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THE STRUGGLE WITH THE CODLING MOTH.

BY WM. LOCHHEAD, ONTARIO AGRICULTURAL COLLEGE, GUELPH.

Everyone recognizes the destructive work of the Codling Moth, but everyone does not know how to fight it. Much has been written about it, for the great loss occasioned by this one insect has compelled not only fruit-growers but also governments to investigate its habits and to determine practicable methods for its control. As a result of the labours of many scientific observers, its life-history is now fairly well known, and its control is now no longer a matter of mere chance. The recent work of Slingerland and Simpson in particular has cleared up many doubtful points in its life-history, so that the careful, intelligent fruit-grower can now rely upon remedies which are practically effective.

Although the "worm" or larva is well known on account of its abundance, the other stages of the Codling Moth are still unfamiliar to most fruit-growers. This is not to be wondered at, for the moth is quite small, and is a very shy creature. Other small moths are frequently mistaken for it, and this probably explains why a few years ago trap-lanterns were thought by some credulous people to be effective agents in their control. As a matter of fact, Codling Moths do not appear to be attracted by lights, and there are but few instances on record where they have been captured by such means.

It is not many years since the eggs of the Codling Moth were first observed and noted. They are very small, and most careful observations are required to detect them. With the first brood they are found most frequently on the leaves, sometimes on the young fruit, but usually on the fruit in the case of the second brood. About ten or eleven days elapse before the young larvæ emerge. Naturally, the majority of the newly-hatched larvæ of the first brood feed on leaf-tissue. Soon, however, they find the fruit, and enter it, usually at the calyx end. The tunnel to the core, the cavity at the core, and the exit tunnel and its plug are too well known to require description. The larva lives within the apple about

twenty days before it emerges to spin its cocoon under some rude protective covering, such as rough bark, cracks, bands, etc. Six days later the larva within the cocoon transforms to a pupa, and two weeks after it has entered the pupal state the moth appears. The average duration of the first generation is about fifty days. In districts where there is but one generation in a year, the larval stage is lengthened to nearly ten months, for the winter is passed as a larva within a cocoon. Where there are two generations the moths emerge in August to deposit eggs on the apple for the second brood of larvæ, which work throughout August and September in the developed fruit. This second brood of "worms" is more destructive than the first, as their ravages are committed on the later and more valuable fruit, often after it has been picked and stored.

From the standpoint of the control of the Codling Moth it is important to know definitely when the moths deposit their eggs, and when these eggs hatch. The observations of many competent entomologists indicate that the egg-laying period may extend over several weeks with both generations of moths.

When we consider the problem of the control of the Codling Moth we must emphasize the importance of these lengthened egg-laying periods, more especially when we bear in mind the habits of the larvæ. It is clear from what has been stated, that the early larvæ may be killed by poisoning the leaves, and by placing poison in the calyx end of the apple; and the second brood may be killed by the spraying of the fruit, for the eggs of this brood are, as a rule, deposited on the fruit.

Experiments carried out both in the East and the West show that a very large percentage of worm-free apples is obtained when two sprayings are made for the first brood of larvæ, and one for the second brood when it is present: the first spraying a few days after the petals fall; the second two or three weeks later; and the third about the middle of August in ordinary seasons. Slingerland lays great emphasis on the first spraying for Eastern conditions, while Simpson is of the opinion that the second spraying is most effective for Western conditions.

A very important factor in successful spraying is the arsenical mixture used. Paris Green has for many years been used successfully by careful sprayers, but with very indifferent results by careless sprayers. If not carefully mixed and agitated Paris Green settles rapidly to the bottom, and much of it will remain at the bottom of the spray barrel when the solution is all sprayed out.

Arsenite of lime, arsenite of soda, and arsenate of lead are now recommended in preference to Paris Green. They are much cheaper and more effective, since they mix readily in water or Bordeaux Mixture.

In the matter of orchard practice the Arsenic Compounds should always be used along with Bordeaux Mixture, to form a combined fungicide and insecticide against both the Apple Scab and the Codling worm. In small orchards a good hand-power spray-pump is all that is needed to apply the solutions, but in large orchards "power-sprayers" are strongly recommended. The high pressure which is developed allows the use of two lines of hose operating 8 to 12 nozzles. With such an outfit the time required to spray even a very large orchard is reduced to a minimum. Besides, the fineness of the spray leads to more effective work.

The presence of the San Jose Scale, the Grape Rots, the Apple Scab and the Plum Rot in the fruit-regions of Ontario has compelled our fruit-growers to spray. As business men they have been forced into the use of power-sprayers, and this year has witnessed the introduction of the power-sprayer, with the abandonment of the hand-power outfit as a "back number."

As an aid to spraying for the control of the Codling Moth, banding of trees is still practised in many sections. Although this method is quite effective when it is properly looked after, it is worse than useless—it is actually harmful—when the bands are not examined regularly every ten days through June and July for cocoons. Moreover, banding is an expensive treatment when the time required for the fixing of the bands in place, and their examination every ten days, is taken into consideration. It might be preferable to give an additional spraying instead.

There are some remedies which are of little or no value. Simpson places the following remedies in this class: Moth balls hung up in trees; smudging with ill-smelling compounds; plugging the trees with sulphur; plugging the roots with calomel; trap-lanterns; and baiting the moths with vinegar and molasses.

The fruit-grower is aided greatly in his struggle with the Codling Moth by several friends. Our birds especially are great helpers. The Chickadee, the Downy Woodpecker, Nuthatch, Bluebird, Swallows, Sparrows, and Wren, are all valuable, and their presence in the orchard is very desirable.

There are also several minute insects which prey upon the Codling Moth.

Finally, besides all this, the fruit-grower can do much to lessen his losses by what is known as clean farming. This is shown in the appearance of his orchard, as a result of pruning, removal of rubbish, careful cultivation, and manuring. By such means he may increase the productivity by securing better fruit, free from scab and worm-hole.

A NEW CECIDOMYIID ON COTTON.

BY D. W. COQUILLETT, WASHINGTON, D. C.

During the past winter Dr. L. O. Howard received specimens of a Cecidomyiid from Sir Daniel Morris, Director of the Imperial Department of Agriculture for the West Indies, with the statement that the larvæ live in the cambium layer of cotton plants. Up to the present time no representative of this family has been recorded as depredating upon cotton so far as I am aware, and at the request of Sir D. Morris the species is duly characterized herewith :

Porricondyla (Epidosis) gossypii, new species.

Antennæ of male longer than the head and body together, composed of about twenty-one joints, of which the first two are sessile and scarcely longer than wide, the remaining joints, except the last one, with a bulbous basal portion bearing a whorl of bristly hairs and a narrow apical part, the latter being slightly shorter than the thickened part of each joint. Antennæ of female about two-thirds as long as the head and body combined, composed of twenty six nearly sessile joints, the first two joints somewhat conical, the others constricted in the middle, the third joint the most strongly so, each succeeding joint less constricted. Wings hyaline, third vein (the apparent second vein) strongly curved and ending below the extreme tip of the wing, small crossvein very oblique and weakly sigmoid. Colours yellow, the sternum and greater part of mesonotum brown, head blackish, antennæ of female and the enlarged portions of those of the male brown, the constricted portions of the male antennæ white, legs dusky-whitish. Length, 1.5 mm.

Described from several dry and shriveled specimens of both sexes. Type No. 8399, U. S. National Museum. From Barbados, West Indies.

The full-grown larvæ are yellowish-white, the median portion chiefly orange-red; the skin is smooth except on the under side, where there are many minute tubercles arranged in about six irregular transverse rows on the median portion of each segment. The breast-bone is yellow, cylindrical, and with a small knob at the anterior end. The larvæ live beneath the bark of cotton plants, without forming galls.

June, 1905.

NEW SPECIES OF NOCTUIDÆ FOR 1905.—No. 2.

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

Euxoa vestitura, n. sp.—Ground colour dull smoky-brown, varying a little to reddish-brown in one direction and luteous in another. Head and thorax concolorous. Vestiture hairy rather than scaly, neither the collar nor the patagia well defined. Primaries with the usual maculation at least traceable and often distinct, never contrasting, the lines ranging from smoky to black. Basal line geminate, always marked on costa and often complete. T. p. line geminate, the inner portion less defined, more even and sometimes obscure: included space broad, concolorous or a little paler than ground: outer part of line usually distinct, often broken on the veins, more or less out-curved in the interspaces, as a whole the line nearly upright. T. p. line geminate, the inner portion crenulate, outer narrow, even and sometimes wanting. As a whole the line makes a very even curve over the cell and is then parallel with the outer margin. S. t. line marked by a slightly darker preceding shade in the s. t. space, by a vague difference in shade between s. t. and terminal space, or altogether wanting. There may be a series of terminal lunules, a narrow terminal line or no marking at all. Fringes concolorous. There is usually a rather well marked median shade, somewhat diffuse, outwardly bent from the middle of costa to the end of the median vein, then parallel with the t. p. line to the inner margin. Claviform wanting. Orbicular wanting altogether, in most specimens, indicated in others by a few blackish scales. Reniform obscure, marked by two diffuse smoky blotches, indicating the lateral margins, and of these the inner may be absorbed in the median shade. Secondaries dull, smoky, outwardly darker, somewhat yellowish and lighter at base; fringes paler.

Expands.—1.26-1.46 inches = 31-36 mm. *Habitat*.—St. John, New Brunswick, August 9-19.

Eleven males and two females, most of them in at least fair condition. These specimens were taken in 1899 or 1900 and have been in my collection for years, somewhat doubtfully associated with *brunneigera*, of which I have never had good material from the type locality. Renewed study of such material as I have and of Hampson's description from the type has convinced me that I have a good species with characters as above stated. The range of variation is from a type in which all the markings are distinct to a form in which they are barely traceable and in part altogether obliterated. My series covers all intermediate forms. I regret that the labels do not have the name of the collector to whose liberality I owe the specimens.

June, 1905.

Euxoa floramina, n. sp.—Head, thorax and primaries powdery ashen-gray over a luteous ground. Head with two transverse frontal lines. Collar with two blackish lines, one just above the middle distinct, the other just below the tip, obscure and sometimes wanting. Thorax confusedly powdered with whitish scales, which tend to form paler edgings to the patagia. Primaries confusedly marked, with all the transverse maculation obsolete, yet hardly strigate. In the best marked examples the veins are powdered with whitish, there is a diffuse basal blackish streak, to which there may or may not be joined a small, loop-like claviform; there is an ill-defined triangular sub-apical cloud and there is a dusky shading in the median cell. The ordinary spots are narrowly pale ringed, concolorous, not readily made out. The orbicular is narrow, more or less elongate, oblique, irregular and rarely extends to or fuses with the reniform. The reniform is moderate in size or small and of the normal kidney shape. The small loop-like claviform is traceable in about half the specimens, and when it is best marked a narrow blackish line extends from its tip to the outer margin. There is a distinct pale terminal line preceded by black lunules. Secondaries in the male snowy white, immaculate; in the female evenly smoky. Beneath, whitish powdery; primaries more so than the secondaries; all wings with a more or less obvious discal spot, that of the secondaries tending to become lost; female darker than the male, throughout.

Expands.—1.15–1.35 inches = 29–34 mm. *Habitat*.—Stockton, Utah, Sept. 14–24; Mr. T. Spalding.

Twelve ♂ and five ♀, most of them in at least fair condition. All of these were, as I understand it, taken on flowers, in company with *Hollemani* and *Nevada*, to which this species is allied. It most nearly resembles *Nevada* in appearance, but is smaller, much grayer, more confusedly marked, the ordinary spots are rarely fused and the secondaries in the female are evenly smoky instead of having a dusky outer border and smoky veins. With a series of each at hand the differences are even more striking than the description indicates.

Euxoa taura, n. sp.—Head, thorax and primaries dull, smoky, gray-brown; the first and second without defined markings, the primaries with all the lines well defined, but without contrasting ornamentation. The secondaries are dull pale yellowish to a well-defined extra median line, beyond which the wings are blackish, forming a broad dusky border. The abdomen is only a little paler than the thorax and the incisures are narrowly

blackish. On the primaries the basal line is geminate, black, broken. T. a. line geminate, black, the inner portion narrower and less marked, somewhat irregular, as a whole a little oblique outwardly. T. p. line geminate on the costa and on the outcurve; beyond that the outer line is lost and the inner is well defined and sharply crenulate, as a whole only a little outcurved over the cell, and very evenly oblique below it. S. t. line of the ground colour, a little irregular, marked by a series of triangular blackish spots, and the terminal space, which is darker except at apex. There is a series of distinct terminal lunules, beyond which there is a yellow line at the base of the fringes. An indefinite dusky median shade crosses between the ordinary spots and darkens the cell at that point. The claviform is concolorous, loop-like, incompletely outlined by black scales. Orbicular concolorous, outlined by a narrow black ring. Reniform moderate in size, kidney-shaped, a little paler than the ground, with a smoky central line or shade, incompletely outlined by black scales. Beneath, primaries dull smoky-yellowish with a blackish extra median diffuse transverse shading; secondaries as above, but more diffusely marked and paler.

Expands.—1.45 inches = 36 mm. *Habitat*.—Regina, Assiniboia, August 5; T. N. Willing.

One male in fine condition received from Mr. F. H. Wolley Dod, (No. 11). This is a most remarkable species for the genus and was taken for an *Oncocnemis* at first sight; but the generic characters are unmistakable. The body is robust, the thoracic vestiture dense, consisting of flattened hair, collar and patagia well defined.

Euxoa ura, n. sp.—Head, thorax and primaries creamy-gray with a reddish tinge; the first two immaculate. Primaries with all the markings well defined, smoky, not contrasting, surface powdery. Basal line geminate, well marked as a rule, rarely obscure or even wanting. T. a. line geminate, broad, powdery, the inner portion more even, more slender and less marked; the outer forming obvious though not wide outcurves in the interspaces, as a whole a little outwardly oblique. T. p. line geminate, the outer portion even, narrow, tending to obsolescence, the inner lunulate or even crenulate, the teeth often extending to the outer portion; as a whole only a little outcurved from costa over cell and then nearly parallel with outer margin. A more or less obvious, diffuse shade crosses the median space between the ordinary spots, darkening the cell and then runs close to the t. p. line, tending to reach it in some examples. S. t.

line of the ground colour, only a little irregular, variably marked by a dusky preceding shade or a darker terminal space; rarely by both. There is no dark terminal line and in only a few cases are there small dusky lunules before the paler line at the base of the fringes. No trace of a claviform in any specimen. Orbicular of moderate size, or large, round or nearly so, concolorous or slightly paler, sometimes defined by a slightly darker border, sometimes by a pale annulus and sometimes scarcely outlined at all. Reniform large, broad, upright, scarcely kidney-shaped, never completely and sometimes not at all outlined; usually concolorous, occasionally a little paler in the middle and rarely a little darkened inferiorly. Secondaries white in both sexes, in the female tending to a dusky outer border; but that is never strongly marked and often absent. Beneath, primaries silky-whitish with a reddish or creamy tinge, with a discal cloud extending partially across the wing beyond the middle; secondaries immaculate or with a smoky outer band and discal lunule.

Expands.—1.00–1.40 inches = 25–35 mm. *Habitat*.—Stockton, Utah, September 18 to October 4; Mr. Thomas Spalding.

Eighteen males and ten females, most of them in good condition and showing so great a range of variation that I am by no means certain that only one species is involved. Of one form I have 8 ♂ and 3 ♀, and in all these a distinct reddish tinge is obvious. The size ranges from 1.27 to 1.40 inches, most specimens reaching and few exceeding 1.35 inches. The surface is obviously powdery, but all the markings are easily made out. Of a second form I have 6 ♂ and 5 ♀, and all of these are creamy-gray, with hardly a trace of red. This ranges in size from 1.23 to 1.35 inches, but most of the specimens are about 1.30 inches in expanse. The surface is distinctly less powdery and the tendency is to an obsolescence of the maculation. Of the third form I have 4 ♂ and 2 ♀, ranging in size from 1.00 to 1.20 inches, none of the males exceeding 1.10, while the two females are nearly of a size. This has a little reddish in its general appearance, but the maculation is greatly obscured throughout. This form is the more likely to prove distinct, and I propose the term *uramina* for it to call attention to its existence.

The body is robust, the thoracic vestiture somewhat loose, composed of long, flattened hair, with a finer woolly admixture, collar and patagia not well marked. The antennæ are long, in the male distinctly pectinated, but the teeth are not long and are furnished with terminal as well as lateral bristles. In a general way the species is allied to *edictalis*.

(To be continued.)

MANITOBA MICRO-LEPIDOPTERA.

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

The following list of Micro-Lepidoptera taken in the Province of Manitoba, is published for the purpose of recording the distribution of species, as well as an incentive to the collectors of the locality to make more than ordinary efforts to add to the number. The work that has already been done is most gratifying, and compares very favourably with local lists of many of the States, from which a great deal more would have been expected. For instance, the number of Tortricids alone exceeds the number credited to the State of New Jersey, in Prof. John B. Smith's list of 1899. But even in this family I have twenty-five or more additional species which appear to be new, but that are not described at the present time owing to the fact that most of them occur as only one or two specimens of a kind, and oftentimes more or less rubbed. I am quite sure that the work of another year or two will enable us to establish a list of Tortricids from this one province alone of not less than two hundred and fifty species. The same proportions will probably follow in the other families embraced under this general head. Collectors must not forget that each different manner of collecting produces results not found in any other way. Daylight with net, sugaring and light at night, and most valuable, breeding from the larvæ, also different hours of the day must be worked. Some species fly only very early in the morning, others only at twilight; likewise different localities, such as the prairies, along streams, in thickets and underbrush, and in the woods or forest, each will contribute some species not found elsewhere. The proof of these remarks will be found in the localities given in the lists below, regardless of how small the numbers were. Each collector has secured species not found by some or any of the others, showing the result of work along individual lines in favourite spots or methods.

I take pleasure in acknowledging my indebtedness to the following gentlemen for the privilege of studying and making record of their captures, as well as for the many specimens they have generously permitted me to retain:

Mr. E. Firmstone Heath has for several years sent me his captures, all of which are recorded under the name *Cartwright*.

Mr. Norman Criddle has sent me a very large number of most interesting species, all of them most beautifully and carefully expanded. His captures are recorded as *Aweme*.

From Mr. A. T. Dennis, of *Beulah*, a small but interesting lot.

Through your—I must say *our*—well-beloved Dominion Entomologist-in-Chief, Dr. Jas. Fletcher, a very carefully prepared lot of specimens from Mr. L. E. Marmont, recorded as from *Rounthwaite*.

Through the courtesy of Dr. H. G. Dyar, a small lot of unidentified material from the National Museum, collected by Mr. A. W. Hanham, under the localities *Winnipeg* and *West Manitoba*. Also a few indifferent specimens collected by a couple of small boys at *Wattsvie* and *Souris*.

In regard to the identifications, I would say: In the Tortricids I am entirely responsible for the names. The Pyralids have in a few cases been directly identified by Prof. Fernald, the balance named from my own collection, which, however, was also largely named by him. This also applies to the Crambids. The Phycids have been largely determined by Dr. Dyar. The Pterophorids I have worked out entirely by the synoptic tables in Fernald's Monograph of this group, comparing where possible with figures in Walsingham's "Ptero. of Cal. and Ore." Some of these names may have to be corrected, as synoptic tables at their best are very far from perfect. In the Tineid families, those that have been named have been identified by comparison with typical examples in my own and the National Museum collection. Many species, however, yet remain to be identified, and I purpose entering seriously into this work as soon as I have got the Tortricids in fairly good order.

In brackets, after many of the species, I have added the localities hitherto recorded, so far as I know them. A particularly noteworthy fact of this list is, that the Manitoba fauna seems to embrace species from both the coast and foothill districts of the Pacific Slope, from Texas and from the Eastern States, as well as a number of the European species that are accredited to North America.

The descriptions of the new species of Tortricids will follow the general list, with the hope that within the additional time permitted, more specimens of some of them will have been received.

Exartema olivaceanum, Fern.—Rounthwaite, July; Aweme, VII, 23 to 27. Recorded from Eastern States.

Exartema atrodeutanum, Fern.—Aweme, VII, 23; Winnipeg. (Ohio to Texas.)

Exartema inornatanum, Clem.—Rounthwaite, July; Cartwright; Aweme, VII, 23. (Atlantic States.)

Olethreutes nimbatana, Clem.—Cartwright, VII, 10. This species is scarcely separable from *O. consanguinana*, Wlsm. The latter has a more or less obsolete paler fascia through the middle of the dark basal area, and is a little larger in size (No. Atl. States.)

Olethreutes capreana, Hbn.—Aweme, VII, 12 to 20; Cartwright; Rounthwaite, July.

Olethreutes dimidiana, Lods.—Cartwright, one specimen, no date. Agrees with all other American specimens in my collection from the Atlantic States and as far west as Arkansas, but none of them agree with European examples. Further study may warrant separation.

Olethreutes deceptana, Kearf.—Aweme, VII, 24, to VIII, 8; Winnipeg.

Olethreutes hebesana, Walk.—Aweme, VI, 2. (Northern U. S.)

Olethreutes cyanana, Murf.—Rounthwaite, June. (Penna. to Kansas.)

Olethreutes hemidesma, Zell.—Rounthwaite, June. I have bred this species from larvæ found in the beautiful pink flower heads of *Spiraea tormentosa*, during early July in New Jersey. (Maine to California.)

Olethreutes duplex, Wlsm.—Aweme, VII, 12; Cartwright; Winnipeg. (Colorado.)

Olethreutes nubilana, Clem.—Rounthwaite, July; Cartwright; Winnipeg. This is the species that I incorrectly identified as *O. vetulana*, Wlsm., ante, p. 43. The two species seem very much alike. I now have a very long series of Eastern and Canadian specimens, all of which agree with Clemens's type and description. I have only two rather badly rubbed California specimens, and await perfect material from this latter locality before deciding whether both species are good, or that *vetulana* is a synonym. (Penna. to Wis.)

Olethreutes coruscana, Clem.—Rounthwaite, July; Winnipeg; Aweme, VIII, 9 and 15. This identification is subject to correction. The Aweme specimens have white hind wings, reticulated with fuscous around the edges, while the Rounthwaite specimen is darker than any Eastern specimens I have. There seems to be a tendency for all four of these allied species, *chalybeana*, Wlsm., *coruscana*, Clem., *constellatana*, Zell., and *major*, Wlsm., to intergrade. (No. Atlantic States.)

Olethreutes instrutana, Clem.—Aweme, VII, 15 to 31; Beulah, VII, 15; Cartwright. (No. Atlantic States.)

Olethreutes campestrana, Zell.—Rounthwaite, July; Beulah, VIII, 15; Cartwright; Aweme, VI, 27, to VII, 9. (No. Atl. States.)

Olethreutes fuscalbana, Zell.—Aweme, VI, 13, to VII, 22. (Maine to Ohio.)

Olethreutes glaciana, Mschl.—Cartwright, VII, 1. (Ontario and Labrador.)

Olethreutes dilutifusca, Wlsm.—Cartwright. (Oregon.)

Eucosma Morrisoui, Wlsm.—Rounthwaite, July; Aweme, VI, 25 to 29; Beulah,

Eucosma Ridingsana, Rob.—Rounthwaite, July; Beulah, VIII, 1. (Texas to Canada.)

Eucosma circulana, Hbn.—Rounthwaite, July; Cartwright; Souris.

Eucosma occipitana, Zell.—Beulah, VII, 15; Cartwright; Rounthwaite, July. Type from Texas, not since recorded.

Eucosma culminana, Wlsm.—Rounthwaite, July; Beulah, VIII, 15; Winnipeg. Most Eastern record,

Eucosma passerana, Wlsm.—Aweme, VI, 27. Type from California, not since recorded.

Eucosma vertumnana, Zell.—Rounthwaite, June; Aweme, VIII, 8. (New York and Texas.)

Eucosma nisella, Clerck.—Rounthwaite, August. I retain this name for the present, but am not convinced that the European and American species are the same.

Eucosma abbreviata, Wlsm.—Aweme, V, 21, to VI, 6. (Mass. to D. C.)

Eucosma solicitana, Walk.—Aweme, VI, 16. (No. Atl. States.)

Eucosma illotana, Wlsm.—Aweme, VI, 15 to 25; Cartwright. (Oregon.)

Eucosma Scudderiana, Clem.—Aweme, VI, 18. (No. Atl. States.)

Eucosma dorsisignatana, Clem.—Aweme, VIII, 15 to 22; Cartwright. (Eastern States.)

Eucosma confluana, Kearf.—Aweme, VIII, 12.

Eucosma graduatana, Wlsm.—Aweme, V, 31. In Dyar's Catalogue, as well as in Fernald's Catalogue*, *graduata* is made a synonym of *dorsisignatana*. The Aweme specimen is very close to Walsingham's figure and description, the hind wings are rust-red, the shape and size of spots on fore wing are similar, the specimen is little more than half the size of the latter, and it occurs in May, while *dorsisignatana* is a late summer or fall species. If Walsingham's figure is a fair representation of

*Trans. Am. Ent. Soc., N., p. 42, 1882.

his type, I have no doubt that this Aweme specimen is his species, and also that it is most decidedly distinct from *dorsisignatana*. Type from Texas.

Eucosma glomerana, Wlsm.—Aweme, July. Type from Texas, not since recorded.

Eucosma corosana, Wlsm.—Rounthwaite, July; Beulah, VII, 15. Type from Montana, and not since recorded.

Eucosma juncticiliana, Wlsm.—Aweme, VII, 26, to VIII, 15. (Northern U. S.)

Eucosma argentialbana, Wlsm.—Beulah, VII, 15; Aweme, VI, 6, to VI, 29; Rounthwaite, July. (Texas.)

Pseudogalleria inimicella, Zell.—Aweme, VI, 16; Beulah. New Western and Northern record for this species.

Thiodia striatana, Clem.—Rounthwaite, June. (Atlantic States.)

Thiodia dorsiatomana, Kearf.—West Manitoba.

Thiodia pallidicostana, Wlsm.—Aweme, VI, 16, to VII, 27; Beulah, VII, 15; Winnipeg; Cartwright.

Thiodia tenuiana, Wlsm.—Aweme, VI, 16. Rounthwaite, June.

Thiodia triangulana, Kearf.—Rounthwaite, July; Aweme, VI, 29.

Thiodia infimbriana, Dyar.—Aweme, VIII, 13; Cartwright; Rounthwaite, July; Winnipeg.

Thiodia refusana, Walk.—Rounthwaite, May; Aweme, V, 20 to 27.

(To be continued.)

NEW SPECIES OF PHLEPSIUS AND RELATED GENERA (HOMOPTERA).

BY E. D. BALL, UTAH AG. COLL., LOGAN.

Phlepsius Slossoni, n. sp.—Form and general appearance of *lippulus* nearly, slightly larger and darker, with a much longer, flatter vertex. Length, 6 mm.; width, 2 mm.

Vertex slightly acutely angled, the apex truncate, nearly twice longer on middle than against eyes, the disc concave, anterior margin sharp and broadly foliaceous, the line between this foliaceous margin and the front proper being sharply marked. Front slightly convex, evenly narrowing to the apically expanded clypeus. Elytra moderately long, appressed behind the middle, the apices slightly flaring. Venation obscure.

Colour: vertex pale fulvous and brown, a narrow median line to just before the middle forks at right angles, and finally slightly reflexed, black, a wedge-shaped mark from the apex back to this fork, the lateral margins and basal angles ivory white. The apical wedge is black-margined, and the lateral margins have a few slender wavy lines of black extending into

them. Pronotum cinereous or brownish, sprinkled with light dots, and crossed by three transverse light bands, the anterior one broad and equidistant from the median one and margin, the posterior one marginal. Scutellum with the anterior half cinereous brownish, and the posterior half lighter. Elytra ivory white, closely dotted with brownish fuscous, omitting three irregular bands of light, the anterior one broad and marked with a few reticulated lines, the other two narrower and more irregular. A black dot at the apex of each claval and apical nervure. Face finely dotted with brownish fuscous, an ivory mark above.

Genitalia : female segment short, very slightly produced with a faint median notch.

Described from a single female from Biscayne Bay, Fla. Received from Mrs. Annie T. Slosson, in whose honour it is named. This and the following species belong in a group with *lippulus* in colour marking, but are quite distinct structurally.

Phlepsius fastuosus, n. sp.—Form and general appearance of *Slossoni* nearly, but much stouter, and with a shorter, broader vertex. Length, 7.5 mm.; width, 2.75 mm.

Vertex distinctly obtusely angular, the apex blunt and rounding, nearly twice longer on middle than against eye, where it is very narrow, disc flat, anterior margin thin, very slightly foliaceous, especially at apex. Front broad, slightly convex, lateral margin rounding to clypeus.

Colour: vertex brownish cinereous, a cross on the apex; the lateral margins and a few dots on the disc ivory white. Face irregularly dotted with brownish cinereous, omitting a light spot above. Pronotum brownish cinereous, dotted and irregularly irrorate with ivory white. Elytra milky white, irregularly marked with fine reticulations and small dots of brownish fuscous. The dots are mostly arranged in two bands, one rather narrow and definite across the posterior third of the clavus, and the other broader and less distinct, occupying the whole apex behind the clavus, the anterior band becoming black along the suture, and fading out before reaching the costa.

Genitalia: female segment rather long, posterior margin truncate, the median two-thirds angularly produced, elevated and slightly notched at the apex. A pair of black spots outside the apical lobes.

Described from a single female from U. S. Nat. Museum. Collection taken at Las Vegas, N. Mex., June 8th, by Barber and Schwarz.

Phlepsius nigrifrons, n. sp.—Form of *denudatus* nearly, but larger. Resembling *Vanduzei* in general appearance, but slightly shorter and stouter. Length, 7 mm.; width, 2.75 mm.

Vertex convex in both diameters, rounding to the large inflated front, with a slight conical projection at apex. But little longer on middle than against eye. Front full, very broad at base, narrowing down to the parallel margined clypeus. Its length and breadth about equal. Elytra broad, compressed behind, venation obscure, resembling that of *Vanduzeei*, but with the apical cells short.

Colour: vertex pale yellow in female, with a pair of round spots at base, and a small pair just back of apex black. The black on the rounding front is visible on either side the apex. In the male there is an arch of irregular dots connecting the basal spots, two or three dots inside the ocelli, and the frontal markings extend up to the apical spots. Front black at base, with faint, light arcs; below the antennæ it is pale yellow, with about five short brown arcs on either side. Pronotum and scutellum pale dirty yellow, more or less inscribed with fuscous. Elytra pale, with the nervures and the few scattered inscriptions brown; an interrupted black stripe starts beneath the margin of the pronotum, extends back just under the claval suture to the first cross nervure, and gradually fades out. This is especially marked on both sides of the first cross nervure, while the rest of these cells and the fork of the outer sector are milk white.

Genitalia: female segment wanting, or appearing as a pair of widely separated rectangular plates, a pair of roundly pointed plates overlap these on their inner margins, leaving the median fourth exposed. Male valve rounding, with the apex bluntly produced; plates together nearly semicircular, with the apices bent up and slightly produced.

Described from a pair from the collection of the U. S. Nat. Museum, taken at Hot Springs, Ark., by Schwarz and Barber.

Paramesus immaculatus, n. sp.—Form of *Coloradensis* nearly, but smaller, and with a shorter, blunter-margined vertex. Pale tawny, with faint markings. Length, ♀ 4.5 mm., ♂ 3.5-4 mm.; width, 1.75 mm.

Vertex flat, very slightly sloping, anterior margin in a regular curve, about one-fourth longer on middle than against eye, anterior margin distinct, slightly acutely angulate, but not as sharply marked as in the other members of this genus. Front broader and shorter than in *Coloradensis* or in *Twiningi*. Elytra broad, rather short, venation as in *Twiningi*, but less distinctly marked.

Colour: vertex of a uniform pale tawny, sometimes with a faint sub-marginal line. Face pale creamy yellow, slightly washed with brown. Pronotum pale tawny, with more or less of a cinereous cast on disc.

Scutellum pale tawny and testaceous, in irregular mottlings. Elytra subhyaline testaceous, nervures scarcely darker except at apex, where they are sometimes distinctly fuscous. Some specimens from the higher altitudes lack the fulvous tinge, and have more distinctly fuscous nervures.

Genitalia: female segment rather long, slightly emarginate posteriorly, with a strap-shaped median tooth. Male valve very obtusely triangular, plates long triangular, about five times the length of the valve.

Described from sixteen specimens collected at Fort Collins, Palmer Lake and Rico, Colo., by the author.

Eutettix bicolorata, n. sp.—Form of *jucunda* nearly, slightly larger, and with a more prominent front. Front pale greenish-yellow, with black markings on pronotum and tips of elytra. Length, ♀ 6 mm.; width nearly 2 mm. Males slightly smaller.

Vertex rather narrow, but little wider than an eye, and only a trifle longer in the middle. Surface sloping strongly to the transverse depression. Front much inflated, meeting the vertex at a slightly obtuse angle, the margin distinct. As seen from the side the front is roundly angled below the antennæ. Pronotum short, truncate behind. Elytra long, narrow, compressed behind.

Colour: vertex greenish white, four small dots on the anterior margin, and an irregularly reticulate square of black in the centre of each half of the disc. Face greenish white above, brown or fuscous below, sharply separated on a line just below the eyes, the darker colour running up on the sides to the antennal sockets. Pronotum heavily inscribed with black, omitting a narrow posterior margin, a row of irregular spots anteriorly, and three more or less definite stripes on the disc. Scutellum inscribed with brown, omitting three spots in an apical triangle. Elytra greenish straw colour back to the apex of clavus, the nervures concolorous. Back of the clavus the elytra are milky white, with the nervures and numerous reticulations black in sharp contrast. The apical portion of this area solidly infuscate, omitting a marginal line and a small hyaline spot in the third apical cell.

Genitalia: female segment long, posterior margin slightly produced in the middle and sinuate either side. Male valve short, transverse, plates long-triangular, the apices extended and margined with fine white hairs.

Described from one female from Hot Springs, Ark., H. S. Barber collector (U. S. N. M. Coll.), and four specimens taken by the author at Richfield, Utah.

NEW SPECIES OF NORTH AMERICAN LEPIDOPTERA.

BY WILLIAM BARNES, S.B., M.D., DECATUR, ILL.

(Continued from page 196.)

Stiria aliaga, n. sp.—♂. Expanse, 30 mm.

Ground colour even chrome-yellow, a shade lighter beyond t. p. line. Small ochraceous spot at inner third of cell, one towards its outer end and traces of one beyond. These are about equidistant from each other. T. p. line the only other marking on fore wing. This is quite faint, ochraceous, wavy and cannot be followed to costa in the specimens before me. The fringe is darker than wing, of a somewhat "Ashes of Roses" colour. The costa is lightly tinged with the same shade and the posterior thoracic tufts and ends of patagia are likewise similarly coloured. The fringe has a narrow ochraceous line at base and a slightly paler mesial band.

Hind wings pale yellowish-white, fringe concolorous, with faint basal, slightly darker line. Beneath pale yellow. Fore wing from t. p. line to base and hind wing along costa darker, being coated somewhat thickly with chrome-yellow and reddish scales. Head and thorax pale brownish-yellow, abdomen, palpi and legs somewhat darker. Front crater-like with central protuberance.

Female similar to male, but somewhat paler, more of a canary yellow. The specimen is not so fresh as the male, however, which may account for the difference in colour.

Types ♂ and ♀. Pinal Co., Ariz.

Thalpochares Jativa, n. sp.—Expanse, 17 mm.

Ground colour light red, with a decided pink tinge. Base of wing yellowish-white, this extends from junction of costa and thorax obliquely downward and outward to inner margin, about $1\frac{1}{2}$ mm. from thorax. The lower and inner half of this on inner margin, next to body, is, however, of the ground colour. The only other marking on the wing is a Y-shaped, yellowish-white band across middle of wing. The slightly expanded base rests on middle of inner margin. The fork is in the middle of the wing, the outer prong is slightly expanded on costa, while the inner is somewhat narrower and shorter. The space between the prongs is filled with the ground colour, though the edges are somewhat diffuse and not so sharply defined as the outer margins of the Y. The prominence of the mark is heightened by a slight intensification of the ground colour along its margins. The fringe is of a somewhat purer pink tinge at base, outwardly paler.

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Hind wing pale yellowish, faintly tinged with pink, quite markedly so beyond a rather indefinite, incomplete, blackish mesial shade, fringe concolorous, paler outwardly. Beneath fore wing pink along costa and at apex, fading into a more yellowish tint towards inner angle. Yellowish along inner margin, blackish-fuscous centrally. The outlines of the Y mark can be discerned, though faintly. Hind wing yellowish, overcast with pink along costa and to a lesser degree along outer margin. Head, thorax and abdomen concolorous with wings. Palpi yellowish-white, slightly dusky outwardly. Thorax, legs and abdomen yellowish-white.

Type, 1 ♂, Southern Arizona.

Heterocampa Wymola, n. sp.—Expanse, 33 mm.

Fore wings from costa to median vein and narrow bands along outer and inner margins shades of light and dark gray, remainder of wing a dull brassy-yellow. Veins darkened with black scales. A dark apical patch running from apex to median vein, preceded by patch of lighter gray than rest of costal area. The gray on inner margin darker than on costal or outer margins. Only faint fragmentary indications of transverse lines can be made out. A narrow discal bar is in evidence in the male, doubtfully so in the female. A rather faint narrow marginal dusky shade. Fringe concolorous, darker outwardly and at ends of veins and with a well-marked black line at base. Hind wing of ♂ almost white, showing very slightly fuscous under lens. Of ♀ fuscous outwardly, with faint dusky mesial band.

Beneath fore wings dusky, lighter centrally and along outer margin. Hind wings in ♀ paler, fuscous along costa and outer margin. In ♂ as above. Fringe of both wings concolorous, with scalloped basal black line and black dashes through fringe at ends of veins. Head and thorax rather dark gray, the latter posteriorly and edges of patagia somewhat darker. Some metallic tipped scales on thorax and patagia, especially at their posterior parts. Abdomen yellowish-fuscous above and below. Thorax and legs gray. Tarsi checkered black and gray. Palpi smoky-brown, gray at tip. Antennæ gray above, yellow beneath, bipectinate in ♂ almost to tip; in ♀ serrate.

Types ♂ and ♀, Pinal Co., Arizona. From Mr. Poling.

Thyridopteryx Alcora, n. sp.—Expanse, 25 mm.

Head, thorax and abdomen jet black. Wings hyaline, very sparsely coated with black scales. Costal edge narrowly black, somewhat broader beyond cell before apex. Subcostal and median veins as far as end of

cell not covered with blackish scales, in the specimen before me thus appearing of a very pale yellowish tint, with their inner margins narrowly brownish-black. Secondaries along costal and inner margins quite thickly coated with blackish scales and hairs, but much wider along the latter Beneath as above. Antennæ brownish-black.

Type, 1 ♂. Santa Catalina Mts., Arizona, August 24th. Received from Mr. Poling.

Triprocis Yampai, n. sp.—Expense, 19 mm.

Antennæ, head, thorax, base and tip of abdomen black. Collar superiorly and remainder of abdomen, dorsally and at sides, bright red. Fore wings dull brownish-black, with faint blackish lustre in certain lights. Thinly scaled. Beneath, head, thorax, legs and a broad band through centre of abdomen, black. Wings as above.

Types, ♂ and ♀. Babaquivere Mts., Ariz. Received from Mr. O. C. Poling.

Limacodes Oropeso, n. sp.—Expense, 15 mm.

Ground colour a rather dark, blackish-brown, hind wings possibly a trifle paler. Head, thorax and fringe concolorous. Slightly paler at base of fringe, which also shows a very faint checkering under the lens. On fore wings there is a prominent white band, extending from just before apex to inner margin. This band is somewhat more prominent in some specimens than in others. In general it is broadest in the middle of the wing and dwindles almost or entirely out before reaching inner margin and to a less extent also before reaching costa. The outer border of the band, while it presents a rather even course, is somewhat jagged from the outward projections of the white scales along the veins. The inner margin is more irregular, being encroached on by the ground colour, especially opposite cell. There are usually two or three small patches of ground colour included in the broadest portion of the band below median vein. With the lens can be seen a light frosting of the wing with white scales beyond the band.

Beneath somewhat paler than above. On costa just before apex there is a fairly distinct patch paler than the ground colour, to the inner side of which the wing is slightly darkened. In just the right light, with a lens, the light patch is seen to be the inception of a much fainter light submarginal band, common to both wings, and the fringe can be seen to be faintly checkered. The body parts beneath are concolorous and the antennæ only a shade paler.

Types, Yuma Co., Arizona, March. Cochise Co., Arizona.

I am under great obligations to Prof. J. B. Smith for more perfect specimens of this interesting species than those I already possessed. I am rather inclined to think this species may form the type of a new genus, but prefer to place it here provisionally, leaving its final disposition to someone more competent than myself to examine it structurally.

Coccus luzena, n. sp.—Expanse, 24 mm.

Head, collar, patagia, thorax and fore wings evenly gray. Inner half of fore wing quite thickly covered with transverse blackish strigæ. In the outer half these have a tendency to be more reticulated. A rather heavy black band from middle of costa downward and outward, dividing into two or three prongs just before reaching inner margin. Two similar though less heavy lines leave costa between inception of median line and apex. These unite and proceed as a single line for a short distance and then divide into two or three branches just before reaching inner angle.

Hind wings gray with a somewhat reddish-brown tinge. Beneath fore wings gray, somewhat reddish-brown centrally, hind wings gray, both wings reticulated with black, the inception of these on costa of fore wings being especially pronounced. Thorax gray, abdomen greasy, but apparently gray. Legs gray, tarsi banded with black.

Type, 1 ♀. Huachuca Mts., Arizona.

ON THE SPECIFIC VALIDITY OF *INCISALIA HENRICI*.

BY JOHN H. COOK, ALBANY, N. Y.

For many years I have collected diurnal Lepidoptera in the neighbourhood of Albany, N. Y., making a special study of established varieties, sports, and minor varieties within the species.

Among the *Lycenide* the forms which have proved of greatest interest from this point of view are those embraced in the genus *Incisalia*; *I. irus* in particular has afforded abundant material for investigation, and long ago I was enabled to recognize several tendencies in the distribution of colour over both the wings and body, which made it possible to separate this species into groups or form-series. These variations appeared in both sexes, and, as it then seemed, without any indication of tendencies peculiar to either. As an illustration of the danger accompanying the unqualified acceptance of a generalization, I may state that, after having satisfied myself with regard to the character of the discal stigma of the male, I made use of this as a criterion of sex.

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In May, 1904, my brother, Mr. Harry Cook, called my attention to the fact that some of the males (as proclaimed by the genitalia) were *without the stigma*. As many specimens were taken as the lateness and unfavourableness of the season permitted, and all the material collected in former years was again carefully sexed. This resulted in a complete readjustment of the previously accepted form-series, and brought order out of chaos (at least among the males).

Correlated *in every instance* with the absence of the discal stigma are characters which clearly distinguish these males from typical *irus*. The most striking are: (1) the uniform blackish-brown of the basal half of the secondaries beneath; (2) the definiteness of the boundary of this area and its almost equal projection between the median nervules (in *irus* this projection is constantly greater between the second and third than between the first and second); (3) the continuity of the extramesial line running from the costal margin of the primaries—under surface—to the first median nervule (in *irus* this is represented by a series of short dashes between the nervules, which, being at different distances from the outer margin, give the appearance of a much broken or crenulate line). I moreover failed to find any androconia at all on the individuals without the stigma. There are other differences between the two series quite as noticeable, but not constant enough to serve as distinguishing characters.

On a basis of the three constant and best differentiated characters of the males, the females were separated very satisfactorily, and in their turn exhibited correlative differences of minor importance.

The above generalizations are made from sixty-three specimens.

It is to be noted that the series thus removed from *I. irus* agrees in detail with the description of *I. Henrici*, as published by Grote and Robinson in 1867 (Trans. Am. Ent. Soc., I., 174). Scudder has sunk *Henrici* as a synonym; Dyar retains the name, regarding the forms as distinct.

The original description fails to mention the stigma, although it seems reasonable to believe that the absence of so obvious a mark would have attracted the attention of two such experienced observers as the authors, especially since its absence from the ♀ of another species is remarked in the same paper (p. 173).

Edwards, who bred what he thought to be a *Henrici* (*Papilio*, I., 150-152)—the description of the early stages of which has since passed, with many, for a description of the early stages of *irus*—was certainly

unaware of such a distinction, and his statements here and in the American Naturalist (XVI., p. 173) may refer to either *Henrici* or *irus*.

Holland mentions the rusty suffusion of the upper surface as one point of distinction, and figures a well suffused ♀. This character is thoroughly unreliable because inconstant, relative and balanced by similar suffused individuals of *irus*. Nevertheless, it has been used as a criterion by many, and there is a specimen in the collection of the late J. A. Lintner labelled *T. irus*, var. *Henrici*, which is an undoubted ♂ *irus*.

The characters, then, separating the two series seem to be of sufficient importance to warrant their recognition as distinct species, at least until the test of breeding can be applied. I have been unable to discover any difference in the genitalia, but this fact hardly militates against the position taken, as one needs a long series and a good imagination to discriminate between the genitalia of any of the recognized species of this genus.

The earliest record of the capture in this vicinity of *I. Henrici* which I have is May 28, 1890.

A NEW SPECIES OF BUCCULATRIX.

BY MARY E. MURTFELDT, KIRKWOOD, MO.

Bucculatrix Ainsliella, n. sp.—Antennæ about three fifths the length of the fore wings, annulated in dusky brown and dull yellow. Eye caps golden white, expanded. Apical tuft long, projecting forward, dark brown in centre, shading outwardly to dingy white. Face satiny cream white. Thorax cream white, more or less dusky, overlaid with dark brown scales, with small but distinct dark brown spot on centre of dorsum, two rather narrow marks of same colour forming a triangle or open V on posterior joint, back of which is a silvery white band. Forewings: ground colour shining cream white, more or less obscured by dark brown scales, which in some lights exhibit purplish reflections. The pattern, which, though less deeply shaded in some specimens than in others, is quite unvarying, consists of a dark brown longitudinal band from the base along the costa, gradually broadening and intensifying to the apical third, where it narrows and curves backward, leaving the anterior margin to the apex merely speckled with the dark scales. The inner margin to beyond the middle is but sparsely irrorate with brown, but has, just below the cell, a conspicu.

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ous purple brown spot curved on its upper edge, but straight on the margin of the wing, so that when the wings are closed it presents the appearance of a broad oval patch, one half of which is on one wing and the other half on the other. Fringes corresponding in colour and suffusion with the body of the wing. Hind wings pale silvery gray, the fringe tinged with brown. Abdomen iridescent gray, terminating in pale brown tuft. Tibiæ of posterior legs clothed with long buff-coloured hairs.

Alar expanse from 7 to 8 mm. The pupæ are sooty black, and before the moths issue are protruded about two-thirds of their length from the cocoons. Described from numerous bred specimens. I have great pleasure in naming this pretty species after Mr. Charles N. Ainslie, of Rochester, Minnesota, from whom I received the cocoons early in the winter, indirectly through the kindness of Prof. Webster, and later by a consignment direct from Mr. Ainslie. The cocoons are white, and about the size of those of the Ribbed Cocoon-maker of the apple (*Bucculatrix pomifoliella*, Clem.), which, though somewhat less distinctly ridged, they quite closely resemble.

"These cocoons," Mr. Ainslie writes, "are everywhere this winter, but most plentiful in woods, attached, as you see, to leaves and to moss setæ and grass blades at the base of the trees—the black oaks seeming to have more on and around them than other trees."

Some of the leaves received from my correspondent had attached—generally to the under surfaces—crowded groups of from twenty to thirty cocoons, and on many of the grass blades were double rows from one and one-half to two inches in length.

The past year seems to have been the first in which this insect attracted attention, but occurring in such numbers, it is not impossible that it may become seriously injurious. Mr. Ainslie informs me that he has bred five distinct parasites from the cocoons, but as yet these are in too small a proportion to the host insects to act as much of a check upon them.

The *Bucculatrix* above described was submitted to Mr. August Busck for identification, and was by him pronounced distinct from any species in the collection of the National Museum, and he therefore advised the publication of a description.

ENTOMOLOGICAL SOCIETY OF ONTARIO.

BRITISH COLUMBIA BRANCH.

It is with much gratification that we announce the formation of the British Columbia Branch of our Society, which has been accomplished by the affiliation with it of the British Columbia Entomological Society. The Rev. G. W. Taylor, of Wellington, is the President, and Mr. R. V. Harvey, the Queen's School, Vancouver, Secretary-Treasurer. Regular quarterly meetings are held and eighteen members have thus far been enrolled. With such a goodly band of enthusiastic and experienced entomologists the new Branch ought to grow and prosper and do much efficient work for the furtherance of this department of science in the western Province of the Dominion of Canada.

MONTREAL BRANCH.

The thirty-second annual meeting of the Montreal Branch was held in the Natural History rooms on Monday, May 8th, at which 16 persons were present.

The Council, Librarian and Curator, and Secretary-Treasurer, submitted reports showing that the Society had made progress during the past year.

The following officers were elected: President, A. E. Norris; Vice-President, Geo. A. Moore; Secretary-Treasurer, A. F. Winn, 247 Elgin Avenue, Westmount; Librarian and Curator, Charles Stevenson; Council, E. Denny, L. Gibb, H. H. Lyman, G. Chagnon.

CHANGES OF ADDRESS.

MRS. ANNIE TRUMBULL SLOSSON, from 23rd Street to 83 Irving Place, New York.

PROF. F. M. WEBSTER, from Urbana, Ill., to U. S. Department of Agriculture, Washington, D. C.

MR. W. D. KEARFOTT wishes all mail matter to be addressed to him at Montclair, N. J., not Liberty St., New York.

ERRATA.—Page 185, May No., 8th line from top read "pupæ" instead of "papæ"; 18th line from top read "find any description of the larval stage of *Delphastus pusillus*, Lec." instead of "find any description of *Delphastus pusillus*, Lec."

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

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

(Continued from page 184.)

(339. *Leucania anteroclara*).—Specific characters in this genus are often by no means strongly marked, and though they may be on the whole fairly constant, are, as Prof. Smith expresses it in the "Revision," hard to locate in words. *Anteroclara* seems to be, at any rate, a pretty well marked form, but when its range of variation in this locality is known, specimens are to be found closely approximating no less than six different species, or, at any rate, forms standing under six different specific names, viz.: *commoides*, *multilinea* (Calgary form), *phragmitidicola*, *Calgariana*, *farcta* and *roseola*. I have good series of all of these except *farcta*, and have made very careful comparisons. It is only the very darkest specimens, and most of those ♀ ♀, that are really at all like *commoides*, but the darkest streakings are never really black as in that species, the upper margin of median vein not dark bordered, and the secondaries never as dark either. From eastern *multilinea* the darker secondaries separate it at once, and the differences from what I call the Calgary form of that species are discussed under that head. Viewed as a series, it is less like *phragmitidicola* than Prof. Smith's comparisons had led me to suppose. Of this I have critically examined about a hundred specimens from various parts of the continent, including a few from Texas, a ♀ from Aweme, Man., and another from Utah. The dark bordering above median vein mentioned in the "Revision" I find rarely prominent, frequently lacking, and with the exception of the pale median vein and the dark bordering below it, this species is as a whole more even in colour and not more streaky than some of my darkest *anteroclara*. *Anteroclara* varies from pale luteous, or creamy-yellow to a pale oak-brown. *Phragmitidicola* has much the same shade as a base, but is always washed throughout with a faint, uniform, pale brick-red or fawn-brown, which *anteroclara* lacks, and has usually a sparse sprinkling of blackish or dark grayish scales as well. The t. p. line in *anteroclara* when present is reduced to dots on veins 2 and 5, but very occasionally faintly traceable throughout. In *phragmitidicola* it is more often traceable by dots about equally prominent on veins 1 to 6, but may occasionally in the very palest specimens, which seem to come very near *farcta*, be obsolete. The secondaries in *phragmitidicola* are much whiter than in *anteroclara*, and are more like the local form of *multilinea*, but if

anything with less of a smoky border and have a more silky vestiture. The nearest point from which I have seen *phragmitidicola* is Aweme, Man., Mr. Criddle having kindly lent me a ♀ from that locality. Though paler than the average run of the species, it is pretty well matched with a Texas specimen, as well as with one from New Brighton, Pa., and fits into the series without question. Notwithstanding Prof. Smith's suggestion of a local form, I believe that they are really distinct. Of *farcta* I have seen but two specimens that fit the description in the "Revision," and both are from California. One is too poor to be of value for comparison. The other, in the collection of Mr. Merrick, is more like a very pale *phragmitidicola* than any *anteroclara*, but lacks the dark shading to median vein. *Farcta* is the name under which I used formerly to send out *anteroclara*. *Anteroclara* is recorded also from Wyoming, Colorado and Oregon. Vancouver is also mentioned on page 174 of the "Revision," not under the description.

340. *L. Calgariana*, Smith.—Rare. Described from here. The type is at Washington. Probably only a variety of *anteroclara*, which it exactly resembles, with the addition of a rich reddish tinge throughout. In the absence of any real intergrades, however, it must still be treated separately until proved the same by breeding. From *phragmitidicola* it differs, as does *anteroclara*, by the less even coloration and darker secondaries, and the less prominent dark shading below median vein. I have compared a good series of *roseola* from Kaslo, B. C., and other places west of the Rockies, and they differ from *Calgariana* in having paler secondaries, being less streaky, and lacking the dark shading beneath median vein. In his Kootenai list, however, Dr. Dyar says that some of the darkest Kaslo forms have a faint dark shade here, but "are all far less brightly marked than the types of *Calgariana* and cannot be confused with it." The reddest specimen I have seen comes from Victoria, B. C., and is much redder than most of my *Calgariana*, but is less streaky; in other words, more even in colour. Another specimen, from Vancouver Island, has a distinct dark shading, not below, but above and beyond median vein. Both these latter specimens are in the collection of Mr. F. A. Merrick. Although all the *roseola* I have seen lack the slight grayish powdering and conspicuously pale but dark bordered median vein of *phragmitidicola*, besides being different in tint, I am inclined to consider the form a nearer ally of that species than of *anteroclara* or *Calgariana*.

341. *Himella infidelis*, Dyar? (CAN. ENT., XXXVI, p. 32, Feb., 1904).—A ♂, taken by Mr. T. N. Willing at Lethbridge, Alta., on July 11th, 1904, in perfect condition, Prof. Smith tells me is probably this species. *Infidelis* was described from Kaslo, B. C., and from Turtle Mts., North Dakota, and stated to be "between *contrahens*, Walk., and *conar*, Streck., with the discal spots of the former, and the diversified ground colour of the latter." I have the same species from Regina, Assa.

342. *Tenioampa subterminata*, Smith.—Common. End April and early May. At sallows. The usual colour here is a slightly reddish ashen-gray, and though the species varies to a deep brown-red, the ashen-gray ground is seldom entirely obliterated. It was a surprise to me to find recently that this species had formerly been confused with *alia*. The two are, with rare exceptions, so unlike, that comparison seems almost superfluous, but one of the chief differences by which they seem to be generally known is not quite constant. Under the description its author states that whilst in *alia* the s. t. line is *preceded*, in *subterminata* it is *followed* by a darker shade. This is quite correct in the main, but the darker shade, which is a mere bordering to the s. t. line, is occasionally absent in both species, though, of the two, less frequently in *alia*. As a matter of fact, a constant character to separate them is hard to find, though the difference in appearance is obvious enough. *Alia* has never the even ashen-gray ground so common to the present species, and though a dark gray ground may sometimes exist, there seems to be invariably a distinct mottling or peppering throughout of red, ochreous, and brown colours, present in *subterminata* only as a shading. Sir George Hampson has had the species from me, and says that it is synonymous with *revicta*, Morr., though the type of that species does not appear to be in the British Museum. Prof. Smith had never seen *revicta* that he recognized up to the date of publication of his Catalogue. I have seen a copy of the original description of *revicta*, and with a long series of Calgary *subterminata* before me, can easily believe that a certain combination of the ordinary variation of several characters occurs, which fits it in every detail. The most important character of *revicta* is stated to be the black subterminal line. In *subterminata* the dark posterior shade bordering the s. t. line is sometimes distinctly black (though not necessarily, as stated in the description, in the darkest specimens), and in one of my examples, while the black bordering is very conspicuous, the pale line itself is almost obsolete.

343. *T. alia*, Gn.—Common. End April and early May. Sallows. Prof. Smith states in his Revision concerning *alia*: "It is a very constant species." Compared with its European congener and near ally, *incerta*, it most assuredly is, but in this district at any rate the variation is considerable. Judging from specimens received from Wellington, B. C., and from Cartwright and Aweme, Man., supposed to be authentic, I probably have true *pacifica* at Calgary, but so far I have quite failed to draw any line between them, though I tried hard to separate my local series into two species before I had any idea what *pacifica* was like. The original description of the latter says that it "differs by its thinner squamation, its more obscure tint, and the narrower black-filled reniform. . . . In size the species is like *T. alia*, while the ornamentation is very similar." In his Revision, Prof. Smith says: "*Alia* is less robust, the thoracic clothing less dense, while the wings are apparently more heavily clothed with scales," whilst he separates them tabularly in giving an even s. t. line as characteristic of *pacifica*, and a sinuate one of *alia*. He says also, "*pacifica* is difficult to separate from *alia* on colour characters." I have a series of *alia* from Chicago which are not separable from the common form occurring here. The two ♂♂ sent me by Dr. Fletcher from Wellington, B. C., as *pacifica*, and stated to have been carefully compared with specimens named by Prof. Smith, seem perhaps to have very slightly denser thoracic vestiture, but except that one of them is of a much richer red, I cannot see that they differ specifically from some of the darkest of the Calgary series, some of which have just as even a subterminal line. The Manitoba specimens fit into the same series, which I cannot divide into two by colour, s. t. line, or any other character or combination of characters. If two species really exist, it would seem that they require placing on a firmer basis than at present.

344. *Stretchia plusiiformis*, Hy. Edw.—Very rare. Light. I have a ♂ without abdomen, dated April 25th, 1894, and a ♀, May 1st, 1895. It has not been seen here since the latter year.

345. *Cleoceria populi*, Strk.—The larvæ appear to be common, though local, on *Populus deltoidea* or *P. balsamifera*, I am not sure which. They spin leaves together as a hiding-place for the daytime. I have bred a considerable number, and find that the variation is enormous. I have nothing nearly as white as Dr. Holland's figure, but the colour varies from a pale bluish ashen-gray without contrasts to dark blackish gray, with still darker lines, bands or blotches across the inner half of the

wing. With the exception of one specimen, taken at light, there are always very distinct shades of olive green or brown of varying intensity on different parts of the wing and on the collar. In some specimens a broad central band of rich olive brown is the most conspicuous mark. Pupation commenced during 1904 on June 25th. The duration of emergence seems short, and all my specimens, numbering nearly sixty, emerged, usually between 4 and 9 p.m., between July 30th and Aug. 4th. In 1902, the only other time I have bred it, the few I had hatched in about the same time, but a week later. Only two specimens have been taken besides those bred, at light, Aug. 16th and Sept. 27th, 1903. Both are in perfect condition, and that taken on the earlier date is normal. The Sept. 27th specimen shows such very slight traces of the olive shading that I at first overlooked the existence of any, and felt sure it was a different species. However, it agrees in every other detail with specimens subsequently bred. An attempt to bleach out the olive shade from bred specimens by long exposure to sunlight has failed, but it may be that exposure to the weather when alive may have this effect. The apparent retiring habits of the insect would account for its otherwise good condition at so late a date.

346. *Lithomoia germana*, Morr.—An extreme rarity until 1903 and 1904, during which seasons it has been common at treacle. Middle Aug. and Sept.

347. *Xylina amanda*, Smith.—Rare at sallow blossoms. End April and early May. I formerly had this as *petulca*, but it is not compared with that species (*signosa*) in the description. Described partly from Calgary material, and appears to be widely distributed over the continent. The type is from Winnipeg, and is at Washington. The figure given with the description in Prof. Smith's Revision of *Xylina* (Trans. Am. Ent. Soc., XXVII., pp. 1-46, Aug., 1900), gives a good idea of the species, though the left wings of that specimen are in a bad light. I have the same species from Aweme, Man., sent me as *contenta*, but not agreeing with figure or description of that in the Revision.

348. *X. fagina*, Morr.?—A ♂, taken by Mr. Gregson at Lacombe, Alta., on September 1st, 1900, has been doubtfully so referred by Prof. Smith, who writes: "A specimen from Cartwright, Man., is intermediate between this and normal *fagina*. I am not so certain that this will not prove new when plenty of material is at hand." He had seen the specimen before and labelled it "*holocinerea*?" A similar ♀ was taken here

on Sept. 6th, 1904. They differ from anything else in my collection, and seem to agree with the figure and description of *fagina* in the Revision.

349. *X. Oregonensis*, Harv.—Prof. Smith says he has a specimen of this species in his collection which comes from me. I have a Calgary specimen dated April 23rd, 1895, which stood for years in my collection as *Georgii*, a name I have certainly had given me, though not to that specimen, which, judging from the description in the Revision, is probably *Oregonensis*. However, it seems that of the older species, *emarginata*, *holocinerea*, *Georgii*, *puella* and *Oregonensis*, are all very much alike, and to these I believe may now be added *Fletcheri*, *ancilla* and *vertina*. *Holocinerea* should occur at Calgary, as Winnipeg, Man., and "N. W. British Columbia" are amongst its original localities. I have a Manitoba series received as *Georgii* and *holocinerea* which I cannot separate into two species, nor distinguish from my Calgary specimen. The shape of the orbicular would seem to be an unsafe guide in separating species in this group, as I notice it often varies considerably in the two wings of the same specimen.

350. *X. ancilla*, Smith.—(Psyche, June, 1904, p. 57). Described from Calgary, Cartwright, Man., and Wellington, B. C. The ♂ type is from Cartwright, and the ♀ from Wellington. The Calgary specimen is a ♀ co-type in my own collection, dated Sept. 18th, 1899, and I have one other Calgary ♀, Sept. 18th, 1898, and a similar specimen from Cartwright, Man. The description says: "Allied to *Oregonensis*, Harv., but of a very dark blue gray, with much less contrast, and inconspicuous maculation. The scant material indicates a considerable range of variation, and that the more uniform examples may be confused with well-marked *Georgii* or *holocinerea*." My three specimens look distinct from anything else here listed.

351. *X. pexata*, Grt.—A single specimen dated April 29th, 1895, has been thus named by Prof. Smith, and is not unlike his and Dr. Holland's figures of that species. It has lost an abdomen and both hind wings in the mails.

352. *Litholomia napæa*, Morr.—Common. Sept. to early Oct., and after hibernation from March 29th to May 30th. The first noctuid seen in the spring.

353. *Calocampa curvimacula*, Morr.—Two specimens at treacle, Sept. 27th, 1903, and one more the following fall.

354. *C. nuperæ*, Lint.—Rare. I have records (except during the winter) for every month except July.

355. *C. cineritia*, Grt.—Common. Sept. (treacle) to early May (sallows). Also at light. Rather a variable species, and I think I have both the forms referred to and figured by Dr. Ottolengui in Journ. N. Y. Ent. Soc., X., pp. 77 and 78, and Pl. X. (June, 1902).

356. *Cucullia montanae*, Grt.—Six or seven specimens, July, apparently all in 1899. Typical form according to Prof. Smith.

357. *C. similis*, Smith.—A single ♂, taken by Mr. C. Garrett, on Fallen Timber Creek, about 20 miles west of Didsbury, Alta., is apparently distinct from anything in my collection, and has been named by Prof. Smith "*similis*, paler than typical and with less yellow." In maculation the specimen resembles *montanae* almost exactly, but the colour of primaries is much more like *indicta*.

358. *C. indicta*, Smith.—(CAN. ENT., XXXVI., 154, June, 1904). Described from here. The ♀ type is in Prof. Smith's collection, and, unless my notes err, bears label, "Head of Pine Creek, July 29th, 1896," which means that it was taken not far from my house, at about the western limit of the prairies. The ♂ type is in my own, and was taken in the true foothills on Sheep Creek, and about twenty miles nearer the mountains. Another Pine Creek ♀ is dated July 21st, 1903. I had held this species as probable *florea*, whilst believing my *florea* to be either a form of *asteroides* or a new species. The discoidal spots are even less evident than in my *postera*, the mark at anal angle is not so distinct, and there is an entire absence of any reddish brown shading, or obviously darker costal margin. My ♀ has a dark smoky suffusion throughout. I considered it identical with the ♀ type, but without Prof. Smith's opinion I felt doubtful as to whether the ♂ was of the same species. The description says: "The relation is with *postera*, but all the brown has disappeared, and the maculation is almost gone with it."

359. *C. postera*, Gn.—Rare. Middle July to middle Aug. I have eight specimens in my collection which I believe to be referable to this name, though all but two are more or less worn or defective. A perfect ♂ and rather worn ♀ have been returned as *postera* by Prof. Smith. It resembles *asteroides*, which I have from Chicago and Columbus, Ohio, as to the primaries, but the maculation is as a rule less distinct, and the secondaries are smoky throughout instead of pure white in the basal half or two-thirds. It might easily be confused with *florea*.

360. *C. florea*, Gn.—Not common as a rule, but over thirty specimens were taken during 1903. At light, and "hawking" at flowers at dusk.

Middle June to early Aug. The comparative frequency of this species during 1903 has at last enabled me, with Prof. Smith's aid, to arrive at something like a satisfactory conclusion in what has for years past seemed a matter unapproachable from lack of material. Prof. Smith had seen a few specimens from me on more than one occasion, and had designated different individuals, but doubtfully, as *montanae* and *asteroides*, but expressed the opinion that all the specimens might after all be of one and an undescribed species. He had, however, already named true *montanae* for me, which is totally different in colour, with the ground extremely pale, scarcely bluish, and contrasting strongly with the sienna-brown costa and inner margin, and with what I should call a sienna tint throughout. During the winter of 1903-4 I received the species as *florea* from Mr. E. F. Heath, of Cartwright, Man., who stated that it was common with him, and that he had repeatedly sent it out as *florea* unchallenged. I rejected the name, pointing out to him that the description of *florea* in Prof. Smith's "Revision of Cucullia" (Proc. U. S. Nat. Mus., XV, 44, 1892) said "Primaries without red or brown shades." It was this and "the costa hardly darker" which had caused me to label my *indita* tentatively as *florea*. I called Prof. Smith's attention to the fact, at the same time sending him a series of Calgary specimens. He wrote: "It is a question of colour estimates. Closely analyzed, you are correct; but in *florea* the general ground is so much darker (*i. e.*, than in *postera* and *asteroides*) that the reddish shading is not so obvious. I admit, however, that I would not have written as I did with the series I have now." The species is nearer to *postera* than anything else I have, but the ground is darker as a rule, and the maculation much more distinct. In *postera* the dark costal shade does not diffuse itself below the subcostal vein, as it usually does in *florea*, especially between the discoidals and near the apex. *Florea* resembles *asteroides* in this respect. I do not refer to the paler reddish shade, which in all three species extends to the median vein. In pale specimens of *florea*, if the discoidal spots are not distinct, the resemblance is close to *postera* with the maculation very well marked, and worn specimens are almost impossible to separate. My dates for the two would seem to show that *florea* appears a little earlier than *postera*, and this, as well as the entire absence of *postera* during 1903, when *florea* was common, supports my belief that the two series in my collection are distinct. As to

the primaries, *asteroides*, in colour and distinctness of maculation, is about intermediate between the two, but is sharply distinct from both by having white secondaries in basal half at least. I have specimens which I don't think I could separate from either by primaries alone. In the most *postera*-like specimens of *asteroides*, *i. e.*, with the maculation indistinct, if there is a tendency towards the lightening of the costa and reddish shade as well, the resemblance is to *indicta*. Specific characters in this genus are often slight, and I am very glad to have at last succeeded in procuring a good long series—about 50 specimens—of *florea* for a basis for study in this group.

361. *C. Speyeri*, Lint.—A single ♀, dated July 24th, 1898, answers to the description in Prof. Smith's Revision, and is very like Dr. Holland's figure of the species. I have a similar ♂ from Volga, S. Dak.

362. *C. intermedia*, Speyer.—Rather rare. Middle June and July. I have specimens that have been named both *intermedia* and *cinderella* by Prof. Smith, but am quite unable to distinguish between them. Examples from Manitoba, Ontario and Massachusetts do not in any way differ from average Calgary specimens. In a few of the local series, however, there is a slight tendency for the secondaries to become whitish basally. Sir George Hampson's note on specimens I sent him was: "New to us, but I think = *Speyeri*, Lint." It is not the same as the preceding species.

363. *Rancora albicinerea*, Smith—(CAN. ENT., XXXV., 137, May, 1903). Described partly from Calgary material, partly from Manitoba. The type is from Calgary, and is at Rutgers College. A few specimens were taken at sallow blossoms between April 24th and May 5th, 1895, and I fancy only one or two have been seen since. I have a ♂ and two ♀♀, all slightly defective, but not a bit rubbed. Prof. Smith originally named this species *strigata* for me. By the primaries I should certainly have taken Dr. Holland's figure of *solidaginis* for my species, but it is of a ♀, and in *albicinerea* ♀ the secondaries are rather dark smoky, and in the ♂ darker than in that figure.

364. *Nonagria subflava*, Grt.—A single ♀ taken by Mr. Hudson on the edge of Red Deer Lake (between Fish Creek and Pine Creek), on Aug. 6th, 1901, unfortunately spoilt in the taking. I have often, both before and since, searched in vain for signs of larvæ of *Nonagrias* in reeds

and the larger grasses. I don't think *Typha* grows here at all. I certainly never saw it.

365. *Tapinostola orientalis*, Grt.—Two ♂♂ at light, Sept. 3rd and 5th, 1904. "Darker than usual," according to Prof. Smith.

366. *Hydræcia Americana*, Speyer.—Fairly common at treacle. Aug. and Sept. I have specimens with the reniform both white and orange, but do not know to which of the varieties described by Prof. Smith they should be referred.

367. *H. medialis*, Smith.—Rare. Middle Aug. to early Oct. Treacle, light, and sometimes disturbed from hay-cocks, etc., in daytime. Mr. H. H. Lyman states (CAN. ENT., XXXVII., 30) that a Calgary specimen in the British Museum is the form named *palescens* by Prof. Smith. I have not seen Prof. Smith's Monograph of *Hydræcia*, but note that Dr. Dyar does not list the two names as distinct. My six specimens show considerable variation in shade of colour, but I have never suspected two species.

368. *Papaipema impecuniosa*, Grt.—Two ♂♂ and a ♀, bred from larvæ found feeding in stems of Cow Parsnip (*Heracleum lanatum* ?), close to the Red Deer River, about 50 miles north-east of Gleichen, in early July, 1904. The moths emerged from 14th to 16th August. They appear to be the same species as Dr. Holland's, Pl. XXVI., fig. 5, which, however, is there stated to represent *inquæsitæ*. The figure is declared by Mr. C. J. Smith, in Ent. News, XV., p. 221, to be that of *impecuniosa*, and I have since had this statement corroborated by Prof. J. B. Smith and Dr. Dyar. A specimen from New Brighton, Pa., is slightly darker than the local specimens.

369. *Pyrrhia exprimens*, Wlk.—Very rare, and only taken during two seasons, June 28th to July 12th. Treacle and flowers at dusk.

370. *Xanthia flavago*, Fabr. Fairly common at treacle some years. Middle Aug. to middle Sept.

371. *Cirrædia pampina*, Gn.—Sometimes common at treacle. Middle July to early Sept.

372. *Scoliopteryx libatrix*, Linn.—Rather rare. Have taken it in good condition at treacle in May and June, and from August until well into the winter, at the latter season hibernating in root cellars, etc.

(To be continued).

A NEW NORTH AMERICAN TAENIORHYNCHUS.

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From the heart of the Sierras, in California, comes a new mosquito of the genus *Taeniorhynchus*, which is here described :

Taeniorhynchus Sierrensis, n. sp.—♀. Head brown, a median line of white curved scales extending up between the eyes, immediately followed laterally by a patch of flat brown scales, a narrow white stripe laterad, followed by a brown stripe, narrow white line around the eyes, white forked and curved scales on the occiput; the general effect is of two brown sub-median spots, and the curved scales are confined to this comparatively narrow median line; antennæ brown, and while not really banded, giving the effect of white bands, verticels brown, pubescence white, basal joint white scaled; palpi brown with white tips, and a narrow light band about midway; proboscis dark brown; clypeus brown; eyes brown.

Thorax brown, with fine tomentum, resembling the "frost" on some *Anophelina*, partly denuded, but sparsely covered with brown and white curved and spindle-shaped scales, the white scales being apparently mostly on the outer parts of the mesonotum, *i. e.*, cephalad, on the sides, and a heavy median bunch just in front of the scutellum; prothoracic lobes brown, with white curved scales; scutellum brown, such scales as remain are white curved and spatulate; pleura brown, with heavy patches of broad white scales; metanotum brown, nude.

Abdomen brown, with basal white lateral spots and basal white bands, thickened on the median line, which do not always reach all the way across, and on the penultimate segment is merely a median white spot; some segments also narrowly apically banded, apical hairs brown; ventrally mostly light scaled, and on the distal segments arranged so as to form both basal and apical bands.

•Legs: coxæ and trochanters brown, with light scales; femora dark, slightly speckled with white scales, the dorsal sides the darker, but on the hind legs light at the base; small white knee spot on all the legs, a little more pronounced on the hind legs; tibiæ dark, sometimes a little speckled; metatarsi on all the legs with basal and apical light spots, which are very faint, sometimes missing on the fore legs and develop into well-marked basal and apical white bands on the hind legs; the fore legs are of lighter brown and the banding often very faint or missing; 1st and 2nd tarsal joints on the hind legs with apical white bands, on mid and fore legs only

the 1st tarsal have apical white spots, and in the fore leg they are very indistinct; remaining joints brown; unguis simple and equal.

Wings covered with brown typical *Taeniorhynchus* scales; 1st submarginal cell nearly a half longer and a little narrower than the 2nd posterior, the stems nearly the same length; supernumerary cross-vein slightly shorter and slightly interior of the mid cross-vein, the posterior about the same length as mid and a little more than its own length distant; halteres light. Length, 6 mm.

Male is very like the female; palpi nearly as long as the proboscis, the ultimate joint small and basally white banded, the penultimate also basally white, otherwise the organ is brown, and is not plumose. Length, 4 mm. *Habitat*.—Sierra Nevada Mts., California.

Described from several specimens sent from Three Rivers (?), Cal., by Dr. E. J. Bingham, 1st Lt., Asst. Surg., U. S. A. The thoracic scaling at first suggests *Culex triseriatus*, Say, but the abdominal marking and the banded legs carry it away from that, and besides that the wing scales are distinctively *Taeniorhynchus* scales.

CRIOCEPHALUS OBSOLETUS, RAND., AND ASEMUM MÆSTUM, HALD.

Abbé Provancher in his work on the Coleoptera of Canada, page 585, gives a brief description of an insect he calls *Criocephalus obsoletus*, Rand., and adds that it is very common.

After a careful reading of his description, I have come to the conclusion that it can not apply to *Criocephalus obsoletus*, but to *Asemum mæstum*, a common longhorn throughout eastern Canada. *C. obsoletus* is a much rarer insect in Canada, and, in fact, I have no record of its having been captured in the Province of Quebec; it is not even mentioned by Mr. Harrington in his list of Ottawa Cerambycidae.

The two genera are decidedly very different, and cannot be mistaken one for the other. The eyes are finely granulated and hairy in *Asemum*, while the contrary is the case in *Criocephalus*. The antennæ are also longer in the latter genus and the body more elongate.

I found *Asemum mæstum* in great numbers at St. Hilaire, Que., on 24th May, 1903, under the bark of pine stumps. The only specimen of *C. obsoletus* I have comes from New Mexico—a very southern locality for this insect.

G. CHAGNON, Montreal.