenish, almost bare. Antennæ of moderate size, first and second joints piceous, third bright reddish-yellow, somewhat longer than broad, elliptical; arista black, basal, long loose plumose. Front plane, short luteous pilose, longer black pilose near the ocelli. Face and cheeks bare, shining, lower anterior orbits very short white pilose. Face considerably obliquely produced below, with a conspicuous round tubercle below the middle moderately concave above; between the tubercle and the tip of the epistoma there is a short deep concavity. Occiput white pilose. Dorsum of thorax shining, distinctly punctured, very short black pilose in the middle and yellow pilose around the margins, quite widely so anteriorly. Pleura more olivaceous than the dorsum, shining. Scutellum with two apical and three shorter lateral bristles on each side. Abdomen everywhere shining with a greenish tinge, much broader than the thorax at the apex of the second segment, with short white pile that appears to be arranged in bands on the segments; the lateral margins of the first, second and third segments have longer erect pile. Legs entirely black, the knees, especially the anterior pair, lighter; the pile is very short, sparse, and in most lights white. Wings uniformly grayish hyaline, veins black. Tegulæ white, fringed with somewhat yellowish. L. corp. 6 mm.; al. $6\frac{1}{2}$ mm.

One female specimen: Cook's Inlet, Alaska, 1896; Prof. L. L. Dyche, of the University of Kansas.

This species is very closely allied to *C. Willistoni*. It differs, however, as follows: The tubercle is much more distinct, and between it and the tip of the epistoma there is a short deep concavity. In *Willistoni* the tubercle is so indistinct that between it and the epistoma the outline is almost perpendicular. The face is produced quite distinctly, more downwardly in this species. The pile of the dorsum is black; in *Willistoni* it is luteous. The pile of the abdomen is also much more sparse and finer; in *Willistoni* it is quite uniform and not arranged in bands.

8. *Chilosia pacifica*, n. sp. Plate V., Fig. 2, a.

Male.—Eyes pilose, scutellum with bristle-like hairs on the margin, arista bare, abdomen largely opaque, robust, thickly white pilose.

Female.—Shining brassy, abdomen broad, entirely shining, antennæ brown, third joint reddish.

Male.—Eyes long dense, whitish pilose. Front swollen, sulcate, long black pilose. Face uniformly lightly white pollinose and short, sparse, white pilose below, extending only moderately below the eyes, obliquely truncate at the apex, the lower border of the cheeks straight. In outline the face is almost straight below the antennæ to the inconspicuous, obtuse, nasiform tubercle, thence distinctly concave to the tip of the epistoma, which forms a second tubercle almost as large as the upper one. Antennæ of moderate size, the second and third joints black, third brown on the upper half, yellowish-red below, very slightly broader than long, almost square, the lower outer angle rounded. Arista, bare, basal, black. Dorsum and pleura shining greenish, densely, long, erect whitish pilose. Scutellum with long, bushy, white pile, intermixed with slightly strengthened black hairs on the margin. Abdomen but little broader than the thorax, everywhere long erect whitish pilose, first segment shining, second entirely opaque, third opaque, except a narrow posterior margin and lateral triangles reaching from the anterior margin two-thirds of the width of the segment, of shining green, fourth segment entirely shining greenish. Legs black, long white pilose. The basal third, and the narrow apex of the middle and anterior tibiæ and the basal third of the posterior are dull testaceous. The colouring of the posterior pair is very inconspicuous. Wings grayish hyaline, veins brown, stigma luteous. Tegulæ white. L. c. 10 mm., al. 8 mm.

Female.—Front shining brassy, coarsely punctured, pitted above the base of the antennæ, short white pilose. Along the eye margins, midway between the antennæ and the ocelli, there are short elevated ridges. Face shining greenish-black, short, sparse, whitish pilose below on the sides; the orbital margins densely short, white pilose. Face considerably concave below the antennæ to the conspicuous tubercle, thence with a short, deep concavity to the epistoma, which forms another less conspicuous tubercle, not produced below the eyes nor obliquely at the apex, which is broadly truncate. Lower border of the cheeks slightly concave. Occiput long yellowish pilose. Eyes much shorter pilose than on the male. Antennæ moderate in size, deep brown; third joint reddish-

brown, blackish above, slightly longer than broad, the lower corner slightly less convex than the upper. Thorax shining greenish, short white pilose. Scutellum fringed with rather short white pile, with six slender black bristles arranged as follows: two on each side near the apex, one more slender on each side near the base. Abdomen considerably broader than the thorax, everywhere shining brassy and rather short, dense, short, appressed pilose; on the lateral margins the pile is longer and erect. Legs short, whitish pilose, femora entirely black, except the extreme apex, anterior, and middle coxæ reddish, all the tibiæ obscurely reddish, except a broad subapical band occupying more than a third of the width of the tibiæ, front and middle tarsi reddish, the two apical joints blackish, posterior tarsi entirely blackish. Wings subhyaline, the basal half slightly coloured with yellowish, veins brown, stigma luteous, stumps of veins at the bases of the apical and posterior cross veins.

L. corp. 9 mm., al. 8 mm.

Two specimens: one bearing the label "Cal., R. W. Doane coll.," and the other, "Palo Alto, California, March 29, 1895."

This species is allied to *C. occidentalis*, Will., also from California. It may be distinguished, however, from that species among other characters by the colour of the pile and the presence of stumps of veins at the bases of the apical and posterior cross veins.

9. *Chilosia punctulata*, n. sp. Plate V., Fig. 6, a.

Eyes pilose, arista bare, scutellum wholly without bristles. Everywhere profoundly punctured; wings uniformly, distinctly yellowish.

Female.—Front deeply punctured, wholly without swollen processes, but little shining, pile short, dense, in some lights blackish, from above white. The orbits on the lower part of the front and the upper part of the face expanded as a narrow band just below the base of the antennæ, white pollinose. Face bare, shining black, deeply concave below the antennæ to the conspicuous round tubercle, thence shortly and deeply concave to the oral margin, which is obliquely truncate. Cheeks narrow, bare, shining, lower border straight. Antennæ situate above the centre of the eyes, second and third joints bright reddish-yellow (sometimes more brownish), first and the narrow orifice brownish. Third joint moderate, a trifle longer than broad, regularly elliptical. Arista bare, basal, yellow at apex. Eyes very short, sparse, white pilose. Mesonotum densely punctured but little shining, pile short, whitish, on pleura below the base of the wings longer and white. Scutellum without bristles,

deeply punctured like the mesonotum, with a loose fringe of fine white pile showing from below the margin. Abdomen broadly elliptical, everywhere deeply and conspicuously punctured and subshining. Pile rather abundant, white. When viewed from above and at one side the pile of the third and fourth segments seems to form broad arcuate bands curving from the apical corner of the segment inwardly. Legs white pilose; all the femora except a narrow tip black; tibiæ reddish-yellow with an indication of a brown median band, more pronounced on the posterior pair. Tarsi yellow, two apical joints darkened. Posterior femora with several short spinous bristles below near the apex. Wings short, broad, uniformly tinged with yellow; veins yellow.

Length, $8\frac{1}{2}$ mm.; al., $6\frac{1}{2}$ mm.

Two specimens: West Point, Nebraska, September 9.

This species is very closely allied to *C. sororia*, Will., from Mexico and to *C. petulca* from Washington State. In the shape of the antennæ and outline of the face it agrees precisely with *petulca* but differs in the absence of the scutellar bristles. This is the only character mentioned by Williston in the *Biologia C. A.* as distinguishing *sororia* from *petulca*. The character, however, in this species which leads me to consider it very distinct is the deep punctuation. The front of *C. sororia* is described as "shining metallic," and the mesonotum as "metallic green," which would certainly indicate that these parts are not deeply and closely punctured. In this species the front and mesonotum are very deeply and conspicuously punctured, so that they have a roughened, granulated appearance and are subopaque. The wings in this species are much more yellowish than the description of *C. sororia* would seem to indicate they are in that species, and there are several other differences.

10. *Melanostoma mellinum*, Linn.

Two specimens: Cook's Inlet, Alaska; coll. L. L. Dyche.

11. *Platychirus chaetopodus*, Williston. Synopsis N. A. Syrphidæ, p. 59, 1896.

Four male specimens were taken on the Pine Ridge in North-western Nebraska by the writer during July, 1896. The species was described from the State of Washington and Snow has recently recorded it from Colorado. The abdominal markings are larger than the description seems to imply.

12. *Syrphus intrudens*, O. S.

Four specimens from Cook's Inlet, Alaska; coll. L. L. Dyche. The

legs are darker coloured than Osten Sacken describes them. This species has been recorded from California and Colorado.

13. *Syrphus mentalis*, Will.

Two specimens: Cook's Inlet, Alaska; coll. L. L. Dyche. This species is known from the State of Washington. These specimens show a considerable variation from the description and from each other. However, the points in which one specimen differs from the description are the very points in which the other specimen agrees. I am thus led to believe that the species is variable.

14. *Syrphus protritius*, O. S.

One specimen: Cook's Inlet, Alaska; coll. L. L. Dyche. This species was described from California.

15. *Syrphus Lesueurii*, Macq.

Two specimens: Cook's Inlet, Alaska; coll. L. L. Dyche. This species has been recorded from New England and once from the Pacific Coast.

16. *Syrphus umbellatarum*, O. S.

Two specimens: Cook's Inlet, Alaska; coll. L. L. Dyche. This species has been recorded from New Hampshire to Arizona, but never from the North-west. This record gives the species an immensely increased range.

17. *Baccha clavata*, Fabr.

One female specimen taken on flowers of *Aster multiflorus*, Sept. 28th, 1896. It differs from the description in having two small yellow spots on the first abdominal segment corresponding to those on segments two and three and in lacking the white pile on all except the first. It is without doubt, however, this species. This is the second occurrence of this species at Lincoln, Nebraska. It was previously taken in 1895 under similar circumstances.

XANTHOGRAMMA, Schiner.

The astute Prof. J. Mik (Wien. Ent. Zeit., 1897, p. 65,) has discovered a character that will separate this genus from *Syrphus* as far as the European species of these genera are concerned. He states: "Als ein bezeichendes Merkmal für die Gattung Xanthogramma habe Ich Form und Farbe der Umwallung (das sind die Klappen) des Metathoracicalstigma (ueber den Hinterhusten) gefunden. Diese Umwallung ist bei allen Arten nicht sehr hoch; sie ist schwarz und trägt auf dem freien Rande kurze, feine, schwarze oder braune Wimperhärchen."

I have sought in vain to apply this character to the North American species of these genera. I have had, unfortunately, the opportunity of examining but one species of *Xanthogramma*, *X. flavipes*, Loew, and it is quite possible that the other species of the genus may differ from it in precisely this respect. However, it is important that the character that will separate all of the European species of these genera finds its exception in this one North American species at least.

In the absence of a positive illustration of the character used by Prof. Mik, I have had some difficulty in conceiving exactly what he means. I take it, however, that the "Umwallung" is the elevated orifice of the metathoracical spiracle and the "Klappen" are the lids fitting over them and bearing on their free edges cilia of the fine black or brown bristles. If I am right in this, the character does not apply at all to *X. flavipes*. The orifice of the spiracle is not in the least elevated more than in any of the fifteen species of *Syrphus* which I have examined with special reference to this character, and the cilia is not black or brown, but only slightly yellowish,

18. *Baccha lemur*, O. S.

Four specimens: Colorado Springs, Colo., Aug. 1896; Prof. Bruner.

These specimens show no variation among themselves, nor differences from the description. The posterior femora uniformly have only an indication of a preapical ring.

19. *Volucella apicifera*, Townsend, Trans. Am. Ent. Soc., 1895, p. 40.

One male specimen, Las Cruces, New Mexico; coll. Townsend, April 8, now in the collection of Prof. Aldrich I have examined. The type of this species, which I have also examined in the collection of the Kansas University, which was taken at Las Cruces, N. M., April 17, and this specimen agree throughout. This species is certainly, as Mr. Townsend states, very closely allied to *V. isabellina*, Will. It differs in some respects in precisely such points as a tenental form of that species would be supposed to differ. However, the markings of the legs and abdomen are exactly the reverse of what would be expected if this were an external form of *V. isabellina*: *i. e.*, they are darker and more extensive. I am inclined to think, with Mr. Townsend, that there are here two distinct though closely related species.

Pyritis, nov. gen. [$\pi\rho\upsilon\tau\iota\varsigma$, a precious stone].

Large black, thickly pilose species, without lighter markings. Marginal cell open, anterior cross vein in middle of discal cell, third vein

straight. Antennæ short, third joint very broad; arista basal pilose. Eyes long pilose, widely contiguous in the male. Femora and coxæ simple, without spines or tubercles. Face very broad, the diverging eye margins form an angle of at least 80 degrees; the apex is just above the antennæ, swollen. (In *Sericomyia* and *Arctophila* the eye margins are almost parallel.)

Type of genus, *Pyritis montigena*, n. sp., North America.

This genus falls naturally into Williston's tribe Sericomyni, which contains the genera *Sericomyia* and *Arctophila*. From both of these it may be easily separated by the peculiar formation of the face and the pilose eyes. There is one genus in the Volucellini, *Phalacromyia*, which has the marginal cell open. From this it differs in having the outline of the face rounded and not produced conically downward, and also in having the third antennal joint circular and not elongate. The distinctive character of this genus, however, is the remarkably wide and swollen face.

20. *Pyritis montigena*, n. sp. Plate V., Fig. 1, a, b.

Male.—Black opaque, thickly pilose. Eyes long, dense black pilose. Face and front shining, sparsely clothed with yellowish pile, intermixed with black. Front very distinctly sulcate. Face swollen, perpendicular to below the eye margins, thence receding and very slightly concave to the oral margin. Antennæ black, third joint reddish, broader than long; arista long, loose pilose on the upper side, much less so below. Thorax long, dense, whitish-yellow pilose, the margins and three narrow indistinct central lines shining. Scutellum shining, dull testaceous. Abdomen covered with long, erect, dark yellow pile; first and second segments opaque; third with a shining band on the anterior margin, becoming more opaque towards the middle, where it is broadly interrupted; fourth segment entirely shining, except a subopaque band widely interrupted in the middle. Legs entirely black; long yellowish pilose intermixed with black on the anterior pair. Posterior pair somewhat arcuate. Wings subhyaline, with black clouds on the cross veins, and at the furcation of the second and third veins. Third vein perfectly straight. L., 12 mm.

One specimen: Moscow, Idaho; coll. Prof. J. M. Aldrich.

21. *Eristalis Meigenii*, Wiedemann, *Ausseurop-Zweiflg.*—*Ins.*, ii., 177, 35-tab. x. b., f., 15 (1830); Williston, *Proc. Am. Phil. Soc.*, xx., 322 (1882); *ibid Syn. N. A. Syrphidæ*, p. 165 (1886); *ibid Trans. Am. Ent. Soc.*, xiii., 318 (1886); F. Lynch-Arribalzaga, *Anales. d. l., Soc. Cien. Argentina*, xxxiv., p. 38 (1892).

Eristalis foveifrons, Thomson. — Eugenes Resa, Dipt. 419, 78 (1878); Williston, Trans. Am. Ent. Soc., xiii., 318 (1886).

Eristalis Androclus, Osten Sacken.—Western Dipt. 337 (1877); non-Walker, List, 612 (1849); *ibid* Cat. N. A. Dipt., note 223, p. 249 (1878); Williston, Synopsis N. A. Syrphidæ, 165 (1886).

Eristalis Brousi, Williston.—Proc. Am. Phil. Soc., xx., 319 (1882): (*Brousi*), *ibid* Synopsis N. A. Syrphidæ, 165 (1886); Snow, Kans. Uni. Quart. Vol. i., p. 38 (1892); *ibid* *idem*, Vol. iii., p. 243 (1895); Townsend, Trans. Am. Ent. Soc., xxii., 48 (1895); Hunter, CAN. ENT., XXVIII., p. 98 (1896).

This species was described by Wiedmann in 1830 from specimens from Montevideo in South America. Thirty-eight years later Thomson, in his work on the Diptera of the Eugenes Resa, redescribed it under the name of *Eristalis foveifrons*, basing his description on specimens from Buenos Ayres.

For some time previous to 1877 Osten Sacken and Loew had been sending out specimens of a species which they identified, however not certainly, as the *E. Androclus* of Walker's List, iii., 612, to their correspondents under that name. Osten Sacken has a note in his Western Diptera (1877) concerning this species which he still at that time considered as Walker's species, *E. Androclus*. Between this time and the time of the publication of Osten Sacken's catalogue in 1878, he had examined the type of Walker's species in the collection of the British Museum and found that it was a *Helophilus*. However, he retained the name *E. Androclus*, O. S., (non-Walker) to avoid confusion.

Now, strangely enough, Dr. Williston, in Proc. Am. Phil. Soc., xx., 319 (1882), recognized the male of this species as *E. Meigenii*, but at the same time described the female as *E. Brousi* (sic). In the synopsis this was corrected and the name *Brousi* given to replace *Androclus*. It was only the immense difference in localities that prevented Dr. Williston's identification of this species with *E. Meigenii*, as he states that the full description applies almost perfectly. He is now of the opinion that they are the same, and it is at his suggestion that the investigation which has resulted in the above arrangement of the names was undertaken.

22. *Eristalis occidentalis*, Will.

Five males and three females from Cook's Inlet, Alaska; coll. Prof. Dyche. Some of the males agree quite well with the description, except that the basal joints of the middle tarsi are not yellowish, which was an

error in the description, and there is no yellow posterior margin on the second and third abdominal segments. The pile of the median segments may be yellow, or mixed with black, or chiefly black. In the female the third and fourth segments are covered with dense deep black pile, and there is no posterior opaque margin on the third or else a very narrow one. This species has elsewhere been recorded only from the State of Washington. [Williston.]

23. *Eristalis montanus*, Will.

Several specimens of this species were taken during July on the Pine Ridge in North western Nebraska. They all have the black on the second abdominal segment as broad on the posterior margin as on the anterior: some of them have an indication of an opaque cross band on the posterior part of the third, and in others the posterior part is entirely shining. The pile of the eyes is entire.

These specimens were captured hovering over a small, shallow pond, at an elevation of a trifle over 4,000 feet.

24. *Helophilus latitarsis*, n. sp.

Male.—Antennæ black; arista yellowish at the base. A spot directly above the antennæ, a broad facial stripe ending abruptly before the base of the antennæ; cheeks and narrow oral margin shining black, the facial stripe may be more brownish. Front, except the vertex which is opaque black and black pilose, and face densely yellowish pollinose and yellow pilose. Face in profile not at all conically produced below, gently concave below the antennæ to half way to the epistoma, thence perpendicular to the notched epistoma. Lower border of cheeks forms with the plane of the occiput only a very little more than a right angle. Dorsum of the thorax opaque black, everywhere short yellow pilose, complete lateral margins yellow, two median moderately broad uninterrupted silvery white stripes which reach the scutellum. Scutellum entirely testaceous pile black, on the very narrow posterior and anterior margins yellow. Abdomen, first segment opaque black, the extreme angles yellow. Second segment opaque with a very narrow posterior margin shining, bright yellow with a broad central stripe of deep opaque black not reaching posterior border and expanded on the anterior border so as to cover three-fourths of the width of the segment; posterior band ferruginous, very narrow at the lateral angles and increasing in width to the centre of the segment, where it unites with the central stripe; pile short, yellow except on the posterior margin. Third segment yellow, tinged with red.

dish posteriorly, where there is a complete narrow reddish cross-band, pilose as in the preceding segment, the black markings consist of a triangular spot, the base of which extends two-thirds of the width of the segment behind, the sides of which are concave and the apex of which is expanded unto a small elliptical spot extending less than one-third of the width of the segment, touching the anterior margin. Fourth segment with the lateral margins narrowly and the posterior margins more widely yellow, for the rest black with a broad subinterrupted pollinose band, leaving a narrow anterior band and a posterior triangle shining black, pile of posterior third black. Femora black, apical third of anterior and middle pairs yellow, an obscure reddish spot near the apex of the posterior pair; anterior tibiae yellow on basal half, intermediate entirely and posterior with only an apical band. All the tarsi except the intermediate metatarsi black; the anterior tarsi, especially the metatarsi, are very evidently widened and swollen. The posterior femora slightly thickened, their tibiae slightly arcuate, unarmed. Wings cinereous hyaline. Length, 11 mm.

One specimen: Minnesota.

This species belongs to the *groenlandicus* group. It is easily separable from *glacialis* and *borealis* by the only gently concave face. From *groenlandicus* it differs: (1) The median dorsal stripes are not very narrow, not broad, distinct, and reach the scutellum, the lateral thoracic stripes are not obsolete posteriorly; (2) the femora are more extensively yellow at the apex; (3) the pile of the thorax is everywhere yellow. From *H. Dychei*, Will., it differs in the less robust and less pilose body throughout, in the outline of the face, which in that species is obtusely conically produced and which is perpendicular below the middle in this species, in the fact that the facial stripe ends abruptly before the base of the antennae; the median dorsal stripes are wider and reach the scutellum, the scutellum is largely black pilose (in *Dychei* the pile of the scutellum is entirely yellow), the apical femoral bands are wider, and there is a much greater extent of yellow on the third and fourth abdominal segments.

Mr. W. A. Snow has a note concerning a specimen of a species of *Helophilus* of the *groenlandicus* group (Kansas Univ. Quart. iii., 243) which in some respects differs from *groenlandicus* precisely as this species does. From the short note given by Mr. Snow I am not certain that his specimen belongs to a species distinct from mine. In his specimen the pile of the dorsum is entirely yellow, the median stripes reach the

scutellum, and the middle femora are yellow at the apex. In all of these characters it agrees with mine. On the other hand, his specimen has the dorsal stripes narrow, and the lower border of the cheeks forms with the plane of the occiput an obtuse angle. In these characters it differs from mine. A comparison of specimens is necessary to clear up the difficulty.

I have noticed in the anterior metatarsus of this species a formation that I think is of considerable value as a specific character, and which apparently has not been observed in any other species of the genus. In this species it is widened and swollen considerably more than in any of the species of *Helophilus* with which I am acquainted. My autopsic knowledge of the species of this genus includes almost all of the species except those of the *groenlandicus* group, and of that group I know only *H. Dychei*, Will. Since that species has the tarsi somewhat wider than the other species of the genus, and since the authors have paid no attention to the tarsi, I am not certain but that in the *groenlandicus* group this character is not of much value. I am certain of this, however, that the swollen anterior metatarsi of the male of this species will separate it from any member of the genus outside of the *groenlandicus* group.

25. *Helophilus Dychei*, Williston, Ms.

Male.—Face below the antennæ only lightly concave; on the lower half nearly vertical and straight in profile; the lower line of the head forms with the plane of the occiput an obtuse angle; face on the sides yellowish-white, the median stripe black; cheeks black. Antennæ black. Front on the lower part yellowish-white with yellowish pile; on the upper constricted part more brownish and with longer blackish pile. Mesonotum opaque black, with two slender, yellowish or yellowish-white stripes, sometimes narrowly interrupted at the suture and reaching only about half way from the suture to the scutellum, pile abundant, dusky yellow. Scutellum light yellow with yellow pile. Abdomen black, the second segment with two large yellow triangular spots, extending the whole width of the segment; third segment with the anterior angles yellow, the black of the second segment is opaque or subopaque with the narrow hind margin metallic; that of the third segment is opaque on the anterior half or a little more; third segment wholly shining, no whitish lunulate spots. Pile erect, yellowish. Legs black, the immediate tips of the femora and the base of the tibiæ yellow. Hind femora moderately dilated; hind tibiæ arcuate. Wings cinereous hyaline; sixth vein sinuous. Length. 1-2½ mm.

The female scarcely differs. There is an indication of a gray lateral stripe on the mesonotum at the humeri. The species is closely related to *H. groenlandicus*, Stager, but differs in the extent of the shining colour of the abdomen, the absence of the pollinose spots on the abdomen, and the colour of the pile of the mesonotum and abdomen in part. There are no yellow markings whatever on the fourth abdominal segment.

Four specimens: Sitka, Alaska: Prof. L. L. Dyche.

The above description is Williston's. The manuscript containing it was most generously turned over to me by Dr. Williston, with the permission to change it in any manner I might see fit. I have not found any change or addition to be necessary.

26. *Helophilus mexicanus*, Mcq.

I have a specimen of this species from Custer in the centre of the black hills in South Dakota. The description applies exactly. This species has not previously been recorded except in Mexico and on the Pacific Coast.

27. *Helophilus pilosus*, n. sp.

Female. — Pile everywhere, including the face, long and rather abundant. Antennæ reddish-yellow. Front opaque black, clothed with yellow pollen on the lower half or more, everywhere black pilose. Face entirely yellow, rather deeply concave below the antennæ, thence almost perpendicular, produced downwards so as to form a short, regular, sharply-pointed cone. Cheeks black, their lower border forming with the plane of the occiput a very obtuse angle. Dorsum of the thorax opaque black, with four broad, complete yellowish-white stripes, the central black interval without whitish line; pile short yellow. Scutellum yellow, with a blackish cast; apical margin more yellowish, pile yellow. Abdomen a trifle broader than the thorax, the sides almost parallel, pile everywhere yellow, short except on the margins of the second segment. First segment whitish pollinose, a rather large spot on each side yellow. Second segment opaque, the posterior margin shining black, on each side with an L-shaped spot of yellow extending three-fourths of the width of the segment, their inner side concave; these spots leave a very broad interval of black between them. Third segment with a broader posterior margin of shining, with two small arcuate spots beginning at the anterior angles, not approaching each other, of yellowish pollinose. Fourth segment shining on the apical half, with two similar but almost straight spots separated at their inner ends by only as much as their width. Fifth

segment entirely shining. Legs yellow; anterior and middle femora with a wide black stripe, attenuated on the apical part on upper side, reaching into the apical third of the femora. Posterior femora with a very broad median band and a very small apical spot black. All the tibiae yellow, the posterior pair more brownish, especially at the base and apex. Tarsi yellowish, the posterior pair somewhat brownish. Wings hyaline. Length, 9 mm.

One specimen: British Columbia.

This species differs from *H. hamatus*, Loew, in the broad abdomen, although it agrees rather closely with the description of that species in coloration. From *H. divisus*, Loew, it differs in having the face not broadly truncate on the lower portion, but sharply conical; in the absence of black markings on the apical portion of the anterior tibiae, the absence of a light stripe in the median dorsal black one, and very greatly in the maculation of the abdomen. From *H. integer*, Loew, it differs in not having complete abdominal bands, in the darker femora and the absence of the facial stripe; and from *H. obsoletus*, Loew, in the distinct markings of the thorax and the darker legs.

28. *Helophilus latifrons*, Loew.

Several specimens: Cook's Inlet, Alaska; coll. L. L. Dyche.

29. *Helophilus divisus*, Loew; Centur. N. A. Dipt., iv., 78.

I have a male and a female specimen of this species which were taken in coitu. They bear no locality label. Another male bears the label "Westville, N. J." The males differ in the following respects from the females in the maculation of the abdomen. Second segment yellow except an opaque black anterior band not reaching the lateral margins by its own width, about one fifth of the length of the segment a similar posterior band narrowed at the ends but reaching the lateral margins, and a broad median longitudinal band connecting the two, the posterior margin yellow with a small pollinose spot in the middle. Second segment yellow with the black markings similar but less extensive, the anterior band only a third of the width of the segment, the posterior one with the sides slightly arcuate, the interior corners of the yellow spots and a large median posterior spot between the arcuate bands pollinose. Fourth segment entirely yellow pollinose except a slender inverted Y-shaped mark, the base of which touches the anterior margin of the segment, and the broadly divaricate segment entirely pollinose.

There is in the male near the base of the posterior femora below an obtuse tubercle covered with very short black bristle-like hairs. In this character this species shows a relationship with *H. chrysostomus*, Wied., of this country, and a stronger relationship with *H. frutetorum*, Fabr., and *H. versicolor*, Fabr., of Europe.

30. *Helophilus integer*, Loew; Centur. iv., 78.

I have a female specimen of this species taken at Newark, New Jersey. I would make the following additions to Loew's rather short description:

Face and cheeks yellow, front black pilose, below yellow and above black pollinose. The middle, as well as the anterior and posterior femora, have small black spots on the inside at the base. These spots consist of a dense mass of minute spinous bristles. The black colour at the base of the scutellum is visible only when viewed from in front, as is the case in the related species of the genus.

31. *Helophilus auripilis*, Townsend, Trans. Am. Ent. Soc., xvii., p. 51 (1895), is the same as *H. lectus*, Loew, Centur., iv., 77 (1863).

I am unable to see any differences between the description given by Mr. Townsend and Williston's description (Synopsis N. A. Syrphidæ, 189) of *H. lectus*, Loew. I have also examined the type of *H. auripilis* in the collection of the Kansas State University, and compared it with specimens of *H. lectus* from New York and Colorado and find not the slightest differences between them. Mr. Townsend describes his species as "H., n. sp., aff. *flavifacies*, Bigot." *Helophilus flavifacies*, Bigot, Ann. Soc. Ent. Fr., 1883, 344, must certainly be a distinct species that will be very likely recognized in time. It differs especially in the coloration of the posterior legs, which are described by Bigot thus: "Avec trois anneaux bruns, Pun, sis à l'extrémité des cuisses les deux autres sur les tibias," thus lacking the broad conspicuous black median band on the femora. Besides this the bases of the anterior and middle femora are presumably at least yellow in Bigot's species since he does not mention that they are black, and there seems to be a difference in the maculation of the abdomen.

32. *Pterallastes perfidiosus*, n. sp. Plate V., Fig. 5, a, b.

Front and cheeks black, the former with long erect black pile, intermixed below with yellow. Face yellow, pilose, slightly concave to tip of the inconspicuous tubercle, thence straight and slightly receding to the epistoma, which is truncate at the apex. Antennæ and arista yellow, third

joint a trifle broader than long. Thorax opaque black, with narrow yellow lateral borders, rather short, sparse, yellowish pilose. Scutellum translucent yellow, with an apparent black in some lights. Abdomen shaped like that of *P. thoracicus*, but a little more elongate, short yellow pilose, first segment black, somewhat shining; second opaque black, except a complete posterior cross band, and with elongate lateral yellow triangles, which reach from the anterior angle to just before the posterior shining band, and the inner angle of which extends towards the middle of the segment about a fourth of its width; third segment shining, except a large, square, opaque spot with deep indentations on the sides, situated on the anterior part of the segment; fourth segment with a similar much smaller spot. All the femora black on the basal half, the anterior pair more extensively so; tibiae yellow, the posterior pair more or less tinged with brown at the base and apex, posterior tarsi black. Posterior femora considerably thickened with short spinose bristles below, the femora arcuate. Wings hyaline, third vein very deeply bent, marginal cell wide open, last section of the fourth vein straighter than in *P. thoracicus*, anterior cross vein in the middle of the discal cell. L., 10 mm.

Described from two female specimens bearing the label "British Columbia."

The very great differences between this species and the only other described species of the genus *P. thoracicus* has caused me no little trouble in ascertaining its generic position. The extreme looseness of the definition of the genera of the Syrphidae makes it impossible in many cases to locate a given species in its proper genus, except by a process of finding where better than elsewhere it may be placed. The present is by a great deal the best illustration of this fact that I have so far discovered. Its location in the *Eristalini* is without any doubt whatever. But as between *Triodonta*, *Teuchocnemis*, *Mallota* and *Pterallastes*, it seems to fit into one about as well as into another. Of these we may more easily throw out of consideration *Mallota*, on account of the formation of the face and general great pilosity, although the venation is precisely as in that genus. We may next dispose of *Teuchocnemis*, in which the third vein is only moderately bent, although we are here approaching differences that are only of specific value. As between *Pterallastes* and *Triodonta*, as far as the female sex is concerned, I know of no distinction sufficient to be called generic. In the male sex there are, however, good and sufficient grounds for generic separation. What has led me to place this species in

Phrallastes rather than in *Triodonta* is simply the general habitus. I think that too much importance has been placed on the presence of pollen on the thorax as a generic character.

33. *Criorhina verrhosa*, (Harris) Walker. List iii., 568.

I have one male specimen bearing the label "St. Anthony Park, Minn." that I am quite certain must be this species. The description applies exactly except as to the median facial stripe. A thick coating of grayish pollen covers the face uniformly throughout; the cheeks, however, are shining.

34. *Pacota bomboides*, n. sp.

Black, but little shining, face black, first three abdominal segments black pilose.

Male.—Very much like *P. grandis*, but legs unarmed and much smaller. Antennæ and arista reddish-yellow, the basal joints brownish. Face black, indistinctly white pollinose, a broad stripe and the cheeks shining. Dorsum of the thorax long yellow pilose before the base of the wings, the remainder and the scutellum black pilose. Abdomen—First three segments black pilose; all except the first with indistinct posterior margins. Fourth segment more shining than the others, with a band of dense long yellow pile occupying the anterior half, the remainder of the segment black pilose. Legs simple, without spines or tubercles, black pilose; all the femora black except the extreme apex, on the posterior femora the apex is more broadly reddish; anterior tibiæ on the basal half, middle except an indistinct broad band, posterior entirely dark reddish brown, tarsi all reddish, two apical joints black. Wing strongly tinged with reddish, forming a large spot extending from the stigma to the base of the second posterior cell. L. corp., 12½ mm.: al., 11½ mm.

One specimen: Summit Sierra Nevada, California.

This species must resemble *P. apiformis* of Europe even more than *P. grandis*, Will., does. It differs from that species in not having yellow pile on the third abdominal segment and in the face being entirely black. It is very striking in general appearance as a miniature of *P. grandis*, Will. It is, however, easily separable from that species by the unarmed femora, coloured wings and black face.

The above is a manuscript name by Dr. Williston which I found attached to the specimen in the collection of the Kansas State University. The manuscript containing it had been misplaced. I thus continue the name although the description is my own.

35. *Brachypalpus inarmatus*, n. sp.

Very similar to *Brachypalpus frontosus*, Loew, but differs in the fact that the coxæ, femora and tibiæ of the male are entirely unarmed.

Male. - Antennæ dark reddish-brown, third joint slightly darker on the lower basal corner; first joint shining; arista yellow, its apex fuscous. Face front and cheeks bluish black, somewhat shining, covered, except a broad oblique stripe on cheeks, with silvery pollen, more dense on the front, which in some lights obscures the ground colour. Occiput below with long yellowish pile. Face in profile concave, but the concavity not receding nearly as low as the lower border of the eyes nor as far back as the eye margin. Dorsum of thorax light shining green with four cupreous stripes, the median ones more slender and all abbreviated behind the middle; the pile yellow and rather abundant. The scutellum and an irregular, poorly defined area in front of it on the dorsum cupreous. Abdomen shining purplish-black, with yellow pile longer on the sides of the second segment and on the posterior margin of the fourth, where it forms a conspicuous fringe. In the middle of the second segment there is a small, slender, opaque spot not reaching the posterior margin. Legs black; femora long golden pilose, the extreme apex of the femora, the narrow base of the tibiæ, and the tarsi, except the last two joints, black. Posterior femora and coxæ without spurs or protuberances, the former moderately incrassate. Wings distinctly infuscated on the anterior half.

One male specimen: Vollmer, Idaho, May 30th, 1896: Prof. J. M. Aldrich.

There are differences between this species and *frontosus* in the face, which is uniformly pollinose, but bare and shining below the antennæ in that species, in the presence of a golden fringe on the posterior margin of the fourth abdominal segment, in the pile everywhere being golden and not gray as in that species, the posterior femora are less curved and the tibiæ are darker than in my specimens of *frontosus*.

It has occurred to me that this might be simply a dimorphic form of *B. frontosus*, holding the same relation to that species as the form *Bautius* holds to *Mallota cimbiciformis*, Fall. From the differences enumerated above, however, it does not appear that such can be the case.

36. *Xylota barbata*, Loew.

A single male specimen [Santa Cruz Mountains, California, 18th April] agrees so well with the description of this species that I am constrained to think it is this species, although it lacks the posterior coxal

spurs. It has occurred to me that possibly where Dr. Williston, in the Synopsis, p. 234, says "hind coxæ unarmed," he meant to state exactly the reverse. The second and third abdominal segments are opaque, but have obscure yellowish, shining spots; the fourth segment is entirely shining bluish-black. The thoracic dorsum and scutellum are brilliant purplish-metallic.

37. *Xylota analis*, Will. Synopsis N. A. Syrphidae, 226.

I possess a male specimen of this species taken on the Pine Ridge in Nebraska in July. This specimen agrees exactly with a specimen from San Pedro, California, Aug. 1896. This species has not been recorded outside of New Mexico and California.

38. *Xylota fraudulosa*, Loew. Centur. v., 41.

I have specimens of this species taken in North-western Nebraska.

39. *Xylota ejuncida*, Say.

One specimen: Cook's Inlet, Alaska; coll. L. L. Dyche.

40. *Mallota facialis*, Hunter.

This species was described from a single male specimen from Pine Ridge, Nebraska. This season's collecting includes another specimen from the same region that is in every way a verification of the views I held at that time.

41. *Triodonta*, sp.

I have a female specimen of a species of this genus from Palo Alto, California, which undoubtedly is a species distinct from *curvipes*, Wied. It is, however, so closely allied to that species that I hesitate to describe it from only the female. Doubtless in the male there are abundantly sufficient characters for specific separation. This specimen differs from the female of *T. curvipes*, Wied., in having the thorax almost bare and shining, not densely brownish pollinose. The abdomen is bare and shining black with the narrow posterior margins of the segments yellow, with only very slight indications of pollinose spots on the segments laterally. It is also much smaller, 8 mm. in length.

42. *Tropidia montana*, Hunter; Ent. News, 1896, p. 215. (Change of name from *T. nigricornis*, which is preoccupied. See Ent. News, 1896, 305.)

Since writing the description of this species I have examined a female specimen of *Tropidia incana*, Townsend (Trans. Am. Ent. Soc., 1895, p. 53), from Colorado, as well as the type of that species in the

collection of the Kansas State University. From this examination I am enabled to give further differences between these two species which are very closely allied.

The face in *incana* in the female is distinctly more concave than in *montana*. In *incana* the face recedes from the apex of the antennal callosity to half way to the epistoma; from that point the outline of the face projects outwardly at the same angle that the upper half recedes inwardly. In *montana* the outline of the face on the upper half is exactly the same as in *incana*, but on the lower half the outline is an almost perpendicular line. Besides this the front is somewhat narrower in *incana*, the spots of the abdomen are much larger and the pile is considerably shorter.

43. *Tropidia mamillata*, Loew, Centur. i, 68, 1861.

Four male specimens of this species were taken by the writer at Cedar Bluffs, Nebraska, in April, on flowers of *Prunus virginicus*. This is, I believe, the only record of the capture of this species since the publication of Loew's first Century in 1861. The locality given in that case was Illinois.

LIBELLULA DEPLANATA OF RAMBUR.

BY JAMES G. NEEDHAM, CORNELL UNIVERSITY, ITHACA, N. Y.

In December, 1896, Mr. Adolph Hempel sent me from Orange Co., Fla., some full-grown dragonfly nymphs which were apparently not to be referred to any of our known genera. At my request he undertook to breed some of them, and soon had imagoes of the species named above. In the letter which accompanied his bred specimens he recorded some careful observations, which are so interesting and valuable I deem them worthy of permanent record. The following account of the habits of this species is from Mr. Hempel's letter:

This species frequents small ponds and the borders of adjacent woods. Imagoes fly, when undisturbed, quite leisurely. They will hover over one spot, then dart a few feet aside and hover again and again. The males are often found in low places about ponds, resting on the ground with wings aslant downward and forward. Sometimes they rest on reeds or snags in the water; sometimes out in the pine woods several hundred yards from water; they may be found resting on the sand warmed by the sun, on logs or on trees.

The female deposits her eggs while hovering over the water, descending to dip the tip of her abdomen repeatedly. She is generally interrupted in her peaceful occupation and soon driven away by the too importunate males. The females remain for the most part in the woods and come from the woods to the ponds to oviposit, but hardly has one shown herself over open water before several males are in pursuit and she quickly disappears again. The difference in the haunts of the sexes is so marked that males would seem largely in excess to one who collected only beside the water, females so to one who collected only in the woods.

The nymphs are quite active. When in the water they rest with the long abdominal appendages widely spread apart; but withdrawn from the water, these are brought together so that the abdomen seems to end in a long point. When picked up they have a habit of curving the abdomen as if to strike with the terminal spines. Their transformation takes place in the early part of the forenoon, and imagoes leave their empty old skins generally clinging to stumps and logs fallen in the water.

The full-grown nymph measures 23 mm.; abdomen, 16; hind femur, 5.5; width of abdomen, 6; of head, 4.5. Body slender, not depressed; abdomen smooth; thorax and legs clothed with tawny hairs.

Colour fulvous, yellowish beneath and on sutures; eyes black; sides of thorax indistinctly marked with black; apical third of abdomen reddish, with two broad black lateral stripes.

Head wider than long; eyes not remarkably prominent; vertex roundly elevated. Rear of head straight or very slightly concave.

Labium moderate; mentum without raptorial setæ; median lobe prominent; its border crenulate, with single spinules between the crenulations. Lateral lobes ample; movable hook nearly straight to the short, abruptly incurved tip; raptorial setæ 6 each side; teeth of opposed margins crenate, each ending in a sharp, incurved hook, and armed with a stout spinule.

Meso-thoracic stigmata separated by less than the width of one of them. Wing-cases reaching well upon the 6th abdominal segment.

Abdomen lance-oval, with sharp lateral margins. Long, straight, sharp, lateral spines on 8 and 9. Dorsal hooks on 4 to 8, the first erect spine like the others directed backwards, the hindmost with their dorsal margin forming a straight line to the base of the segment; 9th abdominal segment hardly longer on ventral than on dorsal side; 10th segment a little shorter than 9th, conical. Abdominal appendages very long (13 mm.) and sharp, longer than segments 9 + 10; superior and inferior appendages equal; laterals one fourth as long.

Libellula deplanata, Rambur, is but a smaller southern variety of *Libellula exusta*, Say, as was pointed out by Mr. P. P. Calvert in 1893 (Trans. Amer. Ent. Soc., XX., 258). But in recent repeated dismemberment of the genus *Libellula* no part of it has been left to bear that name

in America. As genera go the European *Libellula depressa* of Linnaeus is certainly worthy to stand alone, and by all the recognized codes it has the right to the original generic name. So that our N. American species belong to *Leptetrum*, Newman; *Plathemis*, Hagen; *Belonia*, Kirby, or *Holotania*, Kirby; and Kirby (1890 a Synonymic Catalogue of Neur. Odon., London) has distributed our species rather freely among all these genera. I now have nymphs of species referred by him to all the genera, and, unfortunately, they do not confirm his arrangement of the imagoes. The unknown nymphs still in the majority would doubtless lend the best aid to drawing the lines where they belong.

As implied at the outset, the nymphs described above differ by good generic characters from all others known to me. They differ from all Libellulid nymphs which I have seen by the entire absence of raptorial setæ from the mentum of the labium. They are distinct from the nymphs representing the four genera named above by several additional characters: by hooked teeth on opposing edges of the lateral labial lobes; by the extreme elongation of the abdominal appendages and especially by the shape and relations of the 9th abdominal segment which is not longer on the ventral than on the dorsal side, and consequently does not at all appear to enclose the 10th segment. The following characters of venation taken together appear to clearly segregate the imago: (1) The sectors of the arculus are not stalked in either wing. (2) The sub-triangular space consists of three areoles. (3) A short sector, which may be called the *apical sector*, arising beneath the stigma from the principal sector and extending to the apex in both wings, in this species arises under the proximal fourth of the stigma. This *apical sector* develops from a tracheal branch, is very constant in position, and may readily be recognized even when somewhat irregular if taken in connection with another which may be called the *sub-apical sector* which (in Libellulidæ) lies just posterior to it, parallel with it, and separated from it, except at the proximal end, by a single row of areolets. Hagen, describing *Libellula deplanata*, Rambur, in 1861 (Syn. Neur. N. Amer., p. 154), questioned whether it belonged to the genus. The nymph supplies an emphatic negative, which the venation and doubtless other adult characters corroborate, and which is equally applicable to the more recent subdivision of the genus. I therefore propose a new genus *Zadona* with *Z. exusta*, Say (= *L. deplanata*, Ramb.), for its type. And for this interesting and locally common species, which ranges from Florida and Maine to the Columbian River basin, because of its very distinctive white humeral stripes, I would suggest the common name, "the Corporal."

NAKED AND COCOON PUPÆ OF ANTS.

BY GEO. B. KING, LAWRENCE, MASS.

Ordinarily the tribe Camponotidæ can be separated from the other tribes of ants by its habit of having cocoon pupæ in which their young go through their transformation period; whereas those of the (so-called) aculeate genera remain naked and do not spin a cocoon, it will appear, however, if diligent search be made, that several species of this tribe (Camponotidæ) do have naked pupæ, mixed with their cocooned ones, Latreille seems to have been the first to discover that *Formica fusca*, L., had naked and cocoon pupæ. He could not, however, understand why this should be, and indeed it remains one of the dark mysteries of the present day. So far as I am aware no other species of ants have been listed, other than *Formica fusca*, L., having this habit. During my researches in the study of the ants of Massachusetts, I have found that other species have acquired the same habit. And to satisfy myself that no mistake was made on my part in the determination of the larva, cocoon or imago, I sent samples of them to my friend and co-worker, Mr. Ernest Andra, of France, for his opinion, and at the same time enquired of him if any of the ants of Europe had been discovered with naked and cocooned pupæ, other than *F. fusca*. In his reply he stated that *F. fusca* is very frequently found with these two forms, and occasionally *Formica sanguinea*, Latr.; *Lasius niger*, L.; *Lasius fuliginosus*, Latr., and *Polyergus rufescens*, Latr., have been found in Europe having naked and cocooned pupæ, the last four species being very rarely met with in this condition. The species having this habit thus far found by me in Massachusetts are:

Formica fusca, L., var. *subsericea*, Say. ; June 8.

“ “ “ sub. sp. *subpolita*, Mayr. ; June 20.

“ *lasioides*, Em., var. *picea*, Em. ; July 31.

This list may be extended after further research; they are, however, not very frequently met with. The season of the year in which they are to be found being hot and dry, and the ants much more active at this time, as their usual custom is, they will hasten off with their young very rapidly to the underground retreats of their nests, making it quite difficult to obtain samples of either. Furthermore, I might possibly have found more with similar habits if this were the only work which I am investigating, but as I am studying all the insects living with ants, it is quite possible that in many instances their cocoons and pupæ are overlooked.

THE COLEOPTERA OF CANADA.

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

XXIV. THE CERAMBYCIDÆ OF ONTARIO AND QUEBEC.—(Continued.)
MOLORCHUS, Fabr.

Easily recognized by the very short elytra which are divaricate and separately rounded at apex, about equalling the prothorax in length. *M. bimaculatus*, Say (fig. 23), is somewhat variable in colour, but is ordinarily black except a large testaceous blotch on each elytron. The thorax is rather broad, roughly punctured, the sides irregularly rounded, Length, .20-.32 in. Usually found on flowers, but has been bred from hickory, maple, ash, and dogwood.

CALLIMOXYS, Kraatz.

Distinguished from *Molorchus* by the shape of the elytra, which are longer and drawn out nearly to a point at tip. The sexes differ in colour, the males usually having a partially red thorax. *C. sanguinicollis*, Oliv., is blackish (except as stated above), punctured, the elytra more or less fuscous with clear punctuation. Anterior and middle legs entirely blackish, the posterior yellow except the tips of the joints, which are black. The hind tibiæ are long and curved in the males, the exterior margin with numerous teeth. Length, .33-.40 inch. Found on flowers in June and July.

ANCYLOCERA, Serv.

It may be that the Canadian record for *A. bicolor*, Oliv., is incorrect, since the species is said to be a resident of the Southern States from North Carolina to Texas. It is unknown to me in nature, but is said by Mr. Leng to be "a very dainty insect, black with scarlet elytra and abdomen and with slender legs and clubbed thighs. The body is slender, head short and prothorax very long as compared with the cylindrical elytra. The antennæ are serrate, one-half as long as the body in the female and longer than the same in the male. The hind pair of thighs is armed with a terminal spine." Length, .50-.70 inch.

BATYLE, Thoms.

B. ignicollis, Say, is from .28-.52 in. long, black, the prothorax bright red. The elytra are densely rugosely punctured, with blackish pubescence. The prothorax is rounded, unarmed, the pubescence longer than on the elytra. *B. suturalis* is smaller (.28-.36 in.), red, the legs

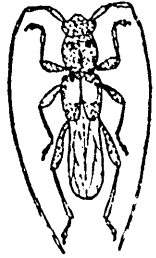


FIG. 23.

more or less black, the elytra often with a black line along the suture which may be dilated behind so as to extend over the greater part of the apical third. The prothorax is said to be occasionally black, but such specimens have never come under my notice. These beetles are often abundant on flowers on the Western plains of the United States.

PURPURICENUS, Serv.

Contains one species, *P. humeralis*, Fabr., a large insect, .50-.74 in. long, black, except a large triangular humeral spot on each elytron. Sides of prothorax spinose. Entire upper surface coarsely punctured, rugosely on the thorax, the elytral punctures distinctly and rather widely separated.

STENOSPHEMUS, Hald.

Here belongs *S. notatus*, Oliv., a rather elongate beetle of nearly parallel form, the elytra slightly tapering behind. In colour it is black, the head beneath and the entire prothorax except a large central dorsal black spot, reddish. The punctuation is rather coarse but sparse and each puncture gives rise to a gray hair, those of the elytra being subseriate in arrangement. The antennæ are spinose, equalling or exceeding the length of the body. Length, .35-.48 inch. Adults of this species have been cut from hickory wood.

CYLLENE, Newm.

The two Canadian species of this genus are difficult to separate since they agree almost exactly in colour. The numerous cross-bands of yellowish (or rarely grayish) pubescence on the velvety black prothorax and elytra give them a very characteristic appearance. Dr. Horn has distinguished them as follows:—

Second joint of hind tarsi glabrous at middle, antennæ of male longer than the body. .42-.89 in. *pictus*, Drury.

Second joint of hind tarsi densely pubescent, antennæ not longer than the body. Prosternum as wide as the coxal cavity. .40-.80 in. *robinia*, Forst.

The species differ in their times of emergence, *pictus* often appearing on its principal food-plant (hickory) early in spring, or even in winter if firewood of this sort be stored in a warm room. I have on one occasion seen several specimens copulating and ovipositing on felled honey-locust early in April at Iowa City. It also bores in butternut. *C. robinia* infests living black locust, often ruining the trees. It appears in late summer or early fall and may be found in great numbers on blossoms of golden-rod.

PLAGIONOTUS, Muls.

The soft-maple borer, *P. speciosus*, Say (fig. 24), is a most gaudy insect of large size (about an inch in length) and with heavier antennae than most of its neighbors. The ground colour is black or nearly so, the legs reddish; but owing to the dense clothing of yellow pubescence very little of the black is visible. Almost the entire under surface is thus rendered yellow, as are also the legs, the greater part of the head, two short bands on each side of the prothorax, and several cross-bands on the elytra.

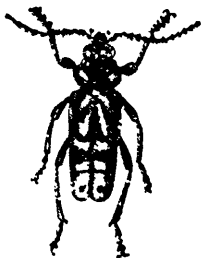


FIG. 24.

CALLOIDES, Lec.

Includes another large insect, *C. nobilis*, Hart., black, pubescent, usually decorated on the elytra with a few small detached yellow spots, which may, however, be absent. Length, .80-.92 in. It is thought to breed in the chestnut.

ARHOPALUS, Serv.

A. fulminans is said to breed in oak, butternut and chestnut. It is .48 to .72 inch long, black with whitish pubescence forming irregularly defined bands on the elytra and leaving on the prothorax a large central black spot with a smaller one on each side. The thoracic marking alone will thus serve as a ready means of recognition.

XYLOTRICHUS, Chevz.

Includes several species which have the front of the head variably carinate; they are, for the most part, ornamented with transverse bands of lighter coloured pubescence, somewhat as in *Cyllene*.

- A. Prothorax with four spots of (usually yellow) pubescence. Elytral markings indistinct and not conspicuous. .32-.48 in. *quadrinaculatus*, Hald.
- AA. Prothorax not spotted (except by breaking up of bands), sometimes fasciate with pubescence.
- b. Elytra obliquely truncate at apex, the outer angle spiniform. Sides of prothorax regularly arcuate. .60-.72 in. *sagittatus*, Germ.
- bb. Elytra obliquely truncate at apex, but not spiniform.

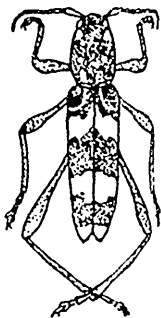


FIG. 25.

Thorax without apical and basal pubescent band. Elytral bands about as broad as their intervals. .32-.64 inch. (Fig. 25.).....	<i>colonus</i> , Fabr.
Thorax with apical and basal pubescent band. Median elytral bands angulated or undulatory. .14-.84 inch.....	<i>undulatus</i> , Say.

The above table is, in the main, taken from Mr. Leng's synopsis. He adds, regarding *undulatus*, that there may, for convenience in cabinet arrangement, "two names be retained: *fuscus*, Kirby, for the form with the sides of the thorax entirely covered with pubescent blotches and the elytral bands wavy, and *interruptus*, Lap. & Gory, for the form with the bands greatly obscured by the sprinkling of white hair." As to food-plants, *colonus* is known at attack oak and maple, while *undulatus* has been beaten from spruce. The latter is often very abundant on freshly cut pine logs or sawed timber.

PLAGITHMYMUS, Motsch.

This name is substituted for the *Neoclytus* of the Check List. The prothorax is transversely rugose, and by this character the genus may be readily distinguished from other Canadian Clytini. Mr. Leng separates the species substantially as follows:—

A. Middle and hind femora spinose at apex.

b. Thorax with a longitudinal elevated ridge, rugose at apex, antennæ filiform. Thorax with basal and apical bands only of pubescence; colour reddish brown, posterior two-thirds of elytra and parts of thorax often darker. .28-.76 in..... *fuscus*, Fabr.

bb. Thorax with a few distinct transverse rugæ, antennæ thickened toward apex. Blackish; head, thorax and legs reddish, elytra with straight transverse bands of yellow pubescence. .20-.70 in..... *erythrocephalus*, Fabr.

AA. Femora not spinose, antennæ filiform, thorax with many strongly elevated but more or less confused transverse rugæ.

c. Elytra rounded at apex, the bands yellow (rarely whitish), forming an oval figure at the base of each, behind which are two slightly oblique fasciæ. Tip yellow. .48-.80 in..... *atpica*, Say.

cc. Elytra truncate at tip. Smaller species with long legs and whitish elytral bands.

Thorax wider than long. .28-.40 in. *muricatulus*, Kirby.

Thorax longer than wide. .36-.44 in. *longipes*, Kirby.

P. erythrocephalus is known to depredate on elm, soft maple, hickory and black locust; *P. caprea* on ash, elm and hickory, while *P. muricatulus* and *P. longipes* may be taken on freshly cut pine.

CYANTHUS, Thoms.

C. ruficola, Oliv., is black, base of femora, the tibiae, tarsi and antennae (except at tip) reddish. Pubescence yellow, forming a nearly complete thoracic margin, a scutellar spot and elytral markings as follows: A short oblique band near the base, posterior to which is a hook-like (sometimes interrupted) figure the shaft of which is nearly parallel with the suture, and behind this a rather broad, nearly straight but oblique band. Beneath, the meso- and metathorax are spotted and the apices of the abdominal segments more or less margined with the same colour. Length, .28-.48 inch.

EUDERCES, Lec.

Contains two small (Canadian) species which agree in their ant-like form, the elytra gibbous at base and with an oblique ivory fascia. The colour varies from black to almost entirely rufous, the tip of the elytra, however, remaining black in the latter case. Mr. Leng separates them by the following characters:—

Eyes nearly divided; prothorax uniformly rounded at sides. .20-.36 in..... *picipes*, Fabr.

Eyes completely divided; prothorax distinctly depressed each side near the anterior margin, laterally subangulate. .26-.36 in..... *pini*, Oliv.

In my experience, *E. picipes* may be taken by beating hazel bushes. When running up the side of the beating-net the resemblance to certain black species of *Formica* (which are often abundant in the same thickets) is truly striking. It has been bred from chestnut twigs.

CYRTOPHORUS, Lec.

Until recently but one species has been recognized. Captain Casey has of late described another form which he distinguishes from *verruosus* as follows:

Larger, pronotum compressed, prominent along the middle, basal elevation of elytra strong. Third antennal joint strongly spinose. .24-.40 in.....*verrucosus*, Oliv.

Smaller, less convex, pronotum not compressed, basal elevation of elytra feeble, third antennal joint briefly spinoso-dentate within at apex. .24 in.....*insinuans*, Cas.

These bear considerable resemblance in form to *Eudercus*, but are without the ivory-like band of the elytra. In colour the former is blackish; legs, in part, and basal three-fifths of elytra sometimes rufous, pubescence white or cinereous, arranged anteriorly in narrow oblique bands which follow the course of the basal elytral gibbositities. Behind these oblique bands is a very narrow cinereous one, nearly transverse in direction. Tip broadly covered with cinereous pubescence. I have not seen *C. insinuans*, which is described from a single male. Wild cherry is known to be a food-plant of *C. verrucosus*.

MICROCLYTUS, Lec.

M. gazellula, Hald., is found in the adult state on oaks. The genus differs from *Cyrtophorus* in not having the third antennal joint spinose at tip.* It is "a small insect, piceous or reddish-brown with the thorax above and the elytra, except about the middle of the suture, black and rather closely punctured, the legs and antennæ always paler. Elytral markings composed of long white hairs arranged as follows: An oblique line from the scutellum, a very short transverse or slightly arcuate line about the middle entirely distinct from the next, a broader band immediately behind and nearly transverse, a blotch covering the entire apical eighth of the length of the elytra." (Leng.) In the male the antennæ equal, in the female reach two-thirds the length of the body. In the former sex the elytral tips are very slightly truncate, in the latter separately rounded.

*Since publication of the table of genera I have come across the following note by Dr. Hamilton (CAN. ENT., XXIII., p. 63):—"The characters separating *Cyrtophorus* and *Microclytus* were originally feeble, and have recently become more so by some one discovering that the relative lengths of the antennal joints in the male of the latter are the same as in the former, thus leaving in the males only the presence or absence of a small spine at the end of the third joint of the antennæ as diagnostic." By a clerical error the legend *Cerambycoides* is placed one line too high up on p. 86 of my table; it should be on line 2, and embraces all the genera from *Chion* to *Microclytus*, inclusive.

NOTES ON RHOPALOCERA, WITH DESCRIPTIONS OF NEW SPECIES AND VARIETIES.

BY HENRY SKINNER, M. D., PHILADELPHIA, PA.

I have received beautifully fresh specimens of *Argyannis atossa* taken in the mountains near Tehachapi, Southern California, July 7th, 1895. The inner half of the superiors below is bright red, almost a blood red. The species was described by Mr. Edwards from a specimen taken by Mr. H. K. Burrison. It is quite distinct and ranks with *diana*, *idalia* and *nokomis* as one of our handsomest Argynnids.

Argyannis Snyderi, n. sp.—♂. Expands three inches. Upper side: Superiors tawny as in other species, but dark and with considerable red. The black markings are distinct and sharply defined against the tawny background. The margin is distinctly but not heavily marked. The inferiors have the usual black markings, but they are unusually well defined and there are almost no black scales at base as in most species in the genus. Under side: Superiors have silver spots on outer margin, extending more than half way toward inner margin. There are two quite large subapical silver spots. On inferiors the silver spots are large and well defined, with wing-ground very light grayish-green with a distinct light buff intermediate border about one-eighth inch in width. Silver lunules on margin are large, well defined, and seven in number, the inner one extending up along inner margin as a line. The ground colour of wings on inferiors below is brownish in the female. This large species comes nearest *coronis*, and has been mistaken for it. I have specimens from Salt Lake City, Utah, taken June 23rd, 1895, and a female from Ogden, July 6th, 1895. All were taken by Prof. A. J. Snyder, after whom the species has been named.

Argyannis platina, n. sp.—♂. Expands two and a half inches. Upper side: Rather light tawny or even light buff. Black markings dense and wide, with outer halves of wings looking rather clear or open, with row of round spots not very large; marginal border light; bases of wings not much obscured. Under side: Superiors have the two subapical silver spots and silver spots on margin well defined; colour of inner half of wing rosy. Silver spots on inferiors are large and well defined and placed on a very light greenish-gray ground. The intermediate buff band is well defined, comparatively wide and very light in colour. Ground colour on inferiors below is reddish brown in the female. Described from specimens taken at Ogden, Utah, between July 18th and 24th, and Beaver Canon, Idaho, at nearly same dates. From Prof. A. J. Snyder.

The typical *Arg. nevadensis* comes from Nevada, and the types came from the valleys of the Sierra, near Virginia City. I have specimens from Reno and Verdi, Nevada. I mention this as I do not think the specimens from Colorado and Utah are typical but are var. *Meadii*, or more nearly related to that variety. I have females from Mammoth Hot Springs which are the colour of *leto* ♀. The species figured in Ent. News, pl. 2, 1892, is not *chariclea* but *polaris*. The other Greenland *Argynnis* brought back by the Peary expedition is *chariclea*, var. *artica*, Zett.

Melitaea Beani.—I propose this name for the Alpine form of *anicia* from the high elevations near Laggan, Alberta, the fauna of which has been so assiduously studied by Mr. Thos. E. Bean, and who has made known new species and interesting facts in regard to the butterflies of that region. This variety has quite a different appearance from the low valley form, being darker, smaller, and with markings apparently run together more and not nearly so bright in colour. Expanse of *Beani* $1\frac{1}{2}$ inch. Expanse of low valley form $1\frac{1}{2}$ inch. I have specimens of *Melitaea alma*, Strecker, from Coso Valley, Cal.; May. Types came from Arizona and South Utah.

Phyciodes Barnesi, n. sp.—♂. Expands $1\frac{3}{4}$ inch. Shape and colour of *P. mylitta*. Superiors light tawny with less markings than any known species. Superiors have an eight-shaped mark in cell near base of wing; just below this is another better defined eight-shaped mark; in centre of cell is a small naught-shaped mark; below this on inner margin is a good-sized black spot; there is a black bar at end of cell and another black bar near angle of wing; the remainder of the wing is practically immaculate. Inferiors have a number of black lines extending out from base for about one-fourth inch; remainder of wing except margin is nearly immaculate, except that the markings on under side can be faintly seen. Under side: Superiors much as above. Inferiors have the markings as is usual, but are not so well defined and are quite light in colour. Specimens were taken at Glenwood Springs, Colo., May 8th to 15th, and June 1st to 7th, by Dr. Wm. Barnes, in whose collection are many co-types.

I have specimens of *Junonia conia*, var. *negra* (Feld. Reise Nov. Lep., 3, 399, n. 592, 1867) from S. E. Texas; Coleina, Mex.; Merchantville, N. J. (Kemp).

Canonympha (Erebia) Haydenii—♀. This differs markedly from the ♂ in being entirely different in colour. Males are dark smoky-brown, and the females are nearly same colour as *Can. inornata* but not so reddish. This species was found in numbers by Prof. Snyder at Beaver Canon, Idaho, last of July and first part of August, 1895.

Thecla damon, n. var. *discoidalis*.—Differs from typical form in having central area of both wings light greenish-yellow. Round Mountain, Blanco Co., Texas, February 10th and August 16th.

Pieris ochsenheimeri, Staudinger (Stett. Ent., Zeit., 1886, p. 199) This species was described by Dr. Staudinger from Central Asia, and is beautifully figured in "Memoires sur les Lepidopteres" by N. M. Romanoff, 4, 220, pl. 14, f. 1 a, b, 1890. Through the generosity of Dr. Herman Strecker, of Reading, Penna., I received two males and a female of a *Pieris* unknown to me from Mt. Wrangel, Alaska. They prove to be the above-mentioned species. As Romanoff's work may not be accessible to many, I append the following description:—

♂.—Expands 1³/₄ inch. Upper side: Superiors white with costa blackish-gray; apical costa, apical portion of wing and upper part of outer margin blackish. There is a round black spot in the space between last costal and first discoidal nervure. Neuration shows faintly gray scales. Bars of wing black. Inferiors white with only one spot and that on outer third of costa, round, black. Base of wings black; there is a very narrow, dark, submarginal line to both superiors and inferiors. Under side: Superiors much as above except that apices of wings are yellowish, and there is an additional spot (not always well defined) below the third discoidal nervure. Inferiors have mixed yellow and gray spots as in *Pieris napi bryoniae*. The female differs from the male in having the veins rather heavily marked with dark scales, as are also the apices of superiors and bases of all four wings. It has an additional dark spot on superiors. Below the veins are not as heavily marked and the ground colour of wings is white instead of yellow.

Systasea pulverulenta, Feld.—I have received a specimen of this species from Prof. T. D. A. Cockerell, who sends the following particulars: "Caught April 22nd at Mesilla, New Mexico, on flowers of *Biscutella Wislizenii*. It is different from any Hesperid I have caught here. When I saw it I thought it was a moth near to *Drasteria*."

SOME NEW AND LITTLE-KNOWN DORYDINI (JASSIDE).

BY C. F. BAKER, AUBURN, ALA.

Spangbergiella vulnerata, Uhler.—There are two specimens of this species in the National Museum collection from New York, and another in Fitch collection from Arkansas.

Spangbergiella Lynchii, Berg.—Signoret quotes the description of this species in his *Essai sur les Jassides* and says: "This species might well be the *S. vulneratus*." Berg takes this suggestion as the final disposition of the species, and reduces *Lynchii* to a synonym of *vulnerata*. I have a specimen of what is undoubtedly this species, from the Herbert H. Smith collection taken at Corumba. While it is very near *vulnerata*, still I think it should retain its place as a good species. It differs from *vulnerata* in having the head more slender, vertex a fourth longer than width between the eyes, the red lines not reaching the middle. In North American specimens of *vulnerata* (and so figured by Signoret) the vertex is but little if any longer than broad between the eyes, and the red lines converge considerably beyond the middle—at the tip as figured by Signoret.

Spangbergiella mexicana, n. sp.—♀. Length, 6.5 mm. Pale green, darker on vertex, pronotum, and bases of abdominal segments. Two oblique slender red lines on vertex, converging towards the tip, which they do not quite reach. Pronotum with two red lines extending its whole length, nearly in line with those on vertex, at its base with a median yellowish dash. Scutel immaculate. Elytra whitish towards the tips; claval suture and all veins except apical, yellow. A black dot at end of claval suture, and one each at end of first and fourth apical veins.

Vertex triangular, obtusely angulate anteriorly, but little longer than breadth between the eyes, about a fourth longer than pronotum. Clypeus subrectangular, broadly rounded at tip. Pronotum twice as wide as long. Ovipositor two-thirds length of rest of venter, exceeding the elytra by $\frac{1}{2}$ mm. Last ventral segment a half longer than preceding, hind margin truncate.

Described from a single female collected at Vera Cruz, Mexico, by Rev. H. Th. Heyde. This species is nearly related to *S. punctato-guttata* and *S. felix*, but is distinct from both as described above.

Bergiella, n. gen. Type, *Parabolocratus uruguayensis*, Berg.—The head is broader than long, somewhat angulate and sloping as in *Parabolocratus*. The frontal sutures are arrested at the antennal scrobes. The

clavus has but a single longitudinal vein. A specimen of this species, collected at Chapada, is in the H. H. Smith collection. I name this genus in honour of the author of "Hemiptera Argentina."

Parabolocratius flavidus, Sign.—This species, described from North America, was omitted from the Van Duzee List. There are specimens in the National Museum from Texas. I have also collected it at Auburn, Ala.

Paraphlepsius, n. gen.—Head about the same width as the prothorax and considerably shorter, three and a half times as broad as long, anteriorly foliaceous, angulate, vertex level. Face of the normal Jassid type. Frontal sutures continued to the edge of vertex. Ocelli on the edge between vertex and face, somewhat removed from the eyes. Elytra broad, slightly exceeding abdomen, bluntly rounded at tip, with a narrow appendix. Apical cells four, antepical two, basal transverse vein entering radial cell. Clavus with two longitudinal veins. Wings with three apical cells exclusive of the closed costal.

This genus is nearest to *Psegmatus*, Fieber, from which it differs in having the head broader and much shorter than pronotum, and the frontal sutures nearly straight, instead of strongly bent inward, as in *Psegmatus*. Type:—

Paraphlepsius ramosus, n. sp.—♀ ♂. Length, 7 mm. Robust. Thickly marked with fine brownish dots and ramose lines. Face and below brown, the face marked with numerous yellowish dots. Legs yellowish, annulate with dark brown. Vertex and pronotum brownish, with numerous small, partly confluent whitish dots, which are larger on the latter. Elytra whitish translucent, with very numerous brown ramose lines adjoining the veins and in the cells; in the female a large irregular clearer space towards base; in the male this clearer space is more pronounced, and there are small clear spots in several of the cells, the ramose lines becoming darker in a broad transverse band at middle of elytra.

Genæ broadly angularly emarginate below the eyes, the succeeding angle very obtuse, beyond attaining the tip of the clypeus. Loræ large, semilunar. Clypeus trapezoidal, narrower at base, truncate at tip. Front rapidly broadening above, apex rather abruptly bent forward, sides nearly straight. Width of vertex between eyes two and a half times the length; length about two-thirds that of pronotum. Pronotum two and one-third times as wide as long, broadly rounded anteriorly, hind margin gently concave; posteriorly the surface is rather coarsely, subobsoletely creased.

Last ventral segment of female twice the length of the preceding, shallowly trisinate, the median sinus acute.

Described from two specimens from the Cornell University collection, kindly sent me by Mr. A. D. Macgillivray, collected at Ithaca, N. Y., the female on Aug. 3rd, 1889. This insect might readily be mistaken for a *Phlepsius*.

Dorydiella, n. gen.—Head broader than prothorax and somewhat longer, more than twice as broad as long, anteriorly foliaceous, angulate, and inclined upward. Face normal. Ocelli on the edge between vertex and face, adjoining the eyes. Elytra long and narrow, with a narrow appendix, somewhat exceeding abdomen, toward the apex narrowed to an acute point. Apical cells four, antepical two, basal cross vein entering radial cell. Clavus with two longitudinal veins. Wings with three apical cells exclusive of the closed costal.

This genus is much like *Dorydium* in everything except the head, which is far shorter. Type:—

Dorydiella floridana, n. sp.—♀. Length, 8 mm. Pale sordid whitish. Face variously marked with fine light brown dots, leaving portions below, and several indistinct transverse bands above, light. Vertex and pronotum with a number of very pale brownish indistinct longitudinal stripes. Anterior edge of vertex with five dark dots. Elytra with very sparse brownish ramose lines, densest about and extending back from the second apical cell. A dark spot at apex of clavus.

Genæ feebly emarginate below the eyes, then broadly rounded, slightly exceeding clypeus. Loræ large, semilunar. Clypeus somewhat narrower towards base, sides sinuate, apex truncate. Front with sides nearly straight, rapidly broadened above where it is bent somewhat back. Length of vertex three-fourths of width between eyes, somewhat longer than pronotum. Pronotal width nearly two and a third times the length; anteriorly the pronotum is broadly rounded, the surface very sparsely punctate and posteriorly finely creased, the hind margin gently concave. Last ventral segment but little longer than preceding, hind margin with a broad, blunt, median projection having a small notch at its extremity and a black dot on either side.

Described from a single specimen in the National Museum collection, labelled "Fla." It is to be hoped that collectors doing miscellaneous sweeping in Florida will look particularly for further specimens of this rare and interesting insect.

CORRESPONDENCE.

BROTIS VULNERARIA AGAIN.

One of the many fine things secured by Mr. Bice at electric light during the season of 1896 was a specimen of that perplexing aberrant Lepidopteron, *Brotis vulneraria*, Hub.

In the CANADIAN ENTOMOLOGIST for 1886, Vol. XVIII., page 72, Mr. Ph. Fischer reports the capture of a specimen in Buffalo at electric light and gives some description of it and an account of the difficulty experienced by the various authors to decide its position in systematic classification. At page 136 the Rev. G. D. Hulst comments on that report and gives further information upon the subject, and quotes Walker as saying that "it does not seem to fit well anywhere."

Mr. Fischer identified his specimen by Hubner's figure. I had no difficulty in recognizing the London specimen by Guenée's illustration of it in his *Lepidopteres Phalénites*, plate 22, fig. 9, under the generic name *Sphacelodes*, but was indebted to Dr. J. B. Smith for a clue to its location in his List of 1891. I had forgotten these notices, where Dr. Hulst gives its generic synonymy, and the cause of it, although I read them with interest mingled with curiosity at the time, knowing nothing whatever of the moth referred to.

It is an interestingly anomalous insect. Whether in a tropical collection it has fitting associates with which it may harmonize and bear a resemblance, it certainly stands out conspicuously distinct in the Ontario one to which Mr. Bice has kindly donated it. J. ALSTON MOFFAT.

PODISUS PLACIDUS.

In the May number of this journal Mr. Kirkland, of the Gypsy Moth Committee, publishes the descriptions of two Pentatomids by Mr. Uhler—*Podisus placidus* and *Euschistus politus*. Of *Podisus placidus* he says he was unable to find the original description, nor could Prof. Uhler at the time give him the reference. This description may be found in the American Entomologist, Vol. II., page 203. E. P. VAN DUZEE.

Buffalo, N. Y.

ERRATUM.—On page 101, seventh line from bottom, for DORYLIA read MYRMICIDÆ.

Mailed June 4th, 1897.