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EDITED BY

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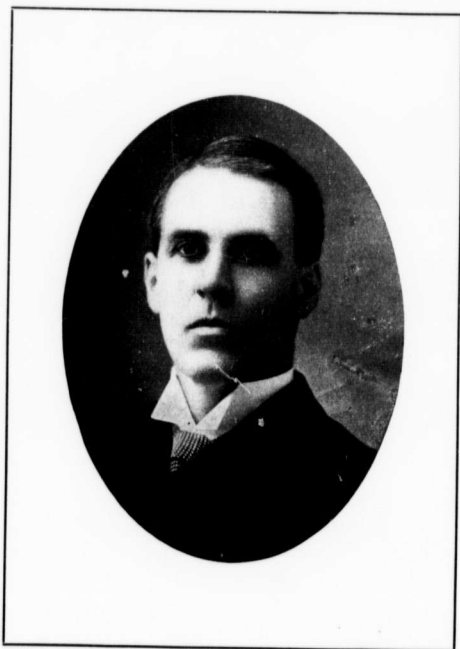
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No. 1

## PRACTICAL AND POPULAR ENTOMOLOGY.—No. I.

### THE PEAR-TREE PSYLLA AND HOW TO DEAL WITH IT.

BY GEORGE E. FISHER, BURLINGTON, ONT.

[At the last Annual Meeting of the Entomological Society it was decided that a series of articles should be published monthly in this magazine of a popular or practical character, in order that in each issue there should be something of interest to the general reader in addition to the papers of a technical and purely scientific character. It is intended that the series shall cover a wide range, and include articles which will be useful to beginners in entomology, and also to the fruit-grower, farmer and gardener, as well as to the many students and teachers who are now interested in Nature-study. The following article is by Mr. Fisher, who was for several years Inspector of Scale-insects for the Province of Ontario, and who has a practical and intimate knowledge of many injurious insects, and of the most effective methods of dealing with them.—ED. C. E.]

Several instances of disastrous and even fatal effects to valuable pear orchards from being attacked by the Psylla have come under my observation, as well as entirely satisfactory results from treating the trees.

The life-history and habits of injurious insects must be accurately determined before we can know just how to deal with them. A knowledge of the habits of such insects will also often enable the farmer to so manage his land and crops that the insects are placed under unfavourable and even destructive conditions.

The Psylla winters in the full-grown or perfect state, a minute brick-red fly, about one-eighth of an inch in length. From the broad head the body tapers to a point at the caudal extremity. There are two pairs of large transparent wings, which when closed cover the body. The thighs are abnormally developed, which enables it to jump a long way; hence the name "Pear-tree Flea-louse." In form this insect is the counterpart of the Dog-day Harvest fly (*Cicada*) in miniature (Fig. 1).

During the winter it secures shelter in the crevices of the bark on the trunks and large limbs of the trees, in nearby rubbish, or wherever it can find protection; hence the advantage of clean culture, in which case it will be confined to the trees. The small lemon-coloured eggs are laid about the middle of April, and hatch about the middle of May, according to weather conditions (Figure 2). There are

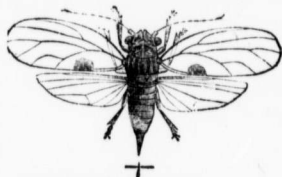


FIG. 1.—The Pear-tree Psylla—greatly magnified.

probably four broods in a season. When the nymphs appear, if there be no foliage, they make their way into the opening buds. They secrete

large quantities of honey dew, which frequently drips from the leaves, and gets over the whole of the tree and fruit, in which a black fungus develops.

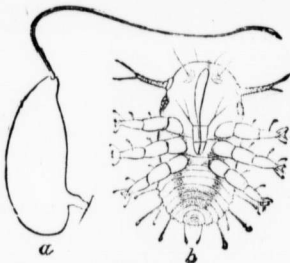


FIG. 2.—Pear-tree Psylla—*a* egg, *b* nymph—greatly magnified.  
(Marlatt, U. S. Dept. of Agriculture.)

that when spray strikes a tree they instantly fly away, and do not return until the spraying is discontinued.

An ounce of crude petroleum in the proportion of 1 in 16 (1 gal. of petroleum in 16 gals. of emulsion), has in my experience proved the most satisfactory in case a treatment must be given in summer, but I would depend upon a very thorough application of lime and sulphur (lime 30 lbs., sulphur 20 lbs., in 40 gals. of wash, cooked two hours), made in March, to wipe out the pest. At this season there are no eggs. The overwintered adults are very sluggish, not at all like those of the summer broods, and these alone are present. If the wash be driven well into all of the cracks of the bark the destruction of the insects will be complete.

Lime alone will destroy Psylla perhaps as completely as with sulphur added, and will go a long way in cleaning off the black fungus, but lime alone will not destroy scale insects, and these are invariably present. Whether it be lime, or lime and sulphur that is used, the wash must be liberally applied, for it will not diffuse, but remains where it strikes the tree, and if the Psylla is to be killed it must be hit.

## NEW HYMENOPTERA FROM THE PHILIPPINE ISLANDS.

BY WILLIAM H. ASHMEAD, M.A., D. SC., WASHINGTON, D. C.

The good work on the Hymenopterous fauna of the Philippine Islands, begun by Father W. A. Stanton, S. J., is being continued by Father Robert E. Brown, S. J., and I have now the pleasure of describing below *two* new genera and *twelve* new species captured by him in the Observatory Garden at Manila.

Family XXVIII.—VESPIDÆ. *Icaria*, Saussure.

*Icaria Cayayanensis*, new species.—♀. Length, 6.6 to 7 mm. General colour brown, marked with yellow and black. The inner orbits from the sinus of the eyes downwards, the clypeus, except a bowl-shaped black spots on its disk, the cheeks, a line along the hind orbits, the scape of the antennæ, its pedicel beneath, and the first two joints of the flagellum beneath, the mandibles, except a spot at base and the teeth which are black, the upper part of the pronotum dilated laterally towards the hind angles, a rounded spot on the mesopleura beneath the tegulæ, the tegulæ, a spot at the base of the insertion of the hind wings, a broad longitudinal band on the metathorax extending on each side to the insertion of the hind coxæ and separated by a triangular black spot in the central depression, two lines on the mesonotum, two large quadrate spots at the base of the scutellum, two spots at the base of the postscutellum, most of the coxæ, except a black spot at the extreme base and on their posterior face, all femora, except the blackish stripes beneath and behind, the tibiæ, except the apices of the middle tibiæ and a large brownish-black blotch towards the apex of the hind tibiæ, all tarsi, the apical margin of the first, second and third abdominal segments and large oval spots at the base of the second dorsal segment, are yellow; the suture at the base of the clypeus, a spot back of the insertion of the antennæ, the flagellum, the ocelli, the occiput, the front face of the prothorax, broad bands on each side of the mesonotum, the mesopleura, the metapleura and the abdomen, except as already noted, are black. The wings are hyaline, but with a fuscous spot occupying the apical half, or more, of the marginal cell; the stigma is brownish-yellow, the veins being brown black or black.

Type.—No. 8126. U. S. N. M.

*Mania* (Father Brown). I have this species from other places.

Family LIV.—DIAPRIDÆ. *Diapria*, Latreille.

*Diapria Philippinensis*, new species.—♂. Length, 1.5 mm. Polished black, shining and impunctate, the scutellum with a large

January, 1905.

depression across the base, the metanotum with a triangular carina at its basal middle, the legs honey-yellow, the posterior pair with a reddish tinge, the collar, the metapleura and the petiole of the abdomen clothed with a whitish pubescence; the antennæ are 14-jointed, much longer than the whole insect, the scape and pedicel being testaceous, the flagellum being black, with the joints long, nodose-pedicellate and with whorls of long hair; the wings are subhyaline, ciliated, the marginal fringe long.

Type.—No. 8127, U. S. N. M.

Manila. Two specimens received from Father Brown. This is the first species in this family to be recorded from the Philippines. The wings may be *clear* hyaline, as the specimens were in alcohol, and the slight dusky appearance of the specimens may be due to dust.

Family LVIII.—FIGITIDÆ.

Subfamily Eucoilinæ. Hexamerocera, Kieffer.

*Hexamerocera Philippinensis*, new species.—♀. Length, 0.9 mm. Polished black and shining, impunctate, the mandibles testaceous, the legs, including the coxæ, wholly brownish-yellow; the antennæ are 13-jointed, with the six last joints enlarged, oval, brownish, the scape and pedicel being reddish, the basal joints of the funicle being more yellowish; the first joint of the funicle is about thrice as long as thick, those beyond small, moniliform, but slightly increasing in size to the club, the scutellum at the sides and the metathorax are finely rugulose; the cup of the scutellum is oval, with a few punctures on its disk; the abdomen has a thick hairy girdle at its base. Wings hyaline, ciliated, the veins yellowish, the marginal cell closed.

Type.—No. 8128, U. S. N. M.

Manila. Described from a single specimen received from Father Brown. This is the first Eucoiline to be discovered in the Philippines.

Family LXVII.—ENCYRTIDÆ. Oencyrtus, Ashmead.

*Oencyrtus papilionis*, new species.—♀. Length, 0.7 mm. Head and thorax æneous black, the head in front with a bluish tinge, the abdomen testaceous, the antennæ and the legs, including all coxæ, pale yellowish. The wings are hyaline, the veins yellowish, the marginal vein punctiform, the stigmal vein short, ending in a minute, rounded knob. The flagellum is subclavate, thickened towards apex, the first three or four joints a little longer than thick.

♂.—Length, 0.6 mm. Differs in having the head and thorax dark blue, the eyes very large, whitish, the abdomen smaller and triangular in

outline, testaceous, but with the lateral margins and the tip brownish; the flagellum is nearly filiform, finely pubescent, with the joints shorter than in female.

Type.—No. 8125, U. S. N. M.

Manila. Described from 2 ♀s and 1 ♂, bred by Father Brown from the eggs of a butterfly, *Papilio*, sp.

APTERENCYRTUS, new genus.

This new genus is proposed for a minute wingless ♀ Encyrtine, quite characteristic, and easily characterized. It falls into my tribe *Mirini*, and may be placed in my table of genera, Classification of the Chalcidoidea, p. 301, No. 25, between *Coccophocionus* and *Phænodiscus*.

25. Wingless forms.

Antennæ inserted close to the mouth, the scrobes distinct, the scape slender, the flagellum clavate, the funicle joints minute, widening towards the club, not longer than wide, the three last joints wider than long, the club enlarged; scutellum with a small tuft of bristles towards apex. . . . . *Apterencyrtus*, Ashm., g. n.

*Apterencyrtus pulchricornis*, new species.—♀. Length, 0.6 mm.

Head dark blue, smooth, impunctate, the eyes whitish, converging slightly anteriorly; thorax æneous black, the mesonotum clothed with sparse, silvery-white hairs, the scutellum shagreened, with a small tuft of black bristles, the hind angles of the metathorax acute, the abdomen smooth, black, but with an æneous tinge in certain lights; antennæ tricoloured, the scape and pedicel beneath, and the funicle snow-white, the scape above towards apex and the pedicel above brown, the club black; the front and middle legs are snow-white, but the middle femora just before apex and the middle tibiæ near the base have a narrow brown annulus; the hind coxæ, and apical two-thirds of the hind femora are metallic brown-black, while the trochanters, base of femora and rest of the legs are snow-white.

Type.—No. 8120, U. S. N. M.

Manila. (Father Brown.)

Family LXXI.—EULOPHIDÆ.

Subfamily III.—Tetrastichinæ. *Tetrastichoides*, Ashmead.

*Tetrastichoides Manilensis*, new species — ♀. Length, 1 mm. Head and thorax blue-black, impunctate, the axillæ and the abdomen æneous black; the scape of the antennæ and the legs, except the coxæ and the basal two-thirds of the hind legs, which are æneous black, are yellowish-white, the flagellum is brown-black, subclavate, finely pubescent, the



funicle joints increasing in size, the last being a little more than twice as long as thick.

Type.—No. 8129, U. S. N. M.

Manila. Two specimens taken by Father Brown.

Family LXXVI.—ICHNEUMONIDÆ.

Subfamily V.—Ophioninæ.

Tribe V.—Campoplegini. Charops, Holmgren.

*Charops papilionis*, new species.—♂. Length, 10.5 mm. Opaque black, closely punctured; the apex of the first and second dorsal abdominal segments, and the following are entirely ferruginous; the first two joints of the antennæ, except a blotch above, the mandibles except the teeth, the tegulæ, the palpi, the front and middle trochanters, the apical joint of the hind trochanters, the extreme apex of the front femora, the front and middle tibiæ and tarsi except the last joint, are ivory-white; the hind legs, except as noted, are black, the hind tibiæ, except towards apex and at extreme base, where they are black, are ferruginous, the apical joint of the hind trochanters being ivory-white. Wings hyaline, with the lanceolate stigma and the veins, except the costal vein at base, which is white, black.

Type.—No. 8142, U. S. N. M.

Manila. Described from a single specimen bred by Father Brown from a chrysalis of *Papilio agamemnon*. This species shows some affinity with *Charops erythrogaster*, Ashm., described from Ceylon, but it is much larger and quite differently coloured.

Family LXXVII.—ALYSIDÆ.

Subfamily II.—Alysiinæ. Aclisis, Förster.

*Aclisis pleuralis*, new species.—♀. Length, 1.8 mm. Brownish-yellow, with dark purplish-brown eyes, the flagellum black, with several of the apical joints snow-white, the meso- and metapleura, and the abdomen above, except the first segment, black; the legs are pale yellow, but with the front trochanters, the middle legs entirely and the hind coxæ, hind femora and base of hind tibiæ, ivory-white. Wings hyaline, pubescent, the veins light brownish.

Type.—No. 8130, U. S. N. M.

Manila. This is the first species in this family to be recorded from the Philippine Islands, and was captured by Father Brown in the Observatory Garden.

## Family LXXVIII.—BRACONIDÆ.

Subfamily VIII.—Sigalphinæ. Fornicia, Brullé.

*Fornicia annulipes*, new species.—♂. Length, 4.5 mm. Black, the thorax punctured, the mesonotum with a distinct median carina, and with a smooth, almost impunctate, space on each side of the carina posteriorly, and again near the insertion of the wings; the scutellum, the mesopleura, and the metathorax are more coarsely punctured or rugulose; the very short pronotum is acutely toothed at each anterior angle; the abdomen has only three visible segments and is coarsely longitudinally rugulose, the first segment with a distinct median carina its entire length, the last segment at apex medially excised, with its margin rimmed. The head is small, transverse, hardly two-thirds the width of the thorax, and is smooth and shining; the pubescent eyes are whitish; the ocelli are pale, and arranged on a slight curved line; the palpi, except the first two joints, the front knees, tibiæ and tarsi, the tips of the middle tibiæ, and the base of the tarsi, more or less, are honey-yellow; the tibial spurs are white, while the middle and hind tibiæ have a broad white annulus at base; rest of the legs mostly black. Wings hyaline, faintly dusky towards apex, the stigma and veins brown-black.

Type.—No. 8121, U. S. N. M.

Manila. (Father Brown.)

Subfamily XV.—BRACONIDÆ.

Tribe III.—Euurobraconini.

*Brownius*, new genus.

This interesting new genus is named in honour of Father Robert E. Brown, S. J., to whom I am indebted for several sendings of Philippine Hymenoptera, among which were many new species in families and genera not before known to occur in the Archipelago.

Probably most Hymenopterists would have described this Braconid in Brullé's genus *Spinaria*, as I find some of the described *Spinariæ* really belong to *Brownius*. This new genus, however, falls into my tribe *Euurobraconini*, while *Spinaria*, Brullé, as I shall restrict it, will fall into the tribe *Braconini*.

*Brownius* has the venation much as in the genus *Bracon*, except that the submedian cell is *much longer* than the median; the recurrent nervure is received by the first cubital cell very near its apex; the second cubital cell is longer than wide, but shorter than the first or the third; the head is obtrapezoidal with the occiput and temples immargined; the prothorax is bidentate anteriorly and armed above with a long acute, erect spine on

its disk posteriorly; the upper hind angles of the metathorax are obtusely toothed; the abdomen is coarsely, somewhat longitudinally, rugulose and has five distinct segments, the fifth segment being triangular and terminating in a sharp median tooth, the dorsal segments three and four, with the lateral hind angles produced into a sharp tooth, while the fourth has also a shorter tooth on the middle of its hind margin.

*Brownius armatus*, new species.—♀. Length, 9 mm.; ovipositor very short, hardly projecting beyond the tip of the abdomen. Pale brownish-yellow, the eyes brown, the antennæ, the hind legs, the dorsum of dorsal abdominal segments 1, 2, 3 and 4, and the wings, except a yellow band at base, black; rest of abdomen pale or whitish.

Type.—No. 8123.

Manila. (Father Brown.)

*Spinaria curvispina*, Cameron, described from Borneo, and *Spinaria leucomaelaena*, Westwood, described from Siam, judging from the descriptions, probably fall into this genus. The true *Spinariæ* have the median and submedian cells of an *equal length*.

#### Subfamily XVI.—RHOGADINÆ.

##### Tribe V.—Hecabolini. Hecabolus, Curtis.

*Hecabolus rubrocinctus*, new species.—♂. Length, 0.8 mm. Black and shining, with the second abdominal segment reddish-yellow, the antennæ and the legs ivory-white, the eyes brown, the wings hyaline, the stigma and veins pale yellowish, the stigma of the hind wings large and brown-black.

Type.—No. 8131, U. S. N. M.

Manila. (Father Brown.)

*Hecabolus ruficeps*, new species.—♀. Length, 2.5 mm.; ovipositor about the length of the body. Head reddish yellow, with brown eyes, the antennæ, except the first two joints, the thorax, and most of the abdomen, except as hereafter noted, black; the legs and the apical margins of dorsal segments 3, 4 and 5, and all of the 6th and 7th segments, are honey-yellow. Wings hyaline, the stigma and veins brown-black, the tegulæ yellowish. The antennæ are very long and slender, much longer than the whole insect; the quadrate head is smooth and shining, impunctate; the thorax is long, feebly shagreened, opaque, except the metathorax, which is shining and finely, sparsely punctate, with a distinct median carina at its basal half; the abdomen is elongate fusiform, the first, second and third segments, and the following more or less basally, are opaquely shagreened, the first being finely rugulose.

Type.—No. 8122, U. S. N. M.

Manila. (Father Brown.)

## NEW TORTRICIDS.

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

The only apology for publishing the following descriptions at this time, is that the names have been made use of in identifying specimens for Messrs. Saunders, Winn and Young, and that "MSS" species are the *bête noire* of entomology—effectually locking up a species indefinitely, and prohibiting any one from referring to it in any way, no matter how common it may be or how interesting a life-history someone else may have worked out.

*Tortrix semipurpurana*, var. nov.—Head, palpi, thorax, antennæ and front wings pale lemon-yellow. A large purplish-brown spot rests on the dorsal margin and covers all of the wing, except a narrow line along costa, a small basal patch and a submarginal and apical band of yellow, these are all confluent, forming a wide inverted **U**, transversely through the dark blotch are two shining steel-gray fasciæ, which are continued through the yellow costal margin, as shining *yellow* scales. In the yellow space before the apex is also a short fascia of shining yellow scales, touching the costa. Cilia pale yellow.

Hind wing: Light purplish-fuscous, pale yellow at apex. Under side: front wing, yellowish-white, with upper dark blotch repeated by a shade of pale purple. Under side: hind wing, same as upper side.

Abdomen and legs very pale yellow, with a fuscous spot on upper side of segments 10 and 11.

Five ♂, twelve ♀. Bred, Montclair, N. J., oak, VI., 9; Cincinnati, Ohio, VI., 4 to 15, Miss Annette F. Braun; New Brighton, Pa., VI., 16 to 24, Frank A. Merrick; Chicago, Ill., June, Jos. H. Reading; Quincy, Ill., June, O. C. Poling; Toronto, Ont., June, H. S. Saunders.

The male specimens are of a paler purple than the female; in some examples of both sexes the purple area nearly or quite touches the costa at inner and outer third, thus enclosing a small middle costal yellow spot.

This dark form has been included in my collection with *albicomana*, Clem., and while I have not had sufficient experience in breeding to justify entire separation, the constant difference certainly warrants a varietal name.

Co-types, U. S. Nat. Mus., No. 8211, and my collection.

*Eulia pinatubana*, sp. nov.—Head, palpi, thorax above and upper side of fore wings, yellowish-red. Thoracic tuft, basal patch, oblique and

apical bands dark rust-red. The space between the basal patch and central oblique band is narrow, scarcely lighter than the basal patch, and indicated by a lighter edging on each side of the space which begins at the basal third of the costa and extends obliquely across the wing to the middle of the hinder margin. The space beyond the central band is similar to the last, beginning near the outer third of the costa and extending obliquely across the wing to the anal angle. The outer margin in some specimens is of the same colour as the interspaces, and the costa is more or less flecked with light yellow. Fringe yellowish, with grayish scales at the anal angle. Hind wing and abdomen above, silky gray or slate colour; under side and fringes lighter. Under side of fore wing light fuscous, lighter yellowish diffused spots along the costa and outer border. Under side of abdomen and thorax light straw yellow, as are also the legs. Fore and middle legs annulated with brown. Expanse 13. to 14. mm.

The above description is copied from p. 793, Fifth Report of the U. S. Entomological Commission, 1890, and applies to the Tortricid, the larvæ of which live on white pine, binding eight to twelve "needles" together and living in the tube thus formed. Specimens of the moth had been identified by Zeller as the European *politana*, Haw., and our species has rested under this name ever since. I have lately secured a good series of *politana* from Europe, and after a critical comparison have no hesitation in separating, especially as the European species does not live in pine, but very dissimilar plants. A very complete life-history of our American species in given is the report referred to above; I have also bred it from larvæ with identical habits in Essex County, N. J., other specimens, of which I have about forty, Winchenden, Mass., V. 26 to VI. 3, Frank A. Merrick; Watchung Mts., N. J., IV. 29 to V. 8; and Toronto, Ont., V. 21, Henry S. Saunders.

Co-types, U. S. Nat. Mus., No. 8212, and my collection.

*Phalonia Winniana*, sp. nov.—Palpi, basal and second joint ochreous brown, long scales of latter white on outer half, and almost hiding third joint, which is very short and pale brown; palpi curved upwards, tip nearly at level of top of head. Head and collar creamy-white. Eyes large, round, black. Antennæ one-third length front wing, shortly ciliated beneath; fuscous, slightly paler between joints,

Thorax fuscous. Front wing: A broad transverse ochreous-white band in outer third, followed by a narrower fuscous subapical band, inner two-thirds fuscous and gray-brown. Basal patch not defined, the brownish-fuscous colour covering inner two-thirds, interrupted on dorsal margin by a geminate creamy-white spot, and the costa marked by paler and darker spots. The outer edge of dark area is nearly vertical, it is sharply indented at middle. The white outer band is narrowest on costa, broadening out a quarter below, and involving anal angle and usual position of ocellic spot, which is obsolete. It is white on costa, becoming ochreous towards outer and dorsal margins. Two small fuscous dots mark costa within this white area and two black dots on median line at end of cell. From costa, beyond white fascia, is an olivaceous band, darkest on edges, curving evenly before apex and terminating in a point just above anal angle on outer margin. This is bounded outwardly by a narrow whitish line, beyond a darker—blackish—line, broadest on costa. The apex and apical cilia fuscous, cilia below apex gradually becoming creamy-ochreous. Hind wings whitish in ♂, dark fuscous in ♀, cilia and under side the same, but a shade darker. Under side front wing: smoky fuscous, mottled with darker and with five creamy-white costal spots on outer half. Abdomen: grayish fuscous, anal tuft ochreous, legs creamy white.

One ♂, expanse 10.5 mm., Essex Co. Park, N. J., V., 20. Two ♀, expanse 12.5 mm., Montclair, N. J., VII., 18 (Light-trap), and Orford, Quebec, VI., 8 (Albert F. Winn). Co-type, U. S. Nat. Mus., No. 8213, and my collection.

I have had two of these specimens in my collection for several years, labelled *dubitana*, Hbn., but the recent accession of several European specimens of the latter showed conclusive differences; *dubitana* is creamy-white over the entire surface of fore wing, except a fuscous-brown middle oblique dorsal patch, a smaller costal spot above it, a narrow apical and outer margin line and a small basal patch. I have yet to see an American insect that compares with *dubitana*, and have no doubt that this name, with the majority of other European names in our list, will be dropped when the whole family is better known.

I take pleasure in dedicating this species to Mr. Albert F. Winn, of Westmount, Quebec.

NOTES ON HYDROMETRA MARTINI, KIRK. (=LINEATA, SAY).

BY J. R. DE LA TORRE BUENO, NEW YORK.

Genus HYDROMETRA, Latreille et auct. (=Limnobates, Burmeister et auctt.) H. Martini, Kirkaldy, 1900 (=lineata, Say, 1832.)

The peculiar facility of the older entomologists, the fathers of the Science, for discarding each other's generic and specific names has in this instance, as in many others, given rise to a complicated synonymy, of which I give above that covering this extremely interesting little water-strider. It is given more in detail in *The Entomologist* (London, Eng.) for June, 1900, on page 176, in which Kirkaldy elucidates it, relegating Say's specific name to synonymy, as it unfortunately has been preoccupied by Eschscholtz, who in 1822 described *Hydrometra lineata* from Manila, Philippine Islands. In the paper mentioned hereafter, Mr. J. O. Martin discusses the generic synonymy.

In March, 1900, pp. 70-76, *THE CANADIAN ENTOMOLOGIST* published "A Study of *Hydrometra lineata*," by the last named author, a most interesting paper on the habits and peculiarities of this Hemipteron. The notes I now present are largely supplementary and confirmatory of his work, although I may say that my labours were not directed to that end. In May of 1903, Mr. W. T. Davis took me to Staten Island, where, in a marshy pond, we found *Hydrometra Martini* by the hundred. We took them until we got tired. Again in May of this year, we took very many more at the same place. Subsequently, I have found them here and there, in ones and twos, or in greater numbers, without any effort, which bears out Mr. Martin's experience, although I have nowhere found them as abundant as at Staten Island. This little bug prefers to hug the shore, hiding among the grass-stems growing out of the water. One's shadow falling on it seems to disturb them, and they emerge from their hiding places, and these seemingly tiny twigs can be seen moving briskly away, borne on their hair-like legs, with which they *run* on the surface, or else they remain motionless, letting some friendly little breeze waft them away. It is to be noticed that *Hydrometra walks* on the surface of the water and does not propel itself by a rowing motion, as do the *Gerridae* and other Water-striders. Its tarsi also are provided with claws terminal and not set above the tip of the last tarsal joint as in the latter family. The winged form of *Hydrometra Martini* must be very rare in the north, as out of about two or three hundred individuals I have seen, I have found only two fully winged males.

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Hydrometra has a very curious habit that I have frequently noticed. It lowers its body by bending the legs, until it touches the surface, and there it lies, as it were, taking its ease. I have also noticed aquarium specimens putting out their hair-like rostra and penetrating the surface film with them. It feeds on the insects that fall into the water and attacks them even before they cease to struggle. In the latter case it is extremely interesting to watch them stealthily approach their victim, extending and retracting their long beaks, retreating hastily at some sudden struggle of their prey, then once more resuming their cautious, slow approach, until at length, when the struggles of their destined meal grow feeble, some bold one injects into it the deadly poison of the Hemiptera, stilling its motions, and the others then hasten to the feast. As noted by Martin, several will fasten their beaks into one insect simultaneously.

Although Martin casts much light on it, especially on the oviposition and kindred phenomena, the life-history of *Hydrometra Martini* is still but imperfectly known. To his data my observations this summer enable me to add one or two facts of interest. I have not witnessed oviposition so entertainingly described by this author. The ovum, however, I have seen, and it is a most beautiful object under the microscope, answering in every particular to the most excellent drawing of it in his paper. I was, however, able to ascertain the period between mating and oviposition. A bred virgin female was mated on July 26th with one of the wild males taken in Staten Island in May of this year. It immediately began to swell and on the 28th or 29th of that month the first ovum was deposited, the female being then quite swollen with ova, and continuing oviposition thereafter. The number of ova deposited by a single female in the course of a summer, under favourable circumstances, must be large. The two I kept alive of those taken in Staten Island oviposited continuously from the beginning of May to the end of August, and although I did not count them, the sides of the aquarium were thickly studded with the ova, and they must have numbered hundreds. This is the more remarkable, when we consider that the abdomen of a full-grown female is not much over 6 mm. long and the ova are between  $2\frac{1}{2}$  and 3 mm. The period of emergence varies with the temperature. In the cool days of spring it is as long as 19 days; in midsummer I have had ova hatch in about nine to ten days. The nymphal stages are five, and the time between moults is about three days, giving about fifteen days for the nymphal instars. This



I observed in a number of specimens I succeeded in raising from the ovum, some carried through to maturity, others living only through a few instars. The life-cycle can therefore be completed in from 25 to 35 days. This would give from three to five broods in the course of the summer, which must be the case, as young and old adults and nymphs in several stages can be found together at almost any time during the warm weather. The nymphs in a general way resemble the adults, except that they are a light green, save where the stomach contents show through the transparent integument. They have a way of carrying the abdomen turned up somewhat as do certain Staphylinds among the Coleoptera. When fresh after reaching maturity, they are covered with a grayish pruinosity. This frail little bug is long-lived too. Under favourable circumstances they live at least a year. The individuals I observed were of last year's broods and they survived in my aquaria until late in August, when they died of old age, the last one being a male, which gave up the ghost on the last day of the month.

Mr. Martin to the contrary notwithstanding, I have found no difficulty in breeding *Hydrometra Martini* in my aquaria. I kept the mated adults in a large aquarium and by preserving the inner surface of the glass above the water clean and polished, they were prevented from getting a foothold to aid them in climbing out and escaping. Their ova were deposited on the sides of the aquarium, and the young emerged without any mishap. For their comfort, a few pieces of duckweed afforded them a resting place, although they seemed to prefer to cling to the sides of the aquarium or to climb up a little way from the surface of the water, holding on to the roughness caused by the coating or sediment left on the glass by the water as it evaporated and became lower in the vessel, or where it had splashed in moving the aquarium about. They are sufficiently hardy to have survived two trips of a couple of hours each, confined in a collecting bottle tightly closed. For food, flies were the staple, with an occasional mosquito or other soft-bodied insect by way of change. I think that with ordinary care a very complete life-history could be worked out in an aquarium. The only species of *Hydrometra* recorded from the United States is *Hydrometra Martini*, Kirk. Close collecting may eventually show others, especially along our southern border, in Texas, Arizona, etc. In fact, Say in his original description of *Hydrometra lineata* notes a form that he calls "var. *australis*," from Louisiana. It has been my good fortune to receive from Georgia, near the Florida line, one specimen

answering to his description. The genital characters are such, however, that I think it may be considered a new species, for which I propose the name *Hydrometra australis*. The figures attached (Figs. 3 and 4) show the differences in the genitalia, drawn from my specimen (a male), for *australis*, and redrawn from Martin's figures for *Martini*.

In addition to the characters drawn from the *genitalia*, it differs from the typical *Martini* in the antennal and head characters pointed out by Say, which appear to me sufficiently definite for separation. Lack of material has prevented me from making the detailed study necessary to indicate them minutely, but careful examination of my single specimen leaves no doubt as to their presence.

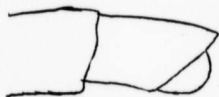


Fig. 3.—*Hydrometra Australis*.  
Male genitalia from side and above.  
(Original.)



Fig. 4.—*Hydrometra Martini*, Kirk.  
Male genitalia from side and above.  
(After Martin.)



### A NEW GELECHID FROM ONTARIO.

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

*Aristotelia Youngella*, sp. nov.—Head, antennæ, palpi, thorax, abdomen and legs shining iridescent green. Basal half of front wing and outer half along costa black or very dark brown, heavily overlaid with iridescent green. The dark basal half is outwardly margined by the black ground colour, owing to absence of the iridescent scales at this point. All the outer half of wing, except the dark costal streak, is dull ochreous, inwardly margined by a pale yellow line, the latter adjoining the dark line of ground colour outlining the basal half. The ochreous and yellow touch the costa at the middle only, and the ochreous shade encloses the dark costal patch, the latter divides the apex and is one half the width of the wing except at its inner end where it is rounded

off into the costa. A tiny dark-brown or black dot on ochreous just at end of cell, and below, but not touching the dark patch above it. The division line in middle of wing, dividing dark basal half from ochreous outer half, is slightly oblique. Cilia fuscous. Hind wing and cilia fuscous, latter once and a half to twice the width of hind wing. Under side front wing fuscous, thinly overlaid with iridescent green, hind wing same, but green only along costal half. Expanse, ♂ 10. to 10.5 mm., ♀ 12. to 12.5 mm.

Nine specimens, ♂ and ♀, Hurdman's Bridge, near Ottawa, Ont., VII., 7 and 9. Co-types, U. S. Nat. Mus., No. 8214, collection of Mr. Young, and my collection. Collected by Mr. C. H. Young, whose name I am particularly pleased to associate with this very beautiful and dainty species, as strictly representative of his own exquisite work in the Micro-Lepidoptera.

#### A NEW SPECIES OF NORTH AMERICAN PROTEOTERAS.

BY PROF. C. H. FERNALD, AMHERST, MASS.

*Proteoteras Moffatiana*, n. sp.—Expanse of wings, 14–20 mm. Head, thorax and fore wings emerald green, varying considerably in the different specimens, some being much brighter than others. The fore wings are marked with black, and many parts have silvery reflections in certain lights. On the basal fourth of the costa there is a small quadrate black spot, below which the basal part of the wing is more or less marked with streaks or irrorations of black. On the middle of the costa is a black quadrate spot connected below with a black stripe extending from the cell outwardly, but not reaching a subapical black spot, which sends a prolongation down along the outer border. There is a series of geminate light spots on the costa, two at the base, two between the quadrate costal spots, and five on the outer half of the costa. The extreme apex is black.

Hind wings and abdomen above fuscous; under side of all the wings fuscous. The costal edge of the hind wings of the males beneath marked with black.

Described from four males and three females. Habitat, London, Ont. (Moffat); Lancaster, N. Y., Oct. 22, 1880; Milford, N. H., June 28, 1870 (Whitney).

I take pleasure in naming this interesting and variable species after the late J. Alston Moffat, who for many years was the able and industrious curator of the Entomological Society of London, Ontario.

January, 1905.

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

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

(Continued from Vol. XXXVI., p. 355.)

150. *Hadena (Xylophasia) remissa*, Hbn.—Nine ♂♂ at light in 1903, and a few of both sexes at light and treacle during 1904. Not previously met with. July 15th to Aug. 2nd. Prof. Smith says they are "somewhat paler in ground colour than New England examples." In a general way the species resembles a pale *ferens*, with which species Mr. Hudson and I at first confused it whilst collecting.
151. *H. (X.) suffusca*, Morr.—Fairly common at treacle. End June and July.
152. *H. (X.) rorulenta*, Smith.—(Psyche, June, 1904, p. 55). Described partly from Calgary material. Allied to and contemporaneous with *suffusca*, but less common. I had the forms standing in two series in my collection for some years, and there always seemed to be a sharp contrast between them, nothing intermediate ever turning up. Prof. Smith does not state whether he compared the type of *suffusca* when naming this species, but says: "I have separated out as *suffusca* those examples in which the ground colour is of an even lilac-gray, the reddish suffusion is uniform, and neither the ordinary spots nor the terminal space contrast strongly. In the new species either the reniform or terminal space, or both, contrast strongly, and are violet or lilac gray. The s. t. line is more sharply defined, the preceding marks blackish and more contrasting, as well as more numerous. The lower half of the wing tends to a gray, which is best marked on the inner margin. The upper half of the wing is reddish, pulverulent, and is darkest on the costa." I would add that the ground colour of the newly-named form is of a reddish ochreous, much like the pale ground of *vultuosa*, and that the reddish shading in upper half of wing contrasts strongly, and is much more conspicuous than it is against the dark lilac-gray ground of *suffusca*. Prof. Smith has specimens also from Winnipeg, Denver, Colo., and New York State, so the two species, if such they really are, would seem to have much the same range, and are probably mixed in many collections. The type is at Rutgers College, and a perfect pair of co-types are in my own collection.
153. *H. (X.) vultuosa*, Grt.—Rather rare. End June and July.
154. *H. (X.) contradicta*, Smith.—Generally very rare. Described

from Calgary. The type, which is in the National collection at Washington, was taken at treacle near the mouth of Fish Creek on June 22nd, 1893. It has turned up amongst Pine Creek hills in 1896, 1899 (one only) and 1904. End June to middle July, and all, I think, at treacle. I have not yet heard of its occurrence in any other locality. A handsome species, and not easily mistaken. A figure is given with the description.

155. *H. (X.) morna*, Streck.—A single ♂, June 19th, 1897. The species looks to me rather like a pale variety of *passer*, in which species the ground colour is almost uniform olive brown. In my *morna*, which Prof. Smith refers to *Hulstii*, this is replaced, except in costal region and terminal area, by ochreous.

156. *H. (X.) cerivana*, Smith.—Seldom common. June and early July; at treacle. Described from Calgary. The type is at Washington. Dr. Dyar treats this as a variety of European *basilinea*, Fabr., but Prof. Smith has examined a good series of both forms, as well as of *finitima*, Gr., and whilst believing them all three to be distinct, claims that *cerivana* is nearer to *finitima* than either is to *basilinea* (CAN. ENT., XXXV., 134, May, 1903). My only *finitima* is a ♀ from N. Y., and differs widely from the Calgary species, both in colour and in the entire absence of grayish suffusion. A figure is given with the description.

157. *H. (X.) lateritia*, Hbn.—Has been a bad treacle pest in some years. June and July.

158. *H. (X.) dubitans*, Walk.—Rare on the whole. July. By some peculiar error which I have never satisfactorily explained, I had for some years *H. Alberta* standing under this name, or rather under *sputatrix*. This mistake was certainly not Prof. Smith's, and the species are quite dissimilar. Meanwhile my *dubitans* did duty for *Helotropha reniformis*, a species of which I have no Alberta record. I probably often used to send out *dubitans* and *Alberta* under such erroneous names, but was never corrected!

159. *H. (X.) impulsæ*, Gn.—Very rare. July. A black species, which at first sight might be mistaken for *Mamestra assimilis* without the white spot near anal angle.

160. *H. (X.) devastatrix*, Brace.—One of the commonest Noctuidæ, and a bad pest at treacle. Met with commonly under bark on dead trees, etc., and in outbuildings. End June to August. Have a fair specimen dated Sept. 8th. I know of no species which has so often "fooled" me on the treacled posts, by looking like something new, and what is more, I

don't seem to be used to it yet! It certainly shows considerable variation, but I fancy the deception is generally due to the varying effects caused by the different angles at which the lantern rays shine on it.

161. *H. (X.) arctica*, Bdv.—This decidedly pretty, and I suppose well-known species, was fairly common at treacle in 1896, and I had taken a few specimens previously. I don't think either Mr. Hudson or myself have met with it since. End June and July.

162. *H. (X.) occidentis*, Grt.—Very rare. End June and July.

163. *H. (X.) versuta*, Smith.—Described from Calgary. The type is in U. S. Nat. Museum. Generally common at treacle in the hills. June and July. The variation, though by no means striking, is considerable, and apt to be rather confusing, both when collecting and in the series. I do not think, however, that I have more than one species under the name. There is often a mossy or bronze lustre, but this is sometimes lacking, and the forms are then dark powdery gray. It may be almost unicolorous, and the markings, never very distinct, obscured, or the reniform may stand out rather conspicuously in whitish. The s. t. area is sometimes rather conspicuously paler than rest of wing, especially near the inner margin. It is really the variation in lustre and the suffused nature of the markings which render the study of a long series necessary before the species can be recognized at sight with any degree of certainty. Nearly ninety per cent. of my specimens are ♀♀. Figure is given with description.

164. *H. (X.) ferens*, Smith.—(CAN. ENT., XXXV., 134, May, 1903). Described from Calgary. The type is a ♂ in the Rutgers College collection. Very rare until 1903 and 1904, when over twenty specimens turned up at light. Prof. Smith states that it is near *runata*, a species I have not yet seen. It is certainly very like *allecto*, from which, however, it may be distinguished easily by the absence of grayish powdering, and greater length, comparative to width, of wing. Bad specimens, too, are not unlike *remissa*, which species has, however, larger, rounder and paler discoidal spots. Sir George Hampson says: "I doubt its being distinct from *separans*, Grt." He has charge of the type of that species, and doubtless has good grounds for the suggestion. July.

165. *H. (X.) enigma*, Smith.—(Psyche, June, 1904, p. 54). Described from Calgary. Seven ♂♂, July 3rd to 19th, at light, 1903. Prof. Smith says after the description: "This is one of those obscure species that have no positive characters, and depend for their standing upon the absence of

any that distinguish others. It is a little like *fumosa*, but has entire secondaries. The absence of black in the basal space excludes it from *ferens*, which it otherwise resembles in size and general habitus." I hardly dare add anything, as, though I suggested a different species to Prof. Smith, I had it mixed with *ferens*, small and badly marked specimens of which, especially if a bit rubbed, are hard to distinguish from it. It seems to bear the same relationship to *ferens* that *Mamestra negussa* does to *M. gussata*; i. e., the later species lacks the numerous black markings which characterize the older. Prof. Smith has the type, and I have a co-type.

166. *H. (X.) cinefacta*, Grt.—Rare in Pine Creek at treacle during July. I found it fairly common flying over flowers of *Symphoricarpos occidentalis* or the western snowberry, on the Red Deer River flat north-east of Gleichen, both before and after sunset, in early July of last year (1904).

167. *H. (X.) unita*, Smith.—(Psyche, June, 1904, p. 54). Described from a single ♀ taken near Calgary on June 26th, 1897, probably at treacle. The species is now in the Rutgers College collection. Prof. Smith says: "It resembles and is allied to *cinefacta*, but differs in the uniform bluish ash-gray, the even black bar connecting the median lines, and in the clearer, better defined markings." It stood for five years in my collection labelled "? *cinefacta*" on Prof. Smith's authority, but the reference always was, and still is, a puzzle to me. Sir George Hampson and others have accepted the species I held as *cinefacta* without challenge, but I never saw a specimen with the least trace of the "uniform bluish ash-gray," which is so evident in this specimen.

168. *H. (X.) Alberta*, Smith.—(Journ. N. Y. Ent. Soc., XI., 8, March, 1903). Described from Calgary. The type is at Rutgers College. I have one ♂ and two ♀ co-types, and a ♂ co-type is in the British Museum. Seldom at all common. Middle June to middle July, at treacle. Prof. Smith says that it is "allied to *cinefacta*." It could not possibly be mistaken for that species as I know it. It is a dark leathery-brown insect, sometimes almost black, and the maculation is always obscure. As mentioned above, I had this species standing for some years as *sputatrix* by some inexplicable error. I certainly never for a moment confused the two.

169. *H. (X.) Barnesii*, Smith.—A single ♂, in good condition, found by Mr. Hudson under the bark on a poplar tree at Lineham's lower log

camp, in the foothills on Sheep Creek, on July 16th, 1898, has been so referred by Prof. Smith, and passed as such by Dr. Barnes. A perfect ♀ taken at light at the C. P. R. chalet at Lake Louise, Laggan, on July 14th last, I have placed under the same name, though I admit it is almost as much like the following species.

170. *H. (X.) sora*, Smith.—(CAN. ENT., XXXV., 133, May, 1903). Two fine ♂♂ only have been taken. One is the type which is now at Rutgers College, and the other a co-type in my own collection. July 2nd and 15th, 1896; treacle. In general appearance the form suggests ♂ *Barnesii*, but is shorter winged and more even in colour than my ♂ of that species. I had at first looked upon both as probable varieties of *Alberta*, but they are really more like *auranticolor*. Neither need be confused with that species, however, which is larger and much more strongly coloured.

171. *H. (X.) semilunata*, Grt.—Always rare. Treacle. June.

172. *H. allecto*, Smith.—Rather rare. At treacle, in September. Described partly from Calgary material. The type is in the U. S. National Museum. According to Prof. Smith, this species differs superficially from *mactata* only in colour, of which *allecto* lacks the reddish or brown shadings, and is black and gray only. I have examined a number of specimens from both Calgary and Cartwright, Man., but have been unable to procure true *mactata* for comparison. Some specimens seem to me to have a slight brownish tinge, especially a Cartwright ♂ sent me by Dr. Barnes labelled *mactata*. Mr. Heath, however, has not *mactata* on his list, and all the *allecto* he sent me were like the Calgary form.

173. *H. transfrons*, Neum.—Sometimes very common at light and treacle, but, in eleven seasons, I am not aware that amongst the numbers taken by Mr. Hudson and myself, more than two have been ♀♀. I used at one time to send it out as *violacea*, with which species I am not familiar. Dr. Otologui corrected the error. There is considerable variation in intensity of colour. In some specimens the s. t. area is conspicuously white, in others scarcely contrasting. Sometimes the violaceous colouring of central band, and even basal area, is intensely rich, and such specimens are very pretty. July and August. The type is recorded vaguely from "British Columbia," and is in the Museum of the Brooklyn Institute of Arts and Sciences.

174. *H. claudens*, Walk. Nearly always a rarity, but some numbers turned up at treacle in 1903, a year favourable to many *Hadenas*. Middle August to middle September.



175. *Polia pulverulenta*, Smith.—Rather rare as a rule, but fairly common in 1903. August to middle September.

176. *P. medialis*, Grt.—A ♂ taken at treacle near mouth of Fish Creek, on Sept. 30th, 1894, was named *medialis* by Prof. Smith. Another at treacle in the hills on Sept. 4th, 1896, passed as that species with Dr Barnes. Neither are in my collection. Two ♂♂, also at treacle, in the hills on Pine Creek, Sept. 14th and 15th, 1903, were erroneously recorded by me, from memory of the former specimens, as *medialis* in Rep. Ent. Soc. Ont., No. 19, p. 92. Prof. Smith afterwards saw one of the latter specimens, and said concerning it: "Not *medialis*, and nothing like it in my collection." I have a specimen from Cartwright, Man., sent me as *confragosa*, which I believe to be conspecific with these latter. The two older specimens may or may not have been correctly named.

177. *Hyppa xylinoides*, Gn.—Fairly common at treacle some seasons. Middle June to middle July.

178. *H. brunneicrista*, Smith.—Described from Calgary, and I have not yet heard of it from any other locality. The type is at Rutgers College. Apparently very rare, but its seeming scarcity may be due to its having been overlooked. It flies at the same time as *xylinoides*, with which I for a long time confused it. Its validity is, however, beyond question. It differs from the preceding species mainly in these respects: (1) The pectinations of ♂ antenna are longer, giving them a much heavier appearance. This is quite obvious to the naked eye. (2) The thoracic tuft is rusty-brown tipped. (3) There is a rusty shading in s. t. area near anal angle, and the s. t. line is *not* sharply angulated at that point, where it also lacks the black crescent-shaped mark before it. It is, in fact, in the anal angle where the most obvious points of difference may be looked for in ♀♀. (4) The secondaries are more even and duller smoky, and though the species is darker as a whole, this point is not a constant feature. Four or five specimens were taken at treacle during the past season (1904), which are all I have seen for about six years, during which time its congener, with which it flies, has not been at all common. I have a ♀ co-type.

179. *Euplexia lucipara*, Linn.—Decidedly rare as a rule, but more common than usual in 1904. June, at treacle.

180. *Homohadena stabilis*, Smith.—Described from Calgary. Type at Washington. Common some years in July and August. Have bred it

from larvæ feeding on the Western Snowberry (*Symphoricarpus occidentalis*). A dull red-brown species, with sometimes no sign of maculation whatsoever, except very faint traces of t. a. and t. p. lines. A figure is given with the description.

181. *H. badistriga*, Grt.—Very rare. July and early August; treacle. I have only one ♂ and two ♀♀, no two alike in either colour or markings. Dr. Fletcher says his specimens of *badistriga* have white secondaries. In my three they are smoky, and the name may be wrong. *H. fifa*, Dyar (CAN. ENT., XXXVI., 30, Feb., 1904), is a closely described form, to which one of my ♀♀ might possibly be referable. I have Manitoba specimens of both sexes similar to this ♀, which were sent me as "either *badistriga* or *kappa*." The latter species is unknown to me. I am inclined to think that my three specimens are not all the same species.

182. *Oncocnemis pudorata*, Smith.—Occurs in the mountains at Laggan (Bean). The type is from Agnes Lake, near there, at about 6,700 feet, and is at Washington. I have a fine ♂ specimen from Mr. Bean, which I am pretty sure is this species. A figure is given with the description.

183. *O. atrifasciata*, Morr.—Two specimens only, both ♀♀, and quite fresh. One on a fence rail in daytime, July 10th, 1896. The other at treacle, Aug. 18th, 1903.

184. *O. viriditincta*, Smith.—A single ♂ at treacle, near mouth of Fish Creek (Bow valley, below Calgary, and east of the hills), on Aug. 27th, 1894. The specimen has one hind wing chipped, but is otherwise good. The type, which is in the Rutgers College collection, is from "McLean, B. C.," and was taken by Mr. Bean. McLean, as before stated, is in Eastern Assiniboia, where Mr. Bean formerly resided. Mr. Heath records the species from Cartwright, Man., so it would seem to be a prairie rather than a mountain species in the west. It has apparently been taken in eastern Canada. A figure is given with the description.

185. *O. Chandleri*, Grt.—Used to be very common, but I have not taken it for some years. I think Prof. Smith redescribed it as *confluens* about 10 years ago, but the description was never published. Under that name I formerly distributed it. July to middle September. Treacle and light. One year it was a pest at both.

186. *O. cibalis*, Grt.—Rarely common, and not seen for years. Middle July to middle September.

187. *Rhynchagrotis gilvipes*, Grt.  
188. *R. rufipectus*, Morr.—Both pretty common. July and August.  
189. *R. anchocelioides*, Gn.—I have a ♀ so named by Prof. Smith, but which looks to me exactly like Dr. Holland's figure of *alternata*. The specimen bears no date.  
190. *R. placida*, Grt.—Fairly common at treacle some seasons. July and August. I may have more than one species under the name.  
191. *Adelphagrotis prasina*, Fabr.—Generally rare, but it came rather frequently to treacle in 1903. July and August.  
192. *Platagrotis pressa*, Grt. Rare. July and August. Sir Geo. Hampson says: "I doubt this being *pressa*, it is much too uniformly gray and fuscous. We have a similar specimen from California."  
193. *Euretagrotis inattenta*, Smith.—(Journ. N. Y. Ent. Soc., XI, 5, March, 1903). Described partly from Calgary material. The type, which is in the Rutgers College collection, is a Calgary specimen. Resembles *perattenta*, under which name I have sent it out. Compared with that species, Prof. Smith says in the description: "The new species is uniformly larger, darker, and even in colour, without mottling, and with the terminal space not lighter than the ground, though in one case somewhat lighter than the s. t. spaces." I have not yet had an opportunity of comparing the two, though *perattenta* seems to occur at Cartwright.  
194. *Pachnobia littoralis*, Pack.—Prof. Smith used to call my form *pectinata*, but more recently he has said: "Your *littoralis* seems to be the normal form of that species." I may have both forms, but do not know their characteristics. Common at light and treacle. June and July.  
195. *P. salicarum*, Walk.—Common at willow blossom and light. End April (earliest, 23rd) and May.  
196. *Agrotis aurulenta*, Smith. One fine ♂ at light, July 28th, 1903.  
197. *A. ypsilon*, Rott.—Not common. I have taken it in fine condition from June 23rd to Oct. 5th.  
198. *Peridroma occulta*, Linn. Common. End June to August. Treacle. Very abundant during 1903, and a nuisance at treacle. I took the opportunity, however, of picking out a fine series of perfect specimens, including some very handsome forms. During the latter part of May and early June the larva was to be seen in some numbers on the ends of willow twigs in the daytime. These were apparently attacked by some parasitic fungus, as they died on the twigs, to which they remained clinging.

199. *P. stricta*, Morr.—Always common. End June to August. Treacle and light. Exceptionally common during 1903, but in fewer numbers than *oculta*.

200. *P. nigra*, Smith.—Not common. July and August. Treacle. I took a good series during 1903, when, though by no means common, it turned up in greater numbers than previously. The species has a bluish-black appearance, with sometimes a few paler shadings of ochreous or brownish ochreous, but very different from the brown of *stricta* or the gray of *oculta*. It is hard to get in good condition. I had this standing for some years doubtfully as *X. castanea*, a species with which I am not acquainted.

201. *P. margaritosa*, Harr., var. *saucia*, Hbn.—Not common. I have no May or July records, but have taken it in fair condition from middle to end of June, and perfectly fresh specimens from Aug. 9th to Oct. 20th. I do not know the type from the variety, and may have both.

202. *Noctua Smithii*, Snellen.—Common. July and August. The erroneous reference to *baja*, Fabr., under which name this common North American species used to be known, is not given in Dr. Dyar's list.

203. *N. Normaniana*, Grt.—Not rare. July and August.

204. *N. juncta*, Grt.—Redescribed from Calgary by Prof. Smith as *patefacta*, the type of which is in the U. S. Nat. Museum (Ent. News, VI., 333, and pl., Dec., 1895). Rather rare. End July to early August. Treacle and light.

205. *N. substrigata*, Smith. Described from Calgary, and figured with the description. Common at light and treacle. Middle June to August. Type in the U. S. National collection at Washington.

206. *N. Treatii*, Grt.—In CAN. ENT., XXXI., 200, it is stated that this species is "not uncommon at Calgary." This is a mistake. It has always been a decided rarity, and hard to get in perfect condition, until 1903, when it was decidedly common, and one of the most frequent and regular visitors to light for some weeks. Mr. Hudson and myself took a large number of most perfect specimens. Also taken at treacle. July and August.

207. *N. c-nigrum*, Linn.—I used to look upon this as a rarity here, but it has been more common during the past few seasons, though by no means abundant. Treacle. Less frequently at light. July and August.

208. *N. cynica*, Smith, var. *perumbrosa*, Dyar?—(CAN. ENT., XXXVI., 31, Feb., 1904, and 102, April, id.). A ♀ dated Aug. 12th, 1903, January, 1905.

which seemed to me a unique, was stated by Prof. Smith to be "probably the species Dr. Dyar calls *umbrosa*." The name, being found preoccupied, was changed as above. Prof. Smith tells me he has a specimen from Cartwright, Man., and I have a ♀ from the same locality, which looks the same. Dr. Dyar's reference of *perumbrosa* to *cynica* rather than to *rubifera*, is based on the form of ♂ genitalia. My Calgary specimen is of a rather uniform dark brown, with scarcely any tinge of red or contrast in shades. The t. a. and t. p. lines seem less waved than in *rosaria*, which it resembles more nearly than anything else in my collection, and the secondaries are dark smoky. Described from Kaslo, B. C. The type is presumably at Washington.

209. *N. rosaria*, Grt.—Fairly common at treacle some seasons. Middle June to middle July.

210. *N. Calgary*, Smith.—Described from here. The type is at Rutgers College. Generally common, rather more so than the preceding, at treacle, during the same period. I used to confuse the two species, but careful study of long series enabled me at last to distinguish them at a glance. In form *Calgary* differs from *rosaria* in having less rounded apices; in maculation in having the terminal area not darker, but usually paler, than the subterminal. In *rosaria* the reverse is almost invariably the case. *Rosaria* is of a rosy red colour throughout, whereas the tints in *Calgary* are brownish red and brownish ochreous. In *rosaria* the basal t. a. and t. p. lines are almost always double, generally fairly distinct, rarely obsolete. In *Calgary*, though generally traceable, they are rarely distinct, and still more rarely are any of them double. The t. p. line may be followed by a narrow pale shade, but the outer portion of the line is usually obsolete, or at any rate is not distinguishable from the dark s. t. shade, as it is from the PALE s. t. shade in *rosaria*. The spaces in the cell between the spots and before the orbicular are sometimes black in *Calgary*, but never in *rosaria*. I have bred specimens from larvae beaten from sallows in early spring. The ♀♀ of both species are smaller than the ♂♂.

211. *N. dislocata*, Smith.—(CAN. ENT., XXXVI., 149, June, 1904). Described from here from four ♂♂ and two ♀♀. The type is in Prof. Smith's collection, and a ♂ co-type is in my own. The description applies for the ♂, which I feel convinced is a good species, but I have no reason for believing that a ♀ co-type sent me by Prof. Smith, picked from his series of *Calgary*, is other than that species. It is by no means common,

but about a dozen specimens were taken at treacle during 1904, more than had been taken altogether previously. I have never seen any ♀♀ which I have suspected of being this species, which I first recognized three or four years ago. The description is an excellent one, but as no corresponding description of *Calgary* was ever published, will not serve to distinguish it from that species. And the broken median shade upon which the name is based, though probably characteristic of the species as a whole, cannot be relied upon even in the ♂♂ for the separation of individual specimens. I have closely examined 64 ♂♂ and 15 ♀♀ of *Calgary*, and "bluish ash-gray," which fits many of the present species well enough, will not apply to any of the older forms. A few of my *dislocata*, however, are of that brownish-red tint common in *Calgary*, but none have the ochreous shade generally present there as well. *Dislocata* averages a little larger, and as a rule has the transverse lines, including the terminal line on both wings, a little heavier and more clearly defined. The paler markings in the reniform, when they exist, seem to be of a faint yellowish tinge rather than whitish, as in *Calgary*. The orbicular is usually but not constantly larger and rounder. The central shade, as mentioned above, seems generally, not always, distinctly broken; and in at least four of my most obvious ♂ *Calgary*, the break is very pronounced indeed, but it is much more often uninterrupted. The same break is occasionally seen in *rosaria*. The collar in *Calgary* is generally a little paler than the rest of the thorax, but in the present species is more often about unicolorous. I may be over-confident, and yet I never felt more sure of a species which I was so incapable of defining. It may be claimed that the inability unjustifies me in condemning the ♀. I cannot always recognize the species at a glance, and I have at least two ♂♂ which I am unable to place with certainty. It flies at the same time as *Calgary*.

212. *N. oblata*, Morr.—Common in some years. Middle June and July. Treacle. Have bred it from larva beaten from *Salix* in early spring.

213. *N. fennica*, Tausch.—Have seen it not uncommon at treacle, but it has been rare of recent years. End June to August.

214. *N. plecta*, Linn. Very rare, and I have never taken a perfect specimen. July, at light.

215. *N. collaris*, G. & R.—Rather common at treacle. August.

216. *N. inopinatus*, Smith.—Not very common as a rule, though it appeared in some numbers at light and treacle. July and August.

Described from material from Manitoba, Vancouver Island and Colorado. The type, figured in CAN. ENT., XXXII., No. 8, Pl. 5, is from Brandon, Man., and is in the U. S. National collection at Washington. Said to be intermediate between eastern *haruspica* and western *sierra*. In his description Prof. Smith says: "In size the new species averages less than *haruspica*, and the colour is, as a whole, more even smoky, with less red. The ordinary spots are somewhat better relieved, while the median lines tend to become broken and incomplete, while yet the detached parts may be well marked." I have one ♀ sent me from the States as *haruspica* without data, and four fine specimens from Mr. C. H. Young, of Hurdman's Bridge, Ont., which Dr. Fletcher tells me are typical eastern *haruspica*. The U. S. specimen differs from the Calgary form in accordance with Prof. Smith's remarks, except that some of my *inopinatus* are much redder, and whilst a series of forty specimens from Calgary and Cartwright, Man., collectively differs from the four Ottawa specimens in like manner, if the two series were mixed, I certainly could not distinguish them without the labels. In his notes to me recently Prof. Smith said: "It is quite possible that we have to do with races instead of final species." To my mind the extremes in my two series overlap in the different characters in such a way as to obviate any suggestion of two species. I sent one of my reddest specimens to Sir Geo. Hampson, who said: "I should call it *sierra*." He recognizes both species, however, and has both from Colorado in the British Museum. *Sierra*, which I have never seen, was described from California, where, Prof. Smith tells me, *inopinatus* is probably not found.

217. *N. clemens*, Smith.—Four specimens. One June 20th, 1901; the other three at light, on May 31st, 1902. Prof. Smith says that Colorado specimens are a little larger. The species bears some resemblance to *Chorisagrotis balanitis*, in mistake for which Mr. Hudson thinks he may have passed it over.

218. *N. clandestina*, Harris.—Generally the commonest noctuid, often extremely abundant. A great frequenter of buildings, particularly if built of logs. On some nights during hot seasons they are a bad pest in houses. I used to think they were attracted thither entirely by lamps, but though they certainly swarm round a light, their presence in the rooms seems to be to some extent accidental. I have seen them in hundreds in a room before the lamps have been lighted, where the night before there were few or none to be seen. They appear to creep into cracks and crannies from the outside to pass the daytime, and a large number of them come out at dusk on the inside. Fortunately, they do not, as a rule, come very freely to treacle. I have bred very few from "cutworm" larvae. End June to August. (To be continued.)

FURTHER NOTES ON TYPES AND OTHER SPECIMENS IN  
THE BRITISH MUSEUM. \*

BY HENRY H. LYMAN, MONTREAL.

Having planned a trip to Europe for the early part of last spring, I was anxious to utilize the opportunity to compare some specimens with types in the British Museum, but as I was sailing to the Mediterranean and going to spend most of my time in Italy, it was impossible to take more than a very few specimens, as I had to carry them everywhere, and did not dare to intrust the box to anyone else to carry for me. I therefore restricted myself to a cigar-box full, chiefly *Gortynas*, two of them *Appassionata* and *Harrisii*, kindly lent me by Mr. Bird, and the rest from my own collection.

I sailed from Boston 26th March, via the Azores, Gibraltar, Marseilles and Genoa to Naples, where I landed on the 10th April. I reached London on 4th June, and the following week paid two visits of some hours each to the Entomological room of the British Museum.

I was unfortunate in missing Sir George Hampson, who was absent on sick leave, but every facility was given me for study, and I was much indebted to the courtesy of the other members of the staff. To guard against misconception, I wish to say that anything which I may say in regard to errors of determination is not to be understood as criticism of the officers in charge of that collection. No great collection can possibly be free from very many errors. No man can be thoroughly acquainted with the *Rhopalocera* or *Heterocera* of the world, and the enormous mass of material already there and the very large accessions which are constantly being received, render it impossible for the wholly inadequate staff to cope with the work.

If there is one criticism I would make it is that there seems to be too much of a tendency to find specimens to agree with the description of every synonym, and so to have one or more specimens standing under every name which has ever been given, which I think a great mistake, but to have a great national collection practically free from errors it would be necessary to call in experts in every group from all parts of the world, and have them working for months on the parts of the collection that they are competent to deal with, and that, of course, is manifestly impossible. My time was chiefly given to the *Gortynas*, and I made the following notes:

\* Read at the Annual Meeting of the Entomological Society of Ontario, 27th Oct., 1904.  
January, 1905.



The drawers of *Gortynas* are not in a satisfactory condition, as specimens are much crowded and put together without sufficient discrimination.

*Necopina*.—Grote's ♂ and ♀ types, but no other specimens.

*Medialis*.—One fine specimen from F. H. Wolley Dod appears to be of the form named *Pallescens* by Dr. Smith.

*Micacea*, Esper.—There are many specimens put under this name, including Gueneé's type of *Immanis* and *Amurensis*, Stgr. Also a specimen labeled *Obliqua*, Harvey, from Sierra Nevada, which does not appear to be that species, but rather *Immanis*, Gn.; this probably accounts for Dr. Smith's original statement, that there was no reasonable doubt of the identity of *Immanis*, Gn., and *Obliqua*, Harvey (Catalogue of NOCTUIDÆ, p. 175), which he afterwards withdrew in his revision (Trans. Amer. Ent. Soc., XXVI., 24), acknowledging *Obliqua* to be a good species.

*Stramentosa*, Gn.—The type and two other specimens.

*Nitela*, Gn.—The type and three other specimens.

*Nebris*, Gn.—The type and four other specimens.

*Limpida*, Gn.—The type and three other specimens.

*Cerussata*, Grote.—One fine specimen from Mr. Bird.

*Marginidens*, Gn.—The type and two other specimens, all large specimens and flown and light in colour.

*Rutila*, Gn.

*Harrisii*, Grt.

*Sauzalite*, Grt.

} These are all put together as one species under Gueneé's name, but erroneously so.

If Grote's description of *Sauzalite* as having a frontal protuberance is correct, a point which an entomologist of Sir George Hampson's ability could determine in five minutes, there could be no excuse for lumping it with *Rutila*, although, as far as I could see, the type looks exactly like that species. I am also satisfied that *Harrisii*, Grt., is distinct from *Rutila*, Gn., as the t. p. lines are different. I also satisfied myself that what we in Montreal have been rearing in abundance from burdock, and also from thistle, is the true *Rutila* from Gueneé. The specimens standing under the name *Rutila* in the British Museum are as follows:

Gueneé's type, which is rather faded. There are three other specimens of the same form, but all are in poor condition.

Grote's type of *Sauzalite*, which is in poor condition.

Two specimens marked "*Harrisii*, Grt., ♀ type"; these agree together in colour and markings and with Bird's specimen which I took over.

Over the label "*var. Harrisii*" are two specimens, one labeled:

GORTYNA, ♂ TYPE. HARRISII, GROTE.
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Is much deeper and brighter in colour than the other specimens of *Harrisii*, but appears to agree with them in markings. The other specimen is without label, but is a fairly fresh *Rutila*.

*Purpurifascia*, G. & R.—There are four specimens, which seem to be correctly named, but are in poor condition.

*Baptisia*, Bird.—One fine bred specimen from Bird.

*Appassionata*, Harvey, type.—In fair condition, but badly set and sprung, the wings sloping down. The fore wings rather narrower and slightly more elongated than in the specimens bred by Bird, but not quite so sharply pointed at apex as indicated in a drawing made for me by Mr. Knight. Hind wings with outer half more distinctly rosy than in Bird's specimen, and more distinctly limited on inner edge by median line. In my opinion there can be no doubt that the species bred by Bird from the Pitcher Plant (*Sarracenia Purpurea*) is the true *Appassionata*.

*Buffaloensis*, Grote's type, is the only specimen in the collection. The right primary is badly slit to the base, but the specimen otherwise is in good condition. It is of a rich red-brown colour.

*Nelita*, Streck.—Is not represented.

*Impecuniosa*, Grt., type.—In rather poor condition.

*Cataphracta*, Grt.—Three specimens, two being fairly fine.

*Rigida*, Grt., type only.—In poor condition.

*Cerina*, Grt., type—Large in size. Right side in poor condition, left side fairly good.

*Erepta*, Grt., type.—Unique. In rather poor condition. A peculiar-looking species. From "Douglass Co., Kansas, 900 ft. F. H. Snow."

*Inquæsitâ*, Grt.—Two fine specimens.

Up to 1900, when I presented a specimen of *Hepialus Thule*, Streck., to the Museum, that species was supposed to be lacking, but on this occasion, when looking over the drawers containing that genus to see if Grote's type of *H. gracilis* was in the collection, I discovered a specimen of *Thule* in fair condition, which has been in the collection ever since 1844, or for 31 years before the species was described. According to the

Museum register, it was collected by George Barnston in Hudson's Bay Territory, the locality, "Albany River, St. Martin's Falls," being enclosed in brackets, but as the entry applies to a number of specimens received in the same lot, it is impossible to be sure of the locality of this particular specimen. The specimen had been placed with *H. argenteomaculatus*.

I also looked hurriedly over the drawers of North American *Colias* and saw a number of errors. *Interior* was in one drawer, while the name *Laurentina* was put, as originally described by Scudder, as a variety of *Philodice*, but the specimens under this name were two albino females of *Philodice*, from Philadelphia, a rather narrow-bordered *Philodice* from New Brunswick and one set under side up.

Two male specimens of *Colias*, which, according to the register, were taken in the Rocky Mountains by a collector employed by Lord Derby, about 1845 or 1847, and which, if I am not mistaken, stood in 1897 over a blank label, have now been labeled *Astræa*, Edwards, but are certainly not that variety. I may say that I have seen the type of *Astræa*, but do not consider it in the least entitled to a varietal name. It is a very ordinary form of *Christina*, and intergrades with the typical form. I noticed a number of other errors, some of which I pointed out to Mr. Heron, but of which I made no exact notes.

P. S.—Since writing the above I have received a letter from Sir George Hampson, in which he says :

"With regard to the specimens standing under *rutila*, they are exactly as Mr. Butler placed them, as I have not yet come to that part of the subject, and had not in any way studied them till I got your letter. *sauzalite* has the frontal prominence very distinct, it is a vertical flat plate, shaped like the letter D, the others have no frontal prominence. *rutila* has the postmedial line moderately bent outwards below costa, then oblique to vein 6, then inwardly oblique, whilst *Harrisii* has it strongly bent outwards below costa, then nearly evenly inwardly oblique to inner margin. We have the type and two other specimens of typical *rutila*, and the three types and two other specimens which I should put under *Harrisii*, but I am bound to confess that these last two specimens appear to be somewhat intermediate."

The two specimens regarded by Sir George as intermediate appeared to me to be merely *Rutila*.

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Mailed January 7th, 1905.