



A SCHOOL COLLECTION OF INSECTS.

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PRACTICAL AND POPULAR ENTOMOLOGY.—No. 2.

ENTOMOLOGY IN SCHOOLS.

BY H. S. SAUNDERS, TORONTO.

Having prepared a case of insects for a Toronto Public School teacher, for her class-room, I thought it might be a stimulus to others to do likewise, if the details were given some publicity.

All of us with medium-sized or large collections have duplicates enough from which to select material for such a case without impoverishing our collections, and now that so many public schools have departments of manual training there should be no difficulty in getting the teachers in these departments to co-operate by supplying the necessary cases. As a suggestion to manual-training teachers, the principal point in building insect cases is making them proof against pests; *i. e.*, tight-jointed. The simplest form of case would be one with a rabbet on the inside edge of the sides, into which a piece of glass could be placed and fastened with gummed paper. Sheet cork is necessary as a lining in the bottom of the case to hold the pins securely.

My idea in preparing the case was to give the scholars some knowledge of the leading characteristics of the principal orders and, with the specimens, fixing these points in their minds.

The accompanying plate needs no further explanation, except supplying what we are unable to read here on the labels. The pronunciation of classical names is indicated by very small hyphens and accent marks. Each label has a red border and black lettering. The size of the case is 19x16 inches. Most of the insects have individual labels on the pins giving the common name.

Insects, class Hexapoda, or the animal kingdom (from the Greek, hex—six, and pous—foot).—Air breathing, with distinct head, thorax and abdomen, three pairs of legs and usually one or two pairs of wings in the adult stage. Insects comprise four-fifths of the animal kingdom.

Order Hymenoptera (hymen—membrane, pteron—wing). Bees, wasps, ants.—Four wings, comparatively few or no transverse veins. Hind wings smaller than fore wings.

Order Coleoptera (coleos—a sheath, pteron—a wing). Beetles.—A pair of horny wing-covers, which meet in a straight line down the back, and beneath which there is a single pair of membranous wings. Eleven thousand known kinds in Canada and United States.

Order Diptera (dis—two, pteron—wing). Flies, mosquitoes, etc.—Only two wings.

Order Lepidoptera (lepis—a scale, pteron—wing). Butterflies and moths. Four membranous wings covered with overlapping scales. Seven thousand known kinds in Canada and U. S. Butterflies.—Clubbed antennæ; fly only in day time, and usually hold the wings erect above the back when at rest. (A few moths have clubbed antennæ, many fly by day, but no moth presents all three of the above characteristics). Seven hundred kinds in Canada and U. S. Moths.—Antennæ not clubbed; fly generally at night; wings not held erect when at rest. Six thousand four hundred kinds in Canada and U. S.

Order Neuroptera (neuron—a nerve, pteron—a wing). The Lace-wings.—Four wings with numerous veins and cross-veins.

Order Hemiptera (hemi—half, pteron—wing). Bugs, lice, aphides, etc.—With four wings, or wingless.

Order Orthoptera (orthos—straight, pteron—wing). Crickets, grasshoppers, etc.—Four wings, first pair thickened and overlapping when at rest; second pair thinner and folded in plaits like a fan.

Order Odonata (odous—a tooth). Dragon-flies.—Four wings, finely netted with veins; hind wings as large, or larger, than fore wings; each wing has near the middle of the front margin a joint-like structure, the nodus.

NOTES ON THE LOCUSTIDÆ OF ONTARIO.

BY E. M. WALKER, B. A., M. B., TORONTO.

(Continued from p. 341, Vol. XXXVI.)

14. *ORCHELIMUM VULGARE*, Harr. The Common Meadow Grasshopper.

Orchelimum vulgare, Harr., Ins. Inj. Veg., 1862, 162.

Xiphidium agile, Redtenb., Verh. zool.-bot. ges., Wien., 1891, 186 (in part).

Orchelimum agile, Scudd., Proc. Davenp. Acad. Nat. Sc., VIII., 1900,

73.

Measurements: Length of body, male 18 mm., female 18.5 mm.; of pronotum, male 5 mm., female 5.4 mm.; of hind femora, male 14 mm.,

February, 1905.

female 14.5 mm.; of tegmina, male 20 mm. (18-24), female 19.5 mm. (19-25); of ovipositor, 8 mm.

This is the only species of *Orchelimum* that is distributed generally over a large part of the Province. It becomes gradually scarcer to the north of Lake Simcoe, and I believe it does not range much further north than Muskoka. I found it sparingly at Dwight, but it did not appear in Algonquin Park, nor did I take it at North Bay, although the proper sort of environment, apart from the northern latitude, was often met with.

This grasshopper is common in upland fields as well as low meadows, and is fond of perching in clumps of tall grass. It reaches maturity towards the end of July, and lasts until about the beginning of October.

The song of the male is the familiar "xr, jip, jip, jip, xr, etc," of which an interesting and detailed description is given by Dr. Scudder in the Twenty-third Annual Report of the Entomological Society of Ontario, 1893, p. 73.

I have found great variation in the length of the tegmina and wings in this species. Individuals with unusually long tegmina, and wings which project some distance beyond them, are not uncommonly met with in the north. I have taken them several times at Lake Simcoe and also at Lake Muskoka, the Bruce Peninsula, and Walpole Id., River St. Clair. These long-winged individuals resemble *O. glaberrimum* in appearance, but are considerably smaller.

Localities: Rondeau, Sept. 14, 16, 1899; Point Pelee, Aug. 8, 1901; Arner, Essex Co., Aug. 9, 1901; Chatham, Aug. 10, 1901; Sarnia, Aug. 12, 1901; Walpole Id., River St. Clair, Aug. 13, 1901; Goderich, Aug. 18, 1901; Bruce Peninsula, Aug. 12, 1901; Burke's Id., Lake Huron, Aug. 29, 1901; Toronto, Aug., Sept.; Lake Simcoe, July 26-Oct. 1; Lake Muskoka, Aug. 10, 1899; Dwight, Sept. 2, 1902; Aug. 23, 1903.

15. *ORCHELIMUM GLABERRIMUM*, Burm.

Xiphidium glaberrimum, Burm., Handb. der Ent., II., 1838, 707.

Orchelimum glaberrimum, Scudd., Bost. Journ. Nat. Hist., VII., 1862, 453.

Measurements: Length of body, male 21.5 mm., female 20 mm.; of pronotum, male 5.9 mm., female 6 mm.; of hind femora, male 17 mm., female 19.2 mm.; of tegmina, male 27.5 mm., female 28 mm.; of ovipositor, 8 mm.

On September 14, 1899, I captured 3 males of this fine species from the marshy shore of the "Rondeau," at Rondeau Provincial Park, Kent Co. I took them while stridulating, their song being indistinguishable, as

far as I could make out, from that of *O. vulgare*. They were found in company with the latter among the tall grass and sedge that border the "Eau." My single female was taken at Point Pelee from an open marsh bordering a creek, Aug. 8, 1901.

16. *ORCHELIMUM NIGRIPES*, Scudd.

Orchelimum nigripes, Scudd., Proc. Bost. Soc. Nat. Hist., XVII., 1875, 459.

Xiphidium nigripes, Redtenb., Verh. zool.-bot., ges., Wien, 1891, 188.

Measurements: Male, length of body, 19 mm.; of pronotum, 5 mm.; of hind femora, 17 mm.; of tegmina, 20.5 mm.

On Aug. 7, 1901, while collecting at Point Pelee, in a low wood bordering a stream, I heard a sound very like the stridulation of *Orchelimum vulgare*, but more subdued, the "jips" coming at much shorter intervals, and more of them produced at a time. After two or three attempts I succeeded in tracing the song to its source, and found an *Orchelimum*, quite new to me, which proved to be *O. nigripes*. I took another male in the same way, but, although I heard many more, I was unable to find any of them. In several cases the sound proceeded from trees, at a height of some ten or fifteen feet, but, as a rule, it came from tall weeds and vines which grow in great luxuriance upon the rich black soil. I also saw a male in an open marsh bordering the same creek, but failed to capture him.

17. *ORCHELIMUM CAMPESTRE*, Blatchley.

Orchelimum campestre, Bl., CAN. ENT., XXV., 1893, 91.

Measurements: Length of body, male 15-18 mm., female 16 mm.; of pronotum, male 3.6-4.2 mm., female 3.9 mm.; of hind femora, male 14.5-16 mm., female 15.2 mm.; of tegmina, male 20.5-26 mm., female 28.5 mm.; of ovipositor, 7 mm.

This slender and graceful species is probably confined to the southwestern section of the Province, especially along Lake Erie, where it frequents open grassy marshes, like most of the other members of the genus.

Mr. Caudell, who kindly compared a pair of these insects with Blatchley's types of *O. campestre* in the U. S. National Museum, says that they agree perfectly with the latter. They are quite like a pair from Indiana, which I received from Mr. Blatchley, and are of about the same size.

Localities: Point Pelee, Aug. 8, 1901; Walpole Id., River St. Clair, Aug. 13, 1901; marsh near Rondeau, Kent Co., Sept. 15, 1899.

18. ORCHELIMUM INDIANENSE, Bl.

Orchelimum Indianense, Bl., CAN. ENT., XXV., 1893, 90.

Measurements: Length of body, male 16.5 mm., female 15.5 mm.; of pronotum, male 3.4 mm., female 3.5 mm.; of hind femora, male 13.25 mm., female 14.5 mm.; of tegmina, male 18 mm., female 20 mm.; of ovipositor, 6.8 mm.

This is the smallest species of *Orchelimum* found in Ontario, and is readily known by the transparent whitish green of the tegmina, and the dark stripe down the middle of the face. My specimens appear to average slightly smaller than those from Indiana.

I found this pretty little species common near Sarnia, in a large tract of open grassy marsh land bordering the St. Clair River. This land had been entirely submerged earlier in the season, but when I visited the place the ground was dry and cracked. Several other interesting Orthoptera were taken here, among them *Conocephalus Nebrascensis*, Brun., and *Orphulella pelidna*, Haan, neither of which have been noted elsewhere in Canada.

I have also taken *O. Indianense* in open marshes at Arner and Walpole Id., in each case a single example.

Localities: Arner, Essex Co., Aug. 9, 1901; Walpole Id., River St. Clair, Aug. 13, 1901; Sarnia, Aug. 14, 1901.

19. ORCHELIMUM DELICATUM, Bruner.

Orchelimum gracile, Brun., CAN. ENT., XXIII., 1891, 70.

Orchelimum delicatum, Brun., Ent. News, III., 1892, 264.

Measurements: Length of body, male 18.5 mm., female 18 mm.; of pronotum, male 4.1 mm., female 4.2 mm.; of hind femora, male and female 16.5 mm.; of tegmina, male 20.3 mm., female 20 mm.; of ovipositor 10 mm.

I sent a female of this *Orchelimum* to Mr. Blatchley, who gave his opinion that it was probably *delicatum*, and kindly lent me a specimen from Indiana for comparison. This specimen closely resembles mine in every respect, except that the ovipositor is nearly straight, while in all of my three females it is distinctly curved. The comparative straightness of the ovipositor is one of the characteristics of *delicatum* as defined in Bruner's description, so that my specimens may belong to another species. They agree with *delicatum* in other important features, however, as, for instance, in the very delicate texture of the tegmina and in the unusual length and breadth of the ovipositor, and it seems better to regard them as the same species until the matter is settled by further collecting.

I found all my specimens among the tall grass and sedge of open marshes.

Localities: Rondeau, Kent Co., Sept. 14, 18, 1899 (1 male, 3 females); Point Pelee, Aug. 8, 1901 (1 male); Sarnia, Aug. 16, 1901 (1 male).

20. ORCHELIMUM GLADIATOR, Bruner.

Orchelimum gladiator, Brun., CAN. ENT., XXIII., 1891, 71.

Measurements: Female, length of body, 21 mm.; of pronotum, 5.5 mm.; of hind femora, 16.8 mm.; of tegmina, 20.5 mm.; of ovipositor, 10.5 mm.

I have but a single female of this insect, taken on Aug. 8, 1901, from a marsh bordering a creek, just above Point Pelee.

21. ORCHELIMUM VOLANTUM, McNeill.

Orchelimum volantum, McNeill, Psyche., VI., 1891, 26.

Orchelimum Bruneri, Bl., CAN. ENT., XXV., 1893, 92.

This species is very abundant in Southern Ontario and varies so much in size, according to locality, that I give the following measurements of average specimens from the Niagara River, where they are very large, and from Point Pelee, where they are much smaller:

| | Length of body. mm. | Length of pronotum mm. | Length of hind femora. mm. | Length of tegmina. mm. | Length of ovipositor mm. |
|--------------------------|---------------------------|------------------------------|-------------------------------------|------------------------------|--------------------------------|
| Niagara River. ♂ | 20.0 | 4.0 | 16.5 | 24.0 | |
| ♀ | 24.8 | 4.9 | 19.7 | 30.0 | 10.5 |
| Point Pelee. ♂ | 17.5 | 3.7 | 15.7 | 19.0 | |
| ♀ | 19.0 | 3.9 | 16.3 | 24.3 | 9.0 |

I first came across this species on the Niagara River, below Queenston, where I heard its peculiar note among the rushes growing in the water near the shore. I took a number of males by sweeping, but only one female. McNeill has well represented this song as "*Zip, zip, kr-zo-e-e, kr-zo-e-e.*" I have never noticed the preliminary "*zip, zip.*" The last part of the song does not last more than half to three-quarters of a second, but is kept up indefinitely.

At Point Pelee and Rondeau *volantum* is abundant in open marshes, bordering streams, and I came across it again at Sarnia among rushes and *Sagittaria* growing in a small pond.

Localities: Niagara River, Sept. 26, 1898; Rondeau, Kent Co., Sept. 15, 1899; Point Pelee, Aug. 8, 1901; Sarnia, Aug. 14, 1901.

(To be continued.)

FOUR NEW SPECIES OF HALICTUS FROM MAINE.

BY JOHN H. LOVELL, WALDOBORO, MAINE.

Halictus hortensis, n. sp. ♀.—Length, 5 mm. Head and thorax green, abdomen black, with the apical margins of the segments brown. Head nearly as broad as long, face finely and densely punctured, thinly clothed with a short white pubescence; mandibles bidentate, rufous at tips; antennæ black, pubescent, flagellum with minute appressed hairs, brownish beneath. Mesothorax nearly bare, finely and sparsely punctured; disc of metathorax rounded or somewhat triangular, evenly and finely rugulose or roughened. Wings hyaline, iridescent, nervures and stigma testaceous, tegulæ testaceous, pubescent, impunctate. Legs brown-black, tarsi ferruginous, hind spur with four long teeth. Abdomen impunctate, or with a few very fine punctures, the discs of the first and second segments bare and shining, the apical segments thinly clothed with a short white appressed pubescence.

I have taken this bee in my garden on the flowers of the rhubarb, blackberry, plum and rose. It is the smallest species of *Halictus* with which I am acquainted in this locality.

Halictus versans, n. sp. ♀.—Length, 6 to 7 mm. Head and thorax dark green, abdomen oval or elliptical, black. Head broad, face closely and finely punctured, clypeus dark purple, coarsely and sparsely punctured, fringed with ferruginous hairs; mandibles rufous at tips; antennæ black, flagellum slightly testaceous beneath. Mesothorax densely and finely punctured; disc of metathorax rounded, with fine radiating raised lines not extending to posterior margin; truncation with a medial fissure. Wings fuscous, stigma and nervures reddish-brown, tegulæ black with a piceous spot. Abdomen black, nearly bare, shining, a patch of white pubescence at base of second and third segments, apical segments very thinly and unevenly clothed with a whitish pubescence.

♂.—Length, 6 mm. Like the female, the coloration is unusually dark; antennæ testaceous beneath; disc of metathorax rougher, with a more or less salient rim. Two males taken on *Solidago* are referred to this species.

The female is described from specimens taken on *Epilobium angustifolium*; it has also been found on *Solidago* and other flowers. The head and thorax are a very dark green, the abdomen is remarkably regular

and oval, the segments closely imbricated and the sutures not at all prominent.

Halictus oblongus, n. sp. ♀.—Length, 7 mm. Head and thorax green, abdomen oblong, black. Breadth of head about equal to the length, face densely and finely punctured, clypeus with a few coarse elongate punctures, fringed with ferruginous hairs; antennæ black, testaceous beneath. Mesothorax minutely and closely punctured, nearly bare; disc of metathorax rounded, rugulose, raised lines extending to posterior margin, with a brassy reflection. Wings hyaline, slightly tinged with brown, nervures and tegulæ reddish brown. Abdomen unusually long, nearly bare, shining, apical segments with a very thin whitish pubescence.

♂.—Length, 6 mm. Slender, resembles the female; antennæ long, conspicuously testaceous beneath; disc of metathorax darker, not brassy; abdomen nearly smooth.

Both male and female specimens were taken on *Eupatorium perfoliatum*, August twenty-fourth. This species is distinguished by the unusual length of the abdomen.

Halictus nubilus, n. sp. ♀.—Length, 6.5 mm. Head and thorax green, with a brassy reflection, abdomen black, apical margins of segments broadly light brown. Head longer than wide, face finely and densely punctured, lower half clothed with a pale fulvous pubescence, clypeus purple, with a few coarse sparse punctures; antennæ black, flagellum pale brown beneath. Thorax clothed with a short pale fulvous pubescence; mesothorax sparsely and rather coarsely punctured; metathorax sharply truncate, disc bluish-green, coarsely rugose, rugæ extending to posterior margin, at each superior lateral angle there is a salient rim extending a short distance each way, centre emarginate; truncation grooved, pubescent. Wings hyaline, clouded with white, nervures light yellow, tegulæ impunctate, piceous. Abdomen without punctures, shining, the extreme sides of first and second segments and apical segments entirely covered with a rather dense fulvous pubescence.

Taken on *Iris versicolor* and *Solidago*. The four species described above belong to that section of *Halictus* for which Mr. Robertson has proposed the name *Chloralictus*.

ASSINIBOIA MICRO-LEPIDOPTERA, COLLECTED BY MR
T. N. WILLING.

BY W. D. KEARFOTT, MONTCLAIR, N. J.

I am very much indebted to Mr. T. N. Willing, of Regina, Assa., for the privilege of working up a very interesting collection of Micro-Lepidoptera. It is particularly notable in recording a number of species that have hitherto been only known by the types, and especially so in establishing a wide range of territory to species that have been only recorded from California. Following this paper I have one in preparation on the same subject, from material collected in Manitoba by Messrs. Heath, Criddle and Dennis, to be followed in its turn by one on Micro-Lepidoptera from Western British Columbia, collected by Dr. Taylor and Mr. Bryant; later I hope to be in possession of sufficient material from the territory east and north of Toronto, which has been less worked than any part of North America, for a fourth paper. It is most gratifying to observe the very great interest in these small insects that has arisen throughout Canada.

TORTRICIDÆ.

Olethreutes consanguinana, Wism.—One specimen; Macleod, VII.

2. The most eastern record for this species, common in British Columbia and California.

Olethreutes deceptana, sp. nov.—Palpi, head and thorax pale gray, thickly sprinkled with darker gray atoms, antennæ pale gray. Front wing pale gray, marked with obscure darker gray. The darker shade forming a basal patch, a more or less obsolete middle fascia and streaks before outer margin. The basal patch covers on costal and dorsal margins a fifth of length of wing, but extends outward on middle one-quarter, the outer edge is slightly indented half way between middle and costa, below middle the edge is irregular and almost lost on its lower fourth. The basal patch is thickly covered with darker, nearly black strigulæ and dots, the former parallel to the outer margin of patch. Central dark fascia from middle of costa and narrowest just below costa; its inner edge slightly indented below costa, broadly indented on cell and slightly above dorsal margin; its outer edge is slightly indented below costa, deeply and narrowly at end of cell, thence obliquely towards anal angle, but before

reaching it abruptly turning downward into dorsal margin. Like the basal patch, it is transversely strigulated with nearly black lines and dots. A narrow dark half fascia arises just below middle of outer margin, proceeds obliquely inward towards costa at outer fourth, but terminates before reaching it; it is widest and rounded on its upper end. Between this short fascia and middle fascia, the narrow streak of lighter ground colour is divided by a darker line. The pale ground colour between basal patch and middle fascia, at apex and along outer half of costa is also strigulated with darker gray shades and dots. The costa is marked as follows: In basal patch with two dark dashes; in ground colour before middle fascia with four dark dashes; in middle fascia, the margins of which are nearly black, make two and between them a third dark dash; beyond middle fascia to apex are four paler ground colour oblique lines, each two divided by a darker dash and each with a darker dash in its middle. The inner pale-ground-colour line continues down to anal angle, the second and third merge together below and outline the upper end of marginal semi-fascia, and then continue around its outer edge to middle of outer margin; the fourth and outer pale line runs obliquely into outer margin below apex and outlines the darker apical spot. Cilia with seven whitish and seven dark gray spots, evenly spaced. Hind wing smoky fuscous, paler along costa and basally. Cilia paler. Under side: Front wing smoky fuscous, with whitish spots repeated from above along costa and outer margin; hind wing grayish fuscous, a shade darker at apex. Abdomen gray above; below and legs cinereous.

One ♂, Regina, VII., 20. Three ♂, Aweme, Man., VII., 24, to VIII., 8 (Norman Criddle). One ♂, Chicago, Ill., June (Jos. H. Reading). Co-types, U. S. Nat. Mus. No. 8205, Mr. Willing's and my collections.

I think this is the species that has been masquerading in our lists as *hartmanniana*, Linn., and propose to drop the latter name from our American list. I have a long series of *hartmanniana* from Europe, and a very careful comparison leaves no doubt of their separate identity. In *hartmanniana* the central fascia is differently indented, there is a tendency to its being entirely divided on cell by ground colour, leaving a conspicuous dash half fascia from costa and a dark shade on dorsal margin; there

is also a dark dorsal shade in *hartmanniana* from base to angle, which is entirely wanting in our American species.

Deceptana is not unlike *Archips afflictana*, Walk., but can readily be separated by structural characters. The ♂ of *afflictana* has a costal fold, which is absent in *deceptana*. The median vein of hind wing of *deceptana* is hairy at base above, which is not the case with *afflictana*. The costa of *deceptana* is more rounded or arched than *afflictana*. Zeller's identification of *hartmanniana* was from specimens collected in Mass. by Burgess. I am much inclined to the opinion that these specimens were *afflictana*, which is common in the Eastern States, or it is possible that they were more or less rubbed specimens of *albeolana*, Zell. By removing *hartmanniana* from our lists, Zeller's species *albeolana*, which has been listed as a variety of *hartmanniana*, will become a good species, and represent the very distinctly marked species, the larvæ of which are always found on birch (*Betula alba*). *Hartmanniana*, according to Meyrick, feeds on Willow (*Salix*).

Olethreutes vetulana, *Wlsm.—One ♂, Regina, VIII., 30. Described from California and Texas and not since recorded. Type, 17 mm. Regina specimen 22 mm., and more of a dark chocolate-brown than California specimens and type, which are a reddish-brown.

Olethreutes campestrana, Zell.—Three specimens, Regina, VIII., 13, and Pincher, VII., 10; marked identically with Zeller's figure, but expanding only 12 mm. All other specimens in my collection and the types expand 16 to 18 mm. These may be diminutive examples of *campestrana* or a new species, but I would long hesitate describing as new anything in this genus with the characteristic white inner and outer bands and dark fuscous or dark-brown basal patch, central band and sometimes apical patch, forming four or five well-defined vertical fasciæ, as there are already seven species (5469 to 5475, Smith's List) so closely allied that I have yet been unable to separate them. Besides the above is a fourth specimen labelled Indian Head, VI., 29, that is darker and differing in the indentations of the white fasciæ, and especially in the ornamentation of the apical patch, which seems closer to *dealbana*, Walk., but is too badly rubbed to be positively identified.

*Smith's List, 1903, No. 5454, erroneously printed *vetulana*.

Eucosma Morrisoni, Wlsm.—Two specimens, Macleod, VII, 8, and Lethbridge, VII., 11. A trifle smaller and paler than Colorado and Montana specimens.

Eucosma circulana, Hbn.—One specimen, Regina, VI., 18. Same size, but differs somewhat from Eastern specimens, and additional material may prove it to be a new species, or at least a good variety.

Eucosma argentibana, Wlsm.—Two specimens, Regina, VI, 18. I have no authentic specimens from Texas, where the types were taken, to make a comparison, but feel reasonably sure of this identification, although the Regina examples are more distinctly marked and capable of a much more clearly defined description than that of the type.

Eucosma culminana, Wlsm.—Two specimens, Regina, VIII., 13 and 15. This is a very interesting capture, described by Walsingham, 1879, from California. It has not since been recorded or, as far as I know, taken.

Eucosma illotana, Wlsm.—One specimen, Regina, VI., 18. This is also an interesting record, as I am not aware of any printed record of its capture since Walsingham took it in Oregon more than twenty-five years ago. It is not, however, the most Eastern specimen, as I have one from Chicago, taken by Mr. J. H. Reading.

Eucosma Smithiana, Wlsm.—Two specimens, Macleod, VI., 25, and VII., 8. I am rather doubtful of this determination, the specimens are somewhat rubbed, but as far as can be seen agree with the description. If not *Smithiana*, I do not know of anywhere else to place them, and additional material may prove it to be new.

Thiodia dorsiatomana, sp. nov.—Palpi inwardly and basally white, outwardly and second joint above tinged with fuscous; head and patagia pale brown or fawn; thorax grayish-brown.

Front wing: Shades of pale olivaceous-brown or fawn, with a white divided median stripe, ocellic spot, sub-apical costa markings, and inner two-fifths of costa narrowly edged with white.

The brown shades are palest along the dorsum, below cell; between median streak and costa; above ocellic spot and in a narrow sub-marginal area. The white median streak extends from base to end of cell and is evenly divided its whole length by a narrow black line, a heavier black

line outlines the white streak below, and a less well defined one above. The inner half of costa is minutely dotted with brown. The dorsal margin from inner fourth to anal angle is distinctly marked with seven or eight equally spaced black dots. Ocellic spot, a broad horizontal white bar, with a luteous-white spot above and below it at each end; above and below the bar is a narrow, short black line, and beyond the two outer spots, two or three black dots. The outer two-fifths of costal margin covering a quarter of the width of wing is a beautiful scroll-work of geminate white lines, edged internally with black and enclosing three small spots of ground colour; the outer spot double the width of the middle one and the inner one but little more than an oblique streak. The inner pair of lines from costa just beyond middle, obliquely to and almost touching ocellic spot, the second pair are shorter and curve around parallel to costal, enclosing middle ground colour spot and joining third pair; the latter entirely enclose the large outer ground colour spot, and the lower line of this pair separates from its companion and dips down beyond and defining the ocellic spot, thence curves upward into apex, forming a white apical dash. Cilia long, whitish, finely speckled with gray inwardly, followed two narrow fuscous lines.

Hind wing: Dark smoky-brown, cilia gray, with a darker basal line. Abdomen above and tuft gray, below and legs whitish, tarsi shaded with brown.

Three ♂, expanse 17 to 19.5 mm. One ♀, 18 mm. Regina, VI., 15 to 18, Macleod, VII., 2. Co-types, U. S. Nat. Mus., No. 8210, Mr. Willing's and my collections.

Allied to *striatana*, Clem., *spiculana*, Zell., *argenticostana*, Wlsm., and *clavana*, Fern. Without any other characters a very easy means of distinguishing these species may be found in the scroll-work on costa before apex, which I purpose using later in synoptic tables; the species, all of which have the white or pale median streak, can readily be separated as follows: The white sub-apical streaks of *striatana* are broad, oblique and nearly straight, the inner and apical are geminated, the middle pair entirely separate. In *spiculana* the white costal streak runs into the inner pair, and there is only one broad white apical dash. The costal streak in *argenticostana* continues clear to the apex as a narrow line, the streaks are almost obsolete. *Clavana*, I have not seen, the description only says

"several oblique irregular streaks," very indefinite, but as this species is stated to have a double dark brown line below the white median streak, it should be readily separated.

I have two other specimens from Verdi, Nev., which do not seem to match any of the above and may be new, but await a larger series before describing.

Thiodia tenuiana, Wlsm.—One specimen, Regina, VIII., 13. This specimen is rather badly rubbed, but compares closely with an example so named by Prof. Fernald in the American Museum of Natural History. It is not quite like Walsingham's figure, which, with the closely allied species *parvana*, Wlsm., and *minimana*, Wlsm., are very poorly drawn, the descriptions are also so general that an actual comparison of the types will be necessary to properly separate them. Vein IV. of hind wing is entirely absent in this specimen.

Thiodia parvana, Wlsm.—Three specimens, Macleod, VI., 29, and Regina, VI., 10. I have but little hesitation in placing these specimens in this species; they agree with Walsingham's rather meagre description and indifferent figure, except that the hind wings are most distinctly fuscous rather than "very pale grayish white." Originally described from north Oregon, and not recorded since.

Thiodia refusana, Walk.—Two specimens, Regina, VI., 18. I feel certain of this identification, although both Walker and Walsingham's descriptions very inadequately describe this beautiful species. It closely resembles *Eucosma circulana*, Hbn., but can be quickly separated by the ♂ costal fold of the latter. The Regina specimens are yellowish-brown, or "cinereous-ochreous," except along the costa, which is whitish. The metallic lines are a dull leaden metallic, and form an almost perfect circle, involving nearly the entire outer third. Within the lower half of this circle is the ocellic spot composed of a cluster of velvety-black dots on a white field, and bounded outwardly on both sides and through the middle (vertically) by short metallic lines. In the upper half of the circle are three horizontal rows of black atoms. Between the circle and costa are a number of oblique metallic lines on a paler field; and through the middle of the wing, from base to circle, about one-third below costa, is a paler, nearly whitish line. The descriptions of *refusana* apply much better to *circulana*, especially where the ground colour is stated to be

"profusely irrorated with brownish scales." If further examination of Walker's type in the British Museum should show that it has a costal fold—the description states it is a ♂—*refusana* would fall as a synonym of *circulana*, and leave our present species without a name.

Thiodia triangulana, sp. nov.—Head and palpi cinereous or ashy-white, latter fuscous outwardly, thorax same, but posterior ends of scales and patagia cinereous.

Front wing divided into three nearly equal triangles, by two oblique fasciæ; the inner from dorsum at first quarter continuing obliquely two-thirds across the wing, the outer from centre of costa to anal angle.

Costa almost straight; outer margin oblique, 45° , straight in three specimens, very slightly concave in the fourth; dorsal margin evenly convex. III. and IV. of hind wing stalked from two-thirds to four-fifths, length of stalk is not constant.

Fore wing: Ground colour varies from dead white to white with an olivaceous tinge, with olivaceous-brown fasciæ, spots and irrorations. An inner narrow fascia arises from inner fourth of dorsum and points towards the inner of the three pre-apical costal spots, but ends abruptly just above middle of wing; it is more sharply defined outwardly than basally, and its outer margin is indented just above dorsum. The basal triangle within this fascia is thinly irrorated with the dark colour, more concentrated in a narrow line on costa, extending nearly to outer fascia and along the dorsal margin; below and paralleling the costa are a row of dots, duplicated in a shorter row below middle; between these are three faint horizontal lines, the lower one the most distinct, and in some specimens continuing outward, defining upper end of inner fascia, through outer fascia and ocellic spot. The outer fascia begins on costa and terminates in anal angle, before and defining ocellic spot; its inner edge is less sharply defined than its outer, and is nearly straight, being sharply indented below middle by a narrow spur of white; the outer edge curves outward as far as middle of wing, and below is sharply indented by the white ocellic spot. The basal triangle, thus enclosed, is crossed horizontally by faint lines of the dark colour, between the veins, the latter being white; the dark colour forms a shade along the dorsum and in one (the freshest) example a small spot on dorsum at outer two-thirds.

The apical triangle, above the ocellic spot is the whitest part of the wing, irrorated with fuscous below and interrupted on costa by three well-defined, large costal spots, the outer the largest; a line of pure white surrounds these spots on all sides except the costal. The ocellic spot occupies the lower half of wing, bounded outwardly by a narrow, irregular, silvery-metallic line, beyond which are two to four small black dots, the spot is white and is crossed horizontally by a row of dark dots above, a faint line and a dark shade below; the silvery-metallic outer line, in some specimens continues around below the spot and up on its inner edge, almost completely encircling it. Before the cilia is a pure white line, from just below apex to dorsal margin and before this is a slightly wider fascia of the dark colour, which continues into the apex. Cilia white, lightly dusted with the dark colour.

Hind wing: Smoky, fuscous, rather shining; cilia pale fuscous, with three very narrow basal lines, middle fuscous, outer and inner, whitish.

Under side: Front wing, dark, smoky fuscous, paler along dorsum and costal spots darker, faintly outlined with paler scales, a white dash between outer spot and apex. Cilia same as above and preceded by a pure white line. Hind wing, grayish fuscous, becoming darker at apex and with one apical and two small costal dark spots. Cilia same as above. Abdomen, above and sides grayish, below each segment black anteriorly, cinereous centrally and gray posteriorly, giving it a very striped appearance. Legs: Femora, whitish gray, tibiae and tarsi cinereous.

Described from four ♂'s. Expanse: 20 to 24.5 mm.

Two from Regina, VII., 18 and 20, and two Aweme, Man., VI., 29, and IX., 31 (Norman Criddle). Co-types, U. S. Nat. Mus. No. 8206, Mr. Willing's and my collections.

Since writing the above I have received from Mr. Ernest Oslar, several additional specimens, collected in Platte Canon, Colo., VIII., 16, and three specimens from unidentified material in U. S. Nat. Mus., collected by Dr. W. Barnes, Glenwood Springs, Colo., Aug. and Oct. The latter are of bright ochreish-brown shades, Oslar specimens olivaceous-gray. The maculation of all are the same; the species has therefore a variation in colour, from ashy-gray, through the olivaceous-grays to a clear ochreish-brown.

(To be continued.)

PRELIMINARY LIST OF THE MACRO-LEPIDOPTERA OF ALBERTA, N.-W. T.

BY F. H. WOLLEY DOD, MILLARVILLE, ALTA., N.-W. T.

(Continued from page 28.)

[172. *Hadena allecto*, Smith.—The receipt of specimens of *mactata* from the east has caused me to doubt the distinctness of *allecto*.]

219. *N. havila*, Grt.—I confused this with the foregoing species until quite recently, so cannot state positively whether it is common or not. From memory I should say at least not rare. I picked four out of my series of twenty-five *clandestina* and sent two to Prof. Smith as possibly *havila*, but questioned their distinctness. He called them *havila*, and added, "The differences seem obvious enough in my collection. It has the ground colour of primaries lighter, has a peculiar strigate appearance, and lacks all the red-brown that occurs in *clandestina*." I much regret having confused the species, and being on that account short of material. My specimens are dated June 16 and July 18. Light.

220. *N. atricincta*, Smith.—Described from Calgary. The type is at Washington. A few are taken almost every year at light and treacle, though I have never seen it very common here in the hills. It was comparatively common near the mouth of Fish Creek (Bow Valley) in 1893, and may be of frequent occurrence there annually. It may be more of a prairie than a hill species, as I found it fairly common at treacle on the Red Deer River, about 50 miles north-east of Gleichen, in a strictly open prairie district, in the third week of June, 1901. End of June and July. A very variable species, some specimens being almost immaculate gray, and others very strongly marked. A striking feature, and one not mentioned in the description, is that in most specimens, particularly the ♀♀, the veins on primaries are conspicuously pale-lined. The t. a. and t. p. lines are often well marked in blackish, and the orbicular may be quite distinct. Secondaries generally smoky outwardly, occasionally pure pearly white. They sometimes have a smoky transverse central line. The species is figured with the description.

221. *Chorizagrotis auxiliaris*, Grt.—June and July.

222. *C. introferens*, Grt.—June and July. One specimen, Sept. 9th.

223. *C. agrestis*, Grt.—June and July. One specimen, May 19th, and another "Circa Sept. 9th." Both dates seem exceptional,

224. *C. inconcinna*, Harv.—June. Have no July specimens, but it seems quite fresh up to the end of June.

The above four species, though scarcely to be met with at all some years, are decidedly common in others, *auxiliaris* being about the least common of the four. They come to both light and treacle, and may be found commonly in the daytime under loose boards and in similar situations. My material representing the group consists of about 150 specimens, the sexes being pretty evenly divided. I have always had some difficulty in separating the first two and the last two species, a difficulty in which I apparently do not stand alone. For instance, Sir Geo. Hampson, in his Catalogue, treats *introferens* as a var. of *auxiliaris*, and, incidentally, he places *soror* in the same position. With Prof. Smith's aid, however, who kindly sent me a named pair of each of the four from other localities, with explanatory notes on their distinctive features, I think I have my series of *auxiliaris* and *introferens* satisfactorily placed, though I still fail to be able to draw any line between *agrestis* and *inconcinna*. Touching the first two, he says: "They are not really difficult with a good series of each, provided you first separate the sexes, for, curiously enough, the ♀♀ of one species tend to resemble the ♂♂ of the other. The ♂♂ tend to a reddish shade and sharp markings; the ♀♀ to gray and obscurer types. *Auxiliaris* ♂ has a clear bright costal region; in the ♀ it tends to become concolorous, like the ♂ of *introferens*." Taken as a whole, *auxiliaris* seems to have the markings more clearly defined, show greater colour contrasts, and have a very conspicuously pale costa and collar. *Introferens* appears more sordid, browner, and has a much less contrasting costa, otherwise the maculation seems practically the same in the two species. But I have an almost intermediate series, though certainly leaning nearer to *introferens*, in which the colours are often rather bright and collar and costa suspiciously pale. Two ♂♂ of this series have, however, been labelled "*introferens*, very like the average Colorado specimens." I am not aware that either species has ever been carefully bred. "*Agrestis* and *inconcinna*," writes Prof. Smith, "are much less satisfactorily separated, and some examples seem as well placed with one as with the other name. They will never be really defined until a batch of eggs from a known ♀ has been bred to maturity." I have tried boxing ♀♀, but failed to induce them to lay. I see the larva of *agrestis* has been described by Dr. Dyar, and the description is

given in Hampson's Catalogue. I take it that typical specimens of *inconcinna* are more or less unicolorous, reddish-brown, the dark inferior portion of the reniform being the only really conspicuous marking, while *agrestis* is more variegated with distinct maculation. The latter species is immensely variable, and as I admit inability to make any really satisfactory separation of *inconcinna* the real range of variation in that is impossible for me to state. Grote described his *agrestis* as a variety of *auxiliaris*.

225. *C. terrealis*, Grt.—Very rare. One ♂ and four ♀ ♀ have been taken. Two ♀ ♀ July 6th, 1896; another Aug. 23rd, 1901; a ♂ July 5th of the same year, and a ♀ on June 30th, 1904. Prof. Smith has the ♂ and has seen three of the ♀ ♀. He says: "It is not the typical form, and comes from an unexpected locality; but the species of this genus are all widely distributed, and in the essential points agreement is sufficiently close to make me feel safe in the name. The typical form is more red-brown and the costal margin a little paler." My specimens are very dark brown, faintly tinged with chestnut. In one, the darkest, the maculation is obscured and the reniform rather faintly outlined in whitish and produced along median vein towards the orbicular, a character I can find in no other specimens of the genus. The other two have distinct maculation, and the discoidals, particularly the reniform, are conspicuously outlined in whitish, and are much paler centrally than ground colour. In none of them is there any sign whatever of a paler costa. The description in Sir George Hampson's Catalogue is, "Dark fuscous brown...the costal area brick-red," and in the figure this latter feature is as conspicuous as in *auxiliaris*, though, of course, the colours are different. It seems by no means improbable that the Calgary form is another species.

226. *C. balanitis*, Grt.—Has been rare of late years, but I have seen it very abundant, and then it was a bad pest at treacle. In 1894, near the mouth of Fish Creek, it positively swarmed. I have certainly seen *Noctua clandestina* in greater numbers, but not at treacle. I don't think I exaggerate when I say that on each of two consecutive nights in early July of that year I could have captured two thousand on not more than forty treacled posts. That was one of my earliest experiences of treacling in the Northwest. I never saw anything to equal the sight before, and though I have on one or two occasions since seen treacle almost or quite as prolific, one species has not so largely predominated. June to middle of August.

227. *Rhizagrotis flavicollis*, Smith.—Sometimes fairly common. July and August. The collar and costal region appear to be either ochreous or reddish, irrespective of sex, and in some ♀♀ gray, but I have no similar ♂♂.

228. *Feltia Hudsonii*, Smith.—(CAN. ENT., XXXV., p. 130, May, 1903). Named after Mr. Arthur F. Hudson, who does a considerable amount of collecting in this district. The type, a Calgary specimen, is at Rutgers College, and two ♀♀ co-types are in my collection. Prof. Smith says in the description, "It is decidedly smaller (than *subgothica*) more slenderly built throughout, much paler in colour, with white secondaries in both sexes. The antennæ of the ♂ are less obviously "brush-like" than in the allies, and, altogether, the new form is perhaps the best defined of any in this series." I believe it to be a good species, though I for long confused it with *subgothica*. It averages smaller, though I have specimens of *subgothica* just as small. The build is lighter, and the insect has a more flimsy appearance. The antennæ are a little finer in both sexes, but I do not seem able to rely upon this as a distinguishing feature. The secondaries are smoky outwardly, as in the older species, but their ground is pearly-white instead of cream-coloured. I have, however, two ♂♂ from Victoria, B. C., which have secondaries almost as white as *Hudsonii*, but the stouter build of the specimens and darker colour generally place them with *subgothica*. I have seen it common at light with *subgothica*. End July and August.

229. *F. subgothica*, Haw.—Common. Middle July and August. At light, treacle, and sometimes on flowers in daytime.

230. *F. herilis*, Grt.—Usually rare. End July to middle August. Light and treacle. The species agrees with figure of *herilis*, in the November number of CAN. ENT. for 1895.

231. *F. venerabilis*, Walk.—Common at light, treacle, and sometimes on flowers in daytime. Have occasionally bred it from "cutworm" larvæ found in gardens. Middle August to end September. The name is as given me by Prof. Smith some years ago, and ♂ specimens in my series are exactly like Dr. Holland's fig. 26 in pl. XXII. under that name, though the figure is stated by Mr. E. J. Smith in Ent. News, XV., 221 (June, 1904), to be that of *volubilis*. My ♀♀ are all darker than Dr. Holland's fig. 23, *volubilis*, and none have the round orbicular. Of Sir George Hampson's figures of the ♂♂ of both, my species is most like

that of *volubilis*, but has a very much more elongated orbicular, and is not so dark in colour. I have ♂♂ sent me as *volubilis* from Chicago, which are almost exactly like my species, but a little darker. Some Calgary specimens have the secondaries equally dark, but this is a very variable feature. My difficulty lies in my ignorance of the distinguishing points of the two species.

232. *F. Vancouverensis*, Grt.—A single ♂, dated June 9th, 1897, agrees fairly well with *Vancouverensis* that I have from Victoria, B. C., but is rather paler and not so heavily marked. The specimen is slightly rubbed.

233. *F. obliqua*, Smith.—(CAN. ENT., XXXV., 5, p. 127, May, 1903). Not common. At light and treacle. June. Described from Calgary. The type is at Rutgers College, and I have two ♂ co-types. Rather like the preceding species, under which name I had it for a long time. Compared with that it is more unicolorous, and entirely lacks the purplish shading and the dark shade preceding s. t. line.

234. *Porosagrotis catenula*, Grt.?—I have three ♂♂ and two ♀♀ of a species to which Prof. Smith gave me this name some years ago. Dr. Fletcher, however, tells me that they are not a bit like *catenula* in his collection. My specimens are much more like Dr. Holland's figure of *vetusta* than Sir Geo. Hampson's of *catenula*, and of Sir George's description, agree rather with the former. I fancy the Calgary species is rather more common on the plains than in the hills. At light, treacle and sunflowers. End July and Aug.

235. *P. mimallonis*, Grt.—Very rare. Middle July to middle Aug.

236. [*P. orthogonia*, Morr.?]—A ♂ dated Aug. 22nd, 1895, taken at light, was so named, doubtfully, by Prof. Smith. It does not appear to be the same species as a ♀ sent me by Dr. Barnes, labelled "So. Utah." The Calgary specimen is badly rubbed, but I am unable to associate it with anything else in my collection.

237. *Euxoa rumatana*, Smith.—(Trans. Am. Ent. Soc., XXIX., 203, June, 1903). Described partly from Calgary material. The type is from Volga, S. Dak., and is at Rutgers College. Rather like *niveilinea*, under which name I had it for years, but differing chiefly in having dark margined secondaries. Very rare. August.

238. *E. plagigera*, Morr.—Not common. Light and treacle. July and August.

239. *E. olivialis*, Grt.—Common some years. July to middle Sept. My specimens entirely lack the pale contrasts shown in Holland's figure, and the costa is scarcely paler than the rest of the wing.

240. *E. maimes*, Smith.—(CAN. ENT., XXXV., 5, 131, May, 1903.) Described partly from Calgary material. The type is a Calgary specimen, and is at Rutgers College. It stood for years in my collection, and was sent out as *Ridingsiana*, of which it appears to be the northern representative. In the description, comparing it with that species, Prof. Smith says, "it is smaller, darker, less powdery in the ♀♀, with rays on the veins even less marked In the ♀♀ the distinction is well marked, that of *maimes* differing little from the ♂, while in *Ridingsiana* all the examples of that sex are paler, more ashen, dusty gray, with less contrasting maculation." Common some seasons. End July to middle August.

241. *E. pugionis*, Smith.—Described partly from Calgary material. The type is from Colorado and is in the U. S. National collection. Formerly confused with *flavidens*. Comparing them, Prof. Smith says in the description, "In the new form the general colour is lighter, the contrasts are much greater, and the secondaries are pure white." In several of my specimens, however, the secondaries are distinctly smoky on the outer third, or even outer half. Rare. August and Sept. At light and flowers.

242. *E. cogitans*, Sm.—A fine ♂ at light. August 13th, 1903. Prof. Smith says, "A little smaller and not quite so well marked as my Colorado specimens, but the same, I think." Sir George Hampson treats *cogitans* as a synonym of *choris*, Harv., and I cannot be sure that his figure of that species is not the same as my specimen.

243. *E. perfusca*, Grt.—A ♂. July 26th, 1900. Smaller than Prof. Smith's examples from Washington, otherwise similar.

244. *E. punctigera*, Walk.—Rather rare, and all my specimens but one are ♀♀, that one having been taken *in cop*. It is redder than any of my ♀♀, and as a ♂ that I have from Regina, Assiniboia, is of much the same shade, the colour difference appears to be sexual. I had the name *titubatis* given me for this species, and have sent specimens out as such. *Titubatis* I have never taken here. July and August.

245. *E. acornis*, Smith.—Described from Calgary. An extremely variable species in both colour and maculation. I have 23 ♂♂ and one ♀, and no two are alike. The colour of primaries varies from pale creamy-luteous to almost slaty-gray. The maculation is sometimes practically obsolete, at others quite distinct. The transverse lines may be either geminate or single, and central shade distinct or wanting. The secondaries have generally more or less of a smoky terminal or subterminal shade, and sometimes also a median transverse line, but are occasionally pale smoky throughout. The figures of the species in Ent. News, VI., 10 (Dec., 1895), and in Sir Geo. Hampson's Catalogue are both good ones. The type is at Washington. I have seen the species very common at both light and treacle, but it has been a rarity of late years. Middle August to middle Sept.

245a. *E. megastigma*, Smith.—Described from two Calgary ♀♀. I suggested to Prof. Smith some years ago that, judging from the description, this seemed to be a var. of *acornis*, and he said he believed I was right. Though he lists it as distinct, he tells me he is still of the same opinion. I have no specimen in my collection named by him, and have nothing like Sir Geo. Hampson's figure of *megastigma*, which does not look to me like *acornis*, the space between discoidals being too dark, besides a general dissimilarity. The figure, however, is taken from the type, which is in the U. S. National Museum. Aug. 24th, Sept. 15th.

246. *E. scandens*, Riley.—A single ♂ in fine condition, taken by Mr. T. N. Willing at the Calgary town lights, on Aug. 1st, 1904, is evidently the same species as *scandens* sent me, named, from Chicago and from Cartwright, Man.

247. *E. vulpina*, Smith.—Described from Calgary. I have two fine ♂♂, all I ever saw besides the type. The figure in Ent. News, VI., No. 10, Pl. XV., is a good one, though in that in Sir George Hampson's work the maculation seems much too distinct. Both figures are of the type, which is in the Museum at Washington. The species is quite even in colour in both primaries and secondaries, and, except for the faintly pale-ringed discoidals, almost immaculate. It might be taken for an extreme form of *incallida*, but has more hairy thoracic vestiture. This fact, coupled with its later date of appearance, convinces me of its distinctness. Sept. 20th, Oct. 3rd and 15th, in different years.

248. *E. vallus*, Smith.—Described from a single ♂ from Laggan (B. C. in error), 5,000 ft. (Thos. Bean.) The type is at Washington, and

Sir Geo. Hampson's figure of it is unlike anything known to me Sept. 9th.

249. *E. pleuritica*, Grt.—Sometimes common. Prof. Smith says of a series I sent him, "Darker than normal, and much tending to *messoria*. Did the darkest example come to hand alone I should put it with *messoria* without question." I am not aware that I ever took *messoria* here, but have a few specimens from Eastern and Western States, from Vancouver Isl. and from Manitoba. Its resemblance to *pleuritica* is less apparent in a series than when single specimens are compared. *Messoria* has a duller, grayer appearance, and secondaries are paler. *Pleuritica* has generally both ochreous and rusty tinges, not present in any of my *messoria*. End June and July. Here I must mention that in this species, as in several others of the genus, there appears to have been, at some time or other, a serious error in association of type labels, or else wrong identification of types. Sir Geo. Hampson's figure of *insignata*, of which the types are in the British Museum (Nova Scotia specimens) is, I should say, without doubt, the species treated here as No. 248. *Insulsa* (type from Vancouver Isl.) is given as a synonym of *messoria*, of which the type is at Boston. The latter species is figured only by a very poor wood-cut. *Decolor*, of which neither the locality nor present location of the type are given, would seem to have been correctly identified as one of the forms of what has long been known in North America as *insulsa*. The matter requires probing to the bottom by those who have access to the older collections. Many of Walker's types are, I believe, impossible to identify with certainty.

250. *E. incallida*, Smith.—Used to be very common at light and treacle, but has been almost entirely absent of recent years. An enormously variable species, chiefly in number and intensity of markings. Some specimens are wholly suffused with black scales, and others are dark smoky-brown. Prof. Smith originally gave me the name *lutulenta* for this species, and referred *incallida* (in MSS.) as a synonym. Sir Geo. Hampson called my species *incallida*, and Prof. Smith tells me now that he is right, and that *lutulenta* is a good species. Of this he sent me an example from Glenwood Springs, Colo. This, from the predominance of pale markings, looks quite different from any of my series of over 50 *incallida* from the Northwest, but is not at all like Sir George's figure, which I can fairly well duplicate. I have a long series from Cartwright, Man., from Mr. Heath (supposed to include *5-linea*, probably a synonym,

according to Prof. Smith) which, as a whole, are smaller, less powdery, and lack that faint ochreous tinge present in all Calgary specimens. In fact, Sir George's figure of *incallida* resembles the Manitoba form, whilst that of *lutulenta* is much nearer the Calgary series. The two series look more distinct than many recently closely described species in the *Noctuidæ*, though the contrast is hardly apparent when single specimens are compared. However, I think it probable that, were more known of the geographical variation of this, as of so very many other poorly-defined forms, we should find that it had more synonyms already than have ever been suggested. Middle July to middle Sept.

251. *E. Lagganæ*, Smith.—Described from Laggan (B. C. in error), one ♂ (T. E. Bean). The type is in Washington, and is figured in CAN. ENT., XXXII., Pl. 5, and also in Sir Geo. Hampson's Catalogue, Pl. LXIV. The figures bear no resemblance to one another whatsoever.

252. *E. testula*, Smith.—The type is a Calgary ♂, and is in the U. S. National collection. It seems to bear no date. I cannot recall the specimen, but from Sir George Hampson's figure I strongly suspect that it is a form of *acornis*.

253. *E. difformis*, Smith.—A single ♂ at light, Aug. 16th, 1901, which Prof. Smith thinks must be this species. It is, however, not at all like Sir George Hampson's figure of the type.

254. *E. recticincta*, Smith.—Described from a single ♀ taken at light, August or September, 1894, and figured with the description. It still remains a unique. When more ♀♀ of *acornis* come to hand, this may prove to be a form of that very variable species. The type is in the Washington Museum.

255. *E. holoberba*, Smith.—Described from here. Very rare. July. Treacle. The type is in Washington, and is figured in CAN. ENT., XXXII., No. 8, Pl. 5.

256. *E. objurgata*, Smith.—I have taken ♂ specimens so named by Prof. Smith, and have two or three others which unquestionably fit into the series. To my eye, however, the form is poorly defined, coming from a group of over 70 specimens which have long been a puzzle to me, and to individuals of which Mr. Smith has at different times given me different names. For instance, I am unable to separate one of my co-types of *pestula* from Calgary so-called *objurgata*. I may be wrong, but feel sure that some of these species can never be separated without the most

careful breeding. Middle July and early August. My specimens in no way resemble Sir Geo. Hampson's figure, which has far more black markings. *Objurgata* was described from Pullman, Washington, and from Dakota.

257. *E. intrita*, Morr.—Used to be fairly common at light in the town of Calgary, and lower down the Bow near mouth of Fish Creek. It seems to be less frequent in the hills, and of late years I have rarely met with it anywhere. Prof. Smith originally cited the form as new, but subsequently wrote: "I have associated it with examples of *intrita* from Colorado and Washington. It is an obscure species." I should never have suspected that Sir George Hampson's figure was the same as the Calgary species, and am inclined to doubt it. July and August. *Intrita* was described from Vancouver Island.

258. *E. mollis*, Walk.—Two specimens only, both I think taken here in the hills. One, in 1894, is in the collection of Prof. Smith; the other, also seen by Prof. Smith, July 25th, 1898, is a ♂ in my own. My specimen is not quite like Sir Geo. Hampson's figure, but may be the same species. A ♀ taken at light on Sept. 3rd, 1904, is smaller, darker, and less clearly marked, but nearer to this than anything else I know.

259. *E. reuda*, Streck.—A single ♂, Aug. 10th, 1896. Damaged in mails. Prof. Smith calls it "*reuda*, rather a well marked form." It is not unlike Sir Geo. Hampson's figure, and may be the same species. I do not, however, recognize the form amongst a number of *Euxoa* sent me unnamed from Vancouver Island, supposed to contain *reuda*.

260. *E. rena*, Smith.—Used to be common at treacle, but very rare of late. I have specimens very like Sir George Hampson's figure (except in colour, which, be it said, in those plates is often very misleading). Middle July and August.

261. *E. insulsa*, Walk.—The species hitherto known by this name in N. America is one of the most regularly common of the genus here, but *insulsa* is treated by Sir George as a synonym of *messoria*. I have specimens approaching to, but not quite so contrasting as Hampson's figure of *decolor*, Morr., by which name the species may perhaps have to be known, if Sir George's diagnosis proves correct. A Manitoba series shows a much wider range of variation than the local captures. July and August. Light and treacle.

262. *E. albipennis*, Grt.—Fairly common some years at light and treacle. August and September.

263. *E. tessellata*, Harr.—Not common. Treacle. July to middle August. Exceedingly variable. I have ♂♂ in which there is a tendency to a paler shade on the costa, especially near the base. These bear a resemblance to some forms of *nordica*, inasmuch that I have sometimes confused them. *Nordica*, however, besides being larger, seems always to have a bluish-gray ground colour, which this species does not possess. Prof. Smith has repeatedly seen my species, so there cannot be much doubt that it is the one designated in North American lists as *tessellata*. Sir George Hampson, however, recently had specimens from me, and says: "What you send as *tessellata*, Harr., I should call a dark variety of *messoria*. It is identical with the types of *insulsa* and *expulsa*, Walk." *Insulsa*, as I mentioned under that head, and *expulsa*, he considers synonyms of *messoria*. His reference of my No. 263 to *messoria* is puzzling. Moreover, in Vol. IV., p. 258, of his Catalogue, the type of Walker's *insignata* is stated to be in the British Museum, and is treated in the text as a synonym of *tessellata*. Yet, on p. 269, *insignata*, also Walker's species, and in the Museum, is treated as a prior name to *pleuritica*, so it would appear that Walker attached *insignata* type labels to different and generally dissimilar species. Taking the names as they now stand in our lists, whilst it is conceivable that bad or poorly marked specimens of *tessellata* and *insulsa* might be confused, or, still more easily, of *pleuritica* and *messoria*, it seems hard to understand that either of one pair could be mistaken for either of the other. Yet it is a noteworthy fact that each of the names, *insulsa*, *expulsa* and *insignata*, have been applied to one or both of each pair. Of the four species, *messoria* is the only one not yet recorded from Alberta.

264. *E. focinus*, Smith.—(Journ. N. Y. Ent. Soc., XI., 7, March, 1903.) Described partly from Calgary material. "It is the species," says Prof. Smith, "that I have mistaken for *friabilis* in collections, and have so named for correspondents. . . . It is an ally of *tessellata*, but grayer and narrower winged, with larger ordinary spots." I have one ♂ and seven ♀♀ bearing his own labels, but none of them bear any resemblance to what he has named *tessellata* for me. Both this and the following species, however, look to me like *nordica* without the black markings. A parallel variation is found in *ochrogaster* (vide infra). However, I have not yet heard of *nordica* from elsewhere in the range given for *focinus*, viz.: Pullman, Wash.; Glenwood Springs, Colo., and California. The type is at Rutgers College, but I am not sure whether it is a Calgary specimen. Rare. July and Aug.

265. *E. pestula*, Smith.—(CAN. ENT., XXXVI., 150, June, 1904.) Described from twenty Calgary specimens. July, Aug. and early Sept. Of these, 4 ♂♂ and 8 ♀♀ are in my collection, all bearing Prof. Smith's own labels, 1 ♂ and 4 ♀♀ being labelled "co-type." Prof. Smith says in the description, "The relationship is to *messoria*, because of the obvious median line; but also to *tessellata* because the space between the ordinary spots is darkened. It is one of the group containing *incubita*, *terrenus* and *pleuristica*, differing from each as much as they do from each other." My remarks under *objurgata*, *focinus* and *nordica* should be here referred to. They comprise a "bunch" containing from seventy to eighty specimens at present in my collection, and, I fancy, over thirty more in that of Prof. Smith, which, though I have studied them through eleven seasons, have always been, and are still, a perfect puzzle to me, and certainly have been in the past to Prof. Smith also. It is with profuse apologies to him that I feel bound to state in explanation that I have no less than ten so-called specific names which he has either directly given to or suggested for different specimens of the group. I do not include *servitus* (vide infra), which I feel sure was a slip, nor *tessellata*, which I have more than once placed in the true *nordica* part of the group myself, but for which he was in no way responsible. I am quite unable to separate some of the specimens bearing his label, including co-types, of *pestula* from *focinus* and *objurgata* labelled by him. If there is any distinction, I can only recognize it between these and *nordica* by the existence in the latter of black markings. All three of the newer names (*i. e.*, except *objurgata*, one specimen of which I believe is a unique, as far as my collection is concerned) refer to enormously variable forms (?), and *pestula* and *focinus* can hardly even refer to varieties for that reason. Prof. Smith has, at different times, seen every one of the specimens I have referred to, except a few taken during 1904, and recently he saw over seventy of them all at once, so he should understand at least as much about them as I do, and it is not for me to sink any of the names. The group used to be fairly common, and eight or nine years ago I must have sent out some numbers, but of late years they have been so rare that I have never cared to risk spoiling ♀♀, on the chance of getting eggs. The type of *pestula* is in Prof. Smith's collection.

266. *E. basalis*, Grt.—Common. July and Aug.

(To be continued.)

PIERIS BRASSICÆ.

BY ALBERT F. WINN, WESTMOUNT, P. QUE.

On September 4th I found, feeding on leaves of *Nasturtium*, two larvæ which I had never seen before, and which agree exactly with figures and descriptions of the larvæ of the "Large White Butterfly" of Europe, *Pieris brassica*.

Both of these larvæ succumbed to attacks of Hymenopterous parasites, and while it is to be hoped that the rest of the larvæ in the neighbourhood have shared the same fate, it is scarcely likely, as there are large fields of cabbage within a short distance of the place where the two were found, and unless the winter kills them off, I fear we shall have another immigrant to add to our list, and a most unwelcome one. Next summer will tell the tale as to whether the species has established itself permanently or not, and any specimens seen should be at once reported.

NOTE ON SOME GEOMETRIDÆ IN THE HULST COLLECTION, RECENTLY EXAMINED BY DR. DYAR.

BY GEO. W. TAYLOR, WELLINGTON, B. C.

Dr. Harrison G. Dyar, in the Proceedings of the Entomological Society of Washington, VI., No. 4, has given us a very interesting and important paper on the Hulst collection of *Geometride*.

In this paper he has shown, from an examination of the type specimens, that a considerable number of Dr. Hulst's supposed species are not really entitled to specific rank. Of course, any entomologist describing as freely as Dr. Hulst did would be sure to make some mistakes and create some synonyms, and I have no doubt that Dr. Dyar is perfectly correct in his judgment in the majority of cases that he cites.

When, for instance, he tells us that the types of *Thalophaga fautaria* and *Tetracis hyperborea* are specimens of the well-known *Anthelia nigroseriata*, of Packard, we can readily believe it, because on referring to Hulst's descriptions we can see that *nigroseriata* must have been the insect before him, and so we cross *fautaria* and *hyperborea* off our lists, and it is the same in the case of most of the species with which Dr. Dyar's paper deals. But there are one or two cases in which, while not doubting Dr. Dyar's facts, I find I cannot accept his conclusions. In these cases the Doctor's determinations of the types seem to raise a real difficulty. For instance, he tells us that the type of *Somatolophia umbripennis* is a specimen (a single female) of *Alcis Haydenata*, and he adds, "Thus both genus and species fall."

Now, Hulst described *Somatolophia umbripennis* (Trans. Am. Ent. Soc., XXIII., p. 350) from a specimen or specimens, he does not say how many, from Colorado, and from the description I should have expected his type to have been a *male*, because he gives all the male characters in the new genus he proposes for the species, and says not a word about the female. He describes his genus *Somatolophia* minutely, telling us that the male has *no hair pencil* on the hind tibiae, and has *long* pectinations to the antennæ, both characters at variance with the genus *Alcis*. He also tells us that the 1st and 3rd segments of the abdomen bear *dense* dorsal tufts of hairs, and in his description of the species *umbripennis* he adds that the hairs on the 1st segment in that species are black.

Now, it seems to me absolutely inconceivable that Dr. Hulst could have drawn up either the generic or specific description from a single female *Alcis Haydenata*. It is quite true that in the brief diagnosis of *umbripennis* there are many points of resemblance to *Haydenata*, and I have many times gone over the description with specimens of *Haydenata* in my hand, but I have always given up when I came to those dense dorsal abdominal tufts, which certainly are not present in the slightest degree in *Alcis Haydenata*.

The explanation suggesting itself to my mind is that Dr. Hulst had other specimens before him when he drew up his description of *S. umbripennis*, that he mixed with them this female *Haydenata* and that at some later date the original male type in some way came to grief, leaving only the female, which was not really conspecific, to represent the species in his collection. But the point I want to raise is this: Ought we to strike out the genus and species on the evidence of a specimen marked type when it is evident that that specimen was not the one from which the original descriptions were made? For my own part I doubt the propriety of doing this, so I shall for the present retain the names in the expectation that sooner or later the genuine *Somatolophia umbripennis* will come to light.

A similar case is that of *Diastictis festa*. Dr. Dyar says that the type is a specimen of the moth subsequently named by Hulst himself, *Deilinia pulveraria*. Here the description of *festa* (Trans. Am. Ent. Soc., XXVII., p. 335) is manifestly that of a *Diastictis*, not a *Deilinia*, and in this case, too, I am convinced that the specimen now doing duty as type cannot be the one from which the species was described. For the present, therefore, I retain *D. pulveraria* on our lists as a good species and not a synonym of *festa*. The moth in question (*pulveraria*) is not rare in the Kootenay district.

CORRECTIONS IN EVANIIDÆ, ETC.

BY J. CHESTER BRADLEY, ITHACA, N. Y.

In Schletterer's "Die Hymenopteren Gruppe der Evaniiden," Annalen d. k. k. Nath. Hofmuseum Wien, IV., p. 311, read *trochanterata*, Cameron, for *trochanterica*, Cameron. Page 338, the locality for *Evania semirubra*, Cresson, should be Cuba. Page 118, in synonymy of *Evania*, date 1829, after "*Evania*, Curtis," should come the following reference: "*Brachygaster*, Stephens, Systematic Catalogue of British Insects. I. p. 343, 1829. On page 143, under synonymy of *Evania minuta*, the same reference, *Brachygaster minutus*, Stephens, should be put in after *Evania fulvipes*, Curtis. In Dr. C. G. De Dalla Torre's "Catalogus Hymenopterum," Vol. III., p. 1076, under *Evania*, *Brachygaster*, Leach, Edinb. Encycl., 1817, should be struck out and *Brachygaster*, Stephens, Syst. Cat. of Brit. Insects, 1829, replace it. Leach, in the reference given simply under a description of *Evania minutus*, states as a synonym "*Brachygaster minutus*, Leach, Mss.," which is not even an attempt, let alone sufficient to establish a genus. So a corresponding change should be made after *Evania minuta*, Lamarck, on page 1082. Thus we have 1829 as the date of establishment of the generic name "*Brachygaster*," but in 1826 it was used for a genus of Diptera by Meigen. Hence it falls as a homonym, and as the genus is to-day recognized, I propose the change: "

BRACHYGASTER, Stephens, name prec. = SEMÆODOGASTER, new name.

In plate I, Dr. Schletterer, has represented (figs. 5 a-c) veins that are atrophied and visible only as mere traces. This is apt to cause confusion, as they are so strongly drawn as to give the impression of distinct veins. *E. amazonica* (fig. 5 c) can scarcely show a trace of an extra vein between the transverse discoidal and transverso-medial veins. Such a condition is not found in any Hymenoptera higher than Phytophaga, and Dr. Schletterer must have mistaken a mere coloration for a trace of a vein. The more correct figuration is shown in Kieffer's "*Evaniidæ*," in Wytzman's "Genera Insectorum," plate I, fig. 7.

Kieffer, in Zeitschr. fur Hym. u. Dipt. III., p. 111, establishes *Pseudevania* for *E. trochanterata*, Cameron, and *marginata*, Cameron, without giving any characters. The two are utterly unlike and generically

distinct. *Evania marginata* is by far the most distinct, and from Cameron's descriptions and figures worthy of generic rank. So we will call it the type of *Pseudevania*, while *trochanterata* falls back into *Evania*.

In Kieffer's "Evaniidae" of Wytzman's Genera Insectorum, p. 2 and elsewhere, I would call attention lest someone should not understand him, that by "Ashmead, State Board of Agric., U. S. A., Catal. Ins.," he means Smith's list of the insects of New Jersey. P. 5. *Brachygaster floridanus*, *Johnsoni*, and *Weithi*, Ashmead, should be listed under genus *Hyptia*, as Dr. Ashmead placed them in their original descriptions. P. 6. The absurdity of erecting Foeninae as a sub-family on the genus *Gasteruption* is evident. It should be *Gasteruptioninae*. Kieffer overlooks Ashmead's "Classification of the Ichneumonidea," Proc. U. S. Nat. Mus., 1901, in which this sub-family had already be recognized.

In Dr. Ashmead's "New Species of Evaniidae," Can. Ent., 1901, p. 303, *Hyptia Johnsoni* should have the locality *Jamaica*, instead of Philadelphia.

EVANIELLA, n. gen.

Evania Neomexicana and *E. Californica*, p. 304, belong to a new genus, which I shall shortly describe under the name *Evaniella*. Here also belongs and stands as type the species which Dr. Ashmead (p. 304) calls *unicolor*, Say, but is not that species. Say's description applies to *E. appendigaster*, which could easily have spread into the interior with the early settlers, inasmuch as it is parasitic on cockroaches.

Hypolaepus Viereckii, Bradley, Can. Ent. 35, p. 47, Dr. MacGillivray kindly points out to me is synonymous with *Pteronus ventralis*, Say. It is identical in characters with *Hypolaepus*, to which it would run in Dr. Ashmead's tables. The value of the characters is doubtful.

The following typographical errors occur in an article by the writer on the Genus *Platylabus* in Can. Ent. 35, p. 275: Page 277, under heading 1, paragraph beginning "Metallic blue" should be co-ordinate with the first, and should end with a reference to (4). "4. Abdomen more or less rufous" should have after it a reference to (6). Page 279, "*Luzernensis*, n. sp.," should read "*Luzernensis*, n. sp."

NEW NOCTUIDÆ FOR 1905—NO. I.

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

MINOFALA, n. gen.

Head of moderate size, not retracted; eyes round, hardly prominent, yet distinct and of good size; front protuberant inferiorly, with a roughened depression guarded by a sharp rim; palpi small, slender, not attaining the end of the protuberance; tongue weak, yet of moderate length and, perhaps, functional; antenna in the male with the joints a little marked, ciliate rather than bristle tufted. Thorax oval, convex, collar and patagia distinct but not uplifted; vestiture scaly; no tufts; legs moderate, of normal proportions, without spines, spurs or other armature save the usual spurs of tibiae. Abdomen cylindrical; well exceeding the secondaries; untufted. Primaries elongate triangular, apex well drawn out, though not acute, outer margin oblique; venation apparently normal. Secondaries trigonate, proportionate.

MINOFALA INSTANS, n. sp.

Ground colour a dirty, pale luteous, overlaid by smoky scales and relieved by white scales. Head and thorax of the ground colour, lightly irrorate with black scales. Primaries with all the maculation obvious; a blackish, diffuse shade from the middle of t. a. line to outer margin above the middle, forms the salient feature of the wing. Basal half line marked by a geminate dusky spot on costa and by dusky and white scales below that point. T. a. line geminate, much broken, defining lines dusky, included space whitish, very irregular and with large angles. T. p. line geminate, much broken, defining lines blackish, slender, included space more or less white, well removed outwardly, abruptly bent from costa over cell and obliquely incurved below. S. t. line very close to margin, white, irregular, two little teeth on veins 3 and 4 reaching the outer margin. The apex is pale and a dusky shade precedes the line; below is a pale shade from reniform above a pair of sagittate spots which continue the dark median shading and beyond which the terminal space is also dark. There is a broken black terminal line. The fringes are long, luteous-gray, cut with whitish. There is an obscure median shade line, obvious only toward inner margin. The claviform is indicated by brown scales. Orbicular small, round or nearly so, whitish, edged with black scales. The

reniform is obscured by the dusky shading and has no defining lines. Secondaries whitish with a smoky outer border, an incomplete smoky extra median line and a dark discal lunule. Beneath, primaries smoky, paler outwardly, this lighter space crossed by two dusky lines. Secondaries whitish, powdery, a little infuscated along the costa and outer margin, with an outer dusky line and a dusky discal lunule,

Expands: 1.05 inches = 26 mm.

HABITAT: Galveston, Texas, in May.

One male in good condition, from Prof. F. H. Snow, is the generic and specific type. The general resemblance to *Fala ptychophora*, Grt., is obvious, but this is a much smaller insect.

LEUCANIA PENDENS, n. sp.

Ground colour dull reddish-luteous with smoky shades and powderings. Head with smoky powderings. Collar with three transverse leaden gray or smoky lines, of which the middle is narrower than the others, the upper being just below the tip. Dorsum smoky, as is also a narrow submarginal line on the patagia. The primaries have much the appearance of *unipuncta*, with the strigate tendency of *phragmatidicola*. A smoky streak extends along the median vein to the end of the cell and beyond it between veins 4 and 5 to the sub-apical shade, into which it merges beyond the t. p. line. The white dot at the end of the median vein is included in this shading. There is a distinct black spot below the streak at the place of the t. a. line. T. p. line consists of an even series of black venular dots. The fringes are dusky. There is a vague dusky shade on costa before the apex and another below it, leaving the apical area a little lighter; but there are no strong contrasts. Secondaries smoky, whitish at base, veins smoky, fringes yellowish. Beneath, pale luteous, lustrous, disc and fringes of primaries dusky; secondaries paler, powdery along the costa.

Expands: 1.32 inches = 33 mm.

HABITAT: Chokaloskee, Florida, in May.

One female in very good condition, from Mr. George Franck. The species is obscure in appearance and has resemblances in all directions. The most characteristic feature seems to be the dusky central streak which extends, without break other than the inclusion of the reniform, almost to the outer margin.

EUCALYPTERA GIGANTEA, n. sp.

Ground colour white, overlaid by a creamy tint, uniform, lustrous. Head, thorax and abdomen immaculate. Primaries with a black streak through the centre, starting as a point in the cell near the base, extending just above the median vein and broadening very slowly to near the middle of the outer margin, but a little distance from it, where it ends somewhat diffusely. Secondaries a little whiter than the primaries, immaculate. Beneath powdery: primaries suffused with blackish along the costa and through the centre; secondaries with costal area dusky. The legs are stout and very heavily clothed with hair.

Expands: 1.56 inches = 39 mm.

HABITAT: Galveston, Texas, in May.

One male from Prof. F. H. Snow, in good condition; but becoming grey. The primaries are narrower than usual, and that character, with the large size, heavy body and simple maculation should make the species an easily recognizable one.

LYTHRODES SEMILUNA, n. sp.

Ground colour white, with a faint olivaceous tinge. Thorax mottled with olivaceous scales; defective. On the primaries the basal area is clear nearly to the middle, then comes an olivaceous brown shade extending from costa to inner margin, incurved, the inner border fairly defined, the outer diffuse and shading into the ground to a point beyond the cell, where another shade, starting from costa before the apex, curves inward and again outward to the outer margin at vein 3. This darker area also lightens outwardly, leaving the apex of the ground colour, and the veins through this area are also white. The ordinary spots are indicated; the orbicular by blackish scales on the inner shading, the reniform by a dusky slender lunule at the end of the cell. Secondaries white, with a narrow smoky margin. Beneath, primaries smoky, fringes white; secondaries white, with an extra median and marginal dark band and a small discal spot.

Expands: .80 inches = 20 mm.

HABITAT: Cochise County, Arizona, April 8.

A single male specimen from Mr. George Franck. The body is defective; but the wings are in good condition and, while the markings are really very different from those of all the other species, the characteristic strigate appearance is obvious.

PHURYS CAMPANILIS, n. sp.

Ground colour of head, thorax and primaries a deep, dark bluish-gray, the maculation smoky-brown or black. Head and thorax immaculate. Primaries, t. a. line a somewhat diffuse blackish outer line, preceded by a somewhat indefinite orange line; outwardly oblique, with outward little teeth on the veins and incurves in the interspaces: t. p. line geminate, the defining lines diffuse, black and irregular, included space broad, orange in colour, conspicuous; in course almost rigidly upright. The main part of this t. p. line is really the orange centre, which is continuous; the preceding line is broken and not well marked except on costa and inner margin; the following line is broader, well marked, expanding into an oval spot in the sub-median interspace and again opposite the cell. S. t. line seal brown, narrow, outwardly denticulate on the veins, incurved in the interspaces, preceded by undefined paler shades. A series of terminal, venular, blackish dots. Fringes concolorous. Orbicular wanting. Reniform black, oblong, oblique, of moderate size, not well defined. Secondaries deep ochraceous overlaid by smoky, with a vague yellowish median shade and a subterminal denticulate line, only recognizable on close examination. Beneath, uniform tawny-yellow, with leaden-gray fringes.

Expands: 1.40 inches = 35 mm.

HABITAT: Chokaloskee, Florida.

One male, in good condition, from Mr. George Franck. Most closely allied in some respects, to *P. ovalis*, Grt.; but obviously distinct by the irregular t. a. line and the vaguely marked secondaries.

PHURYS CAROLINA, n. sp.

Ground colour smoky-brown overlaid by violaceous gray. Head and thorax immaculate. Primaries with the maculation evident in the male, barely indicated in the female. T. a. line obscure, smoky-brown, diffuse, even, outwardly angulate on the median vein. T. p. line geminate, evenly outcurved over the cell, then almost evenly oblique to the inner margin; the inner defining line is a narrow edging of brown scales which may be traced through the full course; the outer line is broader, deeper brown, a little diffuse and at about vein 5 joins an oblique streak of the same colour that extends to the apex; the included space is yellow and also follows the apical streak, only scattering yellow scales attending the real line to the costa. The first appearance, therefore, is that of an oblique double line from apex to inner margin, one-third from anal angle. S. t. line

wanting. There is a narrow brown crenulate terminal line, emphasized by better defined blackish interspacial dots. Orbicular wanting. The reniform is a vague, undefined, oval, blackish spot. Secondaries dark smoky brown, without obvious markings. Beneath, yellowish with smoky powderings and an ill defined discal spot on all wings.

Expands: 1.36 inches = 34 mm.

HABITAT: North Carolina, in August.

One male and one female; the former in very fair, the latter in defective condition. I have no recollection as to the source of the specimens and no indication as to more exact locality. The difference between the sexes is striking; but whether it is always so I am not able to say. The species belongs with *glans*, Grt., and *flavistriaris*, Hbn., which is not the same as the *flavistriaris* of Guenee. I have notes on all the type specimens in European Museums, but have been unable to get material upon which I might base a revision of the species, some of which are wrongly named in nearly all collections.

BOMOLOCHA HEULOA, n. sp.

Ground colour dull, dark smoky-brown, all the maculation obscure. Head and thorax concolorous with primaries, not maculate; abdomen with dorsum a little darker, the sides a little paler than secondaries. Primaries with median lines narrow, just defined, black with a vague paler edging outwardly. T. a. line upright, regular bisinuate. T. p. line at or a little beyond the middle, roughly parallel with the outer margin, drawn in below the cell, more or less outcurved above and below that point. S. t. line punctiform, blackish, variably defined, a little sinuate. Terminal line blackish, broken, sometimes not traceable; fringes concolorous. The orbicular is a small patch of black, elevated scales. The reniform is a narrow curved line of such scales, outwardly with a vague paler shading. Under the lens the surface appears flecked with metallic-blue scales. Secondaries a little lighter than primaries and palest at base. Beneath with a grayish tinge, powdery; secondaries with a discal dot and traces of a powdery median shade line.

Expands: 1.18-1.24 inches = 29-31 mm.

HABITAT: Cochise County, Arizona, in July.

One male and two females in passable condition, from Mr. George Franck. As is usual in this genus, the male is a little larger and more robust than the female, and also a little more sordid in colour. The primaries are distinctly angulated at middle of outer margin in all the specimens; but in the females the angle is better defined and there is a

distinct excavation below the apex. In wing form, dark colour and similarity of sexes the relationship is closest to *B. toreuta*, Grt.

HYPENULA CAMINALIS, n. sp.

Ground colour smoky-blackish, with all maculation fragmentary and obscure. Head, thorax and abdomen concolorous. Primaries with the median lines denticulate, black, scarcely or not at all relieved from the ground colour. T. a. line irregular, but on the whole nearly upright. T. p. line rather evenly bisinuate. S. t. line very narrow, pale, irregularly dentate. A very narrow pale terminal line and a series of preceding black spots. The reniform is a narrow, upright, yellowish mark, scarcely relieved. Secondaries with a dusky extra-median shade and a paler sub-marginal line. Beneath, paler than above, powdery, more yellowish toward base, a common extra-median shade line and an s. t. line which is pale, broken on the primaries and continuous on the secondaries.

Expands: 1.12-1.25 inches = 28-31 mm.

HABITAT: Cochise County, Arizona, June and July.

Two males and seven females; all in rather poor condition, from Mr. George Franck. The species is obviously allied to *acuminalis*, but is decidedly blackish instead of brown, and it lacks the white scales characteristic of the Texan form. It seems also, on the whole, a little smaller. The specimens had been papered and are all defective as to legs.

RENIA RIGIDA, n. sp.

Ground colour dull reddish-gray with a smoky shading which forms the basis of the maculation. Head and thorax concolorous. From the base to the median shade the primaries are of the reddish-ground and contrast a little against the rest of the wing. The t. a. line is obscurely indicated in the male, as is also the orbicular spot. The median shade is broad, outwardly diffuse, makes the most conspicuous part of the maculation and extends rigidly oblique from the basal $\frac{1}{3}$ of the costa to the same point on the inner margin. T. p. line single, crenulate, somewhat diffuse inwardly and merging into the dark median area, squarely exerted over the cell, then very oblique inwardly to the inner margin. The reniform is upright, narrow, dusky with a vague paler margin. S. t. line is a more or less obvious black shading before a fragmentary pale line which is a little irregular, but on the whole parallel to the outer margin in course. There is a series of black terminal dots on the interspaces, where the margin is a little notched. Secondaries a little more blackish in tint, without obvious

maculation. Beneath powdery, primaries darker with a vague tendency to reproduce the maculation of upper side: secondaries paler, darkening outwardly; with two smoky bands across the disk and, in the outer dark space, a narrow, pale, submarginal line.

Expands: 1 inch = 25 mm.

HABITAT: Oak Creek Canyon, Arizona, 6,000 feet, August.

One male and one female in fair condition, from Prof F. H. Snow. The species is one of the smallest of the genus and belongs with *sobriialis* and *larvalis* as well by general colour as by the angulated exterior margin of primaries. It differs at once, however, in the very distinct, rigidly oblique median shade as well as in the details of the maculation generally.

SIMPLICIA ALBISINUATA, n. sp.

Ground colour deep smoky-brown, no contrasts except for the sinuate, white s. t. line of the primaries. Head and thorax concolorous, the abdomen paler. Primaries with the median lines vaguely traceable, darker, irregular. S. t. line obvious or prominent; pale or even white, with an obvious incurve opposite the cell, else rather even. Terminal line pale, narrow, sometimes obsolete, preceded by blackish lunules, the fringes slightly indented. Orbicular a diffuse spot, a mere dot, or altogether wanting. At its best with a bluish white central dot. Reniform large, kidney shaped, always in part obscure, sometimes a diffuse blotch, usually with the inner margin marked by a few bluish white scales with a blackish surrounding. Secondaries with an extra median paler shading, vaguely marked; the fringes a little paler. Beneath a little paler and less smoky than above, more powdery; with a whitish, irregular s. t. line, broken on the primaries and, on the secondaries, a somewhat obscure median shade line and discal spot.

Expands: 1.38-1.50 inches = 34-37 mm.

HABITAT: Cochise County, Arizona, July and August.

Three males and three females from Mr. Franck, all received in papers and in more or less defective condition. In 4 of the examples the apices of primaries are distinctly acute, in the others the wing is broader, all the margins a little fuller and the apex not so obvious.

This is the first occurrence of this interesting Central American genus in our fauna and the species is evidently allied to *aonia*, Druce, recorded from Panama and Guatemala. In the lists the species may be placed next to *Palthis*, with which the genus agrees in the exaggerated tufts of the legs and palpi in the male.

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

A meeting of this club was held in the rooms of the American Entomological Society in Philadelphia on Friday evening, Dec. 30, 1904. Over thirty persons attended. The President, Dr. Henry Skinner, spoke of the meeting of the Club held 20 years before in the Hotel Lafayette in Philadelphia. Mr. H. A. Morgan was elected President and Mr. G. W. Herrick Secretary for the New Orleans meeting. Dr. Skinner was elected Permanent Secretary. The report of the Committee on a National Organization of Entomologists was read and adopted. It provided for the appointment of a committee which should communicate with certain Entomological Societies, inviting each to add a member to the committee, and when thus formed it should prepare a constitution, by-laws and plan of work for an association of North American Entomologists, and call a meeting in 1905. Dr. John B. Smith, Dr. James G. Needham and Prof. C. P. Gillette were appointed on this committee.

The President spoke of the history of American Entomology, especially of Thomas Say, and exhibited a set of albums belonging to the American Entomological Society, containing the photographs of many older as well as contemporary entomologists. All were invited to contribute to these. Mr. Rehn exhibited numerous old and rare entomological works and editions. Dr. Cook stated that the Gundlach collection was in an excellent state of preservation in Havana, where was also Poey's collection.

Dr. MacGillivray spoke of the Comstock-Needham system of wing venation. He claimed that it represented the real homologies of the veins in all orders. In practically all saw-flies the radial sector arose from the base of the stigma, and what appears to be the base of the radial sector from near the apex of the stigma in all higher Hymenoptera, but he had recently proved that in reality the base of the radial sector has been lost in the latter case, and the radial cross-vein has assumed its functions. He showed that specialization had occurred by addition in such orders as Odonata, and by reduction in Diptera, etc. The subject was discussed by several members. Dr. Fernald complained of the inaccuracy of the terms used in the question of mimicry. He placed on the board a tentative table to classify such phenomena. Mr. Summers put a similar table on the board. The subject was discussed at length. Mr. Washburn then spoke of the attractions Minnesota offered to the entomologist, and the meeting then adjourned.

J. CHESTER BRADLEY, Sec. pro tempore.

Mailed February 4th, 1905.