THE GENUS *PODISMA*.

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## THE GENUS *PODISMA* IN EASTERN NORTH AMERICA.

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*Podisma* (Latr.) is a particularly interesting genus of Melanopli, since it is the only one of that immense group that occurs in the Old World, where, indeed, it is represented by considerably more described species than it is in North America. It is also of interest from its distinctly boreal and alpine distribution, being almost peculiar to high latitudes or altitudes. It is a circumpolar genus, inhabiting the mountains and boreal parts of Europe, Asia and North America, a larger number of species having been described from Europe than elsewhere.

The North American species are found in two widely-separated regions: the Rocky Mountain region from Alberta to New Mexico in the west, and from North-western Ontario to Maine and south to Pennsylvania in the east. It is to the eastern species that the reader's attention will be directed in the present paper.

Although in some cases *Podisma* is but narrowly separable from *Melanoplus*, it is on the whole a distinct type, differing from the latter chiefly in the widely-separated mesosternal lobes, the interspace in the male being transverse and as wide or nearly as wide as the lobes themselves, and in the female strongly transverse and as wide as or wider than the lobes. The pronotum is always short and sometimes subcylindrical, with the lateral carinae poorly defined or absent, and the hind margin truncate or slightly emarginate, or at most obtusangulate. The tegmina are normally abbreviate, and often entirely absent. Of the North American species, those from the east have no tegmina, while of the western forms these organs are present in all but one species.

Two species of *Podisma* have been described from eastern North America, *P. glacialis*, Scudd., from the mountains of New England, New York and Pennsylvania, and *P. variegata*, Scudd., from specimens taken at Ithaca and Enfield Falls, Tompkins Co., N. Y. Before the description of the latter was published the writer sent drawings to Mr. Scudder of specimens of *Podisma* taken at De Grassi Pt., Lake Simcoe, Ont., which were pronounced *P. variegata*, and later on specimens from the same locality were sent to him. On Sept. 12th, 1900, while collecting at North

Bay, Lake Nipissing, 175 miles north of De Grassi Pt., a series of specimens of *Podisma* were taken, which showed features belonging to both species, but were nearer *P. glacialis*. Some of these were sent to Mr. Scudder, who named them *glacialis*, "varying slightly towards *variegata*, especially in the (feebly) banded hind femora."

Since then I have collected a considerable series of specimens from two localities intermediate in latitude between Lake Simcoe and Lake Nipissing, viz., at Tobermory, near Cape Hurd (Bruce Co.), and at Algonquin Park. I have also examined a series of 4 ♂♂ and 3 ♀♀ taken at several different localities in Pennsylvania, belonging to the museum of the Academy of Natural Sciences of Philadelphia, and kindly loaned to me through Mr. J. A. G. Rehn. To complete my collection, I have specimens of typical *glacialis* from the following localities in New England: Mt. Washington, N. H. (3 ♂♂, 3 ♀♀); Greylock Mt., Mass. (2 ♂♂, 2 ♀♀); Speckled Mt., Stoneham, Me. (3 ♂♂, 3 ♀♀).

A careful study of all these specimens has revealed a complete series of gradations from the typical *glacialis* of the White Mountains to the typical *variegata* from Pennsylvania, though these extremes are widely different, not only in structure and markings, but in habits and character of environment.

The chief points of distinction between the two forms as given by Mr. Scudder may be tabulated as follows:

	<i>P. glacialis</i> .	<i>P. variegata</i> .
Eyes.	Moderately prominent.	Very prominent, especially in the ♂.
Antennæ.	Slightly shorter than hind femora.	Distinctly longer than hind femora (♂).
Hind femora.	Yellowish grass-green, obscurely bifasciate with dark olivaceous green.	Flavo-testaceous, broadly bifasciate with blackish fuscous.
Furcula.	Crosses basal fifth or less of supra-anal plate.	Hardly longer than last segment.
Cerci of ♂.	Stouter, middle breadth not less than $\frac{2}{3}$ basal breadth.	Very long and slender; middle breadth less than $\frac{1}{2}$ basal breadth.

A study of my series gives the following results:

1. Eyes.—Those of the N. E. specimens (typical *glacialis*) are the least prominent, the specimens from Mt. Washington having less prominent eyes than those from Speckled Mt. and Greylock Mt. Among the rest of

the series there is but little variation, the greatest degree of prominence being seen in the Pennsylvania specimens (typical *variegata*) and the Lake Simcoe specimens. The eyes of some of the ♂♂ from North Bay approach pretty closely those of the ♂♂ from Speckled Mt., and the ♀♀ from the latter locality are quite like those from North Bay in this respect. There is, however, very little range of variation among the Canadian specimens. An idea of the total amount of variation in the prominence of this organ can be obtained from the accompanying plate.

2. Antennæ.—The variation in the length of this structure can be seen by a glance at the table of measurements. The specimens from Mt. Washington have relatively the shortest antennæ, and it is plain from the measurements of the New England specimens that they average distinctly shorter than the Canadian specimens. From Algonquin Park southward to Pennsylvania, except at high altitudes, we find a gradual but steady increase in the length of the antennæ, the longest ones belonging to Pennsylvania specimens. In typical *variegata* the antennæ of the ♂ are distinctly longer than the hind femora, in *glacialis* slightly shorter. In most of the Canadian specimens they are about equal in length, being faintly shorter in the North Bay specimens, faintly longer in those from Lake Simcoe.

3. The hind femora are relatively shortest in the N. E. specimens, but are practically constant in length throughout the remainder of the series. Some of the Algonquin Park series, however, are inseparable from the N. E. specimens on this score. A more important feature is the colour and distinctness of the bands of the hind femora. In specimens from Algonquin Park and North Bay, like those from N. E., they are uniform green, with the faintest traces of bands, but in the majority from this locality they are more or less distinctly though feebly banded, the lighter areas being yellowish green. A number of ♂♂, however, have the superior sulcus as conspicuously banded as in the Pennsylvania specimens. The hind femora of the latter are in the ♂ strongly fasciate with pale yellowish and dark brown or blackish, the contrast being much greater in the main than in the specimens from Lake Simcoe, which most resemble them. Every gradation is present in the series.

4. The furcula shows great diversity of size and form. As with the other characters, the most northern of the Ontario specimens are most like typical *glacialis* in the form of this structure, and it is longest in some of the North Bay and Algonquin Park specimens, shortest in the Pennsyl.

vania series. Some from North Bay, however, have the furcula as short as those from Lake Simcoe (figs. 56, 57, 58.)

5. Cerci of ♂.—Next to the furcula this structure shows the greatest range of variation. It is much stouter in typical *glacialis* than in typical *variegata*, and Scudder used the character as one of the chief ones by which the two species could be distinguished. A glance at the plate, however, will suffice to show that no separation into two species can be based on the form of this structure. Some of the North Bay specimens have the cerci of typical *glacialis*, but there is a perfectly gradual series of transitions from the stout cerci of the more northern forms to those of the Pennsylvania ones, in which they are most slender. In order to illustrate these transitions as accurately as possible, I have drawn the cerci of all the ♂ specimens, from N. E., North Bay, Algonquin Park, Tobermory and Pennsylvania, and a sufficient number from L. Simcoe to complete the range of variation.

Other variations of less importance are to be found, especially in the general colour and character of markings, but they add nothing to the facts gained from the above.

From these comparisons it is readily seen that the specimens from Mt. Washington and those from Pennsylvania are the most widely separated, but that the wide gaps between them can be filled by a complete series of links represented by the Canadian specimens, the most northern of which closely approach the N. E. specimens, the most southern the Pennsylvania ones.

These variations, hence, appear to be connected with differences in the climatic conditions, and it would seem that temperature is an important factor. They are also accompanied by certain changes in the insect's habits, as evinced by some interesting facts that have been recorded on this subject. Mr. Scudder states that in the White Mts. *P. glacialis* "frequents the close branches of the dwarf birch, and is rarely or never seen upon the ground," while Mr. Morse found most of his specimens "on or among the various species of *Vaccinium*, characteristic of mountain-tops and on Ascutney upon dwarf cornel" (Psyche, 1898, 273). It occurs at elevations of 2,000 to 5,400 feet, in New England, New York and Pennsylvania, but has also been taken at lower levels at Jackman, Me., on the Canadian border, "in open woods and bogs" (Harvey.—Psyche, 1897, 77). At North Bay and Algonquin Park I found the insect common in open woods on bushes, chiefly the common beaked hazel

(*Corylus rostrata*) and the red raspberry. It occurs in both dry and fairly moist situations. The specimens from Tobermory were taken under similar circumstances, while at De Grassi Pt. they seem to be confined to swampy ground where the vegetation is of a boreal character. In such places I have taken them on bushes, chiefly raspberry, but have often found them on the branches and trunk of the *Arbor-vitæ*, sometimes 8 or 10 ft. from the ground. I have never observed this habit in the north, although the species is far more abundant there, but Mr. J. A. G. Rehn says, in an interesting article on "The Habits and Distribution of *Podisma variegata*" (*Ent. News*, XI., 630), that in Pennsylvania they occur on the branches of hemlock, and that when removed they will quickly return.

From these various facts it may be inferred that *P. glacialis* is the more primitive form, especially as the genus is typically an alpine one, and that it once inhabited a much larger area. but after the retreat of the ice-sheet it disappeared from this area, except in the northern part and on the mountains farther south. *Variegata*, on the other hand, may be regarded as an incipient species, the product of an effort on the part of the parent species to survive amid the altered conditions of its environment. These conditions, as we go southward, diverge more and more from those to which the insect was originally adapted, and hence it is not surprising to find slight modifications of structure and colour-pattern corresponding in degree with these changes.

Its occurrence in swampy stations southward is what would be expected from the fact that wet soil is a poor conductor of heat, and such places are cooler than the more open, dry country, but its fondness for hemlock in Pennsylvania seems to indicate a distinct specialization in the insect's habits in this locality. Further observation, however, is desirable on this point.

As many of my Canadian specimens can be classed equally well with *glacialis* or *variegata*, it will be necessary to give a new racial name to these forms, and I have accordingly subdivided the species as follows, though it will be understood that these different geographical races cannot be sharply separated from one another:

- A. Antennæ distinctly shorter than hind femora (♂), nearly three-fourths as long (♀). Eyes not very prominent. Hind femora nearly uniform green externally, obscurely bifasciate with darker green. Furcula crossing basal fourth or fifth of supra-anal plate. Cerci of

♂ rather stout, middle breadth not less than two-thirds the basal breadth.

Habitat—Mountains of New England.—*P. glacialis*, Scudd., type.

- B. Antennæ about as long (♂), about five-sixths as long (♀) as the hind femora. Eyes prominent, especially in the ♂. Hind femora green externally, more or less distinctly bifasciate with darker green, especially on the superior sulcus. Furcula generally crossing less than the basal fifth of the supra-anal plate, but longer than the last segment. Cerci of ♂ about half as broad in middle as at base. Habitat—Northern Ontario.—*P. glacialis Canadensis*, new race.

- C. Antennæ longer (♂), faintly shorter (♀), than hind femora. Eyes prominent, especially in the ♂. Hind femora pale-yellow externally, strongly bifasciate with dark-brown or blackish. Furcula about as long as the last segment. Cerci of ♂ less than half as broad in middle as at base. Habitat—New York, Pennsylvania, Ontario (L. Simcoe, Tobermory).—*P. glacialis variegata*, Scudd.

Specimens from Lake Simcoe and Tobermory may be placed with *variegata*, but are not quite typical. I have seen no specimens of *glacialis* from the mountains of New York and Pennsylvania, so that I have given them no place in the above table. They will probably fall under *P. glacialis* type.

## MEASUREMENTS.

## Males.

	Antenna.	Head and Pronotum.	Hind Femur.	Body.
	mm.	mm.	mm.	mm.
Mt. Wash. 3 spec. ....	8.1-8.2 Av. 8.15 (2 spec.)	5.5-5.8 Av. 5.53	9.5-9.7 Av. 9.57	17.0-17.5 Av. 17.3
Speckled Mt. 3 spec. ....	9.0-9.2 Av. 9.1 (2 spec.)	5.7-5.8 Av. 5.73	9.0-9.7 Av. 9.4	17.0-18.0 Av. 17.7
New England. (Morse) 48 spec.	8.0-9.0		9.5-10.8	15.0-17.5
North Bay. 8 spec. ....	8.5-9.0 Av. 8.8	5.4-5.8 Av. 5.62	9.5-10.3 Av. 9.9	17.0-18.0 Av. 17.27
Algonq Pk. 14 spec. ....	8.0-10.0 Av. 8.66	4.8-5.7 Av. 5.19	8.4-10.0 Av. 8.8	15.0-17.5 Av. 16.1
Tobermory. 5 spec. ....	10.0-10.5 Av. 10.16	5.7-6.0 Av. 5.84	10.0-10.8 Av. 10.24	17.5-18.5 Av. 18.44
Lake Simcoe. 14 spec. ....	10.0-11.0 Av. 10.5	5.3-6.3 Av. 5.79	9.5-10.5 Av. 10.08	17.5-20.0 Av. 18.4
Penn'a. 4 spec. ....	12.0 (1 spec.)	5.3-5.8 Av. 5.52	9.5-10.2 Av. 9.8	16.5-18.5 Av. 17.5
Ithaca, N. Y. (Scudder).....	10.5		9.25	16.5

	Females.			
	Antenna.	Head and Pronotum.	Hind Femur.	Body.
	mm.	mm.	mm.	mm.
Mt. Wash. 1 spec.....	7.2	7.0	12.0	25.0
Speckled Mt. 3 spec.....	8.2-9.0 Av. 8.6 (2 spec.)	6.3-7.0 Av. 6.6	10.0-11.5 Av. 10.9	21.0-26.0 Av. 23.0
New England. (Morse) 62 spec.	7.0-8.5		10.0-12.0	19.0-28.0
North Bay. 5 spec.....	9.0-10.5 Av. 9.9	6.3-7.0 Av. 6.86	12.0-12.6 Av. 12.4	21.5-25.2 Av. 23.9
Algonq Pk. 4 spec.....	9.0-9.2 Av. 9.1	6.0-6.8 Av. 6.87	10.2-12.0 Av. 11.2	20.0-24.0 Av. 21.7
Tobermory. 5 spec.....	9.0-11.0 Av. 10.12	6.5-7.5 Av. 7.09	12.2-13.5 Av. 12.3	22.0-26.5 Av. 24.8
Lake Simcoe. 8 spec.....	10.0-11.0 Av. 10.69	6.8-7.8 Av. 7.29	11.0-13.4 Av. 12.4	24.5-26.5 Av. 25.37
Penn'a. 3 spec.....	11.5 (1 spec.)	6.5-7.0 Av. 6.66	12.0-12.5 Av. 12.25	21.0-24.5 Av. 22.83
Ithaca, N. Y. (Scudder).....	8.5 +		12.75	23.5

Fig.

## EXPLANATION OF PLATE 6.

- 1, 2, 7. *Podisma glacialis*, type, ♂ cercus. Mt. Washington, N. H.  
 3, 4. " " " " Greylock Mt., Mass.  
 5, 6, 8. " " " " Speckled Mt., Stoneham, Me.  
 9. " " " " From Scudder (Rev. Mel.).  
 48. " " " ♂, head and pronotum. Mt. Washington,  
 N. H.  
 49. " " " " " " Speckled Mt., Me.  
 53. " " " ♂, supra-anal plate and furcula. Speckled  
 Mt., Me.  
 61. " " " ♂, hind femur. Speckled Mt., Me.  
 10-17. " " *canadensis*, ♂ cercus. North Bay, Ont.  
 18-31. " " " " Algonquin Park, Ont.  
 50. " " " ♂, head and pronotum. North Bay,  
 Ont.  
 54-56. " " " ♂, supra-anal plate and furcula.  
 North Bay, Ont.  
 62, 63. " " " ♂, hind femur. North Bay, Ont.  
 32-36. " " *variegata*, ♂ cercus. Tobermory, Bruce Co., Ont.  
 37-42. " " " " Lake Simcoe, Ont.



43.	<i>Podisma glacialis, variegata</i> , ♂	cercus.	From Scudder (Rev. Mel.).
44, 45.	"	"	" " North Mt., Penn'a.
46.	"	"	" " Bellasylva, Wyo. Co., Pa.
47.	"	"	" " Glen Omoko, Sull. Co., Pa.
51.	"	"	♂, head and pronotum. Lake Simcoe, Ont.
52.	"	"	" " " " " North Mt., Pa.
57, 58.	"	"	♂, supra-anal plate and furcula. Lake Simcoe, Ont.
59, 60.	"	"	♂, supra-anal plate and furcula. North Mt., Pa.
64.	"	"	♂ hind femur. Lake Simcoe, Ont.
65.	"	"	" " " " Bellasylva, Pa.

ON THE SYSTEMATIC POSITION OF THE ORTHOPTEROUS  
GENUS *AULOCARA*, SCUDDER.

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Too late for correction, I find that in my recent paper on western Orthoptera\* I have redescribed Scudder's *Aulocara rufum* as a new species under the name *guanieri*, placing it in the not very nearly related genus *Heliastus*. This unfortunate mistake was brought about by the uncertain position of the genus *Aulocara*, which possesses both tryxaline and œdipodine characters. The general aspect of the species of the genus is certainly very strongly œdipodinean and the characters of the declivate vertex, subperpendicular front, filiform antennæ, small round eyes, obsolete lateral carinæ, twice or thrice severed median carina, wrinkled pronotum, and of the generally present intercalary vein, all indicate close affinity to the CEdipodinæ. McNeill, in his revision of the Tryxalinæ†, excludes this genus, but Scudder considers it to belong to that group. *Ædocara*‡, Scudd., and the invalid genus *Coloradella* of Brunner von Wattenwyl‡, are synonyms of *Aulocara*, and under the former name Saussure places it in the CEdipodinæ§, and *Coloradella* was established as a tryxaline genus. Thus there is considerable difference of opinion among specialists as to the systematic position of *Aulocara*. Upon thoroughly studying the group characters exhibited by our species of this genus, I feel very certain that its logical position is in the CEdipodinæ.

\* Proc. U. S. Nat. Mus., xxvi., 775-809 (1903).

† Proc. Davenport Acad. Nat. Sc., vi., 179-274 (1897).

‡ Ann. Mus. Genoa (2) xliii., 123 (1893).

§ Prodr. CEdipod., suppl., 15 (1888).

CLASSIFICATION OF THE FOSSORIAL, PREDACEOUS AND  
PARASITIC WASPS, OR THE SUPERFAMILY  
VESPOIDEA.

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(Paper No. 16.—Continued from Vol. XXXV., p. 205.)

FAMILY XLII.—Mutillidæ.

1830. Mutillidæ, Family (partim), Leach ; Edinb. Ency., IX., p. 145.  
1855. Mutillidæ, Family (partim), Smith ; Cat. Hym. Brit. Mus.,  
III., p. 1.  
1899. Mutillidæ, Family XLII., Ashmead ; Journ. N. Y. Ent. Soc.,  
VII., p. 49.  
1899. Mutillidæ, Family (partim), Fox ; Trans. Am. Ent. Soc.,  
XXV., p. 220.  
1899. Mutillidæ, Famille (partim), André ; Spec. Hym. d'Eur. Tom.  
VIII., pp. 1-77.  
1903. Mutillidæ, Famille (partim), André ; Wytzman's Gen. Ins.,  
Fam. Mutillidæ.

William E. Leach, and *not* Frederick Smith, as Ernest André has it, was the first to establish the family *Mutillidæ*; but none of these gentlemen correctly defined it, and all have included genera which do not belong to it. Some of the genera belong to the *Bethylidæ*, one belongs to the *Thynnidæ*, one to the *Cosilidæ*, and others to the *Myrmosidæ*.

The family, as here restricted, contains only wingless females, with the thorax always undivided, or without trace of the pronotal or mesonotal sutures, while the males are easily distinguished from those in other families by having the abdomen terminating in two slender, straight spines, which usually project from between the two plates of the pygidium—the epipygium and the hypopygium. All other writers on these wasps, namely, Klug, Lepeletier, Leach, Haliday, Radoszkowski, Sichel, Smith, Saussure, Blake, Cresson, Fox, Peringuey and André, have, in my opinion, included in the family genera or groups which do not belong to it, but which fall naturally into other families, as I have clearly shown in my characterization of the families. All its members are genuine parasites, and live in the nests of various bees and wasps. The family may be separated into *two* closely-allied subfamilies, as follows :

## Table of Subfamilies.

- Abdomen with the first segment *broadly sessile* with the second, *without* a distinct constriction or furrow between, and never much narrowed or petioliform, although sometimes subnodose in some males..... Subfamily I., Mutillinae.
- Abdomen with the first segment *petiolate* or *petioliform*, never broadly sessile with the second, but much narrowed at apex, and usually *with* a constriction or furrow between it and the second..... Subfamily II., Ephutinae.

## SUBFAMILY I.—Mutillinae.

This group has apparently reached its highest development in Europe, Africa and Asia, the typical forms found in America being less numerous; the others show a closer affinity with the next subfamily or the *Ephutinae*, tribe *Sphaerophthalmini*.

Two minor groups or tribes may be recognized by the following characters:

- Eyes small, rounded, hemispherical or ellipsoidal, prominently convex, smooth and highly polished, not faceted, or with the facets vaguely defined, except in ♂ *Tricholabiodes*, *Pseudophotopsis* and *Alloneurion*, which have large oval eyes, more or less faceted, that extend to the base of the mandibles..... Tribe I., Photopsidini.
- Eyes larger, not rounded or hemispherical, ovate, obovate or ellipsoidal, always distinctly faceted, and in the ♂ sometimes emarginate within..... Tribe II., Mutillini.

## TRIBE I.—Photopsidini.

The majority of the males in this group more closely resemble those in the family Myrmosidæ, tribe *Chyphotini*, than any of the others, and this resemblance has influenced me in placing the tribe at the head of the family *Mutillidæ*, although in cephalic characters, and particularly in the rounded eyes, they are evidently allied to the tribe *Sphaerophthalmini*, some of the females having been described originally in the genus *Sphaerophthalma*, Blake.

## Table of Genera.

- Males..... 1.
- Females..... 20.
1. Eyes large, oval, not hemispherical, occupying most of the sides of the head and extending to base of mandibles, usually with a feeble sinus in front and behind, delicately faceted..... 2.

- Eyes not large, hemispherical or rounded.....4.
2. Postscutellum armed on each side with a small erect tooth or spine; mesonotum with complete furrows .....3.
- Postscutellum normal, unarmed.
- Front wings with three cubital cells, the third sometimes incomplete, the stigma very small and indistinct; only *one* recurrent nervure; mandibles strongly excised beneath, 3-dentate at apex; middle and hind tibiae armed with spines.  
(Africa).....Tricholabiodes, Radoszkowski.  
(Type *Mutilla pedunculata*, Klug.)
3. Front wings with *two* cubital cells and only *one* recurrent nervure; both mandibles excised beneath, with a process or projection before the incision; ocelli large. (Africa, Asia.).....Pseudophopsis, André.  
(Type *Agama Kamarovi*, Radosz.)
- Front wings with *three* cubital cells and with *two* recurrent nervures, the third cubital cell again divided by a longitudinal vein issuing from the middle of the second transverse cubitus.  
(Asia).....Alloneurion, Ashmead.  
(Type *Mutilla Kokpetica*, Radosz.)
4. Mesosternum anteriorly normal, unarmed.....5.
- Mesosternum anteriorly abnormal, armed with *two* (or more) teeth.
- Head quadrate, the temples full; mandibles at apex 4-dentate; mesosternum laterally at the middle armed with a tooth; first joint of the flagellum as long or nearly as the second. (North America.).....Tetraphopsis, Ashm., gen. nov.  
(Type *T. Hubbardi*, Ashm.)
- Head not quadrate, the temples not full; mandibles at apex 3-dentate; mesosternum laterally unarmed; first joint of the flagellum shorter than the second. (North America.).....Odontophopsis, Viereck.  
(Type *O. exogyrus*, Viereck.)
5. Marginal cell at apex pointed or rounded, but never broadly truncate ..... 6.
- Marginal cell at apex broadly, squarely truncate ..... 15.
6. Mandibles beneath *excised*, or with a sinus and usually with a tooth, or process, before the incision, or at least the left mandible excised beneath .....7.

- Mandibles beneath *simple*, not excised..... 9.
7. Mandibles acuminate, or with a tooth within before apex, never 3-dentate ..... 14.
- Mandibles stout and strong throughout, at apex 3-dentate.
- Front wings with only *one* recurrent nervure ..... 8.
- Front wings with *two* recurrent nervures ..... 13.
8. Ocelli large; submedian cell a little longer than the median; first and second joints of the flagellum cylindrical, more than twice longer than thick, and about equal in length. (North America.)..... Neophotopsis, Ashm., gen. nov. (Type Photopsis pluto, Fox.)
- Ocelli small; submedian cell not longer than the median; first joint of the flagellum a little longer than thick and shorter than the second. (North America.)..... Bruesia, Ashm., gen. nov. (Type Mutilla harmonia, Fox.)
9. Front wings with *three* cubital cells, or the third partially formed.. 12.
- Front wings with *two* cubital cells, the third entirely absent.
- Mesonotum *with* distinct parapsidal furrows..... 10.
- Mesonotum *without* parapsidal furrows..... 11.
10. Mandibles at apex 3-dentate.
- Front wings with two cubital cells. (North America.)..... Neophotopsis, Ashm. (partim).
11. Second cubital cell triangular; ocelli large; flagellum cylindrical, the first joint longer than wide, but shorter than the second. (North America.)..... Micromutilla, Ashmead. (Type Photopsis nana, Ashm.)
- Second cubital cell small, irregularly pentagonal; ocelli not large, close together in a triangle. (South America.) .... Scaptodactyla, Burmeister. (Type S. heterogama, Burm.)
12. Mandibles strong, 3-dentate at apex.
- Front wings with only *one* recurrent nervure; first abdominal segment smooth, or at most only sparsely feebly punctate ..... Neophotopsis, Ashm. (partim).
- Front wings with *two* recurrent nervures; first abdominal segment distinctly, closely punctate..... Photopsis, Blake (partim).

13. Ocelli large; submedian cell not or rarely much longer than the median; first abdominal segment closely punctate. (North America.) . . . . . Photopsis, Blake.  
(Type *P. imperialis*, Blake.)
- Ocelli small; submedian cell longer than the median; first abdominal segment smooth, impunctate. (North America.) . . . . . *Nomiæphagus*, Ashmead.  
(Type *Mutilla Sanbornii*, Blake.)
14. Ocelli large; submedian cell a little longer than the median; *two* recurrent nervures, the second, however, sometimes incomplete or subobsolete at apex; first joint of the flagellum about twice as long as thick. (North America.) . . . . . *Pyrrhomutilla*, Ashmead.  
(Type *Sphærophthalma anthophoræ*, Ashm.)
15. Mesonotum *without* parapsidal furrows . . . . . 16.  
Mesonotum *with* parapsidal furrows . . . . . 18.
16. Thorax about twice as long as wide, not wider than the head. . . . 17.  
Thorax not much longer than wide, wider than the head.  
Submedian cell not longer than the median; flagellum cylindrical, tapering off at apex, the fourth joint not much longer than the second; second ventral segment more or less conically produced or elevated at basal middle. (Australia.) *Eurymutilla*, Ashmead.  
(Type *Mutilla affinis*, Westw.)
17. Submedian cell longer than the median; flagellum cylindrical, the first joint shorter than the second; second ventral segment normal. (Australia.) . . . . . *Ephutomorpha*, André.  
(Type *Mutilla aurata*, Fabr.)
18. Front wings with *two* cubital cells . . . . . 19.  
Front wings with *three* cubital cells.  
Head subglobose; ocelli small. Australia. *Bothriomutilla*, Ashmead.  
(Type *Mutilla rugicollis*, Westw.)
19. Head subquadrate; ocelli small; mandibles excised beneath, 2- or 3-dentate (*teste* André.) (South America.) . . . . . *Tallium* André.  
(Type *Mutilla tenebrosa*, Gerst.)
20. Thorax not or hardly twice as long as wide, usually narrowed posteriorly, but never very elongate . . . . . 21.  
Thorax elongate, thrice as long as wide, or nearly, obpyriform. . . . 29.
21. Thorax at least  $1\frac{1}{2}$  times as long as wide, obtapezoidal, obovoid, obpyriform, or banjo shaped, or nearly . . . . . 24.

- Thorax not or only a little longer than wide, quadrate or nearly, obtrapezoidal, short ovoid or otherwise shaped.
- Thorax obtrapezoidal or short ovoid. . . . . 22.
- Thorax hexagonal, a little wider than long, punctate; head subglobose; first and second joints of the flagellum only a little longer than thick. (Australia). . . *Eurymutilla*, Ashmead. (Type *Mutilla affinis*, Westw.)
22. Thorax at least  $1\frac{1}{2}$  times as long as wide . . . . . 24.
- Thorax obtrapezoidal and only a little longer than wide.
- Mandibles excised beneath. . . . . 23.
- Mandibles not excised beneath.
- Mandibles conically pointed edentate; first and second joints of the flagellum small, not longer than wide, the third joint longer than the second. . . *Micromutilla*, Ashmead.
- Mandibles falcate, but with a small tooth within before the apex; first joint of the flagellum much longer than wide and longer than the second. . . *Neophotopsis*, Ashmead.
23. Mandibles decussate, acute at apex, but with a minute tooth within before the apex. . . . .? *Odontophotopsis*, Viereck.
24. Thorax banjo-shaped, or nearly. . . . . 32.
- Thorax obovoid or obpyriform.
- Head transverse quadrate, the temples broad; eyes oval or ellipsoidal; highly polished.
- Mandibles long, acuminate decussate, edentate, first joint of the flagellum long, obconical, longer than the 2nd and 3rd united. . . .? *Neophotopsis*, Ashm.
- Thorax obtrapezoidal.
- Head subglobose, the temples rather broad; eyes ellipsoidal or nearly round.
- Scape very long; first joint of flagellum very long; mandibles long, slender, pointed at apex, with *two* teeth within. . . . . *Scaptodactyla*, Burmeister.
- Scape normal; first joint of flagellum not especially long.
- Left mandible *with* an incision beneath toward base.

- Mandibles bidentate; first joint of the flagellum long, fully as long as 2nd and 3rd united...? *Tetraptotopsis*, Ashm.
- Mandibles acuminate, decussate, without teeth; first joint of the flagellum obconical, longer than the second...? *Neophotopsis*, Ashm.
- Left mandibles *without* an incision beneath, simple.....? genus.
24. Thorax banjo-shaped, or nearly, much contracted at the sides.... 32.  
Thorax obpyriform, obovoid or obtrapezoidal..... 25.
25. Mandibles beneath simple, not excised..... 26.  
Mandibles beneath, or at least the left mandible, excised and usually with a process or projection before the incision.... 28.
26. Mandibles at apex 3-dentate..... 27.  
Mandibles at apex simple or at most with a small tooth within before apex, or bidentate.  
Head rather large quadrate or subquadrate, the temples broad..... *Nomiaephagus*, Ashmead.
27. Head subglobose, the temples not especially broad, the antennal foveæ not deep, without a carina superiorly... *Brusia*, Ashmead.
28. Pygidium smooth, *without* a pygidial area; eyes short, oval..... *Tricholabiodes*, Radoszkowski.  
Pygidium not smooth, *with* a pygidial area.  
Body bare or nearly, at the most clothed with a sparse pubescence.  
Mandibles edentate, pointed at apex; first joint of the flagellum not, or scarcely, longer than wide, and very little longer than the second. *Photopsis*, Blake.  
Body clothed with a dense pubescence.  
Mandibles acuminate, but with a slight tooth within before apex..... *Pyrrhomutilla*, Ashmead.
29. Thorax coarsely, rugosely punctate, pitted or foveolated, the front margin truncate, the angles acute or toothed, the lateral margins *with* a prominent tooth at the beginning of the contracted portion or in the tegular region..... 30.  
Thorax not coarsely, rugosely punctate or pitted, although punctate, the front angles rounded, the lateral margins *without* a tooth. 31.



30. Head above bare; mandibles stout edentate, antennal foveæ bounded by a sharp carina superiorly; first joint of the flagellum twice as long as the second..... *Bothriomutilla*, Ashmead.  
 Head above clothed with a dense, white pubescence; mandibles elongate, pointed at apex; antennal foveæ not bounded by a carina superiorly; first joint of the flagellum only a little longer than the second (South America)..... *Leucospilomutilla*, Ashm., gen. nov.  
 (Type *Mutilla cerberus*, Klug.)
31. Head transverse or subglobose, bare or nearly; the eyes rounded, very prominent; antennal foveæ bounded by a carina superiorly; mandibles edentate; first joint of the flagellum much longer than the second (Australia)..... *Ephutomorpha*, André.  
 (Type *Mutilla aurata*, Fabr.)
32. Head large, subquadrate, somewhat wider than the thorax, but with the hind angles rounded and beneath normal, unarmed; mandibles long, bidentate (South America)..... *Tilluma*, André.  
 (Type *Mutilla spinosa*, Swederus.)
- Head very large, quadrate, wider than the thorax, the hind angles acute, and armed on each side beneath with a strong tooth; mandibles long, acute, with a tooth within much before the middle (South America)..... *Atillum*, André.  
 (Type *Mutilla bucephala*, Perty.)

#### A NEW ANOPHELES WITH UNSPOTTED WINGS.

BY D. W. COQUILLET, WASHINGTON, D. C.

*Anopheles Barberi*, new species.—Near *Walkerii*, but only about half as large, the upright forked scales of the occiput chiefly yellowish-white, body devoid of scales, etc. Black, the base of the antennæ, clypeus, stems of halteres, coxæ and trochanters yellow, thorax and scutellum yellowish-brown, front portion of the former and the pleura more yellowish, occiput devoid of appressed scales; thorax somewhat polished, thinly bluish-gray pruinose, the hairs and bristles chiefly black, those of the abdomen mostly yellowish, of the coxæ yellow; femora with a distinct bluish tinge, tarsal claws simple; wings hyaline, the scales brown, the lateral ones lanceolate, petiole of first submarginal cell about one-third as long as that cell, base of the latter much nearer the base of the wing than that of the second posterior cell, hind crossvein less than its length from the small crossvein; length, 3 mm.

Three females, collected August 14th, 1902, and August 17 and 19, 1903, on Plummer's Island, Maryland, by Mr. H. S. Barber, after whom the species is named. Type No. 6959, U. S. National Museum.

NOTES ON CULICIDÆ AND THEIR LARVÆ FROM PECOS,  
NEW MEXICO, AND DESCRIPTION OF A  
NEW GRABHAMIA.

BY FRED. V. THEOBALD, M. A., BRITISH MUSEUM, LONDON, ENG.

A small collection of mosquitoes has been sent me by Dr. Grabham, collected by himself and Mr. T. D. A. Cockerell at Pecos Canon, New Mexico, U. S. A.

This collection was made in June and contains five species, namely :

1. *Theobaldia incidens*, Thomson.
2. *Culex Kelloggii*, Theobald.
3. *Culex consobrinus*, Desvoidy.
4. *Grabhamia Curriei*, Coquillett.
5. *Grabhamia vittata*, nov. sp.

1. The *Theobaldia incidens*, Thomson (5 ♀s), show very evident pale leg banding on the hind legs in one or two specimens, and the position of the posterior cross-vein also varies, for one has it just before the mid cross-vein, another specimen just behind the mid. They were taken on the 18th, 27th and 29th of June. The largest specimen measures 11 mm. in wing expanse.

2. *Culex Kelloggii*, Theobald. (Canad. Entom., Vol. XXXV., p. 211, 1903.—(5 ♂s and 1 ♀). This species was bred by Dr. Grabham from long-siphoned larvæ and only a very few specimens were found. They are quite typical, but the ♂s are much smaller than the type, one only being 4 mm. long. They were bred from the 19th to the 27th of June.

*The larva of C. Kelloggii*.—Head bright testaceous; eyes black, a black band behind; antennæ black, at the apex acuminate, ending in three long black spines and one very small one; just above the junction of the dark and pale areas is a fan-shaped set of hairs. Thoracic hairs as follows: The frontal band composed of two large median triple hairs, a couple of small ones next, then two single ones, followed by two triple ones outside; the next lateral area composed of two outer densely compound groups, then on the inside a double and single hair; third area composed of two compound bunches. The siphon as long as the three preceding segments, pale testaceous black at the apex and with a black basal ring and black spot, a row of small bristles on its basal half and a line of fine hair tufts on the apical portion, these are four in number

and rather more basal than shown in the figure; at its base three tufts of bristles on each side and a group of spines; anal segment with a few long black dorsal bristles and pale ventral fan; gill plates long and narrow. Characteristic basal spines shown at *a*.

*Length*.—8.5 to 9 mm.

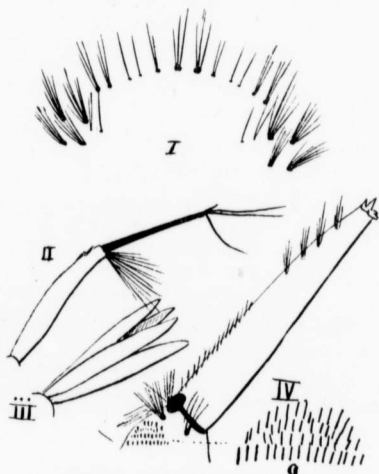


FIG. 14.—*Culex Kelloggii*, larva.  
I. Thoracic frontal and lateral hairs; II. Antenna; III. Anal gills; IV. Respiratory siphon, *a* basal spines.

3. *Culex consobrinus*, Desvoidy.—One ♀ taken on June 21st. This species I do not think has been recorded so far south before.

4. *Grahamia Curriei*, Coquillett. *Culex Curriei*, Coquillett. (Can. Entomol., p. 259, 1902.).—A series of 10 ♀s, varying greatly in size, the smallest 4.5 mm., the largest 6 mm. The metanotum is densely clothed with pale straw-coloured narrow curved scales with a median broad reddish-brown line, one or two show traces of narrow similarly-coloured lateral lines. They were taken from 20th to 29th of June, during the day, and were very troublesome and abundant. The four pairs of black abdominal spots on segments 2 to 5 are very marked.

5. *Grabhamia vittata*, n. sp.—Thorax clothed with rich reddish-brown scales and with two narrow broken creamy lines and a few pale scales at the sides, especially over the roots of the wings; pleura with dense gray scales. Abdomen blackish-brown with basal white bands; venter white. Legs brown, base of femora pale, remainder of femora

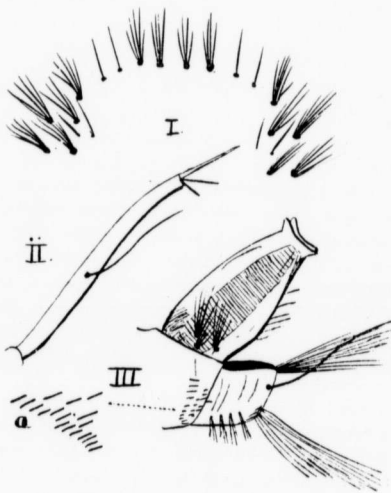


FIG. 15.—*Grabhamia vittata*, larva.

I. Thoracic frontal and lateral hairs; II. Antenna; III. Siphon, *a* basal spines.

and tibiae mottled with white scales; some of the tarsi with basal white bands; last hind tarsal black; ungues of ♀ all unserrated; of ♂ all unserrated.

♀.—Head brown with narrow curved yellowish scales, palest in the middle, with numerous upright yellow and black forked scales, flat creamy-white lateral scales with a round patch of flat black ones in the middle of each white area, a pale border along the eyes, black bristles projecting over them, except in the middle where the bristles are golden; antennæ deep brown, basal joint and base of the second joint bright

testaceous; proboscis deep brown; palpi deep brown towards the apex; joints testaceous, with a few golden and black hairs, apical joint long, as long as the rest of the palpi. Thorax deep brown, clothed with bright reddish-brown narrow curved scales, a narrow median black line and a narrow line of creamy scales on each side, also a few creamy scales in front, over the root of the wings and before the scutellum; four rows of long dark bristles on the posterior half of the mesonotum; scutellum brown with narrow curved pale creamy scales and long dark posterior border bristles; metanotum pale brown; pleura fawn coloured, densely-white scaled.

Abdomen deep blackish-brown with basal white bands and a few yellow scales on the apices of the last three segments; border bristles pallid; venter densely clothed with creamy-white scales. Legs with the coxæ pale, with creamy scales; femora pale basally and ventrally, with scattered brown scales becoming densest towards the apex, extreme apex with a yellow spot; tibiæ brown, mottled with pale scales, darkest towards the apex and with black bristles; fore metatarsi and first two tarsal segments with narrow pale basal bands; mid-tarsi the same as the fore; hind legs with a pale basal band to the metatarsi and first three tarsal segments, last segment black; all the unguis uniserrated.

Wings with brown scales except on the subcostal vein and one side of the first long vein, where they are mainly white, and also at the base of the costa; the lateral vein-scales on the second, third, fourth and apex of the fifth veins long; the first, third and fifth long veins with darker scales than the remainder; fork-cells short, the first submarginal cell longer and narrower than the second posterior cell, its base about level with that of the latter, its stem slightly longer than half the length of the cell; stem of the second posterior about the same length as the cell; posterior cross-vein rather more than its own length distant from the mid cross-vein; fringe dense, brown. Halteres with pale testaceous stem and fuscous knot.

*Length.*—4.2 to 5.5 mm.

♂.—Palpi brown with a white band at the base of the two apical joints, plume hairs brown, yellow opposite the pale basal areas, there is also a pale band on the long antepenultimate joint, the last two joints of nearly equal length, the apical one slightly the shorter; apex of the antepenultimate swollen. Antennæ with brown plume hairs tipped with grayish-yellow; scales of the head gray. Thorax with looser, more

scattered, reddish-brown scales in the middle, gray ones at the sides. Abdomen as in the ♀. Legs banded as in the ♀, but the pale basal bands more of a yellow hue.

Fork-cells very small; first submarginal a little longer and much narrower than the second posterior, its base a little the nearer the apex of the wing, its stem a little longer than the cell; stem of the second posterior cell also longer than the cell; posterior cross-vein about one and a half times its own length distant from the mid.

Fore and mid unguis unequal, both uniserrated, the larger mid unguis rather straighter than the much-curved fore one; hind unguis equal, prominently uniserrated. Basal lobes of genitalia very hairy, claspers narrow, thin, terminating in a longish spine.

*Length.*—4.5 to 5 mm.

*Habitat.*—Pecos Canon, New Mexico, U. S. A.

*Time of capture.*—June 16th to 29th.

*Observations.*—A very abundant species, according to Dr. Grabham, caught after sunset. It varies very much in size, the smallest specimen being 4 mm, the largest 5.5 mm. The ♂ has evidently a variable adornment on the thorax and is peculiar in having the hind unguis uniserrated.

The species can easily be told from any other *Grabhamia* with banded legs by the basally-banded abdomen and last hind tarsal being black and the white-scaled sub costal and first long vein. *G. dorsalis*, which it most nearly approaches, has the abdomen and thorax with different adornment and the legs basally and apically banded, not basally as in this species. The type is in the British Museum (Nat. Hist.).

The *larva*.—Head deep chestnut brown, eyes black, reniform, pale around; antennæ pale testaceous at the base, dark at the apex, terminating in two small spines and a third larger flattish pointed one, paler in colour; there is also a long lateral spine about half way down the antenna; mouth whorls bright golden-yellow; thorax and abdomen pale brown with a double darker dorsal line, the front of the thorax with four tufts of black hairs in the middle in front, then two separate hairs and then another tuft on each side, two pairs of long lateral tufts, the first pair with two single black bristles just behind them and a little more centrally placed; the first two abdominal segments with large lateral tufts, remainder with small ones; siphon short and thick, deep brown, about as long as the penultimate and antepenultimate segments; a few

tufts of hair near its base and also a patch of characteristic spines shown at *a*. The last segment has a single dorsal tuft with a large bristle below it; the ventral fan rather long and prominent and four ventral small tufts.

*Length*.—When mature, 9 mm.

The *pupa* has cylindrical siphons contracted towards the apex, with small, slightly-oblique, opening; there is a dense median tuft on the first abdominal segment. The anal fins are large, rounded, with median rib and double-contoured border towards the base of each fin; a distinct apical dorsal tuft on the last segment.

*Length*.—5 mm., with anal fins 6 mm.

### HESSIAN FLY REARED IN THE LABORATORY.

BY F. L. WASHBURN, ST. ANTHONY PARK, MINN.

It has always been claimed that there is but one brood of Hessian Fly in Minnesota. On June 25th of current year larvæ of Hessian Fly in second stage were found working on wheat in an adjoining county, brought to the Experiment Station and the wheat plant placed in moist sand in breeding jar in laboratory. These specimens quickly formed puparia, and one fly, a female, emerged July 19th. She lived about two days, before dying depositing between 80 and 90 eggs on green blade of wheat and on dried wheat stem in breeding cage. The eggs were laid indiscriminately on leaf and stem, some singly, some in clusters of two or three and some in strings attached by ends.

On July 1st one larva was found in field in first stage, brought into laboratory on wheat plant, but did not live.

On the same day larvæ in second stage were secured and placed in breeding jar in laboratory. Upon July 8th they formed puparia, and on Aug. 16th one female emerged. She died Aug. 18th without ovipositing.

The season here has been cold and damp, ideal condition for Hessian Fly. Probably more favorable conditions existed outside than in the laboratory.

## LIST OF CANADIAN COLEOPTERA.

BY JOHN D. EVANS, TRENTON, ONT.

(Continued from page 292.)

*Chrysomelidae.*

- 6550, *Orsodachna atra*, Ahr., '79, '80.  
 \*6590, *Coscinoptera dominicana*, Fab., '80.  
 \*6592, " *vittigera*, Lec., '79.  
 6610b, *Bassareus pretiosus*, Melsh., '80.  
 6614a, *Cryptocephalus notatus*, Fab., '80.  
 \*6626, " *confluens*, Say, '79.  
 \*6633, " *calidus*, Suffr., '80.  
 6683, *Pachybrachys carbonarius*, Hald., '79.  
 6690, " *atomarius*, Melsh., '80.  
 " sp., '79.  
*Graphops*, sp., '80.  
 6778, *Nodonota tristis*, Oliv., '80.  
 6778a, " *convexa*, Say, '79.  
 6778b, " *puncticollis*, Say, '79, '80.  
 6781, *Entomoscelis adonidis*, Fab., '79, '80.  
 6783, *Prasocuris vittata*, Oliv., '80.  
 6795, *Chrysomela exclamationis*, Fab., '79, '80.  
 6796, " *conjuncta*, Rog., '79, '80.  
 6799, " *suturalis*, Fab., '79.  
 \* " " *var. pulchra*, Fab., '81.  
 6807, " *lunata*, Fab., '79, '80, '81.  
 6808, " *scalaris*, Lec., '80.  
 6809, " *Philadelphica*, Linn., '80.  
 6810, " *multipunctata*, Say, '79.  
 6810a, " *Bigsbyana*, Kirby, '79, '80, '81.  
 \*6831, *Gastroidea dissimilis*, Say, '79, '80.  
 6833, " *formosa*, Say, '79.  
 6837, *Lina lapponica*, Linn., '79.  
 \*6838, " *tremulæ*, Fab., '79.  
 6839, " *scripta*, Fab., '79, '81.  
 6843, *Gonioctena pallida*, Linn., '81.  
 6844, *Phyllodecta vulgatissima*, Linn., '81.  
 6848, *Phyllobrotica discoidea*, Fab., '79.  
 6892b, *Trirhabda Canadensis*, Kirby, '79, '80.



- \*6894, *Trirhabda attenuata*, Say, '79, '80.  
 6898, *Adimonia externa*, Say, '79, '80.  
 6907, *Galeruca decora*, Say, '80, '81.  
 6909, " *notulata*, Fab., '81.  
 6915, " *erosa*, Lec., '79.  
 6932, *Oedionychis vians*, Ill., '79, '80.  
 6933, " *lugens*, Lec., '79.  
 6948, *Disonycha alternata*, Ill., '79, '80.  
 6950, " *Pennsylvanica*, Ill., '80.  
 6957, " *triangularis*, Say, '80.  
 6958, " *collaris*, Fab., '79.  
 6960, *Haltica bimarginata*, Say, '79.  
 6962, " *carinata*, Germ., '81.  
 6963a, " *inærata*, Lec., '79, '80, '81.  
 6968, " *evicta*, Lec., '79.  
 7023, *Phyllotreta vittata*, Fab. '80.  
 7060, *Microrhopala vittata*, Fab., '80.  
 7082, *Odontota nervosa*, Panz., '80.  
 7104, *Coptocycla guttata*, Oliv., '79.  
 " *sp.*, '80.  
 7109, *Chelymorpha argus*, Licht., '79.

*Bruchide.*

- \*7124, *Bruchus discoideus*, Say, '80.  
 \*7148, " *fraterculus*, Horn, '79.  
 " *sp.*, '79.

*Tenebrionide.*

- \*7254, *Asida opaca*, Say, '80.  
 \*7257, " *polita*, Say, '79, '80.  
 \*7259, " *sordida*, Lec., '79.  
 \*7291, *Coniontis opaca*, Horn., '79.  
 \*7320, *Eleodes tricostrata*, Say, '79, '80.  
 \*7323, " *obsoleta*, Say, '79, '80.  
 \*7327, " *extricata*, Say, '79, '80.  
 \*7340, " *hispidlabris*, Say, '79, '80.  
 \*7357, " *opaca*, Say, '79, '80.  
 7401, *Upis ceramboides*, Linn., '79, '80, '81.  
 \*10592, *Blapstinus gregalis*, Casey, '79, '80.  
*Paratenetus gibbipennis*, Mots., '79.

*Melandryide.*7653, *Melandrya striata*, Say, '79.*Cephaloide.*7759, *Cephaloon tenuicorne*, Lec., '81.*Mordellide.*7779, *Mordella melæna*, Germ., '79.7783, " *marginata*, Melsh., '79.

" sp., '80.

*Anthicidæ.**Stereopalpus*, sp., '79.7925, *Notoxus anchora*, Hentz., '79, '80.*Meloide.*8006, *Meloe impressus*, Kirby, '79, '80.\*8028, *Nemognatha dichroa*, Lec., '79, '80.\*8077, *Epicauta puncticollis*, Mann., '79.\*8078, " *oblita*, Lec., '79, '80.\*8083, " *sericans*, Lec., '79, '80.\*8084, " *pruinosa*, Lec., '80.\*8092, " *maculata*, Say, '79, '80.8104, " *Pennsylvanica*, DeG., '79.

" sp., '79.

8132, *Cantharis Nuttalli*, Say, '79, '80.8133, " *cyanipennis*, Say, '79, '80.\* " *atrata*, Fab., '80.*Rhynchitide.*8210, *Rhynchites bicolor*, Fab., '79, '80.*Otiorhynchide.*\*8245, *Ophryastes sulcirostris*, Say, '79.\*8279, *Nocheles æqualis*, Horn, '80.\*8312, *Tanymechus confertus*, Gyll., '79.*Curculionide.*8348, *Sitones tibialis*, Hbst., '80.\*8357, *Trichalophus simplex*, Lec., '79.8429, *Phytonomus setigerus*, Lec., '80.8437, *Lepyrus colon*, Linn., '79, '81.8444, *Listronotus inæqualipennis*, Boh., '79.*Macrops*, 2 sp., '79.

" 2 sp., '80.

- 8482, *Hypomolyx pineti*, Fab., '81.  
 \*8487, *Lixus rubellus*, Rand., '79.  
 \*8497, " *mucidus*, Lec., '80.  
 \*8514, *Stephanocleonus cristatus*, Lec., '79.  
 8543, *Erycus puncticollis*, Lec., '79, '80.  
 8615, *Magdalis barbata*, Say, '79.  
 8618, *Anthonomus nigrinus*, Boh., '79, '80.  
 \*8659, " *rufipes*, Lec., '80.  
 8661, " *cratægi*, Walsh, '81.  
 \*8842, *Ceutorhynchus sericans*, Lec., '80.  
 \*11078, " *erysimi*, Fab., '80.

*Calandridæ.*

- 8929, *Sphenophorus costipennis*, Horn, '79.

*Scolytidæ.*

*Hylesinus*, sp., '80.

The genus and species of several specimens have not yet been determined.

## GASTROPHILUS EPILEPSALIS, FRENCH.

BY F. L. WASHBURN, ST. ANTHONY PARK, MINN.

Dr. Burnside Foster, of St. Paul, a short time since sent me three Dipterous larvæ taken from the cutaneous tissue of a three-weeks-old infant, born on the seventh month, at Superior, Wisconsin. I at first thought the insect to be *Lucilia*, but being in doubt, and having no biological collection in this group for reference, I immediately sent it to Washington, receiving a telegram in reply that Mr. Coquillett had identified it as *Gastrophilus epilepsalis*.

In view of Prof. French's description of the type on page 263, Vol. 32, of this journal, taken with his account of the medical aspects of the case described, and in view also of Prof. Aldrich's objection to the nomenclature, page 318, op. cit., I regard this as an interesting find. Dr. Foster states that two of these maggots were from the neck, one from the palm of the hand and one from between the great toe and second toe on right foot, all of them in pustules similar to those made by some others of this genus. The child had been sleeping out of doors considerably during the daytime. The doctor proposes to write an account of the case in the forthcoming number of the St. Paul Medical Journal, of which he is editor.

It will be remembered that Prof. French named this species from a larva, great quantities of which were found in the evacuations of a child subject to periodic epileptic spasms. As these attacks ceased for a time after the use of purging medicines, by means of which large numbers of the maggots were voided, Prof. French appears to have assumed, curiously enough, that the spasms were caused by the *reproduction of the larvæ in the intestines* (the italics are mine) and the effect of the same on the nervous tissue; hence he gave the maggot the specific name *epilepsalis*.

In sending the above cutaneous larvæ found by Dr. Foster to Washington, I gave no data whatever, and yet they were declared identical with Prof. French's type, an intestinal parasite.

It is a pity no imagoes were reared from the larvæ. It appears probable that the species is badly named, for it evidently has no connection with epilepsy. In any event, much remains to be learned regarding it.

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#### BOOK NOTICE.

CHECK LIST OF THE LEPIDOPTERA OF BOREAL AMERICA.—By John B. Smith, Sc. D., Professor of Entomology, Rutgers College, assisted by Henry Skinner, M.D., and W. D. Kearfoot (Kearfott), Philadelphia. American Entomological Society, June, 1903.

Prof. Smith has produced a new edition of his List of 1891, brought up to date. There seems a certain savour of rivalry in the appearance of this publication immediately after the Washington catalogue (Bull. 52, U. S. N. M.), especially as the Edwardsian names for the butterflies are again advanced. Still, there may be some excuse for the List in its smaller size and more compact form. The absence of a specific index is a great disadvantage. As a whole, the Washington catalogue has been copied, with a new set of numbers. There are some divergences, on which comment may be made. The most marked is Dr. Skinner's restoration of the Edwardsian names for the butterflies. I am sure this is a false position. As I have repeatedly said, there are probably too many genera in Dr. Scudder's system, but they must be fully studied. Prof. Grote has shown how it should be done in the *Papilio* group. A wholesale rejection of Dr. Scudder's work is not the way to solve the problem.

In the *Sphingidæ* Prof. Smith makes a few changes, hardly for the better. All the forms of *Hemaris tenuis* are given specific rank, which

shows a lack of attention to the work of Prof. Smyth. In the Saturniidae, *Attacus*, Linn., is preferred to *Rothschildia*, Grote, and *Calosaturnia*, Smith, is revived for our American *Saturnia*. It would have been better if these changes had not been made. The Nolidæ are interpolated after the Lithosidæ, following Sir G. F. Hampson. They are really Tineids, as Dr. Chapman and I have shown. In the Nycteolidae, *Earias obliquata*, Hy. Edw., again appears. I have been at pains to point out that it is a Pyralid, though it is perhaps not surprising that Prof. Smith overlooked this, since the species, unfortunately, was omitted in the Washington catalogue. *Cydosia* and *Cerathosia* again inject themselves into the Arctiidae, in spite of the proof adduced by Prof. Grote and myself that this is not their correct position. The genus *Fenaria* appears in the Agaristidæ along with other genera which I refer to the Noctuidæ, but as *Fenaria* appears also in the Noctuidæ (p. 47), it leaves some doubt as to Prof. Smith's point of view.

In the Noctuidæ, Prof. Smith's changes in the specific names will prove the most valuable part of the list. I do not think he gives enough weight to Prof. Grote's work on the generic names; but this does not greatly matter in the interim of the appearance of Sir G. F. Hampson's volumes, which will settle these matters, I hope. *Psychophora* appears in the Noctuidæ and again in the Geometridæ. Is this a facetious attempt to express the variation in venation which we observed in the species *fasciata*? Mr. Beutenmüller gives a new version of *Catocala*.

The small families following the Noctuidæ are practically unchanged. I see that *Malacosoma pluvialis* and *M. ambisimilis* have fallen into the synonymy. I wonder if Prof. Smith ever compared the larvæ of *Californica* and *pluvialis*. If he had, he could hardly have made this synonymy without comment. May I not justly refer Prof. Smith to the words in his own preface: "It is not for the catalogue-maker to decide upon the validity of species and genera except where he has special knowledge"?

The Geometridæ, I presume, have not been changed. *Mycterophora* still masquerades as a Geometrid, though Prof. Smith might have properly transferred it to his Noctuid series. In the Limacodidæ, some unwarranted changes have been made. *Minuta*, Reak., is not *Shurtleffii*, Pack., and *Graefii* and *Fiskeana* are not *flexuosa*; *casonia*, *crypta* and *flavula* are good varieties, not synonyms. Some very bad advice has been followed here.

In the Pyralidæ and subsequent groups, Mr. Kearfott is responsible, and he follows my catalogue closely. I think it would have been better if the catalogue had been followed throughout and the same numbers retained. Many collectors use the list numbers in correspondence, and the divergences introduced will cause a certain inconvenience, not compensated for by the cases where the changes are an improvement on my catalogue. These cases are not numerous, and should have been left for a more general revision.

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