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A FEW NEW IPIDÆ.

BY J. M. SWAINE, MACDONALD COLLEGE, QUE.

Ips borealis, n. sp.—Length, $3\frac{1}{4}$ – $3\frac{1}{2}$ mm.; width, $1\frac{1}{3}$ mm. Sides parallel, smaller and more slender than *pini*. Head and prothorax black, elytra dark brown to black, legs and antennæ lighter. Prothorax three-fourths as long as the elytra.

Head rather prominent, globular, beak rather distinct with the angles square. Vertex and front convex; whole upper part of head remarkably smooth and shining. Front with a faint transverse impression extending between the eyes. In one sex the front is nearly as smooth as the vertex, very finely punctured with extremely minute hairs; in the other sex the front is densely, minutely granulate-punctate, and hairy below. These hairs from the front are brownish, slender, and erect. In both sexes the epistomal margin is densely fringed with yellowish or orange hairs; and close to the margin, and parallel to it, is a row of close-set, short tubercles. The eyes are elongate, broadly rounded above, and faintly emarginate in front. The genæ are sparsely punctured, aciculate, with large punctures below. The club is large, short-oval, with the first two sutures distinctly bisinuate.

The pronotum is longer than wide, hardly wider than the elytra; the sides are nearly parallel forward for three-fourths the length, then rapidly narrowed; the caudal margin is obtusely angled at the middle, with the hind angles rounded. The anterior half is rather coarsely tuberculate, as usual; the posterior half is shining, coarsely and sparsely punctured with the punctures slightly tuberculate on the sides, and a wide, smooth, shining, median space.

The elytral striæ are but faintly impressed, except the sutural striæ which are wide and deep; the stria punctures are medium in size, not close, and not regularly spaced; those of the sutural striæ are larger and closer. The intervals are wide and flat, and uniseriately punctured throughout their length. The punctures of the first two interspaces are closer and strongly granulate; those of the remaining interspaces are sparse on the disc, closer and granulate near the margin of the declivity;

closer on the sides and granulate behind. The first declivital tooth, that of the second interspace, is distinct and acute; the second and third are closely united; the second acute, the third longer, blunt, and incurved; the fourth is smaller, acute, and midway between the third and the raised apical margin. This raised apical margin is less elongate than in *pini*. The tip of each elytron is raised into a minute recurved tubercle. The declivity is not deeply concave, coarsely, irregularly punctured, glabrous, with the sutures strongly raised. The body is clothed above and on the sides with long, coarse, erect, brownish hairs. The disc of the pronotum and the central region of each elytron are less hairy. The long hairs of the elytra arise, as usual, from the interstitial punctures.

The only sexual characters observed are those of the front. This species is closely allied to *pini*; but quite distinct in the frontal characters and the long hairs of the discal interspaces of the elytra.

Ten specimens from spruce at St. Anthony, Newfoundland; collected by Mr. C. M. Spencer of Macdonald College. Type specimen with the front smooth and very finely punctured.

Ips longidens, n. sp.—Length, $2\frac{3}{4}$ – $3\frac{1}{4}$ mm.; slender cylindrical, dark red to black, moderately clothed with long light hairs; allied to *latidens* but differs as below.

The head is coarsely, rugosely punctured; and has the front granulate, flattened, or faintly impressed transversely, with a narrow faint median carina extending to the vertex; the epistoma deeply emarginate on the middle line, with the epistomal fringe thicker and bright yellow from the emargination; the eyes broadly emarginate; the antennal club with the sutures bisinuate, nearly straight.

The pronotum is longer than wide, distinctly impressed on each side near the middle, broadly rounded behind, slightly rounded and gradually narrowed on the sides, more rapidly cephalad of the middle, and narrowly rounded in front. The asperations of the front half of the pronotum are of different sizes, the largest more or less concentrically arranged; the hinder half is shining, with a smooth median space and small, sparse punctures on the disc, becoming larger on the sides. The pronotum is sparsely hairy except the centre of the disc which is nearly glabrous.

The elytra have the sides parallel as far as the level of the upper margin of the declivity, then obliquely narrowed and squarely truncate, as viewed from above. The striæ are distinctly impressed on the disc, less deeply on the sides, with the stria punctures large, quadrate, and

closely placed. The sutural striæ are rather narrower than usual, but deeply impressed. The interspaces are narrow, on the disc narrower than the striæ; and uniseriately punctured. These interstitial punctures are small at the base but become distinctly larger behind and are at times slightly confused near the declivital margin, where they are nearly as large as those of the striæ. Near the lateral margin the interstitial punctures are also larger towards the base. Near the declivital margin the interspaces are strongly roughened by the large, close, stria and interstitial punctures. The punctures of the first two interspaces are granulate, more strongly near the declivity. The long hairs are, as usual, from the interstitial punctures. The declivity is nearly perpendicular; flattened; coarsely, not densely, punctured; faintly pubescent; with the sutural interspaces raised and very faintly convex in profile. The declivital armature is peculiar, and approaches that of *latidens*. The first tooth, that of the second interspace, is small, acute, and curved ventro-mesad. The second tooth is longer, sharp and nearly straight; it arises from the anterior or dorsal margin of an acute ridge which extends downward to end abruptly (usually) just before the third tooth. This ridge is sometimes nearly entire, or it may crenate, emarginate, or bimarginate. When emarginate there is the appearance of an additional, small, blunt tooth. The third tooth is like the second, long, slender, straight and acute, and is usually separated from the ridge mentioned above by a short interval; it is succeeded, after a short interval, by the raised, acute, usually crenate apical margin. In some specimens (δ ?) the second and third teeth are longer and blunt at the tip.

Twenty specimens from Hemlock, at Ithaca, N.Y.

This species differs from the *latidens* Lec., of California, its closest ally, in the longer pronotum, and distinct declivital armature. In *latidens* the second prominent tooth arises from the middle of the ridge. The published descriptions of *latidens* Lec. are given below. Original description by Dr. LeConte, Trans. Am. Ent. Soc., 1874, V 72: "*T. latidens*—Cylindrical, brown, shining, clothed with long erect yellow hairs, prothorax more parallel on the sides than usual; not much longer than wide; more broadly rounded in front; hind angles rounded; disc sculptured as in *T. pini*, more strongly impressed each side near the middle; elytral striæ deep, closely punctured interspaces each with a row of punctures; posterior declivity concave as usual; subsutural denticle small, acute, next tooth broad, composed of the confluence of three cusps, of which the

upper one is least developed and the middle one most prominent ; following this is a long acute tooth and then the usual apical acute margin. Length, .12 inch, 3 mm. California, Mr. Crotch. Smaller than *T. pini*, with a shorter prothorax and very different elytral sculpture and armature."

Description by LeCoate in Rhynchophora, page 367 : "This species is smaller (3 mm., .14 inch) than *T. pini*, and of more slender form. It is easily distinguished from all the other species by the much more deeply concave declivity of the elytra ; the cusp of the second interspace is acute ; the teeth of the fourth and fifth are united together, forming a ridge, which has three distinct cusps, of which the middle one is more prominent ; the tooth between this ridge and the terminal margin is unusually prominent. The striae are composed of deep close-set punctures, and the interspaces are marked with rows of small punctures. The sutures of the antennal club are nearly straight."

Trypodendron betulae, n. sp.—Length, 3-3½ mm.; closely allied to *lineatus* Oliv., with which it has commonly been confused in collections. Colour black, legs and antennae reddish, each elytron with a broad dusky-yellow vitta down the middle.

The head is subglobular in the female ; retracted ; front convex, punctured, coarsely granulate and hairy ; epistoma carinate on the middle line and raised along the front margin ; eyes divided, interocular space hairy ; antennae from a small fossa between the ventral portion of the eye and the base of the mandible.

♂ Pronotum wider than long, 6 : 5, faintly margined and truncate behind ; sides nearly parallel behind and evenly rounded to the middle line in front, which is very slightly produced ; strongly roughened in front with transverse rugosities, which become small behind the middle, but are continued on the dorsum nearly to the base ; the sides behind are nearly smooth, finely punctured, with a smooth unpunctured spot on each side ; sparsely clothed in front with slender backward-pointing hairs. Proster-num narrow ; intercoxal process short, broadly triangular ; fore coxae subglobose, sparsely hairy.

Elytra longer than the combined width at the base, 10 : 6, sides parallel as far as the level of the top of the declivity, then rapidly narrowed to the tip ; striae faint on the disc, impressed on the declivity and distinctly impressed near the lateral margins ; striae punctures very small and shallow ; interstriae punctures of the disc extremely minute, those of the sides larger and with longer hairs ; they are confused towards the declivity and at the base ; declivity oblique, not flattened, but with the

first and second striæ conjointly impressed, much as in *lineatus*; first and third interspaces of the declivity convex, forming the lateral margins of the impression; the striæ tend to be impressed on the declivity and the interspaces to be convex, as in *lineatus*; interspaces of the declivity with distinct, confused, setigerous punctures, making the declivity distinctly though sparsely hairy; the interstitial punctures often minutely granulate.

Femora stout, distal lobes well developed; fore tibia gradually widened; regularly curved on the hind margin from near the base to the tip, and marked with a submarginal row of teeth distally, with small tubercles towards the base, and with sparse long hairs; front margin nearly straight, mucronate at the tip, with stout distal-pointing hairs apically; outer face hairy, and with many sparse conical tubercles shorter than the submarginal teeth. Inner face concave towards the tip and sparsely hairy; front margin bent inwards and tuberculate near the tip (this shows only from the inner side). First three segments of the tarsus stout, with few long hairs above, and pilose below; the fourth segment minute.

The hind tibia is more slender, hind margin slightly curved until near the tip which is broadly rounded at the outer angle, with submarginal teeth as in fore-tibia; front margin nearly straight; apical mucro more slender; without tubercles on the outer face; inner face with a row of spine-like hairs extending from the mucro diagonally to near the hind margin. This row of stout hairs, with the distal part of the hind margin forms a groove for the reception of the tarsus. First three segments of the tarsus stouter.

The antenna is reddish-yellow; scape slender and strongly curved at the base, swollen at the apex, with the dorsal margin rather distinctly bent at the distal fourth, but not strongly angulate as in *lineatus*; sparsely hairy, with longer hairs from the dorsal surface. The funicle four, segmented, first segment large, swollen distally; second segment pedunculate, widened distally, third and fourth segments wider and shorter, saucer-shaped; club longer than the funicle, oval, a little more strongly narrowed proximad, densely pubescent on both sides, with an acutely triangular, raised, more strongly chitinized portion at the base which is sparsely pubescent. The antenna of *lineatus* (from pine) differs in that the dorsal margin of the scape is sharply angled at the distal fourth; the second segment of the funicle is longer than in *betula*, with the sides nearly straight, except at the extreme base, and gradually widened; the club is more elongate than in *betula*, with the sides slightly rounded and

gradually widened from the nearly truncate, narrow base to near the apex, which is broadly rounded.

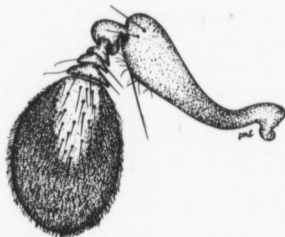


FIG. 12.—*Trypofendron betulae*, n. sp., antenna.



FIG. 13.—*T. lineatus* Oliv., antenna.

The male.—In the male the front is deeply and broadly concave, as in *lineatus*, with a median carina and the side margin of the depression fringed with long, erect, yellow hairs. The depression is very sparsely and minutely granulate-punctate, with inconspicuous setae. The pronotum, from above, is wider than long, truncate before and behind, with the sides and angles slightly rounded. The asperations are but feebly developed. The hairs of the anterior half are long and curved backwards, and become shorter on the sides towards the base.

The sculpture of the elytra is often coarser in the males, with the striae more distinct, and the declivital granules larger.

The tibia of the fore leg differs from that of the female in being more slender until near the tip, where it is suddenly widened. The fringe of the front margin is longer and very thick distally, without the distal tubercles. The hind tibiae are rather more slender; hind margin toothed as before; outer face with very long stout hairs, longer and tuberculate at the base on the hind margin; front margin nearly straight, fringed with very long, slender, erect, wavy hairs; a row of spine-like hairs across the inner face as in the female, but more strongly developed. The first three segments of the tarsi are much stouter, flattened, and with the hairs from the under side longer than in the female.

This species differs from *lineatus* in the colour markings to be described below, and as follows: The declivity of *betulae* is distinctly hairy and the declivital interspaces are confusedly punctured; the declivital

interspaces of *lineatus* are uniseriately granulate-punctate, and the declivity indistinctly pilose. The lateral striæ of the elytra are impressed in *betulæ*; in *lineatus* only the last is distinctly impressed. The male of *betulæ* has a distinct carina in the depth of the frontal impression, and the hairs of the margin of the frontal impression and also of the anterior part of the pronotum are much longer than in *lineatus*. The male of *lineatus* has the carina usually faintly developed, and often represented by an anterior and posterior tubercle. The hind tibia of *betulæ* has a fringe of very long slender erect and wavy hairs on the front margin; this fringe is represented in *lineatus* by two or three of the long hairs.



FIG. 14.—*T. betulæ*, n. sp., hind leg.

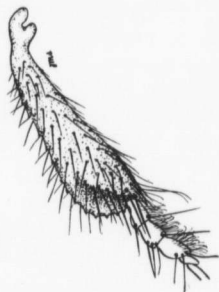


FIG. 15.—*T. lineatus* Oliv., hind leg.

The colour markings of *betulæ* seem to be quite distinct from those of *lineatus*. In *betulæ* the pronotum is dense black, and each elytron has the side and suture black, with a broad, dusky yellow band down the middle; usually the two black borders meet at the tip. There is considerable variation in the width of these black and yellow bands, but never a bright coloration nor an approach to the typical markings of *lineatus*. In *lineatus* the pronotum has the hind margin yellow or reddish. Each elytron has a black band along the side, the suture, and down the middle, with two yellow bands intervening, one between the lateral black border and the median black band, the other between the median black band and the black sutural border. The coloration is much brighter in *lineatus*.

In specimens from the Western Coast, which I have not separated from *lineatus*, the yellow caudal border of the pronotum extends forward to cover almost the entire disc, leaving the front angles black.

When specimens of either species are killed before completion of pigmentation, the bands are fainter, and the whole body may be yellowish.

With a large number of specimens before me, I find no difficulty in separating the two species from colour markings alone, and they are quite distinct in the other characters described.

I have taken the form which I consider *lineatus* or *bivittata* from conifers only, and *betule* only from deciduous trees.

Type specimens, ♂ and ♀, taken from *Betula lutea* at Ste. Anne de Bellevue, Quebec Province.

Phléotribus picea, n. sp.—Length, $2-2\frac{1}{4}$ mm.; width, .8 mm. Colour brown to black; sparsely hairy; form more slender than *liminaris* or *frontalis*.

Head subglobose; front roughened by large, rather closely-placed punctures bearing slender yellowish hairs; above and on the sides minutely acupunctate; epistomal region concave, bounded above by a crescentic ridge; hairs from the concave area longer; antennæ arising from above the outer angle of the mandibles, as in *liminaris* and *frontalis*; antennal grooves short and deep; eyes entire and elongate.

Pronotum with lateral margins slightly rounded, distinctly narrowed cephalad; cephalic margin broadly rounded; caudal margin nearly straight, margined and deflexed; sparsely clothed with rather stout yellowish hairs arising from the sparsely placed, slightly tuberculate, very coarse punctures; scutellum minute.

Elytra rather elongate, sides subparallel, strongly narrowed behind; ventral margin of the declivity strongly serrate; base of elytra raised and margined with stout, recurved, crescentic tubercles; deeply punctate-striate; striæ with large, deep, closely placed punctures which bear very short inconspicuous hairs; interspaces strongly raised, carinate, with a row of setose tubercles which are larger behind, forming the serrations of the declivital interspaces, and become reduced to granulate punctures at the base; interspaces of the declivity strongly serrate. The ventral margin of the declivity is a serrate ridge formed by the union of the 9th and 10th interspaces, which fuse on the anterior third of the elytra. The serrations of this ridge are triangular and prominent. The ridge extends across the caudal face of the declivity below to fuse with the third interspace.

The antennal scape is slightly widened distally, and narrowed at the tip; the first segment of the funicle is very large, wider than long; the remaining four segments of the funicle are very short, the 4th and 5th wider; club 3-segmented, much longer than the funicle, long, suboval, distally pointed, narrower than in *frontalis*, with the lateral dilations of the segments less elongate.

Hind tibiæ stout, much widened distally; outer margin slightly curved, broadly rounded distally; inner margin also distinctly curved, with a slender mucro at the tip; outer margin with one submarginal spine, and the distal margin with six submarginal spines and marginal tubercles, clothed with long, slender, plumose hairs. The outer margin is not so strongly curved as in *Phlæotribus*, and not straight with a truncate distal margin as in *Phlæophthorus* (see Eichnoff).

Ste. Anne de Bellevue, P. Q., Canada. In dead but green branches of *Picea canadensis*. Two broods annually.

This species differs from *liminaris* and *frontalis* in its smaller size, more elongate form, elytral sculpture as given above, and characters of antennæ and tibiæ. I have not seen *P. puberulus* Lec., but judging from his description, which is quoted below, this species is smaller and differs in its more strongly elevated and very strongly serrated elytral interspaces.

"*Phlæotribus puberulus* Lec.—(Bul. U. S. Geol. and Geog. Survey of Territories, Vol. V., 1880.) Cylindrical, black, nearly opaque, clothed with fine, erect, yellowish pubescence; base of antennæ and tarsi piceous. Head sparsely, finely punctured; front nearly smooth, shining, broadly concave, with two small acute cusps on the epistoma. Prothorax wider than long, sides oblique, slightly rounded, coarsely punctured, dorsal line obsolete, visible only near the middle. Elytra with shallow striæ formed of quadrate punctures; interspaces somewhat elevated, not wider than the striæ, with the hair arranged in rows. Length, 2.5 mm.

"Veta Pass, one specimen. This species resembles in appearance *Hylesinus opaculus*, but is quite different in characters. The joints of antennæ are less prolonged than in the other species, so that the club becomes elongate oval, and as long as the remaining joints united"

I have described this species as belonging to *Phlæotribus*, but it might quite as well go in *Phlæophthorus*. Mr. Eichnoff characterized *Phlæophthorus* Woll. and *Phlæotribus* Lat. as follows:

"*Phlæophthorus* Woll.—Antenna with a 5-segmented funicle and a 3-segmented long, pointed club, with the segments feebly widened on the

inward side. Venter not turned upwards behind, horizontal. Middle and hind tibiæ straight on the outer side, and the tip truncate.

"*Phlæotribus* Lat.—Antenna with a 5-segmented funicle and a much longer fan-shaped club divided into three long leaf-shaped segments. Venter arched, notably upturned behind. Middle and hind tibiæ rounded on the outer margin and toothed."

In *Phlæotribus caucasicus* and in *Ph. scarabæoides* the hind tibiæ are distinctly rounded and toothed on the outer margin. In *Phlæophthorus rhododactylus* the tibiæ are straight on the outer margin and abruptly truncate distally, with one tooth on the outer margin and a series of teeth distally. In *Phlæotribus frontalis* and *Phlæotribus liminaris* the outer margin of the hind tibiæ is strongly rounded and toothed, somewhat as in *caucasicus* and *scarabæoides*. In *P. piceæ*, n. sp., the hind tibiæ are slightly rounded on the outer margin, and broadly rounded on the distal margin, with one tooth on the former and a series of six on the latter. In *P. scarabæoides* the lateral extension of the segments of the club are very elongate; in *caucasicus* distinctly shorter; in *liminaris* still shorter; in *frontalis* shorter than in *liminaris*, and in *piceæ* and *puberulus* shorter than in *frontalis*. In *P. rhododactylus* these lateral extensions are barely noticeable. In these forms there is a distinct gradation in this character, and the difference between the conditions in the clubs of *scarabæoides* and *piceæ* is quite as decided as that between the latter and *rhododactylus*. In *caucasicus* and *scarabæoides* the antennæ are close together on the front above the inner angles of the mandibles. In *rhododactylus*, *liminaris*, *frontalis* and *piceæ* the antennæ are further apart, arising above the outer angles of the mandibles. In my specimens of *caucasicus* and *scarabæoides* the venter is distinctly bisinuate in profile, with the thorax convex, bending upward to the abdomen. In *rhododactylus* the venter sometimes exhibits this curve in lesser degree, but is usually nearly horizontal. In *liminaris* and *frontalis* the ventral curve is very feeble but variable, and in *piceæ* is scarcely to be detected.

This intergradation of character leads me to believe that *Phlæophthorus* Woll. is hardly more than a subgenus of *Phlæotribus* Lat.

The relations of *piceæ* to *liminaris*, *frontalis* and *puberulus* are indicated in the following key:

- A. Club with the lateral extensions of the segments more than twice as long as their width at the base.

- Hind tibiae rounded and toothed on the outer side; pronotum not coarsely punctured and not tuberculate; elytral interspaces nearly flat and roughly punctured *liminaris* Harris.
- AA. Club with the lateral extensions of the segments not more than twice as long as wide.
- B. Club with the lateral extensions of the segments about twice as long as wide.
- Prothorax granulate-punctate, elytral interspaces elevated and serrate, more strongly behind *frontalis* Zimm.
- BB. Club with the lateral extensions of the segments about as long as wide.
- C. Elytral interspaces somewhat elevated (see description) *puberulus* Lec.
- CC. Elytral interspaces strongly elevated and serrate with granules, which become large and prominent on the declivity. . . *piceæ*, n. sp.
- Type and paratypes of new species described above are in the collection of Macdonald College.

EXPLANATION OF PLATE II.:

(All are much enlarged, and drawn with a camera lucida.)

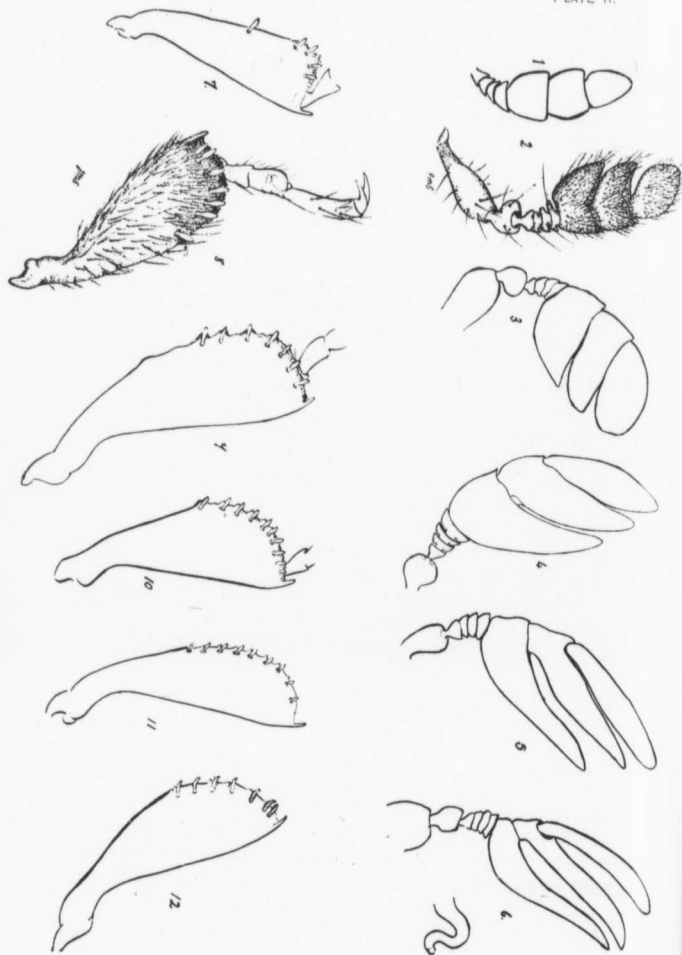
- FIGS. 1. *Phlæophthorus rhododactylus* Marsh, antennal club and outer part of funicle.
- " 2. *Phlæotribus piceæ*, n. sp., antenna.
- " 3. *Phlæotribus frontalis*, Oliv., antenna.
- " 4. *Phlæotribus liminaris* Harris, antennal club and funicle.
- " 5. *Phlæotribus caucasicus* Reitt., antennal club and funicle.
- " 6. *Phlæotribus scarabæoides* Bernard, antenna.
- " 7. *Phlæophthorus rhododactylus* Marsh, hind tibia.
- " 8. *P. piceæ*, n. sp., hind leg.
- " 9. *P. frontalis* Oliv., hind tibia.
- " 10. *P. liminaris* Harris, hind tibia.
- " 11. *P. caucasicus* Reitt., hind tibia.
- " 12. *P. scarabæoides* Bernard, hind leg.

A CORRECTION.—In "Notes on a Few Scolytidæ," in the May, 1910, number of the CANADIAN ENTOMOLOGIST, page 165, under "DD," the following error occurs: "Punctures of the elytral striæ more closely placed," should read, "punctures of the elytral striæ more *widely* placed."

J. M. S.

CAN. ENT., VOL. XLIII.

PLATE H.



A NEW CANADIAN GEOMETRID.

BY JOHN A. GROSSEBECK, AM. MUS. NAT. HISTORY, NEW YORK.

The Geometrid here described was originally sent me among other species for determination by Dr. C. Gordon Hewitt, entomologist to the Dominion Experimental Farms, Ottawa. It was determined as probably new, and was later returned to me by Mr. Arthur Gibson in a good series, with the request that I describe it. I am unable to find any description that will cover the species, so I am calling it :

Selidosema Manitoba, new species.

Expanse, 27-34 mm. Head, thorax and abdomen with mixed grayish-brown and white scales, the latter sometimes almost absent, and sometimes, on the abdomen, predominating. A blackish spot at the base of each antenna, a bar of the same colour across the middle of the frons, and the posterior edge of the patagia and first three abdominal segments black. Ground colour of wings slaty-brown, verging toward paler gray, and occasionally in the median area of the primaries becoming wholly white. Basal line of primaries absent. Intradiscal line geminate, black, rather evenly curved outwardly, but slightly drawn in on the veins; extends from one-fourth out on costa to one-fifth or less on inner margin. A median line, rather narrow and diffuse and usually incomplete, passes across the centre of the wing. In the specimens with white median areas this line is absent, or shows merely as a point in several places. Extradiscal line black, moderate in width, evenly scalloped between the veins, and in general curving outward from the costa to vein Cu_2 , then inward to inner margin. A broken denticulate white line is sometimes present in the outer area. A whitish, subapical patch (intensified in the specimens with white centres) is also usually present in the outer area, the inner border of which touches the extradiscal line. Terminal line represented by a series of black triangular marks between the veins pointed inwardly. Discal spot, when present, a moderate sized ring pupilled with white. Fringe concolorous with the ground, tending to become checkered in some specimens. Secondaries with intradiscal line straight, broad and diffuse, occasionally showing on inner half of wing. Extradiscal line more defined, roundly denticulate, and in its course resembling that of the fore wing. Fringe and discal spot as in fore wing, but the latter never distinctly pupilled. Beneath, whitish or grayish, heavily but finely speckled with brown. The extradiscal line is sometimes strongly

indicated on both wings, but is usually absent. Discal spots showing more or less on all wings as rather large spots, rarely as rings.

Described from twelve male specimens collected by Mr. J. B. Wallis, at Winnipeg, Manitoba, May 25 to June 2, 1909.

The species is quite different from any other North American *Selidosema*, but closely resembles in general appearances *Alcis atrolinearia* Hulst and *Cleora areataria* Bwl. It is, however, different from both in the absence of any indication of a hair pencil on the posterior tibia.

The type is deposited in the Division of Entomology at the Central Experimental Farm, Ottawa. Co-types are in the collections of Mr. J. B. Wallis and the author.

ON *HALOBATOPSIS BEGINII* ASHM.

BY J. R. DE LA TORRE BUENO, WHITE PLAINS, N. Y.

In the course of preparing a synopsis of the *Gerridae* of the Atlantic United States (and consequently of the Eastern part of Canada), it has been my endeavour to know at first hand, when possible, the forms to be included therein, and among them, naturally, the one herein treated:

Halobatopsis Beginii Ashmead, 1897, CAN. ENT., XXIX:56; Banks, 1910, Cat. Nearc. Hem. Het., 26; *H. Beginii* Bergr., 1908, Ohio Nat., VIII:373-4.

This species was overlooked by Kirkaldy and myself in our "Catalogue of American Aquatic and Semiaquatic Hemiptera,"* very fortunately, as it turns out, since thereby we were prevented from assisting in the perpetuation of an error; an error which, in the absence of the types, could not have been recognized from the description alone. In looking up descriptions, types, etc., for my studies in *Gerridae* referred to, the U. S. National Museum authorities have been most good in allowing me the privilege of examination of their invaluable types and specimens named by the authors of species themselves. Among this material figure Ashmead's types (or what may pass as types, since they are from the type locality) of the species under discussion, labelled by himself. They are four specimens, in a more or less mutilated condition, three being *pinned*, but nevertheless clearly recognizable is the *immature stages or nymphs* of two unrelated GENERA! This fact has been established by careful comparison with long series of nymphs of the two species in question which have been taken abundantly in company with the adults, viz.: *Metrobates*

*Proc. Ent. Soc., Wash., X, pp. 173-215. 1908 (actual appearance in June or July, 1909).

July, 1911

hesperius Uhler, on Lake Mahopac, Putnam Co., N.Y., and *Rheumatobates Rileyi* Bergr., on various bodies of water in several localities in this near vicinity. Passing now to a specific consideration of each specimen, the following notes have been made. Three specimens bear handwritten locality labels. These are not very plain to me, but look (*very* roughly imitated) like "M. 27, 7, 96." I cannot venture to guess what this may mean, but it should appear from the original description, which I have not seen. Two specimens are *pinned* on one pin, one above the other as is usual in indicating the sexes, and the other is mounted on a point. The two on the pin bear a name-label:

"Halobatopsis

Béginii

Ashm."

in Ashmead's own handwriting. Both are dilapidated, but not to the same extent as the fourth one mentioned further on, and both have still the characters which enable one to recognize the genus and species. The upper specimen (therefore, presumably, the male) possesses unmutulated both antennæ, the front legs, the right middle leg, and the left hind leg. The left middle leg is lacking the tibia and tarsus and the right hind leg the tarsus. The lower specimen (therefore, presumably, the female) has lost the last three (?) joints of the left antenna, being otherwise in quite good condition. In "Ohio Naturalist" (l.c.), Bergroth remarks in referring to the species under consideration: "I am at a loss to make out why he (Ashmead) has placed it in the genus *Halobatopsis*, as the first antennal joint . . . is described as 'distinctly longer than joints 2 and 3 combined.' The 2nd joint, too, is said to be 'longer than the third, the latter being about three-fourths as long as the second.' Judging from the description *Halobatopsis Béginii* Ashm., belongs to a new genus." It is, therefore, fortunate that these two specimens should possess antennæ in good condition, as the preceding makes evident. I deem it neither necessary nor desirable to revert at length to these organs, for reasons readily deducible from what follows, because these structures at once determine the proper category of the two specimens. The upper one is smaller than the fourth specimen referred to and clearly belongs on antennal characters, even though we were to omit consideration of all others, to *Metrobates hesperius* Uhler, and is a nymph in the 3rd (?) instar. The lower one is an immature male of *Rheumatobates Rileyi* Bergroth, in about the 4th, or 5th and last, nymphal instar. Here again the antennæ, although not quite formed, begin to reveal the bizarre structure so characteristic of the males of this genus and the hind femora

already have indications of the curious distortion peculiar to certain of its species. The single specimen on a point, already referred to, is another nymph, somewhat smaller than the fourth, of *Metrobates hesperius* Uhler, very much shrunken and mutilated, having left only portions of three legs, the left anterior and right middle and posterior. The fourth specimen, on a very rusty and verdigrised pin, bears a printed locality label "Sherbrooke, Can.," and on another small label "418," in pen and ink. This is a male, more or less greasy and shrunken (the latter, by-the-by, an evidence of immaturity), and has left to it only one whole and three half legs, the former being the right anterior, and the latter the femora of the left anterior and both posterior legs. The antennæ also are absent. The structure of the head, however, shows its affinities, and it agrees with nymphs in the 3rd or 4th instar of *Metrobates hesperius* Uhler.

It naturally follows from the preceding that *Halobatopsis Béginii* Ashm., has no real existence as a biological unit, in that it is a composite of two known species in as many different and unrelated genera, its only claim to attention being that it is an addition to our synonymies.

My valued friend, Mr. Otto Heidemann, of Washington, D.C., at the time these specimens were sent to me for study, called my attention to their being nymphs of *Metrobates* and *Rheumatobates*, and it is with peculiar pleasure that I make known here his independent arrival at this conclusion, the correctness of which a glance at the specimens made evident, and which careful study subsequently amply confirmed.

The synonymy of the two genera and species involved may now be corrected to read as follows :

Metrobates Uhler, 1871.

Proc. Bost. Soc. Nat. Hist., XIV, 108.

= *Halobatopsis* Ashmead, 1897, CAN. ENT., XXIX, 56 (not Bianchi), [in part, for nymphs].

Hesperius Uhler, 1871, l.c.

= *Béginii* Ashm. (*Halobatopsis*), 1897, l.c. [in part, nymphs of this species described as adults].

Rheumatobates Bergr., 1892.

Ins. Life, IV, 321.

= *Halobatopsis* Ashmead, 1897, l.c. (not Bianchi), [in part, for ♂ nymph].

Rileyi Bergr., 1892, l.c.

= *Béginii* Ashm. (*Halobatopsis*), 1897, l.c. [in part, for ♂ nymph described as adult].

FURTHER NOTES ON ALBERTA LEPIDOPTERA.

BY F. H. WOLLEY DOD, MILLARVILLE, ALTA.

(Continued from p. 156.)

150. *Hadena indocilis* Walker.—The type is a female in the British Museum, and, according to the Catalogue, comes from Trenton Falls, N. Y. I have a New York female in my own collection, and Calgary specimens scarcely differ. It is the species standing in North American lists as *remissa* Hubn., which name refers to a variety, rather common in Europe, of a European species, well known as *gemina* Hbn., to which, however, Sir George Hampson, makes *obscura* Haw. a prior name, making *remissa* "ab. 2" and *submissa* "ab. 1," and apparently about intermediate. For further notes on these forms, vide under *ferens* and *enigra* (infra).

151. *H. alia* Guen. has priority over *suffusca* Morr., as pointed out by me in CAN. ENT., XLII, 190, June, 1910. Sir George Hampson makes the change in his Catalogue, Vol. IX, p. 500, antedating my remarks by about two months, though the volume had not appeared when I wrote them.

152. *H. rorulenta* Smith.—Sir George Hampson, after his description of this form, adds, "This is probably an aberration of *suffusca*." The type of *suffusca* I have not yet seen, and do not know to just what form it refers, but *alia* type is a somewhat reddish specimen of the even, non-contrasting form I had listed as *suffusca*. *Rorulenta* is very likely the same species. At any rate, I know nothing to make me wish to disagree with the suggestion, though I happen to possess no exact intergrades.

154. *H. contradicta* Smith.—Sir George Hampson creates a new genus, *Trichoplexia*, to receive this species and *exornata* Möschler. Of *contradicta* he gives a very good woodcut, showing the tuftings, and of a Labrador specimen under *exornata* he gives a coloured figure. I have no note that I compared the figure with the specimen, but should judge it to be misleading, as my note on the species says, "Suffused, and without black lines, but probably the same as *contradicta*," of which there were two Calgary males in the collection. I certainly should not have made the suggestion from the figure alone. Prof. Smith has five males in his collection from Newfoundland, one of them labelled Grand Lake, under *exornata*, which seemed to me probably a rather suffused form of *contradicta*. The "*exornata*" of the Washington collection is a female from Colorado, and is certainly not *contradicta* or closely allied thereto.

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Neither is a Nova Scotia female under the same name in the American Museum of Natural History at New York. The type of *exornata* is presumably in the Möschler collection, wherever that may be. Labrador is given as the first locality in all the catalogues except Staudinger's, who gives "Mong. Labr." I have not taken *contradicta* here for some years.

155. Under this heading, in the second line, for "the species" read "the specimen," and I still hold to my suggestion that it is probably a variety of *passer*, under which I have now referred to it. I have not taken another like it. It is probably quite distinct from *morna*, of which *hulstii* Grt. appears to be a synonym. The types of both these names come from Colorado. That of *morna*, from Rio Blanco, is a male, in the Strecker collection, unset when I saw it, though described in 1878 or 9. It is a pinkish red species, and I referred it to *Luperina* in my notes, which add, "abdominal tuft extremely slight." Prof. Smith has the species correctly named in his collection I think, and in Jour. N. Y. E. S., XVIII, p. 138, Sept., 1910. refers it to *Sidemia* Staud., as used by Hampson, and likens it to *subornata* Staud., from Mongolia, as figured on pl. CXVIII, f. 31., of Hampson's work. From memory, he is about right, and as almost the sole differences between *Luperina* and *Sidemia* as characterized by Hampson are that the latter has more rounded apices and an abdominal crest at base, which the other lacks, I am not ashamed of my Mss. generic reference. But *passer*, which Sir George Hampson places under *Luperina*, has an abdominal crest at base. The only two North American species which he treats under *Sidemia* are *longula* Grote and *devastatrix* Brace. *Longula* I have not examined structurally, but *morna* is certainly more closely allied to *passer* than to *devastatrix*. I have seen the type of *hulstii*, a female, in the Græf collection at Brooklyn. In the Strecker collection, beside the type of *morna*, is a Colorado male marked "*hulstii* Grote," a little paler and more even only than *morna*. Strecker makes the reference in Suppl. 3, p. 32. The "*morna*" of Hampson's Catalogue is an ally, possibly a race of *conradi* Grote, as already pointed out by Prof. Smith. That of the Washington collection is the same species, in one drawer at least. But by some oversight, several drawers further on is another very distinct species also standing as *morna*, and certainly nearer to it than the other. It is the species I have already referred to under *passer* as probably undescribed.

156. *H. cerivana* Smith.—This differs from eastern *finitima*, of which it is probably only a racial form, chiefly in being paler and grayer. I

have no exact intergrades, but I am poorly off for outside material. Kaslo specimens are like my local series. Those from Vancouver Island (I have two specimens only) are much browner and more highly coloured, and much like some I have from New York. Whether European *basilinea* is distinct from *finitima* or not is perhaps unimportant. Sir George Hampson keeps them distinct, seeming to find, as my own series shows, that they differ slightly, though constantly, in intensity of colour and markings, *finitima* being the lighter and better marked. I wish to differ with no one who calls them the same species, though as they do not get a chance to habitually interbreed, how is the point to be decided? Prof. Smith's figures of the genitalia of all these in CAN. ENT., XXXV, plate 4, figs. 5, 6, 7, May, 1903, are not convincing.

157. *H. lateritia* Hufn.—The type of *obliviosa* Walker, is a female in the British Museum, and comes from "Rocky Mountains" from Lord Derby. It may have been taken in Alberta territory. It was referred to *lateritia* by Prof. Smith in his catalogue, and Sir George Hampson follows him. I looked at the specimen for a long time, and had my doubts. It looks alpine, has a rough fluffy appearance, is very evenly gray powdered, seems narrower winged, and has better defined though very indistinct claviform than *lateritia* usually has. A Vancouver Island specimen was placed next it in the series to show the connection, but is rubbed, and does not to my mind prove its identity. However, I did not recognize it as any other species, and it may prove to be rightly placed.

Sir George Hampson makes *satina* Strecker a synonym of *lateritia*, and Prof. Smith upholds him in Journ. N. Y. Ent. Soc., XVIII, 139, Sept., 1910, mentioning that he has two examples like *satina* from Grand Lake, Nfld. I saw the type of *satina* in March, 1910. It is a worn male from Anticosti, taken, the description (1893) says, by W. Couper in 1873. I referred it at once and without hesitation to *commoda* Walker (= *alberta* Smith). I referred on the spot to Hampson's Catalogue, and was greatly surprised to find his reference to *lateritia*, an idea I refuse to entertain for one moment. My notes say: "Even leather brown, t. a. and t. p. line distinct, blackish. Eyes not lashed. Part of right antenna only, ciliate." I admit that I could not match it exactly in my series of *alberta*, all being darker, but feel confident that it will ultimately prove to be this species, or, just possibly, a very close ally. I would suggest that the Newfoundland specimens mentioned by Prof. Smith are not *satina*. Had that species been in his collection associated with *lateritia*, I must have noticed it. I have only within the last few weeks received Strecker's Supplement

No. 1, containing the description, and find that he led off on a wrong track himself by likening the species to *lateritia* and *dubitans*, adding: "But it is a smaller species, and otherwise quite different." It certainly is!

158. *H. cogitata* Smith.—Though its distinctness from *dubitans* Walk. is very doubtful, *cogitata* is the name I have decided to use for this form for the present. There is a male type, red, and a trifle variegated with paler shades, at Washington, from the Sierra Nevada, California, whence the form was described, Colorado being also mentioned under the description. By Smith's Catalogue there should also be types in his own collection and in the Neumœgen collection at Brooklyn. I seem to have overlooked these.

This and *dubitans* are kept distinct on our lists, and Sir George Hampson treats them as two species, ascribing to *dubitans* in the table a black-brown suffusion, mentioned as lacking in *cogitata*. He has types *dubitans* Walk., *insignata* Walk. (*Apamea*, 1857), and *sputator* Grote, the latter, from Evans' Centre, N. Y., being the *sputatrix* of Grote's and subsequent lists. The two former are marked merely "U. S. A.," but are probably not western. The series under the name contains no western specimens. Type *dubitans* is a small red-brown specimen, with scarcely any trace of black-brown suffusion. Types *insignata* and *sputator* are darker and alike. His series under *cogitata*, with the exception of one, "Hudson's Bay (Barnston)," are all western, and include Calgary specimens. This is claimed by Prof. Smith to be the *Apamea insignata* of Walker, described in 1860, of which the type is probably with the Entomological Society of Ontario, though, judging from Smith's Catalogue, it may be at Rutgers' College. Walker, as above shown, had used the name, also under *Apamea*, in 1857, thus duplicating the name in the genus, even if not in the species. The two series in the British Museum seemed to me very doubtfully separable. Prof. Smith had Calgary specimens in his collection under *dubitans*. An occasional Calgary specimen has slight blackish suffusion, and matches my palest eastern specimens very well. But my blackest specimens come from Miniota, Man., and some of these have the pale part of the reniform distinctly yellowish, sometimes noticeable in paler eastern specimens. I know of nothing tangible by which *cogitata* and *dubitans* can be separated as species, though, as Dr. Barnes has pointed out to me, the Calgary form is not quite typical *cogitata*, which is really slightly variegated. I have a long series from Kaslo and Vancouver Island, but of all my specimens, the least

evenly coloured comes from Trenton, Ont. Whilst at the Brooklyn Museum I saw a series from Big Indian Valley, Catskill Mountains, from Mr. Pearsall, which were of the light red form, prevalent in Western Canada, and a series of larger and blackish specimens from the same locality, strongly suggesting two species, but whether *cogitata* and *dubitans* I cannot say.

160. *H. devastatrix* Brace.—I believe it has not been recorded before, that this species sometimes has spines on hind tibiæ. I made the discovery accidentally about a year ago, finding that about fifteen per cent. of a number of my specimens which I examined had spines, varying from one to three, between and slightly exterior to the two pairs of hind tibial spurs. I wrote and asked Dr. Barnes to examine his specimens, and Dr. McDunnough replied that out of fifty or sixty examined, ten had from one to three spines. Prof. Smith reported that he found a single spine in the majority of his, but suggested that the character was probably really constant, and that the spine had been broken off from the rest. I doubt that explanation. Incidentally I have discovered the same variable character in several species allied to *Plusia*, concerning which I shall write later.

163. *H. versuta* Smith.—This species is one of the most regularly occurring Noctuids here. *Ducta* Grote, of which the type is in the British Museum, from Orono, Maine, seems to be very rare in the east, but will probably prove to be the same species, I certainly have seen *versuta* from Hymers, Ontario, and compared it with my Calgary series. Sir George Hampson's figure of *ducta* is of the type, and is pretty good, though there should really be a W in the subterminal line, a characteristic feature of *versuta*. *Miniota* Smith (An. N. Y. Acad. Sci. XVIII, 114, Jan., 1908), is certainly *versuta*. The description is made from three males and six females from Miniota and Cartwright, Man. My notes taken whilst at Rutgers College state that a female co-type of *miniota* is from Calgary. As the locality is not mentioned under the description it may be my mistake, and really be a co-type of *versuta*, which was described from two Calgary females. The male and female types of *miniota* are from the place of that name, and are the bronze-tinted form of *versuta*, referred to in my original notes. *Moilena* Strecker, described in 1898, I also refer to *versuta*. The type is a worn female from Loveland, Colorado. I have specimens from Yellowstone Park, Wyoming, and from Provo, Utah, and there are specimens, or a specimen, in Prof. Smith's collection from Glenwood Springs, Colo. In the Washington

Museum I compared specimens from New York, Orono, Mainé, and Cartwright, Man., which seemed to me all the same species. I have a specimen from Field, B. C., and Dr. Dyar records *versuta* from Kaslo, suggesting that it may merely be the western form of *ducta*. I have a pair from Duncans, V. I., which are browner and rather more heavily marked only than some of my local series.

164. *H. ferens* Smith.—I make this a synonym of *runata* Smith, described from Winnipeg. I have examined a female type and a co-type of the latter in the Washington collection, two female co-types in Prof. Smith's collection, and a male co-type in the Strecker collection. Calgary specimens of *ferens* in the Washington collection are like the type of *runata*. The latter name stands in both Dyar's and Smith's lists as a synonym of *lona* Strecker, and Sir George Hampson makes the same reference, figuring as *lona* a female from Pullman, Washington. The figure is faulty, and the orbicular is not gray in the specimen, though that on the left side happens to be rubbed. I question whether the species figured is *lona*, of which I have seen Strecker's type, a female from Clyde, N. Y. This my notes say is "larger than *runata*, but doubtfully distinct." Pullman, Washington, is mentioned as a locality under the description of *runata*. It probably occurs there, as I have it from both Windermere, B. C., and Vancouver Island, but a male from Pullman, labelled "*runata*" in Prof. Smith's collection has lashed eyes, and seemed to me a *Eumichtis* near, and possibly not distinct from *versuta*.

Separans Grote, of which the male and female type from Evans' Centre, N. Y., are in the British Museum, Hampson treats as distinct. He figures the male type, but the dark markings of the figure are nearly all too pale. Its distinctness from *runata* is by no means certain. In the Washington collection is a male from Racine, Wis., labelled "*separans*, like type," which is slightly paler and more ochreous only than a male *ferens* from Calgary in the same collection.

I do not appear to have met with either *ferens* or *indocilis* here since publishing my original notes, in which I referred (under "*remissa*") to a close resemblance between them. I certainly have nowhere seen any intergrades, but the two are very close allies at best.

165. *H. nigra* Smith.—No more specimens have been taken here since my notes were published, and the material in my collection has dwindled to a single male co-type. In the Washington collection are a male from Calgary, and a specimen on a short pin, lacking abdomen and head,

labelled "*Mamestra insulsa*, named by Francis Walker." The two specimens are alike, but the species is, of course, not *insulsa*.

I am indebted to Mr. Prout for a good series of *gemina* Hbn. and its var. *remissa* Treit., from the British Isles. All these are of stouter build and more reddish brown than any of my Calgary specimens, but my co-type of *enigra* bears a closer resemblance to some of the typical *gemina* of this series than any *indocilis* do to *remissa*. They all seem to agree in antennal structure and tuftings, as they do with *runata*.

166. *H. cinefacta* Grt.—There is a female type from Wash. Terr. in the British Museum, which is figured by Hampson. Calgary specimens are, however, duller, and have maculation less clearly written than some of my specimens from California and Vancouver Is., but others from California are like my local series. A female type from "So. Calif." is in the Henry Edwards collection. This bears a closer resemblance to *Spaldingi* Smith (= *umbripecta* Hamps.) than the British Museum type, as to its identity with which I am not satisfied.

I believe Hampson's figure under "*centralis*" to represent the same species as his *cinefacta*. It is certainly not *centralis*, of which I have a female from the type locality, the Sierra Nevada, which I have compared with the type and a series from the same locality in the Henry Edwards collection. This species has long, narrow, acute primaries, resembling *Parastichtis*, as used by Hampson in this respect, though the thoracic tufting of my specimen is rather that of *Trachea*.

167. *H. unita* Smith.—I have re-examined the female type in Prof. Smith's collection, and find the ground colour less blue-gray than memory had supposed it. It is a trifle bluer only than Calgary *cinefacta*. In maculation it bears a most peculiar resemblance to the common eastern form of *Mamestra subjuncta*. Like that, it has a large and nearly round orbicular, and is just as near that species in colour as it is to *cinefacta*. But it differs from *subjuncta* in having perfectly smooth eyes. Mr. Cockle has a Kaslo specimen in his collection which I have seen. I know of no others. The species figured by Sir George Hampson as *unita*, from Corvallis, Oregon, is certainly not this species, but probably *cinefacta*.

168. *H. alberta* Sm.—This, as Sir George Hampson catalogues it, is a synonym of *commoda* Walker. The type of the latter is attributed merely to "U. S. A. (Doubleday)," and may as likely as not have come from western Canada. It appears to be a small, brown, poorly-marked *alberta*. Another synonym of *commoda*, and prior to *alberta* I believe

to be *satina* Strecker, from Anticosti, for notes on which, vide supra, under *lateritia*. I have recently seen several specimens which I compared with my series and named *commoda*, from Hymers, Ont. Here the species varies from a dull sooty dark brown, almost black, to a reddish leathery brown, somewhat approaching *lateritia* in shade, though none of mine are as red as that. Most have very indistinct maculation, but a few have it quite clear, with cross lines distinct, blackish, and sometimes edged with gray. There is occasionally a black basal streak, reaching in one specimen to the t. a. line, but this is more often entirely lacking. The orbicular is seldom regular in shape, and varies from comparatively round to elongate oblique, in some of the latter shape almost touching the reniform.

169. *H. [Barnesii* Smith?]*]*—I am in doubt as to this species being *Barnesii*. It is certainly far from typical. I have three specimens in my collection from Banff, Alta., from Mr. Sanson, and have examined a number of others from that locality. It appears to me to be the same species as the specimen figured by Sir George Hampson from Colorado as *auranticolor*, but which was not the specimen labelled "type," though from the same locality, and which my notes tell me that I did not feel sure was the same species, wherein, however, I may have erred. It is a much more purplish-brown species than *Barnesii*, of which I have compared the types, and have now specimens from the type localities, Yellowstone Park, Wyo., and Glenwood Springs, Colo. This is placed by Hampson in *Trachea*, and next to *sora* Smith, which is probably a dark variation of it, as suggested by Dr. Dyar in the Kaslo List. One of the principal differences between *Parastichtis* and *Trachea*, as used by Hampson, is that the former has long and narrow primaries and the latter broad. Both this and the other slight differences of creasing and tufts mentioned seem to me sometimes variable in one species, e.g., *lignicolor*. In fact, I do not think the genera are very distinctly separated, or separable, though the characters may hold well enough for some of the species. My No. 169 varies considerably in wing form, and almost, though, so far as I have yet seen, not quite, connects with my co-type of *sora* in this character as well as in colour, they being not separable by maculation. Through *sora* the present species may show a specific relationship to *Barnesii*, but I must leave the matter as it stands at present. I have a specimen of this species from Peachland, B. C., and have one that is either this or *sora* (or both?) from Kaslo. Mr. Sanson's specimens were dated from July 30th to Aug. 14th.

(To be continued.)

A LIST OF DIPTERA TAKEN AT KEARNEY, ONTARIO, IN
JULY, 1909.

BY MILLARD C. VAN DUZEE, BUFFALO, N. Y.

The Diptera listed below were taken by me during a collecting trip to Kearney, July 2nd to 9th, 1909. As I had no thought at the time of publishing a list of the species taken, many of the common forms were not noted, but such unrecorded species are probably well known and widely distributed.

Kearney is located in the Parry Sound District, about fifty miles north of Muskoka, and as many miles east of Parry Sound. It is surrounded by low hills, from which most of the pine had been cut, the trees still standing being largely birch. In many places there was a thick growth of hazel and raspberry, and many *Cornus* bushes, which were in bloom at the time, were scattered over the low ground. There are well-tilled farms among the hills and along a valley through which a considerable stream flows, and near the town widens into almost a lake and receives several swampy creeks. There is, therefore, a great variety of conditions within a small area about Kearney, and I found it an excellent location for collecting insects.

I am greatly indebted to Prof. C. W. Johnson for the determination of a large number of the species enumerated in this list, and to Prof. J. M. Aldrich for his determination of *Dolichopidae* and for his help and encouragement which has enabled me to determine some of these species myself. I also wish to acknowledge my indebtedness to Prof. James Hind, who kindly went over all the *Tabanidae*, and to Dr. Johannsen and Dr. Williston for the study of material. Where not otherwise indicated, the species have been determined by myself.

The nomenclature here used follows the Aldrich Catalogue, except in a few cases, where the change is noted.

Family TIPULIDÆ.

Rhipidia fidelis O. S.*Limnobia triocellata* O. S.*Erioptera armata* O. S.*Erioptera caloptera* Say.*Liogma nodicornis* O. S.*Bittacomorpha clavipes* Fabr.*Oropeza venosa* Johnson.

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Ctenophora apicata O. S.—I took one female flying by a roadside in a patch of swampy woods, and have since taken another specimen under similar conditions at Ridgeway, Ont.

Pachyrhina incurva Loew.

Family CHIRONOMIDÆ.

Palpomyia rufus Loew.—Det. Johnson.

Palpomyia trivialis Loew.—Det. Johnson. In the Aldrich Catalogue these two species are placed in *Ceratopogon*, but Johannsen refers them to *Palpomyia*.

Procladius caliginosus Johannsen.—Det. Johannsen.

Tanyptus monilis Linn.—Det. Johnson.

Chosmatonotus unimaculatus Loew.—Det. Johnson. The White Mts., N. H., are given as the type locality of this species. I took several species at Kearney that were described from the White Mountain District.

Chironomus nigricans Johann.—There was but one specimen, a female, among the Kearney material, but probably it was a common species there. I have found it abundant at Toronto and about Buffalo.

Chironomus atrimanus Coq.

Metriocnemus par Johann.—I took one female that appears to be of this species, but the dark markings are of a very light brown. It seems to be immature, and measures but 4 mm.

Family CULICIDÆ

Anopheles punctipennis Say.

Culex cantans Meig.

Culex sylvestris Theobald.

Family MYCETOPHILIDÆ.

Symmerus (Plesiostina) lauta Loew.

Apemone sp.—This may be *Platyura maudæ* Coq., but the abdomen is black, except that most of the third segment is reddish-yellow, otherwise it agrees well with the description of that species.

Mycomya mendax Johann.—My one female seems to agree well with the description of the female taken by Aldrich at Juliaetta, Idaho.

Family BIBIONIDÆ.

Bibio xanthopus Wied.—Det. Johnson.

Dilophus obesulus Loew.—Det. Johnson.

Dilophus sp.

Scatopse atrata Say.—Det. Johnson.

Family SIMULIIDÆ.

Simulium meridionale Riley.*Simulium venustum* Say.—This species was very troublesome the first days of July.

Family RHYPHIDÆ.

Rhyphus fenestralis Scopoli.—Det. Johnson.

FAMILY STRATIOMYIDÆ.

Beris annulifera Bigot.—Det. Johnson.*Allognosta fuscitarsis* Say.—Det. Johnson.*Actina viridis* Say.—Det. Johnson.*Geosargus (Sargus) cuprarius* Linn.—Det. Johnson.*Geosargus viridis* Say.—Det. Johnson.

FAMILY TABANIDÆ.

[Prof. Hind determined or verified all the species in this family].

Chrysops mitis O. S.*Chrysops celer* O. S.*Chrysops carbonarius* Walker.*Chrysops cuclux* Whitney.*Chrysops excitans* Walker.*Chrysops frigidus* O. S.*Chrysops striatus* O. S.*Tabanus lasiophthalmus* Macq.*Tabanus illotus* O. S.*Tabanus epistates* O. S.—Numbers of this species could always be found on the windows of the railway station.

Family LEPTIDÆ.

Xylomyia pallipes Loew.—Det. Johnson.*Leptis mystacea* Macq.—Det. Johnson.*Leptis plumbea* Say.—Det. Johnson.*Chrysospila quadrata* Say.—Det. Johnson. Abundant in damp woods.

Family CYRTIDÆ.

Pterodontia flavipes Gray.—I took one specimen while beating low bushes on a hillside. I have another specimen taken by my brother, E. P. Van Duzee, on Mackinac Isd., Michigan, in July, 1910.

Family BOMBYLIIDÆ.

Spogostylum pluto Wied.—Det. Johnson. I saw quite a number on

the ground and on logs where there had been a bush fire a few weeks previous.

Anthrax morio Linn.—Det. Johnson. Common along paths and roads. Those taken vary from $4\frac{1}{2}$ mm. to 9 mm. in length.

Anthrax lepidota O. S.

Family THEREVIDÆ.

Thereva frontalis Say.—Det. Johnson.

Thereva nigra Say.—Det. Johnson.

Family ASILIDÆ.

Dasyllis grossa Fabr.

Dasyllis socratos Walker.

Dasyllis posticata Say.—Det. Johnson.

Dasyllis flavicollis Say.—Det. Johnson.

Laphria sericea Say.—Det. Johnson.

Laphria ætatus Walker.—Det. Johnson.

Laphria sp.—Much like the preceding, but with a golden and black matrix.

Laphria pubescens Willist.—Det. Johnson.

Laphria canis Willist.—I found *Dasyllis* and *Laphria* much more abundant than they are about Buffalo.

Family DOLICHOPIDÆ.

Psilopodinus patibulatus Say.—Det. Johnson.

Psilopodinus scobinator Loew.—Det. Aldrich. This species was very abundant along the sunny edges of woods. There were great numbers of individuals of this family near the marshy borders of the streams, and I now regret that I was not more thorough in collecting them.

Chrysotus obliquus Loew.—Det. Aldrich. These were also abundant in sunny places.

Chrysotus affinis Loew.

Chrysotus chloricus Wheeler.

Chrysotus discolor Loew.

Argyra albicans Loew.—Det. Aldrich.

Neurigonia spp.—I sent two species belonging to this genus to Prof. Aldrich, and he reports that both are still undescribed.

Neurigonia rubella Loew.—One female seems to belong to this species.

Medeterus sp.—One female belonging to this genus I have not yet been able to determine.

Dolichopus calcaratus Aldr.—Quite abundant in places.

Dolichopus longimanus Loew.

Dolichopus palaesticus Loew.

Dolichopus batillifer Loew.

Dolichopus sp.—Prof. Aldrich determined this as No. 32 of his manuscript table of the species of *Dolichopus*.

Dolichopus splendidus Loew.—Det. Aldrich.

Dolichopus melanocerus Loew.

Dolichopus brevimanus Loew.

Dolichopus reflectus Aldr.

Dolichopus lobatus Loew.

Dolichopus discifer Stannius.

Dolichopus scoparius Loew.

Dolichopus chrysostoma Loew.

Gymnopternus frequens Loew.—Det. Aldrich.

Hercostomus unicolor Loew.—Det. Aldrich.

Paraclius claviculatus Loew.

Family EMPIDÆ.

Platypalpus flavirostris Loew.—Det. Johnson.

Synechus pusillus Loew.

Empis pallida Loew.—Det. Johnson.

Empis pæciloptera Loew.

Rhamphomyia mutabilis Loew.—Det. Johnson.

Rhamphomyia basalis Loew.

Rhamphomyia hirtipes Loew.

Rhamphomyia pulla Loew.

Rhamphomyia minutus Walker?

Rhamphomyia luteiventris Loew.—Det. Johnson.

Family PLATYPEZIDÆ.

Platypeza velutina Loew.—Det. Johnson.

Family PIPUNCULIDÆ.

Pipunculus nitidiventris Loew.—Det. Johnson.

Family SYRPHIDÆ.

Microdon tristis Loew.—Two specimens were taken resting on leaves of hazel bushes.

Chrysogaster pulchella Willist.

Pipiza spp.—Two species were taken, one of which may be *puella* Willist., but I cannot be sure of the species belonging to this genus.

Paragus tibialis Fallen.

Melanostoma mellinum Linn.

Syrphus Americanus Wied.

Syrphus Lesueurii Macq.

Syrphus ribesii Linn.

Syrphus arcuatus Fallen.

Allograpta obliqua Say.—Quite abundant about meadows.

Mesogramma geminata Say.

Sphaerophoria cylindrica Say.

Sphegina lobata Loew.

Sphegina Keeniana Willist.

Rhingia nasica Say.

Volucella eecta Walk.

Sericomyia bifasciata Willist.—Two specimens taken flying in the bright sunshine about the leaves of low weeds along the edge of a wood.

Sericomyia chalcopyga Loew.—One specimen was taken resting on a leaf in the woods.

Condidea lata Coq.—Det. Williston. Several were seen flying around and alighting on the wet ground along a roadside ditch in the woods, but their motions were so quick I was only able to capture one.

Helophilus grœnlandicus O. S.—These were taken with the preceding. I also took one on stones in a running brook.

Syritta pipiens Linn.

Xylota ejuncida Say.—Det. Williston. Also taken by the side of the water.

Family CONOPIDÆ.

Zodion fulvifrons Say.—Det. Johnson.

Zodion nanellum Loew.—Det. Johnson.

Oncomyia abbreviata Loew.—Det. Johnson.

Myopa clausa Loew.—Det. Johnson.

Family TACHINIDÆ.

Macquartia pristis Walk.—Det. Johnson.

Ocyptera dorsides Walk.—Det. Johnson.

Metachæta helymus Walk.

Feleteria tesellata Fabr.—Det. Johnson.

Archytas aterrima Desvoidy.—Det. Johnson.

Family MUSCIDÆ.

Morellia micans Macq.—Det. Johnson.

Family ANTHOMYIDÆ.

Mydæa nigripennis Zett.—Det. Johnson.

Spilogaster signia Walk.—Det. Johnson. I saw a number of these
in the crevices of the rough bark of large trees.

Spilogaster nitens Stein.—Det. Johnson.

Spilogaster pagana Fabr.—Det. Johnson.

Limnophora diaphana Wied.—Det. Johnson. Taken resting on
trunks of trees.

Phorbia latipennis Zett.—Det. Johnson.

Phorbia fuscipes Zett.—Det. Johnson.

Cænosiæ calopyga Loew.—Det. Johnson.

Family SCATOPHAGIDÆ.

Cordylura gracilipes Loew.—Det. Johnson.

Cordylura munda Loew.—Det. Johnson.

Cordylura setosa Loew.—Det. Johnson.

Parallelomma varipes Walk.—Det. Johnson.

Scatophaga furcata Say.—Det. Johnson.

Scatophaga pallida Walk.—Det. Johnson.

Scatophaga stercoraria Linn.—Det. Johnson.

Scatophaga suilla Fabr.—Det. Johnson.

Family HETERONEURIDÆ.

Clusia lateralis Walker.—Det. Johnson.

Family HELOMYZIDÆ.

Scoliocentra helvola Loew.—Det. Johnson.

Family SCIOMYZIDÆ.

Bischofia (Dryomyza) aristalis Coq.—Det. Johnson.

Neuroctena analis Fallen.—Det. Johnson.

Tetranocera plebeja Loew.—Det. Johnson.

Tetranocera valida Loew.—Det. Johnson.

Tetranocera plumosa Loew.—Det. Johnson.

Tetranocera combinata Loew.—Det. Johnson.

Tetranocera flavescens Loew.—Det. Johnson.

Tetranocera pallida Loew.—Det. Johnson.

Tetranocera saratogensis Fitch.—Det. Johnson.

Family SAPROMYZIDÆ.

- Lauxania obscura* Loew.—Det. Johnson.
Sapromyza vulgaris Fitch.—Det. Johnson.
Sapromyza bispina Loew.—Det. Johnson.
Sapromyza tompedita Loew.—Det. Johnson.
Sapromyza lupulina Fabr.—Det. Johnson.

Family ORTALIDÆ.

Melieria similis Loew.—Det. Johnson. This species was taken quite abundantly in the sweep-net from rank weeds growing by a swampy creek near the village.

Leoptera vibrans Loew.—Det. Johnson. These were always to be found on the windows of the railway station but none were taken elsewhere.

Family TRYPETIDÆ.

Rhagolitis fausta O. S.—Several specimens of this pretty species were taken from the sweep-net or found resting on the leaves of the rank vegetation on swampy ground. The larvæ live in cherries, but I did not notice any cherry trees near where they were taken, wild cherries, however, were common about Kearney.

Family MICRORHIZIDÆ.

- Calobata univittata* Walk.—Det. Johnson.

Family SEPSIDÆ.

- Sepsis violacea* Meig.—Det. Johnson.
Nemopoda cylindrica Fabr.—Det. Johnson.

Family PSILIDÆ.

- Chyliza apicalis* Loew.—Det. Johnson.
Psila bicolor Meig.—Det. Johnson.

Family EPHYDRIDÆ.

- Dicheta caudata* Fallen.—Det. Johnson.
Scatella stagnalis Fallen.—Det. Johnson.

Family OSCINIDÆ.

- Oscinis coxendix* Fitch.—Det. Johnson.
Chlorops crocota Loew.—Det. Johnson.

Family DROSOPHILIDÆ.

- Drosophila funebris* Fabr.—Det. Johnson.

The 181 species enumerated above represent 109 genera and 36 families.

NOTES OF CAPTURES OF LEPIDOPTERA AT SUGAR AND
LIGHT DURING 1910 AT MY FARM ON THE LONG
RIVER, NEAR CARTWRIGHT, SOUTHERN MANI-
TOBA, AND ALSO OF THE RESULTS OF
THE OVERHAULING OF SEVERAL
CASES OF DUPLICATES.

BY E. FIRMSTONE HEATH, CARTWRIGHT, MAN.

The collecting season of 1910 was in many respects so very peculiar that I think some description of it, and a fuller account of my captures than can be given in the very useful list annually compiled by Mr. Arthur Gibson may be interesting.

The snow was all gone by March 12th, and the brook which courses through my land was free from ice, but the weather during the rest of the month was cold and stormy, and nothing appeared on the wing.

For nearly all of the identifications I am indebted to Dr. J. B. Smith, and the numbers accompanying the names are those of Dr. Dyar's List of N. A. Lepidoptera, 1902.

April came in warmer, and on the 1st I took a single *Semioscopsis inornata* Wlsm. (5895) at light; and on the 2nd and 3rd a few *Homoglaea hircina* Morr. (2256) at sugar. The first *Pieris rapæ* Linn. (40) were seen on the 20th, after which they were very numerous, and I feared we were in for another dose like that of the previous year, when the cabbage plot had to be carefully gone over every morning, and as many as possible of the ovipositing females netted, in order to save my plants. Strange to say, in the fall the caterpillars gave very little trouble. Either the extremely hot and dry weather had in some way caused a failure of the spring brood, through scarcity of food-plant, or the contents of some parasitized pupæ I had sent in from Montreal had established themselves to some purpose. Up to the date on which I am writing (May 2nd) I have not seen a single *Pieris rapæ*, though hibernated specimens of other genera are to be frequently met with. The potato crop was seriously damaged by the Colorado beetles. In fact, the crop was almost a total failure from the drought, in addition to the beetle attack. It used to be said that the beetle could not survive the Manitoban winter, and in the early years of my potato growing it used only to appear in small numbers, and at intervals of several years. But now, owing, I am afraid, to the neglect of potato growers in destroying the larvæ whenever seen, no matter in how small a number, in these occasional appearances, it has become acclimatized, and is going to be very troublesome. I have several times during the last few years seen one of the Soldier Bugs,

July, 1911

Perilloides bioculatus Fab., devouring larvæ. Unfortunately, the bug is not sufficiently numerous to have much effect in reducing the numbers and the destruction done by the beetle.

The weather continued cold, with nightly frosts, till the 26th April, when a few Graphiphora and sundry hibernated noctuids came to sugar. On May 14th I took at sugar a couple of *Phæocyma unilineata* Grote (3000). It is always rare and of very irregular occurrence. Also some *P. norda* Sm, and one or two *P. minerea* Guen. (2990) and a single *Euchæca cretacea* Pack. (3334).

On May 22nd a single *Xylina pexata* Grote (2112), very well preserved, was taken, making the third specimen in my collection.

The wild fruits, cherries, saskatoon and cultivated currants bloomed at the end of the month, but I took nothing worth recording, very few moths visiting the blossom.

June 9th.—The Actonyctas now began to appear, and this genus came out rather strongly during the season. During the next few evenings I took :

990. *Acronycta morula*, Grote.
 982. " *leporina*, Linn.
 988. " *innotata*, Guen.
 999. " *Radcliffei*, Harv.
 June 23—1001. " *spinigera*, Guen., one only.
 29—1030. " *noctivaga*, Grote.
 1016. " *falcula*, Grote.
 1038. " *emaculata*, Smith.
 995. *Acronycta telum*, Guen. Dr. Smith says this is the true *telum* described by Guenée. The more eastern variety, *hastata*, does not seem to occur here. It is not by any means abundant, and is difficult to separate when on the sugared trees from *A. Manitoba* Smith (996).
 27— 993. *Acronycta lobeliæ*, Guen. A couple for the first time.
 Aug. 6— *Acronycta tartarea*, Smith. I also took one or two more during the latter part of the month, and September. I am afraid I have hitherto overlooked this moth. It was quite by accident I noticed its very dark secondaries, having before confused it with *A. revellata*.
 17— *Acronycta* ?, a couple, male and female, which Dr. Smith thinks are not described.

- June 21—1579. *Euxoa plagigera*, Morr. One at sugar.
- 23—1418. *Platagrotis pressa*, Grote. Several very good specimens.
1419. " *condita*, Guen. One or two.
1415. *Adelphagrotis prasina*, Fabr. Scarce here.
2772. *Meliopotis versabilis*, Harv. One, for the first time.
1290. *Dipterygia scabriuscula*, Linn. One; the second I have taken.
- Hadena miniota*, Smith. One; rare; easily confused with *devastatrix*.*
- 24—*Homoladana fifia*, Dyar. Always rare here; one.
- 27—2540. *Ogdoconta cinereola*, Guen. One; a rarity here.
- 28—919. *Halisidota tessellaris*, S. & A. Several. I have in previous years hardly seen this moth. This season it seems to have replaced *maculata* Harr. (922), which has been usually fairly common, both at sugar and light.
- Aplectoides fales*, Smith. One, at sugar. This seems to be also a new species, which I do not find listed.†
- 29—1504. *Noctua atricincta*, Smith. Rare; one, and a species of *Noctua* which Dr. Smith thinks may be new.
1289. *Trachea delicata*, Grote. One, for the first time.
- July 10—1422. *Eueretagrotis sigmoides*, Guen. One. I have not taken this moth for several years.
- 15—3066. *Bomolocha bijugalis*, Walk. A rarity here; one.
- 18—1243. *Hadena cariosa*, Guen. One, for the first time.
- 19—2159. *Gortyna velata*, Walk.
- 23—1554. *Mamestra obesula*, Smith. One, for the first time.
- During June I took several *Chytonix*, which are either a curious variety of *palliatricula* Guen. (1067) or are a new species. They are at present in Dr. Smith's hands for examination. The ordinary form is common here.
- 24—1269. *Polia extincta*, Smith. One, for the first time.
- 30—1291. *Actinotia ramosula*, Guen. One, for the first time.
- 31—1150. *Hadena transfrons*, Neum. Rare, but on this and subsequent nights I took two or three more.
- Aug. 2—1884. *Dargida procinctus*, Grote. One.

*Mr. Dod considers it a colour variation of *H. versuta*, see page 233.

†Jour. N. Y. Ent. Soc., XIII, 192, Dec., '05.—Ed.

- 4—656a. I took flying over some annuals in my garden a couple of *Hemaris thysbe*, var. *ruficaudis* Kirby, for the first time. In some years *thysbe* is numerous at wild plum and Carayana bloom, etc.
2230. *Agroperina helva*, Grote. Not common; occurs at intervals.
- 5—2189. *Papaipema circumlucens*, Smith. At light; in trap; one.
- 7—1697. *Euxoa dissona*, Mösch. One, at sugar. I think this makes the third I have taken during twenty-five years' collecting.
- 9—2568. *Rivula propinqualis*, Guen. The second I have taken.
- 11—1823. *Mamestra lilacina*, Harv. One or two particularly brilliantly marked, so much so that at first I thought it was another species.
- 18— *Euxoa indensa*, Smith. This new species seems to be almost equally numerous with *verticalis* Grote (2607a), a variety of which I have taken it to be.
- 31— Nothing came to my trap since the beginning of the month until this night, when I found a fresh *Papaipema nitela* Guen. (2179), and a few other things not worth recording.

June, July and August were generally much hotter than usual, and the rainfall was very much below the average, hardly amounting to one-third of the normal.

The autumn genera came out in very small numbers generally speaking. Perhaps *Calocampa*, *Glæa* and *Cosmia* were in their usual strength. Of *Peridroma*, *occulta* Linn (1462) was more numerous than usual, but *astriata* Morr. (1464) was absent. *Xylina* was very sparsely represented, and *Catocala* hardly at all. In some years I have counted 25 to 30 individuals of some half dozen species of the latter upon a single sugared tree, and in a clump of trees some fifty yards square I must have seen two or three hundred of them on some dozen tree trunks. Indeed they were rather a nuisance, driving away other things more desirable. This year I saw two or three of the commoner species in an evening at the most.

- Sept. 1—2161. *Gortyna velata*, Walk. In trap.
 2165. " *immanis*, Guen. In trap.
 2174. *Papaipema rigida*, Grote. In trap.
 2190. " *rutila*, Guen. In trap.
 2189. *Papaipema circumlucens*, Smith. In trap. One or two of each.
 5—2175. *Papaipema Harrisii*, Grote. In trap; one. This is the second I have taken.
 13—1610. *Euxoa citricolor*, Grote. At sugar; one. Very rare here.
 1147. *Hillia discinigra*, Walker. At sugar; one. It is only within the last year or two that I have taken this species.
 20—2185. *Papaipema unimoda*, Smith. In trap; one, for first time. During September I took several examples of *Tæniocampa communis*, Dyar.
 2021. *Graphiphora uniformis*, Smith.
 2026. " *peredia*, Grote. One or two.
 During October I got a few *Xylina ancilla* Smith; *Grotei* Riley (2092); *antennata* Walker (2090); *holocinerea* Smith (2193), and on
 Oct. 9— *Xylina laticinerea*, Grote (2091). This species very seldom occurs here, and this must be about its western limit. I do not think I have seen more than two or three in my years of collecting.
 14—2114. *Euharveya carbonaria*, Harv. One, for the first time. Dr. Smith kindly went through my old *Orthosia Conradi* series, and I find I have most of the new *Agroperina* species, viz.:
Agroperina inficita, Walker.
 2231. " *lutosa*, Andrews.
 " *lineosa*, Smith.
 " *pendina*, Smith.
 2229. " *Conradi*, Grote.
 I also found among some duplicates which I had not worked over,
 2104. *Xylina emarginata*, Smith. I took it early in the spring, so I conclude it is a hibernated specimen, but it is in good order.

1265. *Polia pulverulenta*, Smith. One.
I may mention here that the *Polias* I have hitherto sent to my friends as *confragosa* belong, Dr. Smith now says, to the *medialis-acutissima* species, the one being a variety of the other.
1650. *Euxoa incubata*, Smith. One, the first taken.
In Sphingidæ, Bombyces, Geometridæ and Micros, I took practically nothing at all, owing, I suppose, to the unfavourable weather for collecting at lights.

GEOMETRIDÆ AS YET UNDESCRIBED.

BY RICHARD F. PEARSALL, BROOKLYN, N. Y.

Chlorosea Proutaria, n. sp.—Expanse, 32-34 mm. Antennæ bipectinate in ♂, serrate in ♀, white above, yellowish beneath. Front and vertex rosy white, the border of orbits and a line behind vertex in ♂ deep roseate. Wings of the same thin texture, size and shape as *Nevadaria* Pack, but the green of primaries is more intense, and the strigations of white a little more marked, especially in the ♂. An almost straight broad white line crosses primaries, starting from costa about one-fourth from apex, and sloping more strongly toward base, than does the same line in *Nevadaria*, reaches inner margin at centre. There can be traced a very faint suggestion of a narrow white basal line in both types, more evident in the ♂, one-fourth from base at costa, and rounding outward to same distance on inner margin. Secondaries in ♀ white silken, tinged at anal angle with green, and having marginal line of same colour; fringes short, WHITE. In ♂ they are white, centrally traversed by a white curved line, parallel to outer margin, not defined costally, quite evident at inner margin, where it curves strongly toward base. Within this line there is a thin dusting of green scales; outside it, they are heavily scattered, becoming intense and strigate toward anal angle; marginal line and fringes GREEN. Beneath all wings an even greenish white, the outer line of primaries showing through faintly. No discal dots above or below. Thorax and basal segments of abdomen above pea green, the latter white terminally and beneath. Body beneath white, washed heavily in front and faintly at sides with green. All legs with femora green, the front pair with tibiæ roseate, all others white; all tarsi white.

Types ♂ and ♀, the former taken at Chimney Gulch Golden, Col., VIII, 26, '04 (Osler), the latter at Eureka, Utah, V, 27, '10 (Spalding), in author's collection. In appearance much like *Nevadaria* Pack, but easily distinguished from it by the absence of red markings on abdomen.

July, 1911

In recognition of the many kindly services rendered to me and other co-workers in the group by Mr. Louis B. Prout, of London, Eng., I have given his name to this species.

Three co-type ♂♂ are in the author's collection from Golden and Clear Creek, Col.

Aplodes intensaria, n. sp.—Expanse, 25 mm. Palpi roseate, projecting beyond front in ♂, longer in ♀ and paler at tip. Antennæ yellowish, shortly bipectinate in ♂, simple in ♀. Front deep rosy pink; on vertex a pure white line between antennæ, with a narrow roseate line between this and collar, which is green. All wings above dark sea green, darker than any other species known to me, strigate with white, the primaries produced and sharp at apex. Costa above narrowly salmon pink its entire length, becoming roseate at apex. Two broad white firm lines cross each wing. On primaries, the inner about one-third out on costa, runs outwardly almost straight across to inner margin one-third out. The outer line, at costa two-thirds out, has a slight inward curve at centre of wing, reaching inner margin two-thirds out. Secondaries with anal angle slightly produced, the inner margin being long. Inner line close to base curves boldly outward reaching inner margin at same distance from base as at costa. Outer line two-thirds out, runs in a curve parallel to outer margin until it drops below cell, when it curves outward and downward to a point on inner margin much nearer anal angle than would have resulted from its original course. No marginal lines. Fringes cream white at base, rosy at margin. No discal dots above or below. Beneath evenly greenish white, the lines above showing through. Costa of primaries as above. Thorax above and beneath dark green. Abdomen above green, marked at base by a large roseate triangle enclosing a cream white blotch, the third, fourth and fifth segments with similar marks decreasing in size toward apex. Below green except just at base and tip, these being whitish. Legs cream white, all more or less washed with roseate, strongly on fore legs.

Types ♂ and ♀ taken at Eureka, Utah, (Spalding) V, 9, '10, and V, 13, 1910, respectively, are in author's collection.

Two co-type males from same locality, VIII, 6, 10, and V, 21, '10. Another specimen in collection of Brooklyn Institute Museum was referred to *Aplodes rubrifrontaria* Pack, Beaver Valley, Utah, June, in Science Bulletin No. 8, by the author, and bears a label by Mr. Grossbeck that a specimen like it is in the U. S. Nat. Museum at Washington as *festaria*

Hulst. The type of *festaria* Hulst is in the Am. Museum of Nat. History, N. Y. City, and is quite a different insect.

Nearest to *viridicaria* Hulst, but in that species the abdomen was white in the four examples from Colorado, which were his types. The "type" so labelled by Hulst in Bklyn. Inst. Museum is from Hot Springs, N. M., 7,000 ft. altitude, and belongs to another species.

Stammodes affiliata, n. sp.—Expanse, 28–30 mm. Palpi long, stout, dark brown, last joint ochreous, tipped with roseate. Front and vertex rosy ochre; an irregular patch of black scales centrally, between antennæ, extending in a line down front. Antennæ rosy ochreous, irregularly mottled with black. Thorax and abdomen pale ochre, the former with a central longitudinal blackish streak, the latter having segments darkened anteriorly by heavy black atoms. All wings above, an even dark glossy plumbeous much like *Rickseckeri*, but darker. Broadly along costa on primaries, broken into irregularities by clusters of black scales, a band of rosy ochre extends to and expands over the apical and outer marginal areas. The basal portion of secondaries is frequently dusted with these scales, its outer boundary being the curiously broken transverse line beneath. Fringes rosy ochreous, cut with black at veins. No discal dots. A faint, broad, pale line, beginning at costa half way out, runs straight across wing, fading out at centre. This line can be traced in all the 17 examples before me, but often only by suggestion. Beneath, primaries as above, the rosy ochreous scales broadly covering costa, apex and outer margin to middle. Short strigate markings of black cover this rather thickly, more densely just outside the border of a narrow whitish (or clear white) line, starting from costa one-fifth from apex, running across it with a sharp outward trend to vein 8, thence inclined basally to vein 5, again sharply outward to vein 3, where it turns inward, becomes faint and runs parallel to outer margin to a point one-third within anal angle, at inner margin. No discal dots or marginal line. Secondaries from base to transverse line are evenly covered with roseate-ochreous strigate finely with black. Outer area, having similar ground colour, is much darkened to margin with black and plumbeous atoms and strigations, especially along outer border of line. This line, leaving costa a little more than half way from base, makes a strong outward scollop to vein 5, then with an abrupt outward sweep or angle, makes a second long scollop to inner margin, well within anal angle. One or two highly coloured examples

have a bright chestnut red patch outside angle of line at costa on primaries, and on secondaries at both ends of the line, rather broadly diffused. Discal dots large, round, black. Fringes of plumbeous and ochreous scales mixed, flecked with black atoms. Thorax and abdomen beneath dark brown. Legs ochreous, heavily dusted with dark brown and roseate scales.

Types six males and one female, taken at San Diego, Calif., XI, 16, to XII, 9, 1910 (Ricksecker), with ten co-types in author's collection.

(To be continued.)

DR. SAMUEL HUBBARD SCUDDER.

After many years of patiently endured weakness and infirmity, which affected his bodily powers but left his mental capacity unimpaired, the end has at length come to a most distinguished Entomologist, Dr. Samuel Hubbard Scudder, who died at his residence in Cambridge, Mass., on the 17th of May, 1911, aged 74 years. Dr. Scudder was born in Boston, and received his education at Williams College, where he took the degree of A. B. in 1857; five years later he became a B. S. of Harvard University. In 1890 he received the honorary degrees of Doctor of Science at Williams and LL.D. at Pittsburgh. A lover of Nature from his earliest years, he devoted his life to the study of the insect world, and at the same time did not neglect the refining cultivation of music and literature. His charm of manner, kindness of thought, entire unselfishness, refinement and courtesy, attracted to him the friendship of the leaders in science, art and literature in that centre of culture where he lived. He was also considerate and sympathetic with the poor and struggling students of nature and the aspiring entomologists, however uncouth they might be, winning their hearts' devotion and life-long admiration and respect. A loveable man indeed, and a trusty friend to those who knew him well. When the writer first came within the charmed circle, of which Dr. Scudder was the centre, some forty years ago, he and his young wife were living in Cambridge. Not long after, on account of her delicate health, they went to the south of France, and enjoyed for a time the balmy climate of the Riviéra; but health was not restored, and soon the much loved wife was taken away. Years after he experienced another bitter sorrow in the death of his only child, who had entered upon a physician's career with every prospect of attaining distinction in medical science. Over devotion to the needs and calls of the sick in a time of severe epidemic in Boston, led

to his untimely death, and left the father sadly forlorn. Apart from these two bereavements, his life was cheerful and happy, and it was a rare delight to spend an hour or two in the quaint little building behind his dwelling, where were stored his rich treasures of butterflies, locusts and fossils, and his library of scientific works.

After spending fully twenty-five years in the study of the life-history of butterflies and the collection of information from all quarters, Dr. Scudder produced his first great work "The Butterflies of the Eastern United States and Canada," three large royal octavo volumes, illustrated with a wealth of plates and maps, showing the insects in all stages in their natural colours, and giving details of structure as well. From time to time he published single small volumes on Butterflies adapted to the needs of the ordinary collector, and leading on to scientific study. From the butterflies he turned to the Orthoptera, and published a number of books and articles of a systematic character, which are a great help to students of this order. His attention was next directed to fossil insects, of which he formed a most interesting collection, resulting in the publication of his splendid work on the Pre-tertiary and Tertiary Fossil Insects of North America. A full bibliography of Dr. Scudder's works will no doubt soon be prepared, and will fill many pages.

The high scientific reputation which he enjoyed is abundantly evident from his election to honorary membership in important societies in London, Vienna, St. Petersburg, Moscow, Brussels, the Hague, Geneva, Madrid, Argentina, as well as many in North America. He was one of the first honorary members of the Entomological Society of Ontario, being elected in 1868, and a frequent contributor to the pages of the CANADIAN ENTOMOLOGIST, as well as occasionally to our Annual Reports.

C. J. S. B.

SPHÆRIDIDIUM BIPUSTULATUS FAB. FOUND IN THE
NEIGHBOURHOOD OF NEW YORK CITY

BY CHARLES SCHAEFFER,

Museum of the Brooklyn Institute, Brooklyn, N. Y.

Mr. Ernest Shoemaker showed me at the last meeting of the New York Entomological Society a few specimens of a small *Sphaeridium* which he had taken in East New York, Long Island, in company with *S. scarabæoides*.

These specimens proved to be the European *S. bipustulatus* Fab., which differs principally from *scarabæoides* in smaller size and having the

hind angles of the prothorax acute, while in *scarabæoides* they are obtuse. They are generally not as brightly coloured as *scarabæoides*, though some of the varieties approach certain varieties of *scarabæoides*.

The colour is black; prothorax and elytra generally with testaceous margin. Elytra near apex with a variable, transverse reddish-yellow fascia across suture of irregular outline and sometimes with a red humeral spot.

The transverse sub-apical fascia is sometimes very indistinct and often absent.

GEOMETRID NOTES.

A NEW EUPITHECIA.

BY L. W. SWETT, BOSTON, MASS.

Eupithecia Chagnoni, nov. sp.

Expanse 22 mm. Palpi long. Head white or grayish between antennæ. Wings light reddish ash in colour, darker towards outer margins. Fore wings light ash, with reddish brown shadings. Basal band narrow and black at costa about 2 mm. from body, whence it is curved back to base. Between the basal line and intradiscal are a few dashes. The intradiscal line is represented on costa by quite a large triangular patch bent towards discal spot, and from this patch runs a fine line accentuated on the veins to inner margin. Then a clear mesial space, in which the black discal spot stands out; beyond on costa the extradiscal line is also represented by a triangular patch, from which a hair line bends outward opposite discal spot, then inward scalloped on every vein to inner margin. Beyond extradiscal line is a pale band, following the same course about 1 mm. wide, with a black hair line running through it to inner margin. Beyond this for 3 or 4 mm. the wing is shaded heavily with reddish brown, with a trace of a faint, light, irregular line running to inner margin. The fringe is quite long and grayish, with intervenular dots.

The hind wings are full and rounded, as are the fore wings, and of the same colour, only darker. Several faint wavy lines may be discerned running across the wings below discal spot, which is round and black. Beneath, fore wings as above, only the extradiscal is wider and blacker, and the pale band beyond is clearer than above; discal spots show on all wings. Hind wings, three prominent wide dark bands on basal and two beyond discal spot, which are slightly bent outward opposite discal spot. This is a very distinct species and not easily confounded with any other;

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it belongs to the *Russeliata*, *Brauneata* Swett group, and slightly resembles the former. I take pleasure in naming this after my kind friend, Mr. G. Chagnon, through whose courtesy I have had the privilege of examining many Canadian Geometrids.

Type, 1 ♂, 22, VI, 1907, Montreal, Que., in my collection. Co-type, 1 ♂, Montreal, Que., in Mr. Chagnon's collection.

BOOK NOTICE.

NATURE SKETCHES IN TEMPERATE AMERICA : By Joseph Lane Hancock, M. D., F. E. S. A. C. McClurg & Co., Chicago. Price, \$2.75.

This work is creditable both to the author and to the publishing house that has brought it out in so attractive a form.

It is a book that the public school teacher, in whose curriculum nature studies have a place, will gladly welcome. It will be found by such an one to be not only a store of information, but also a guide to investigations on his own part—it is both instructive and suggestive.

By city people, taking their families to the country for the summer vacations, the book will be found a treasure, affording pleasant reading for dull days, kindling in the minds of the young people an interest in the operations of nature, making known the life-histories of many living things.

With what eagerness the children will listen to the tragedies of the mouse in the wren's nest, the oriole hanged by a thread from its nest, the golden-crowned kinglet held in the grip of the burdock ; with what pleasure they will hear of the rescue of the family of wrens, the deliverance of the song-sparrow from the blue racer, the successful taking of the photograph of the field sparrow, etc., etc. The book is full of delightful anecdotes ; and the interest in it is greatly enhanced by the vignettes, tail-pieces and other cuts, to the number of two hundred and fifteen, and by the twelve coloured plates that adorn it. It may be highly recommended ; it should have a place in every school library ; it would be a charming gift for a boy or girl ; it is well worthy the perusal of every lover of nature.

T. W. F.

Mailed July 3rd, 1911.