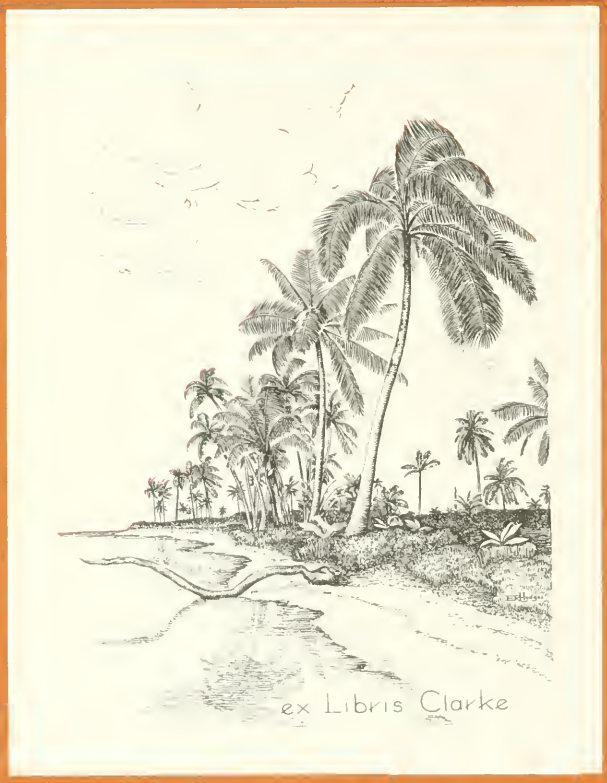
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ART. III.—DESCRIPTIONS OF NEW TINEINA FROM TEXAS, AND OTHERS FROM MORE NORTHERN LOCALITIES.

By V. T. Chambers.

ANAPHORA.

A. TEXANELLA, *n. sp.*

Very distinct from *plumifrontella*, *popcanella*, and *arcanella* Clem., and from *agrotipenella* and *mortipenella* Grote, nor can I recognize it at all in either *Scardina* or *Bombycina* as described by Zeller.

Palpi overarching the thorax; dark brown on the outward, luteous-brown on the inner surfaces. Antennæ compressed, straw-yellow; thorax dark gray-brown; fore wings brown, tinged with grayish-yellow; the usual spot at the end of the disk indistinct; the other spots common to the wings of the other species I cannot find in this. One of them may be represented by an indistinct blackish line beneath the middle of the fold. Hind wings and abdomen fuscous-gray, like the thorax, and a little darker or rather less yellowish than the fore wings. Under surface of both wings grayish-fuscous. Smaller than any specimens that I have seen of the other species, having an *alar expansion* of only nine lines. Bosque County, Texas.

TINEA.

T.? 7-STRIGELLA, *n. sp.*

Vertex white: basal joint of antennæ white on the upper, brown on the lower surface; stalk of antennæ black, with a white line along each side. Thorax and basal half of fore wings blackish-brown, the apical half having its costal half blackish-brown and its dorsal half white, the costal brown of the apical half being separated from the basal brown half by a white costal streak, which extends into the dorso-apical white part; beyond this costal white streak are five others, which likewise extend across the costo-apical brown to the dorso-apical white part of the wing, thus dividing it into a number of large spots; the first of these five streaks is oblique, the others perpendicular to the costal margin, and the space or brown spot between the second and third is larger than that between the others. Dorsal cilia brown, with numerous narrow white streaks running up through them from the dorsal white margin. In the basal half of the wing, there is a narrow white line extending along the fold, and an oblique white costal streak which almost reaches the fold. Face and palpi grayish-fuscous. Under surface of

body and the legs yellowish. *Alar expansion* a little over one-fourth of an inch. Bosque County, Texas.

The palpi in my single specimen are a little injured, and I have not examined the neuration. Possibly it may not be a true *Tinea*.

T. UNOMACULELLA, *Cham.*

Besides the yellow spot at the end of the disk mentioned in the description of this species, there is also a smaller one on the fold near its end, and one on the extreme apex of the thorax. There are also about seven small ones around the base of the cilia, and frequently the wing is more or less dusted with yellow scales.

ANESYCHIA.

A. HAGENELLA, *n. sp.*

Costal part of the fore wings nearly to the tip, and spreading nearly half across the wing in width, blackish-brown; the remainder of the wing white except as follows: the dark brown sends five projections or teeth into the white; the first is near the base, the second a little farther back, third about the middle, the fourth a little behind the third, and the fifth projects toward the apex; there is a small blackish spot on the base, then a very small one, then one a little larger, all beneath the fold; then another on the fold, another beneath it again, and then two others above it; there is also a minute spot on the basal angle, and nine others (six costal and three dorsal) around the base of the cilia. There are also eight spots on the thorax, one of them just before the base of the wings, one just behind each eye, two on the disk, and one on each side of the apex. Head white; antennæ fuscous; second palpal joint blackish, tipped with white, third white; hind wings silvery-white; abdomen fuscous: legs pale stramineous, with a silvery lustre, stained with brown on their anterior surfaces. *Alar expansion* 9½ lines. It resembles *A. trifurcella* Cham. more nearly than any of our other species. Bosque County, Texas.

HYPONOMEUTA.

H. ZELLERIELLA, *n. sp.*

This species approaches nearer to *H. longimaculella* Cham. than to any of our other species. The third palpal joint is white, dusted with blackish scales; second joint blackish, tipped with white. Head white. Basal joint of antennæ white, tipped at the apex above with brown; stalk fuscous; thorax white, with a black spot behind each eye, and one touching the base of each wing, one above each tegula, and one on each side of the apex. Fore wings white, with the costal third stained with pale ochreous, and separated from the white part by three long black dashes, the first of which is before the middle, the second extends back from about the middle, and the third is just before the apex. In the pale ochreous costal part of the wing is a short fuscous basal streak just within the costa, and behind it is a small fuscous costal spot. Just

within the costa, about midway of the wing-length, is another small spot, and another just before the cilia, slightly within the margin. The direction of all these spots is longitudinal, and under the lens all this pale ochreous or discolored costal part of the wing is minutely sprinkled with blackish scales. In the white dorsal part of the wing is a black basal spot on the fold, another a little farther back on the fold, then two beneath the fold, another on the fold about midway of the length of the wing, behind that is another on the fold, then another beneath it, and then another, and yet another above the fold; there is also an indistinct dash just beyond the anal angle, and then the usual nine spots around the base of the cilia, three of them costal. Hind wings silvery-white, with a faint fuscous tinge. Abdomen fuscous above; tuft, under surface and legs straw-yellow. *Alar expansion* 10½ lines. Bosque County, Texas.

DEPRESSARIA.

In volume 4 of the Canadian Entomologist I described several species which I then placed in this genus. I was induced to place them here by the fact that I did not then know the indefinite extent of the genus *Gelechia*, and believed, as I still do, that the affinities of these species were rather with *Depressaria* than with the true *Gelechia*, and I was not acquainted with *Cryptolechia*. Subsequently some of those species were referred to *Cryptolechia*, but most of them to *Gelechia*, one forming the type of a new genus, *Cirrha*. There is, however, no sufficient reason perhaps for separating this species (*C. platanella*) from *Gelechia* as at present *un*restricted, for *Gelechia* at present is a miscellaneous assemblage of species, many of which possess but little affinity for each other. Thus, all the species which in volume 4 I referred to *Depressaria* are referred to *Gelechia* or *Cryptolechia* except two?—*D. versicolorella* and *D. pallidoehrella*, and neither of these is a true *Depressaria*, though perhaps as properly located in it as in *Gelechia*, especially *D. versicolorella*. Thus, among over three hundred species of *Tincina* that I have found in Kentucky, the one described below as *D. eupatoriiella* is the only *Depressaria*, and it is an aberrant species. The species described below as *D. fernaldella* was received from Professor Fernald from Orono, Maine; and, as illustrating the multitude and variety of the species of *Tineina* in this country, I will here state that, according to my estimate, not less than eight hundred species of *Tincina* have been described from Canada and the United States south and west of Massachusetts (including that State), and not more than ten (probably not more than nine) belong properly in this genus. These are *atrodorsella* Clem., *cinereocostella* Clem., *grotella* Robinson, *heraclina* Deg., *hilarella* Zell., *leeontella* Clem., *nebulosa* Zell., *pulvipenella* Clem., *scabella* Zell., and *robiniella* Pack.

The collection received from Professor Fernald contained twenty-eight species, six of which belong to *Depressaria*, viz:—*hilarella?* (I cannot determine it with certainty from the single worn specimen), *leeontella*, *atrodorsella*, *pulvipenella*, *fernaldella*, n. sp., and another smaller

(new?) species, of which there is a single worn specimen; while, as above stated, I have found but a single *Depressaria* among over three hundred species found in Kentucky. Of the twenty-eight species in the Fernald collection, fourteen are believed to be new; and, in addition to the *Depressariæ* above mentioned, I recognize in it the following species:—*Tinea biflavimaculella* Clem., *T. grisseella* Cham., *T. carnariiella* Clem., *Amadrya effrenatella* Clem., *Adela biviella* Zell., *Gelechia dubitella?* Cham., *Ypsolophus straminiella* Cham., *Gracilaria purpuriella* Cham., and *Hyponomeuta evonymella* auct. Eight of the fourteen new species belong to *Gelechia* and two to *Cryptolechia*.

D. EUPATORIIELLA, *n. sp.*

Second joint of the palpi incrassate beneath toward the apex, the scales rather long and loose, scarcely forming a brush, and in the dead specimens not divided. Palpi, head, thorax, and fore wings dark or fuscous-gray; the palpi and wings dusted with blackish atoms, *each of which is a minute tuft*, and which along the costa take the form of small, obscure, and indistinct streaks; on the disk, before the middle, one of the blackish atoms is very obscurely margined behind by one or two whitish scales, and about the end of the disk is a minute whitish speck; apex of the wings rounded; hind wings not emarginate beneath the apex, pale grayish, with a faint purplish lustre—perhaps pale grayish-yellow would be as correct as pale gray; abdomen above of the same color, with the hind wings depressed, scarcely tufted at the sides; beneath it is gray, with a blackish spot on each side of each segment; legs dark gray or fuscous; under surface of the fore wings grayish-fuscous; that of the hind wings gray on the disk, the margins pale ochreous-yellow, dotted with blackish atoms. Antennæ fuscous, scarcely pectinate. The upper surface of the thorax is not dusted, and has a small double or bifid tuft at the apex. *Alar expansion* eleven lines. The larva feeds upon the under surface of the leaves of *Eupatorium ageratoides*, much in the same manner with that of *Nothris eupatoriiella* Cham. I did not observe it, as the leaves, when gathered, were supposed to be folded by the *Nothris* larva. The imago emerges in the latter part of July. 2 ♂, 1 ♀. Kentucky.

Both *atrodorsella* Clem. and *lecontella* Clem. have the minute bifid tuft on the thorax, as in this species, and the antennæ scarcely pectinate. The second joint of the palpi is, however, more brush-like in those species.

D. FERNALDELLA, *n. sp.*

Palpi slender, scarcely brush-like; antennæ scarcely pectinate; abdomen flattened above, scarcely tufted at the sides; apex of fore wings more acute, and the costa more arched than in *eupatoriiella*, *lecontella*, *atrodorsella*, or *pulvipenella*, and the wings also wider; indeed, in these respects it exceeds perhaps any of the species figured in Nat. Hist. Tin., vols. 1 and 12. The palpi are also unusually slender. Nevertheless, I

think it is more properly referable to this than to any other genus. Palpi whitish, with the basal half of the outer surface of second joint brown. Head whitish. Both head and palpi have, however, a faint pinkish-yellow tinge, and the antennæ are still more distinctly tinged with it. Thorax and fore wings very pale ochreous, with a strong roseate or pinkish tinge. On the disk before the middle is a small blackish dot, which under the lens is resolved into two; further back, behind the middle, is another, and opposite the space between the two is another on the fold; these two latter are by a lens resolved into small spots of brownish dusting; farther back is a brownish line parallel (nearly) with the dorso-apical margin, but which the lens resolves into about nine small spots of dustings, scarcely confluent with each other, and one on each marginal veinlet (costal as well as dorsal); around the apex and margins near it are ten small brownish spots, scarcely visible or very indistinct without a lens. Hind wings yellowish, irrorate with fuscous, not emarginate beneath the apex; abdomen of nearly the same color with the hind wings; legs brownish on their anterior surfaces, the hind tarsi pale yellowish. *Alar expansion* 10 lines. Maine.

YPSOLOPHUS.

Y. QUERCIELLA, *Cham.*

The single bred specimen from which this was described was accidentally destroyed some years ago. From my notes and recollection of the species, I think it not improbable that it belongs in *Depressaria*, with palpi resembling those of *D. dictamnella* Zell.

DEPRESSARIA.

D. FERNALDELLA. (*Supra.*)

Since the preceding portion of this paper was prepared, I have received a letter from Professor Fernald, in which he states that he has "seen *Machimia tentorifuella* Clem., which seems to be identical with your [my] *Depressaria fernaldella*". I have not seen *tentorifuella*, and the species *may* be thesame. There is certainly a close resemblance in many points; but an examination of *fernaldella* and a comparison of it with *tentorifuella*, as described by Clemens, shows many discrepancies. Thus *tentorifuella* has the vertex "*shaggy*", which is incorrect as applied to *fernaldella*. The latter has a row of ten small blackish spots around the apex, which are not mentioned by Dr. Clemens; and, furthermore, it has a brownish line before these spots, and nearly parallel to them, which is so unusual a mark that I think it must have struck Dr. Clemens had it existed in his species; yet he does not mention it. There are other less striking differences in ornamentation. *D. fernaldella*, while not a typical *Depressaria* by any means, seems to me to be more appropriately located in that genus than in *Cryptolechia*, to which I should refer *tentorifuella* as described by Clemens, and to which it has been referred by Zeller. While, therefore, the species *may* be the same, I, for the present at least, consider them to be distinct.

CRYPTOLECHIA.

In the Can. Ent. iv. 129, I have attempted to define a new genus under the name of *Hagno*, and in that connection have alluded to its resemblance to *Psilocorsis* Clem., which was known to me only by Dr. Clemens's writings, not having seen any of his species. The wings of *Psilocorsis*, as described by Dr. Clemens, seemed to me to differ materially from those of *Hagno*. I also suggested the probability that both might prove to be equivalent to *Cryptolechia*, which was then known to me only by scattered notices in various books. I find that *Hagno* is equivalent to *Psilocorsis*, and both are equivalent to a section of *Cryptolechia*.

C. CRYPTOLECHIÆELLA.

Depressaria? cryptolechiœella, Cham. Can. Ent. iv. 91.
Hagno cryptolechiœella, Cham. *ibid.* 132.

Smaller and prettier than any of the allied species known to me. The wings have a faint pinkish or roseate lustre, and have the lustre also of "watered silk". The transverse blackish lines are not visible to the naked eye, and the base of the wings is orange-yellow. If my recollection is not at fault, the larva feeds on leaves of the Holly (*Ilex*).

C. FAGINELLA.

Hagno faginella, Cham. Can. Ent. iv. 131.

The close resemblance of some allied species makes a more detailed description of this species than that heretofore given necessary.

The palpi are ochreous, with a blackish line along the under surface of the second joint, continued on to the apex of the third, and another on the outer and one on the inner surface of the third joint. *Cryptolechia* (*Psilocorsis*) *quercicella* Clem., according to Dr. Clemens, has the third joint black, with two yellowish-white stripes in front. I, however, have not seen the species, and I know from experience how easy it is to make a mistake as to the number and position of these lines. A species from Texas which I formerly (Can. Ent. vi. 231) identified with *faginella*, but which I now consider distinct (*vid. post*), and an undescribed species, of which a single specimen is before me, have the palpi exactly as I have described them in *faginella*—that is, the upper surface of the third joint is ochreous instead of black, as Dr. Clemens's account would make it. *C. faginella* has the head ochreous-yellow, and the thorax of the same color, only darker, as if tinged with fuscous. In this, the Texan species agrees with it. The undescribed species above mentioned, which is from Missouri, and has been bred by Professor Riley and Miss Murtfeldt from a larva feeding on *Ambrosia* has the head darker than in *faginella*, and of the same color with the thorax. *C. quercicella*, according to Dr. Clemens, has the head and thorax yellowish-brown (as in the Missouri specimen). *P. reflexa*, as described by Dr. Clemens, has the palpi as in *faginella* as to ornamentation; but from the fact that Dr. Clemens

separates it from *quercicella* as a distinct section, characterized by the great length of the palpi, it is not necessary to refer to it further in this connection. *C. faginella* has the basal joint of the antennæ yellowish-ochreous, except a wide blackish line extending along its upper surface; *quercicella* has "two black stripes in front"; and the species from Texas and that from Missouri agree in this respect with *quercicella*. *C. faginella* and also the Texas and Missouri specimens have the stalk of the antennæ ochreous-yellow, with two blackish lines extending along the upper side of the basal half, and the remainder of the stalk has each alternate joint blackish; *quercicella* has simply "a black line above, terminating in black spots". In *quercicella*, the fore wings are "yellowish-brown, varied with blackish irregular striæ, chiefly from the costa, with a black dot on the end of the disk"; *faginella* agrees with this description, except that I should call the ground-color of the wings dull yellowish-ochreous, as they are likewise in the Missouri specimen; while in the Texas species the ground-color is paler, while the transverse stripes are more distinct, showing also a tendency to become more confluent, especially about the end of the disk, where they present to the naked eye something like a faint dark fascia; *faginella* has a more silky lustre than the other species, though this may be owing to the fact that the specimens are newer.

In the Texan specimens, and in that from Missouri, there is no spot at the end of the disk, and it is not distinct in *faginella*. In *quercicella*, "the posterior margin is tipped with blackish, and the cilia are yellowish-brown, containing two dark fuscous hinder marginal lines"; in *faginella*, there is a row of blackish spots around the apex, and a single faint brownish hinder marginal line in the cilia (which in the single specimen before me are a little injured). In the Missouri specimen, there are five very distinct blackish spots around the apex, and behind them in the cilia are two distinct, brownish, hinder marginal lines. Indeed, the cilia may be called brown, with a median, paler, hinder marginal line. Besides the five distinct spots, there are other very faint ones, and the brownish cilia are paler than the spots. The specimens from Texas agree in this respect with that from Missouri. One of these I sent to Mr. Cresson for comparison with Dr. Clemens's type of *quercicella* in the collection of the entomological section of the Phila. Acad. Sci. (formerly American Ent. Soc.). After comparing them, Mr. Cresson informs me that it "is not *Psilocorsis quercicella* Clem., which differs by having a rather broad, distinct, dusky border on the apical margin of the anterior wings, otherwise they look very much alike".

The species are all of very nearly the same size—about eight to nine lines in expanse of wings. Professor Zeller (Bei. z. Kennt. 1873, 40) identifies specimens received by him from Ohio and Texas with *quercicella* Clem. His Texan specimens were collected in the same region of the State from which I have received mine; and as in two collections that I have received from that region there is only one species, I think the

probability is that *quercicella* Zell. (*nec* Clem.) is the same species that I have referred to above, and which I formerly identified with *faginella*, but which I now incline to consider distinct, and for which I suggest the name of *cressonella*. I, however, do this with some hesitation; for while, with the material before me, I consider the species distinct, I recognize the probability that, with fuller collections of bred specimens of all the supposed species, it is not improbable that they will be deemed at most only phytophagic varieties of a single species.

I am not sure but that the species described by me as *Gelechia dubitella* is properly referable to this genus.

C.? OBSCUROMACULELLA, *n. sp.*

The palpi in this species resemble those of *dubitella* above mentioned, and are more robust than in *quercicella*, *cryptolechiella*, &c., mentioned above.

Pale ochreous, so densely dusted with fuscous as to obscure the ground-color; on the fore wings the dusting is least dense along the fold and about the base. The spots on the wings are small, indistinct, and easily effaced; one of them is about the middle of the fold, and one near its end, one above the fold before the middle, one a little larger farther back, a small one at the end of the cell, and four or five indistinct ones are placed farther back, within, but parallel to, the apical margin. The basal half of the outer surface of the second joint of the palpi is brown; third joint ochreous; legs blackish-brown. *Alar expansion* about half an inch. Bosque County, Texas.

GELECHIA.

G. DISCONOTELLA, *n. sp.*

Palpi simple; second and third joints of equal length. Hind wings a little narrower than the fore wings, and rather deeply excised beneath the tip. Pale fuscous, or rather ochreous-yellow, irrorate with fuscous, with a faint silky-roseate hue, and with a longitudinal-elliptical brown spot at the end of the cell. Antennæ white, annulate with brown. Palpi brown, with the tip of the second joint white, and a wide band of the general hue on the middle of the third joint; legs brown on their anterior surfaces. Hind wings paler than the fore wings. *Alar expansion* three-eighths of an inch. Kentucky, in May.

G. SYLVÆCOLELLA, *n. sp.*

Allied to *bimaculella* Cham., but smaller, and with more of a purplish-bronze lustre. *Palpi simple. Hind wings as wide as the fore wings, and a little excised beneath the tip.* Palpi ochreous, with the base of the third joint, an annulus about its middle, and also an annulus about the middle of the second joint blackish. Antennæ blackish, faintly annulate with ochreous. Head pale ochreous, dusted above the antennæ with blackish scales. Fore wings and thorax blackish, microscopically dusted

with ochreous, with a purplish-bronze lustre, with a white or pale ochreous spot on the fold beyond the middle, and with an ochreous or white fascia about the apical fourth concave toward the base, and widest on the costa, and sometimes interrupted about the middle. Cilia of a bluish-smoky hue. Hind wings a little paler than the cilia of the fore wings, and with paler cilia. Abdomen and legs ochreous, banded with fuscous. In addition to the marks on the fore wings above mentioned, there is sometimes another small white spot on the fold. Possibly it may be only a variety of *bimaculella*, but I believe it to be distinct. *Alar expansion* five lines. Kentucky.

In some specimens of *bimaculella* there is a small white spot on the fold before the usual larger one, and sometimes the fascia attains the dorsal margin. The head, too, is rather pale purplish, dusted with black, than "purplish-brown", as it is described originally.

G.? BOSQUELLA, *Cham.*

This species was originally (Can. Ent. vii. 92) referred to *Œcophora*. Afterward (Can. Ent. vii. 124) I transferred it to *Gelechia*. Having but few specimens, I have not examined the neuration, and its external characters leave me in doubt as to its real affinities. I am not sure but that the first reference to *Œcophora* is the best.

G. CRISTIFASCIELLA, *n. sp.*

Cell of hind wings closed, the wings scarcely emarginate beneath the tip; second joint of palpi thickened beneath, but scarcely brush-like : third joint pointed, shorter than the second. Snowy-white; the head with a silvery lustre. Basal half of second joint of palpi and two rings on the third brown. Antennæ annulate with white and brown. Fore wings with a short brown dash just within the costal margin near the base, an oblique brown fascia of raised scales just before the middle and nearest the base on the dorsal margin, a small brown costal and opposite larger dorsal spot before the cilia, and a faint row of brownish spots around the base of the cilia. These marks on the upper surface show through on the lower, which is fuscous. Hind wings with a faint grayish tinge. Abdomen tinged with yellow. Legs brownish on their anterior surfaces. *Alar expansion* six lines. Kentucky, May 11, two specimens.

G. TRIOCELELLA, *Cham.*

Of this species, which was very abundant in Colorado, I have taken a single specimen in Kentucky. The Kentucky specimen is a trifle larger than those from Colorado. In the Colorado specimen, there are three ocellated spots on the fore wings, one of which shows indications of division. In the Kentucky specimen, it is completely divided into two spots. In the former, they consist of a black dot surrounded by a reddish-ochreous annulus; in the latter, the annulus is gray. These spots are very indistinct without the use of a lens.

G. QUINQUECRISTATELLA, *n. sp.*

This species has much the aspect of a *Laverna*. The second joints of the palpi are somewhat incrassate toward their apices, but not at all brush-like, and the third joint is much shorter than the second. The hind wings are wider than the fore wings, and emarginate beneath the apex.

Dark brown; the face and palpi and apical part of fore wings dusted with silvery-gray. On the fore wings, at about the basal one-third, are two raised tufts, one above, the other beneath, the fold; at about the middle is a single discal tuft, and at about the apical one-third are two others; cilia grayish-fuscous, dusted sparsely with hoary; hind wings fuscous, with stramineous cilia; abdomen dark brown; anal tuft yellowish. Legs and tarsi brown, annulate with white at the joints. The scales of the tufts are tipped with hoary, and the tufts nearest to the dorsal margin are placed a little behind the corresponding tufts. *Alar expansion* eight lines. The tuft on the middle of the disk is longer than either of the others, and appears sometimes as if there were two small ones confluent instead of one large one.

G. PALPILINEELLA?, *Cham.*

The species was described from Texan specimens in the Cin. Quar. Jour. Sci. ii. 252, which, appearing brown to the naked eye, show under a lens distinctly enough a white fascia before the cilia, which sometimes appears to be interrupted in the middle. I have taken at the light in Kentucky six specimens, which I mark with the ?, because, while they agree in all other respects with the Texan specimens, three of them show no indication of the fascia with or without a lens; while the other three, in place of the fascia, have a costal and opposite dorsal spot, visible to the unaided eye. Unless the palpi are observed, it may be mistaken for *G. palpianulella*.

G. 6-NOTELLA, *n. sp.*

Head and palpi white, except two annuli, one of which is at the base and the other before the apex of the palpi. Antennæ, thorax, and fore wings blackish-brown; about the basal one-fifth of the wing-length is an oblique white costal streak crossing the fold; farther back, about the middle of the costa, is a shorter one; and before the cilia is a still shorter one, pointing obliquely forward. These three streaks are all tipped with silvery scales, more abundantly on the first two than on the third. On the dorsal margin, respectively nearly opposite or a little before the first two costal streaks, are two tufts of silvery metallic scales; apex with a whitish spot and sometimes dusted with white. The cilia are paler and more grayish than the wings. Abdomen yellowish-white, the last segment stained with fuscous. Legs and tarsi white, banded with dark brown. *Alar expansion* half an inch. Bosque County, Texas.

G. INTERMEDIELLA, *n. sp.*

Intermediate between *roseosuffusella* Clem. and *rubensella* Cham., with one or other of which it has been heretofore confounded. The third joint of the palpi is longer and more acute than in *rubensella*, more like that of *roseosuffusella;* but the fore wings are much less roseate than in either of the other two species, frequently showing no tinge of the roseate hue; and, indeed, that hue when most distinct in it is but barely perceptible.

As in *rubensella* (and sometimes in *roseosuffusella*), the first dark band does not cover the base of the wing. The second band is like that of *roseosuffusella*, but the third extends across the wing, the dorsal portion being, however, paler than the costal, and the costo-apical part of the wing is ochreo-fuscous. In other respects, it resembles *roseosuffusella.* It is, however, darker and more grayish, less yellowish than that species. Bosque County, Texas.

G. LACTIFLOSELLA, *n. sp.*

Palpi simple; creamy-white, dusted with brown, with the outer surface of the second joint brown except at its tip. Basal joint of antennæ pale cream-color, stalk pale yellow. Thorax and fore wings pale cream-color, sparsely dusted with brown, with a small brown spot touching the fold above, near the base of the wing, another a little farther back, and yet farther back near the middle two spots, one on the fold, the other on the disk; sometimes these two last spots are confluent. There is a transverse brown streak at the end of the cell, and a distinct brown line curving around the base of the apical cilia; tip of thorax and a spot on each side before the tip brown. Hind wings and abdomen above white, tinged with silvery, and tuft creamy-white; abdomen beneath creamy, with a brown spot on each side of each segment. Legs creamy, sparsely dusted with brown, annulate with brown at the articulations, and with the tibia of the first and second pair brown. *Alar expansion* half an inch. Bosque County, Texas.

G. FUSCOTÆNIAELLA, *n. sp.*

Palpi simple. Hind wings excised beneath the tip. Snowy-white. Antennæ, apical half of thorax, base of fore wings, two small costal spots, and an apical spot brown; the second costal spot is larger than the first, which is placed about the middle of the costa. Abdomen whitish. Legs brownish-yellow on their anterior surfaces. *Alar expansion* four lines. Bosque County, Texas.

G.? MULTIMACULELLA, *n. sp.*

Hind wings not emarginate beneath the tip; palpi simple; third joint about half as long as the second.

Head, antennæ, palpi, and fore legs dark fuscous, the palpi tinged with ochreous. Fore wings sordid ochreous, covered with small fuscous

spots, a row of which extends entirely around the margins of the wing. On the fold the spots are distinctly confluent. Intermediate and hind legs and tarsi and anterior tarsi fuscous, annulate with ochreous; abdomen fuscous above, whitish beneath. Some specimens are more ochreous than others. *Alar expansion* half an inch. Bosque County, Texas.

There is something about the species which suggests a resemblance to *Tinea* in ornamentation and in the form of the hind wings.

G. CRESCENTIFASCIELLA, *Cham.*

The crescentic fascia is always indistinct, and frequently not discernible, and sometimes in place of it there is simply a small, yellow, costal and opposite dorsal spot. The palpi are pale gray, brownish on the outer surface of the basal half of the second joint, and the tip of the third joint is brown. In some specimens, the wings are sprinkled with small blackish atoms.

G. (ERGATIS) PALLIDEROSACELLA, *n. sp.*

Palpi simple; pale grayish; second joint with thin brownish annuli, one near the base, one near the tip, and one on the middle; third joint, with base, tip, and an annulus between them brownish-gray. Head, thorax, and fore wings pale grayish, dusted with dark gray, and very faintly tinted with roseate; base of the costal margin, an oblique fascia behind it, and a little farther back, but still before the middle, an oblique costal band, extending to the fold, blackish-brown. Behind the last of these streaks, in the middle of the wing, is a short, blackish dash surrounded by a hoary or whitish annulus. Behind the middle is a costal, dark gray spot, opposite to which is a still smaller dorsal one, and opposite to the space between them is another blackish dash, the portions of the wing above and below which are but little dusted, while behind it the apical part of the wing is more densely dusted with brownish scales; cilia gray, with a darker basal line. Antennæ annulate with pale gray and dark brown; upper surface of abdomen and anal tuft pale luteous; legs brown on their anterior surfaces; tarsi annulate with brown and pale grayish-white. *Alar expansion* five lines.

Many specimens show no trace of the roseate hue. Bosque County, Texas.

G. OBSCUROSUFFUSELLA, *n. sp.*

Second joint of the palpi brush-like; hind wings scarcely emarginate beneath the apex.

White. Second joint of palpi brown on the outer surface at the base. Anterior wings suffused with pale fuscous on the disk and apex, with an indistinct whiter fascia before the cilia, slightly angulated posteriorly. Basal half of each segment of the tergum grayish; venter and anal tuft white; hind legs whitish; anterior and intermediate legs brownish on anterior surfaces; their tarsi annulate with white. *Alar expansion* half an inch. Bosque County, Texas.

G. OCHREOCOSTELLA, *n. sp.*

Palpi long, simple; third joint larger than second, acuminate. Hind wings faintly emarginate beneath apex.

Palpi ochreous; second joint suffused with fuscous on outer surface. Antennæ annulate with ochreous; inner surface of hind legs ochreous. *Extreme* costal margin ochreous. Insect otherwise brownish-gray, microscopically sprinkled with white scales. *Alar expansion* two thirds of an inch. Bosque County, Texas.

G. CANOPULVELLA, *n. sp.*

Second palpal joint brush-like. Antennæ white, dotted above with brown. First and second pair of legs brown on their anterior surfaces, their tarsi annulate with white; base of extreme costa blackish. Insect otherwise hoary or whitish, dusted with bluish-gray, the dusting becoming more dense toward the apex of the fore wings, with five or six rather indistinct grayish spots around the base of the cilia. *Alar expansion* a little over one-fourth of an inch. Bosque County, Texas.

G.? CILIALINEELLA, *Cham.*

The statement in the description of this species, that it is only microscopically distinguishable from *G. solaniiella*, is too broad, though the resemblance is very close. The palpi of this species resemble those of *Cleodora*, though the brush of the second joint of the palpi is smaller than in that genus. I have not examined the neuration, but I am inclined to transfer the species to *Cleodora*. The ornamentation is much like that of *C. pallidistrigella* Cham. and *C. pallidella* Cham. though the white streak on the fold and that on the disk which characterize those species are wanting in this, and in their place, or rather in place of their contained black streaks, there are in this species one or two small brown spots. It has the oblique costal and dorsal white streaks before the cilia as in those species, and behind them the short, white, costal streaks, but not the dorsal ones, and there is only one brown, hinder marginal line instead of three, and that one is indistinct.

CLEODORA.

C. PALLIDELLA, *Cham.*

This species was described from two specimens. On the receipt of a larger collection I find a greater amount of variation than I had looked for. The ground-color of the wings varies from ochreous-yellow to white, suffused with pale ochreous-fuscous. The palpi also vary in a similar manner, the outer surface being usually pale ochreous, dusted with fuscous. By a slip of the pen in the description I have stated that the brown spot is on top of the third joint; it should read second joint. The antennæ are fuscous, and the head and thorax are paler, more whitish than the fore wings; there is a white streak along the fold containing a blackish spot, and parallel to it is a discal, basal, white streak containing a black line or dash. The color of the wings deepens toward the apex, and just

before the cilia are the long, oblique, costal and opposite dorsal white streaks mentioned in the description, and behind these are three short, white, costal and four dorsal streaks, the latter produced into the cilia, which are white, with three distinct, dark brown, hinder marginal lines, placed respectively at their base, middle, and apex; the legs are whitish, stained with fuscous on their anterior surfaces; and the *alar expansion* ranges from six to seven lines.

C. PALLIDISTRIGELLA, *Cham.*

This species is a little smaller than the preceding, ranging from five to six lines in *alar expansion.* The color of the head and appendages and the thorax resemble those of the preceding species, and it is fully as variable. The tegulæ and extreme base of the wings are white, the wings otherwise being much darker than in any of the specimens of the preceding species. They vary from orange-yellow to a dark yellow suffused with fuscous. The streak along the fold and the one above and parallel to it are indistinct, and their contained blackish spots are smaller, *while the costal margin from the middle to the cilia is white;* the costal oblique streak is much less oblique than in the preceding species, and *there are no costal spots behind it;* on the other hand, the dorsal oblique streak is more oblique, passing along the base of the cilia, into which it sends three white streaks. The differences above indicated by the *italics* induce me to consider the species distinct.

ANARSIA.

A. TRIMACULELLA, *Cham.*

I have taken this species also in Kentucky. It was described from Texas.

DASYCERA.

D. NONSTRIGELLA, *n. sp.*

This species differs from *D. newmanella* Clem., and from the two European species, not only by the absence of yellow marks on the wings, but still more by having the basal three-fourths of the antennæ densely clothed with scales; whereas in those species only a small portion is so clothed, and in this species the other fourth is also scaled, though not densely, and the scaling grows less and less toward the apex. It is described from a single ♀ taken resting on a leaf in the woods, June 30th.

Palpi yellow; under surface of third joint brownish. Face yellow, passing on the vertex into metallic yellowish-purple, if I may so describe an indescribable hue. Thorax and upper surface of fore wings rich brownish-purple; hind wings, abdomen, and under surface of fore wings purplish-brown (duller, more brownish, and less purple than the upper surface of fore wings); hind legs purple-brown, suffused with yellowish (other two pair rubbed in pinning). *Alar expansion* $6\frac{3}{4}$ lines. Kentucky.

BUTALIS.

B. TRIVINCTELLA, *Zell.*

I have bred great numbers of *B. matutella* Clem. It varies greatly from specimens indistinguishable from *B. immaculatella* Cham. to forms which I have described as *B. dorsipallidella* and *B. brevistriga*, and some specimens approach very nearly *B. trivinctella* Zell. I am much inclined to consider them all as varieties of one species. I have received *B. trivinctella* from Bosque County, Texas.

COLEOPHORA.

C. TEXANELLA, *n. sp.*

Palpi and antennæ simple. Inner surface of the palpi whitish; antennæ with alternate annulations of brownish-ochreous and white; abdomen brown above, a little paler beneath; hind wings fuscous. Outer surface of palpi, head, thorax, and fore wings rather dark ochreous, with two white lines on the fore wings obscured by dark brown dusting. One of these lines is on the fold; the other extends from the middle to the end of the disk. There is also a little brown dusting along the dorsal margin. Cilia of both pairs of wings grayish-ochreous. *Alar expansion* 5½ lines. Texas, from Belfrage.

C. CINERELLA, *n. sp.*

Dark gray. Palpi and antennæ simple. Face and under surface a little paler than upper surface. *Alar expansion* 5½ lines. Kentucky, July.

C. MULTIPULVELLA, *n. sp.*

Palpi rather short, simple. Stalk of antennæ simple; basal joint tufted, white. Vertex and outer surface of palpi stained with brownish-ochreous, and the antennæ annulate with that color. Fore wings densely dusted with dark gray, so as to obscure the whitish ground-color; the dusting less dense beneath the fold, more dense toward the apex. Hind wings and upper surface of abdomen dark ochreous-gray; under surface of the abdomen white, dusted more sparsely with gray. Legs marked with dark ochreous-gray on their anterior surface. *Alar expansion* half an inch. At light in July. Kentucky.

C. ALBACOSTELLA, *Cham.*

By some inadvertence, I have omitted in the description of this species to state the ground-color of the fore wings. It may be called ochreo-fuscous or fusco-ochreous, with the base of the dorsal margin and the entire costal margin pale ochreous or whitish. Under the lens, very fine, narrow, whitish lines are seen marking the course of the veins. The outer surface of the palpi is fuscous.

C. FUSCOSTRIGELLA, *n. sp.*

Palpi and antennæ simple. Sordid ochreous. Second and third palpal joints each with a brown streak on their outer surface. On the fore

wings, the fold is marked by a narrow black line, and beneath and nearly parallel to it is a pale ochreous line. The base of the dorsal margin is pale ochreous, and it is microscopically streaked with white scales beneath the fold toward the cilia. Above the fold, the wing is somewhat streaked with fuscous. One of these streaks is short and narrow and near the apex; another, longer one, begins about the middle of the disk and goes to the apex. Nearer to the margin is another, which begins indistinctly near the base, but becomes wider and more distinct toward the apex; and another, still wider and more distinct, begins near the base, within the costal margin, and passes back to the cilia, being, however, interrupted beyond the middle by two narrow short ochreous streaks, which mark the position of two subcostal veinlets. The base of the costal margin is ochreous, and between the streaks the wing is ochreous. Legs and tarsi fuscous on their anterior, ochreous on their posterior surfaces. *Alar expansion* nearly half an inch. Bosque County, Texas.

C. BIMINIMMACULELLA, *n. sp.*

Antennæ and palpi simple. White, dusted, or, perhaps more correctly, suffused on the thorax and fore wings with pale fuscous. There is a small blackish spot on the fold at about the middle of the wing-length, and another at the apex of the fore wings. *Alar expansion* nearly half an inch. Bosque County, Texas.

C. QUADRILINEELLA, *n. sp.*

Sordid white, or white very faintly stained with ochreous. The markings are very indistinct. There are three pale ochreous lines, one within the costa, one on or just beneath the fold, and one along the disk, becoming fuscate about the basal third of the wing length, one of the branches going to the costal and the other to the dorsal margin, near the apex. Anterior surface of the legs and under surface of abdomen very pale fuscous. *Alar expansion* not quite four lines. Kentucky, in June. It requires care to distinguish the lines on the wings even in the most perfect specimens.

The larval case is two lines long, and bears some resemblance in form to that of *C. solitariella* as figured in Nat. His. Tin. iv., but is still more like that of *alcyonipenella* in Nat. His. Tin. v., having a clear shining shield covering its upper anterior portion. Food-plant unknown. Kentucky.

C. OCHRELLA, *n. sp.*

Basal joint of antennæ enlarged; second joint of palpi with a minute tuft. Fore wings dark ochreous, sometimes a little fuscous toward the tip; head, palpi, and thorax paler; hind wings what I should call leaden-ochreous; cilia of both pairs ochreous, and a little paler than the fore wings. Antennæ with alternate annulations of white and ochreous-

brown. Abdomen of a dark leaden or slaty hue above, whitish beneath, with the tuft yellowish-white; legs brownish-ochreous on their anterior surface, whitish-ochreous behind. *Alar expansion* over five lines. Kentucky, in June. Larva unknown.

COSMOPTERYX.

C. 4-LINEELLA, *n. sp.*

This species departs so far from the usual type of structure, as well as ornamentation, that I hesitate a little about locating it in this genus. The fore wing is rather more caudate than it is figured for *C. drurella* in Ins. Brit. iii., or for *C. gemmiferella* by Dr. Clemens. The cell is acutely closed, and toward its end the subcostal and median veins each give off three branches; while the apical vein, after giving off two branches to the dorsal margin, and then one to the costal margin, continues through the long *cauda* to its apex.

The face, antennæ, and palpi are white, and also the head, which has a faint purplish tinge, and the antennæ and palpi are marked with longitudinal black lines. (These organs are slightly injured in the two specimens before me.) The legs also are white, the first two pair marked with black on their anterior surfaces; the hind legs only on the tibia. *Vertex, thorax, and basal half of fore wings dark fuscous*, with three white lines on the vertex (one on each eye and one on top); the wings with four white lines (one dorso-basal, one costo-basal, the other two on the disk, neither of them reaching the base, and the one nearest the costal margin being the longest); the costo-basal streak departs a little from the margin; all four streaks end abruptly with the basal brown part, and beyond it the wing is yellow—almost golden-yellow—with an oblique white line along the base of the costal cilia, and three smooth tufts of brilliant metallic scales, one of which is near the costa, another on the disk a little farther back, and the third is before the dorsal cilia. *Alar expansion* four lines. Bosque County, Texas.

ERIPHIA.

E.? ALBALINEELLA, *n. sp.*

Having but a single specimen, I have not examined the neuration, but it is otherwise so near *E. concolorella* Cham. in structure that I place it provisionally in this genus. Head and palpi blackish-brown, with a white line along the under surface of the palpi; antennæ white; thorax and fore wings blackish-brown, with a basal white streak on the wings extending the length of the fold; another white streak leaves the costal margin near the base, and passes obliquely backward almost to the fold, and thence on, nearly parallel with the fold, to the end of the cell, where it almost meets the apex of another shorter oblique costal streak (or rather an indication of one) before the costal cilia; cilia white, with a dark brown, hinder marginal line; hind wings and their cilia and the abdomen purplish-fuscous; anal tuft whitish; legs white,

marked with dark brown on their anterior surfaces. *Alar expansion* four lines. Bosque County, Texas.

E.? NIGRILINEELLA, *n. sp.*

Of this also I have but a single specimen, and place it provisionally in this genus. The hind wings are a little wider than in the preceding species. Head and palpi white, except that the second and third joints of the palpi have each two small black dots on the outer surface; antennæ white. Thorax and fore wings white, with a short, blackish-brown, basal streak, which diverges from the costa, and nearly reaches the fold, and then passes backward, nearly parallel with the fold, nearly to the end of the cell and at a point nearly opposite to the beginning of another costal black streak placed just before the cilia, and which passes backward to the apex. The ornamentation of the fore wings is almost the reverse of the preceding species—white when that is black, black when that is white. Legs white, marked on their anterior surfaces with brown. *Alar expansion* three lines. Bosque County, Texas.

ELACHISTA.

E. TEXANELLA, *n. sp.*

Sordid pale yellowish-white, immaculate, or with faint fuscous microscopic dustings. *Alar expansion* nearly one-third of an inch. *E. parvipulvella* Cham. has wider wings, is more creamy-white, and is distinctly dusted with brownish-ochreous, and has the outer surface of the palpi brownish. In *texanella*, the neuration of the hind wings approaches that of *Cosmopteryx;* the subcostal vein passes straight through to the apical part of the wing, where it is deflected to the *dorsal* margin; it has no branches; the cell is unclosed; the median is furcate on the dorsal margin about the middle, and there are two independent discal branches, which are indistinctly continued through the cell. Submedian and internal distinct. Bosque County, Texas.

E. STAINTONELLA, *n. sp.*

White; the basal third of the costal margin of the primaries pale ochreous, dusted with fuscous; apical half of primaries pale ochreous, dusted with fuscous, with a narrow white fascia before the apex posteriorly angulated, or perhaps the wings are as well described as white with the apex, a wide irregular band just behind the middle (widest on the costa), and the basal third of the costal margin pale ochreous dusted with brownish; the cilia also are somewhat dusted. Hind wings pale fuscous, with pale ochreous or grayish-ochreous cilia. *Alar expansion* three lines. Texas.

Fore wings.—The subcostal vein goes to the apex, emitting three branches before the end of the cell, and becoming furcate before the apex; the median emits three branches before the end of the cell; and the fold is thickened. In the hind wings, the subcostal and median are each simply furcate.

TISCHERIA.

T. QUERCIVORELLA, *Cham.* Cin. Quar. Jour. Sci. ii. 109.

? T. quercitella, Frey, *nec T. quercitella*, Clem.

I have not seen the specimens from which Frey described his species nor the single imperfect one from which Clemens prepared his description. Frey thought his specimens belonged to Clemens's species; but Frey's description applies sufficiently well to the four ♂ and two ♀ before me, and which I cannot reconcile with Clemens's account of his species. In *quercivorella*, the face, palpi, and antennæ are *very pale* lemon-yellow, the vertex being darker—as dark as the fore wings. Clemens says of *quercitella*, "antennæ, head, labial palpi, dark orange-yellow". In *quercivorella*, the thorax and fore wings are lemon-yellow, with the costal margin more reddish, and becoming more so toward the apex, which is reddish-orange and somewhat dusted with darker scales. Clemens says of *quercitella*, "fore wings orange-yellow; apical portion reddish-brown, dusted with dark brown", and does not mention the reddish-orange hue of the costal margin. In *quercivorella* (both sexes), the dorso apical cilia are paler than those of the apex, which, like those of the hind wings, and the entire hind wings themselves, except a fuscous patch at the base, are pale silvery-yellow; this fuscous patch and a similar one on the under side of the fore wings are peculiar to the male. In *quercitella*, Clemens says the hind wings are "pale yellowish, becoming reddish-brown toward the apex, and the apical cilia dark brownish". This does not apply to *quercivorella* at all. I have quoted the whole of Dr. Clemens's brief description.

In *quercivorella*, the under side of the wings is paler than the upper, and does not become darker toward the apex, but has the costal margin stained with fuscous on the fore wings. The thorax, abdomen, and legs are *pale* yellow, as also is the anal tuft; the front surface of the legs and the under side of the abdomen dusted with fuscous. *Alar expansion* scant three-eighths of an inch. Kentucky and Texas.

T. PRUINOSELLA, *Cham.*

I have received slightly injured specimens from Texas which I refer to this species, which is heretofore recorded only from Kentucky.

T. LATIPENELLA, *n. sp.*

A single specimen (♂) received from Texas is pale yellow or luteus, becoming more orange toward the tip of the fore wings; the hind wings are paler than the fore wings and thorax, being, in fact, nearly white. There is a small fuscous patch on the under side of the fore wings; none on the hind wings. It is a little paler in color than *T. quercivorella* Cham., which it resembles in many respects, especially in size. But the striking peculiarity about it, that which gives it its distinctive character, is the extraordinary width and form of the hind wings. These, instead of being linear-lanceolate, and sharply pointed at the

apex, as is usual, are fully as wide as the fore wings, and approach them in shape. The costal and dorsal margins are almost equally arched; each rounds off toward the apex almost equally at about the apical third of the wing, and the apex is rather obtuse. They are very unlike anything else I have met with in the genus; and if the species had been previously described, I think they could not have been overlooked. The specimen was not pinned when I received it, and therefore I cannot suspect that it was a manufactured species. It belongs no doubt to the Oak-feeding group.

Possibly it may be *T. zelleriella* Clem., which I have not seen. Dr. Clemens says, "Hind wings bluish-gray, tinted with yellow externally toward the tip." "Bluish-gray" would hardly describe the color of the hind wings, which are of a very pale whitish-yellow; but this is the only *Tischeria* that I have seen which has the "hind wings tinted with yellow" along the costal margin "toward the tip". But if it is that species, it is strange that Dr. Clemens has not directed attention to the extraordinary width of the hind wings and their comparatively rounded apex.

As above stated, I have but a single ♂ and no ♀. Dr. Clemens's description of the ♂ applies well enough, except in the particulars just stated; but he describes the supposed ♀ of *zelleriella* as something quite different, and he bred *zelleriella* from mines on the upper surface of Oak leaves. I have another species which I have labelled *zelleriella?*, and which I have bred frequently from mines on the upper surface of Oak leaves. This species agrees with Dr. Clemens's account of *zelleriella*, except that the hind wings are *not* tinted with yellow, as above described in the ♂, and the hind wings of the ♂, if they can be called bluish-gray, are *very* pale. The ♀ agrees better with Clemens's description of *zelleriella* ♀.

In this species, the abdomen is fuscous, the anal tuft yellow; there is no fuscous spot on the under surface of either pair of wings in either sex; the legs, palpi and face, and antennæ are very pale lemon or whitish-yellow. In the ♀, the fore wings are deep saffron or almost reddish-yellow, becoming deeper and more purple toward the apex, with the dorsal cilia paler; hind wings and cilia leaden-gray. The ♂ differs by being much paler yellow on the fore wings, and the hind wings are also paler and wider; though not nearly so wide, and tapering much more gradually to the acute apex, than in *latipennella*, with which it otherwise agrees, except that it lacks the yellow tint along the apical part of the costa. It also differs from the ♂ by having the abdomen yellow instead of fuscous. The mine also seems to differ from that of *zelleriella*, being whitish, elongate, rather narrow, and the cuticle contracted, and it is placed indifferently at any part of the upper surface, whereas Dr. Clemens states that the mine of *zelleriella* is at first a white blotch, but subsequently becomes brown, *and the margin* of the *leaf is curled.*

I have known this species for years, but hesitated to describe it as new, lest it might prove to be *zelleriella*. I am, however, pretty well

convinced that it is new, and suggest for it the name *T. clemensella*. It is the same species referred to by me as *T. zelleriella?* in Cin. Quar. Jour. Sci. ii. 110 (April, 1875). So far as I have been able to learn, there is no authentic specimen of *zelleriella* now extant, and we must content ourselves with Dr. Clemens's brief description.

Messrs. Frey and Boll describe a species as *zelleriella* Clem., suggesting the name *complanoides* for it if it should prove distinct from *zelleriella*. It is impossible to say whether *complanoides* = *zelleriella* or not; but *complanoides* has "the antennæ, head, and breast vivid egg-yellow, of the same color as in the European species (*complanella*), and the fore wings of the same color". In *clemensella*, the face, palpi, breast, and legs are paler than the fore wings, even in the ♂, and very much so in the ♀; and, as I understand the description of *complanoides*, the base of the hind wings is darkened, which is not the case with this species. I do not recognize any species that I have seen in Dr. Clemens's account of *zelleriella*, nor in that of *complanoides* by Frey and Boll.

T. ÆNIA, *Frey & Boll.*

In a paper in the Cin. Quar. Jour. Sci. i., I denied the distinctness of this species, which mines the leaves of *Rubus villosus*, from *T. malifoliella* Clem., which mines Apple leaves. The species had been long known to me before it was described by Frey and Boll as *T. œnia*, and was referred to by me (*loc. cit.* iii. 208) as identical with *malifoliella*. I am not now so certain that it is identical, and probably the greater number of entomologists would concur with Frey and Boll in regarding it as a new species, or a phytophagic species or variety; and yet the only constant or material difference that I have observed is that *T. œnia* is of a richer bronzed-brown, while *malifoliella* is of a duller dead brown. I have received from Mr. Belfrage, from Texas, a single specimen in good condition, and now in the museum at Cambridge, labelled *T. œnia?*, the food-plant of which is unknown, and which seems to me to bear about the same relation to the Blackberry species that the latter does to the species from the Apple; that is, it is of a brighter, more brassy lustre than *T. œnia* from the Blackberry. It is a little smaller than *T. œnia* and *T. malifoliella*, which are of nearly the same size, and the face and palpi are of a different hue. It will probably prove to be a new species. They may all be regarded as "phytophagic species".

T. PULVELLA, *n. sp.*

Antennæ pale ochreous; vertex whitish, stained with ochreous; face and palpi white; thorax and fore wings white, suffused with pale ochreous, and *densely* dusted with ochreous-fuscous, paler and less dusted beneath the fold; hind wings and cilia pale lead-color; under surface of fore wings ochreo-fuscous, that of the hind wings whitish; both wings wide for this genus. Abdomen whitish, dusted with fuscous; anal tuft yellowish-silvery; legs yellowish-white. *Alar expansion* four lines. Texas.

LITHOCOLLETIS.

L. NECOPINUSELLA, *n. sp.?*

The nearest American congeners of this species are *L. cratægella* Clem. and *L. hageni* Frey. The latter I know only through Professor Frey's description. *Possibly* the insect before me may be that species, though I am unable to detect any trace of saffron-yellow in the ground-color of the fore wings, which are dark golden-brown; the third dorsal spot, which seems to be distinct in *hageni*, is here only indicated by its dark margin, there being no white scales; and the two last costal streaks do not cross the entire wing as they do in *hageni*, if I understand Professor Frey's description of that species.

It cannot be mistaken for *cratægella* Clem., because the thorax and basal portion of the fore wing (except the costal margin) are white here, while in *cratægella* they are golden-brown (marked, however, by median and dorsal basal white streaks, which are frequently continued on to the thorax); the face and palpi are here pure white, and the upper side of the antennæ is darker fuscous than in *cratægella*. (Dr. Clemens's description of *cratægella* is not very accurate. He says, "Antennæ, tuft, and front dark silvery-gray." I should call the face and under side of the antennæ silvery-white, while the tuft is rather a brownish than a silvery gray. He makes no mention whatever of the white streak which extends along the base of the dorsal margin as far as the basal fourth of the wing-length, nor of the apical black spot; and what he describes as "the streak of black scales *in the middle* of the wing *at the apex*, extended backward between the streaks as far as the second dorsal and costal streaks", is only the extended dark margins of the costal and dorsal streaks, and frequently extend back to the apical spot.)

This species is also larger than *cratægella*, having an *alar expansion* of over four lines, whilst *cratægella* varies from scarcely three to something over three and three-fourths; the third dorsal streak in *cratægella*, though small, is distinct, while in this species it is only indicated by its dark margin; in this species, too, the dark margins of the first costal streak are produced to the base of the wing, the anterior dark margin separating the narrow golden-brown basal portion from the wide white portion, and the posterior dark margin extending along the extreme costa. The second costal streak is a little more oblique in this species than in *cratægella*, while the fourth is perpendicular to the margin here, and points obliquely forward in *cratægella*. In this species, too, there is a brown ciliary apical streak extending out from the apical spot—something like the hook in some species of *Gracilaria*—and this is the only American *Lithocolletis* thus far seen by me which possesses this peculiar mark; the dorsal cilia are also tipped with brown; all the dark marks of the wings shine with a peculiar bluish-black lustre. But in all other respects the fore wings seem to be marked exactly as in *cratægella;* that is, the ground-color is brownish-golden, and the position and number of

the marginal streaks are the same—three dorsal and four costal, the third dorsal minute, the second large, and the first very large, and the first costal very oblique. In this species, however, these marginal streaks are dark-margined on both sides, while in *cratægella* it is only the first costal and first and second dorsal that are so margined, the others only dark-margined before. Apical spot circular, and hinder marginal line, as in *cratægella*, at the base of the cilia.

The hind wings and cilia dark lead-brown—darker than in *cratægella*. Abdomen fuscous, a little paler beneath, and tuft yellow. Legs and tarsi white, marked on the anterior surfaces with brown. Kentucky, early in May.

L. POPULIELLA, *n. sp.*

I have bred a few species from small tentiform mines on the under side of leaves of the Silver-leaf Poplar, which, though very distinct from *argentinotella* Clem. and *L. fitchella* Clem., I place in the same group with them. It is perhaps nearer to *L. carpinicolella* than to any of the other species figured in the Nat. Hist. Tin.

Palpi, head, tuft, antennæ, under surface of thorax, legs, and abdomen pure snowy-white; upper surface of abdomen and fore wings pale golden: there are three white longitudinal streaks on the thorax (one median, and continuous with a dorso-basal white streak on the wings, the other two passing over the tegulæ* and continuous with a median basal white streak on the wings); there is also a costo-basal white streak on the fore wings, and these three basal wing-streaks are of about equal length, and less than one-fourth of the length of the wings. Immediately behind the dorso-basal streak, and scarcely distinct from it (probably sometimes confluent with it), is the first dorsal streak, which approaches a square form, and is dark-margined before and above. Almost opposite to this dorsal streak, but a little behind it, is the first costal streak; it is oblique, not pointed, and is dark-margined before. The second costal and second dorsal are opposite each other, the costal one being the largest of the two, triangular and dark-margined before. The third costal and third dorsal are nearly opposite, the costal being perhaps a little farther back, and being larger than the dorsal, and larger also than the second costal; both are dark-margined before. These are only the three dorsal streaks. The fourth costal is just before the apex, points a little obliquely forward, and is margined behind by a small apical patch of brown dusting. Cilia white, with a brownish hinder marginal line at their base. *Alar expansion* one-fourth of an inch. Ohio and Kentucky.

L. BIFASCIELLA, *n. sp.*

Tongue, palpi, and face silvery-white, the outer surface of the third joint of the palpi brown toward the tip, and the forehead tinged with

*Following Burmeister, I have sometimes called these organs "patagia".

saffron. Tuft pale saffron, darker toward its sides. Antennæ silvery-white beneath, shining brown above. Thorax and fore wings deep reddish-saffron, with two silvery-white fascia on the wings, dark-margined behind, each of which is nearly straight, one placed at about the basal third, the other behind the middle: immediately before the cilia are a costal and an opposite dorsal silvery-white streak, also dark-margined behind; apex densely dusted with brown, forming a large spot, which has a few white scales before it and others intermixed; cilia saffron, tipped with silvery-gray, and with a dark brown, hinder marginal line before the tips. Hind wings and upper surface of the abdomen dark fuscous. Under surface of the abdomen silvery-white, with a large yellow spot on each side of each segment, and one on the under surface of each of the last three or four joints: anal tuft yellow, tipped with silvery.

First (and second?) pair of legs brown on their anterior, white on their posterior surfaces; the tarsi annulate with white; hind legs white, the tarsi annulate with fuscous, and a pale saffron spot on the outer surface of the tibia. *Alar expansion* scant four lines.

Described from a single ♀ bred from a long, rather wide, and irregular mine on the upper surface of a leaf of the White Oak (*Q. alba*). The pupa was concealed under a white, silken web over the midrib, and the larva is unknown.

It bears an evident, though not very close, relationship to *L. obstrictella* Clem.; but in the latter, instead of the costal and dorsal spots before the cilia, there is a white fascia. But this alone would not be necessarily of specific value. The streaks are, however, a little differently placed; and *obstrictella* has a whitish band near the tip of the antennæ, which is absent in this species; and Dr. Clemens makes no mention of the brown outer surface of the third joint of the antennæ, nor of the yellow spots on the abdomen. He simply says, "abdomen black", and makes no mention of the palpi. But there is a more decided difference. The larva of *obstrictella* belongs to the cylindrical group, and makes a tentiform mine on the under surface of leaves of "the Black Oak" (*Q. tinctoria?*). This mine is on the upper surface of White Oak leaves, and though the larva is unknown, the character of the mine indicates that it belongs to the "flat" group. There are other differences, but these here indicated are sufficient.

As compared with *L. tubiferella* Clem., to which the mine and the imago bear some resemblance, it is deeper reddish-saffron than *tubiferella*, which also has the tuft white, has no dorsal and no costal streak behind the fascia, and the apex is not dusted. It is more like *L. guttifinitella* Clem., or rather it is between *obstrictella* and *guttifinitella;* but the latter always has the first fascia oblique toward the base of the costa, the costal and dorsal spots in the apical part of the wing pointing obliquely backward and smaller, and the dusting is scattered along the base of the cilia, rather than, as in this species, forming a spot which is white-margined before. By these characters, also, *guttifinitella* may be dis-

tinguished from *cincinnatiella* Cham., though perhaps one might not find much difference in the published descriptions. *L. cincinnatiella* is also more golden than saffron, with the dusting of the fasciæ produced back along the middle of the wings. There are also other minute differences between the species mentioned, and there is no difficulty in distinguishing bred specimens.

L. AUSTRALISELLA, *n. sp.*

No basal streak nor apical spot on the fore wings, which are pale golden (about the color of *L. argentinatella* Clem.). There is no distinct hinder marginal line in the pale yellow cilia. The marks on the wings are, first, a small, white, dorsal streak; then an oblique, white, costal streak about the basal third of the wing-length; a silvery-white fascia about the middle, which is posteriorly angulated nearer to the costal than to the dorsal margin; a small, silvery-white, costal spot immediately before the cilia, and a longer dorsal one opposite to it, extending obliquely backward; all of these marks are posteriorly dark-margined, the dark margin of the last costal and dorsal streaks almost meeting in the apical part of the wing; apex dusted with dark brown on a white ground. Thorax pale golden, with a white streak from its anterior margin to the apex. Head, tuft, palpi, and antennæ silvery-white, each joint of the antennæ dotted above with brown, and the basal joint pale golden above. Under surface of body, wings, and legs pale luteous, the legs stained with brownish on their anterior surfaces. *Alar expansion* three lines and one-half. Bosque County, Texas.

L. BICOLORELLA, *n. sp.*

Specimens of this species were bred by me three years ago from flat mines and larvæ, on the upper surface of leaves of *Quercus bicolor*, and, without sufficient examination, were labelled in my cabinet "*L. ulmella*". I am now satisfied that they are distinct species, though closely related; *bicolorella* is between *basistrigella* Clem. and *ulmella* Cham. The stripe along the dorsal margin of the primaries, which in *basistrigella* only extends about or but little over one-half of the wing-length, in *bicolorella* extends to the cilia, and in *ulmella* it is deflexed along the base of the cilia to the apex, and the oblique dorsal streak, which in *basistrigella* is placed at the end of the dorsal basal streak, is absent in both the other species. In this species there are two costal oblique streaks placed almost as in *ulmella*, which has three, and behind these two streaks there are three small white dots within the margin, and one of them touching the brown dusting which is placed along the base of the dorsal cilia, and the second costal streak has the tip margined with brown dusting. The wings, both in this species and in *ulmella*, are perhaps better described as yellowish-saffron than as pale golden. The head and palpi are white, the tuft with a little yellowish intermixed, and the antennæ also are annulate with brown, as in *ulmella*. The abdomen is paler yellow than the wings, and tinged above with fuscous, and on the upper sur-

face of the thorax has a white line from its anterior margin to its apex (*ulmella* also has this line sometimes). *Alar expansion* as in *ulmella*. Kentucky.

ACANTHOCNEMES, *gen. nov.*

The species on which I found this genus is very near to *Phyllocnistis* Zell. As in that genus, the posterior tibiæ are set around with spines or bristles, which in this species are also found on the basal tarsal joint (hence the generic name). It differs from *Phyllocnistis* as follows: the face is wider in proportion to its length, the antennæ are much shorter, and the basal joint smaller, while the stalk is serrated toward its apex. *The maxillary palpi are well developed, being as long as the first and second joints of the labial pair.* In the dead insect, both pairs droop. The anterior wings are more decidedly caudate than in *Phyllocnistis;* more so in fact than in any species known to me, unless it be some species of *Cosmopteryx;* and the neuration, while resembling that of *Phyllocnistis* more nearly than any other genus, is yet sufficiently distinct from it. The costal vein is short and indistinct; the subcostal is also very indistinct, and appears to run straight through the wing to the margin before the apex. The median vein, however, is *very* distinct, running through the middle of the wing and gradually disappearing in the "cauda" or produced apex, just before which it gives a branch to the *costal* margin; cell unclosed (?) (or discal vein oblique and subobsolete); there appears also to be a *very indistinct* branch from the median to the dorsal margin before the distinct one to the costal margin, so indistinct, indeed, that I am not sure that it represents a vein at all; submedian tolerably distinct. Hind wings linear with the costal; submedian (?) and internal veins moderately distinct; the subcostal, obsolete at its base, becomes gradually more distinct as it passes to the extreme apex of the wing. Cilia of both wings long.

As I have examined the neuration of only a single specimen, and a single wing only of each pair, it may prove to be more distinct than I have found it.

As shown by the following description, the ornamentation, while to some extent resembling that of *Phyllocnistis*, is yet of a different pattern.

A. FUSCOSCAPULELLA, *n. sp.*

Head, palpi, basal antennal joint, anterior half of the thorax, and fore wings except at the base, silvery-white, *faintly* tinged with yellowish. Base of the fore wings and apical part of thorax fuscous. Antennal stalk yellowish. The brown base of the fore wings is posteriorly margined by a narrow fascia of a more pure silvery-white than the remainder of the wings. Legs yellowish-fuscous on their anterior margins. *Alar expansion* a little over three lines. Bosque County, Texas.

PHYLLOCNISTIS.

P. ERECHTITISELLA, *n. sp.*

Only the mine and larva are known. I have not succeeded in rearing

the imago. I have known the mine for many years, but believed it to be Dipterous until the fall of 1876, when I found specimens containing the larva and others with the empty pupa case projecting from the mine. Kentucky.

NEPTICULA.

N. QUERCIPULCHELLA, *n. sp.*

Closely allied to *unifasciella* Cham. and equally as pretty. The larva is bright green, with a deeper green line of contents; it makes a long, narrow, winding, and gradually widening track, similar to that of *N. quercicastanella* Cham. in leaves of *Quercus alba*, and is, I believe, the only species of the genus which leaves an old mine to make a new one. From the structure of *Nepticulæ* larvæ this would seem hardly possible, but I do not know how otherwise to explain the fact that I have taken a leaf containing a mine more than half finished, and which had evidently been but a little while unoccupied; and on the same leaf, not an inch distant from it, was a new mine just begun, and yet containing a large larva almost fully grown, and which had evidently just reëntered the leaf; the mine not being more than twice as long as the larva, and in size answering exactly to the terminal portion of the empty mine, and being in all respects exactly like it. After continuing to feed until the new mine was something more than half an inch long, the larva left it, and spun its cocoon on the earth in the bottom of the breeding jar, and I bred the imago from it. The larva was well grown, certainly several days old, when it began the new mine, and *came from somewhere*, whether or not it came from the empty mine in the same leaf. The mine, larva, and insect are larger than in *quercicastanella*.

The head is black; antennæ fuscous; occiput, eyecaps, palpi, and feet yellowish-white, silvery; thorax and fore wings deep blue-black (I think so, though it is exceedingly difficult in so small and resplendent a creature to get the correct hue), bronzed, and with purple and violet reflections; the fascia is behind the middle, silvery-white, and a little widest on the dorsal margin, and the wing behind the fascia is darker than before it, whilst the cilia are paler and less lustrous than the wing; under surface of fore wing; cupreus-black, as also are the abdomen and legs. *Alar expansion* two lines. Imago, June 19, after only a week in the pupa state. Kentucky.

N. JUGLANDIFOLIELLA, *n. sp.*

Dr. Clemens gave this name to a mine and larva observed by him in Walnut leaves; and as his description *of the mine*, as far as it goes, answers to the mines from which I bred this species, I adopt the name. I have, however, nearly always found several mines in the same leaflet at the same time, and very much contorted and frequently crossing each other. I did not observe that the larvæ differed from other *Nepticulæ* larvæ, though Dr. Clemens mentions its resemblance to the larva of a Dipteron. The mines are common in the latter half of June, and the

moths emerge about the 1st of July. Dr. Clemens found some empty mines and some larvæ in August.

The imago resembles that of *quercipulchella* Cham., but is less resplendent and smaller, scarcely measuring two lines in *alar expansion*. The occiput, eyecaps, and palpi are silvery yellowish-white; the head brownish rusty-red; antennæ fuscous; fore wings dark purple-brown, nearly black, but strongly purplish, with the cilia paler, and a pale golden or rather yellowish-silvery fascia behind the middle, which has its posterior margin straight and its anterior slightly concave. The first and second pairs of legs are silvery yellowish-white, and the third pair is of the same hue with the fore wings, with the basal joints paler, and of the same hue with the under surface of the abdomen. Kentucky.

N. LATIFASCIELLA, *n. sp.*

Face pale rusty-yellowish; vertex dark brown; palpi and basal joint of antennæ (eyecap), thorax, a broad fascia about the middle of the fore wings, and the cilia silvery-white, tinged with pale yellowish (except the cilia). The tuft is rather small, the antennæ are pale grayish-fuscous, tinged with silvery; the fascia is very broad, nearly straight on its anterior and convex on its posterior margin; the costal cilia are fuscous; upper surface of abdomen fuscous, lower pale grayish-fuscous, and the legs darker fuscous. *Alar expansion* two lines.

As will be evident on comparison of this description with that of *N. nigriverticella* Cham. in Cin. Quar. Jour. Sci. ii. 118, there are many points of close resemblance between them, although they are very distinct species. It was taken resting on the trunks of Chestnut-trees (*Castanea americana*), the leaves of which were full of empty *Nepticula* mines, about the middle of August. Kentucky.

N. BOSQUELLA, *n. sp.*

Palpi and eyecaps white; antennæ yellowish-fuscous; head deep black; thorax and fore wings pale creamy-white, dusted rather densely with fuscous; hind wings and cilia of both pairs yellowish-silvery; abdomen brown on top; anal tuft yellowish-white; anterior and middle legs brown on their anterior surfaces; hind legs and under surface of abdomen pale creamy-yellowish. *Alar expansion* four lines. Bosque County, Texas.

ART. IV.—TINEINA AND THEIR FOOD-PLANTS.

By V. T. Chambers.

The following is intended as a catalogue of plants which are fed upon by the *Tineina* within the limits of the United States and Canada so far as they are at present known.

The best descriptions of these insects may fail to enable one to identify captured species, when, as frequently happens, two or three minute species differ only in a shade of color, or in the presence or absence of a mark of microscopic dimensions; but when the larvæ, food-plants, and modes of larval and pupal life, with the character of the mines in mining species, are known, there need be little difficulty in recognizing bred specimens. With knowledge of an insect in these particulars, even a very imperfect description of the imago will usually enable us to recognize a species which has been bred from the larva, for although two species may resemble each other so closely that even the best written description may not enable us to determine which of the two it is, yet it will be a very rare occurrence that this close resemblance will hold good throughout its history as larva and pupa, including its food-plant, mode of feeding, larval case, or mine, or burrow, or mode of sewing or folding leaves, mode of pupation, cocoons, &c. The case is very rare that in all these respects two species approach each other so closely that nothing distinctive and clearly marked is left of either. Yet, rare as they are, cases do sometimes occur where we are still left in doubt as to the distinct specific characters even of bred specimens, as, for instance, it may yet be considered doubtful whether *Aspidisca splendorifuella* Clem., *A. juglandiella* Cham., *A. diospyriella* Cham., and the species mentioned by Mr. Stainton as having been found by Lord Walsingham mining Poplar leaves in Oregon, are distinct species, the chief reason for considering them distinct being the difference in food, it being a very unusual thing to find one of these little leaf-mining species feeding on so many and diverse plants.

As to a great majority of the species, we are ignorant what they feed upon or whether they feed at all in the imago. With the exception of half a dozen species mentioned hereinafter, I have never seen any of these little species feeding upon anything except in the larval state.

It is to aid in the identification of species that this catalogue has been prepared. A species having been bred, and the food-plant thus known, and its characters as larva or pupa, and its mode of feeding,

character of mine, &c., having been noted, and, better still, if it be recognized as belonging to any established genus, a reference to the catalogue will give the names of the species known to feed upon that plant; and a reference to the published accounts of those species will usually enable one to determine whether the species is new, or to recognize it if already made known.

When only the larva is known, that fact is distinctly stated; when the food of the imago is known, that also is distinctly stated. In all other cases, the remarks refer to the food-plants of larvæ of which the imago also is known; and when the larva is a leaf-miner, the surface (upper or lower) mined is stated.

MAGNOLIACEÆ.

MAGNOLIA UMBRELLA (and probably some other Magnolias).

The larva of *Phyllocnistis magnoliœella* Cham. makes a long, winding, linear, mine on either surface of the leaves. The imago is unknown, and it may prove to be *P. liriodendronella* Clem.

LIRIODENDRON TULIPIFERA. Tulip-tree.

The larva of *Phyllocnistis liriodendronella* Clem. makes a long, winding, linear mine on either surface of the leaves.

CRUCIFERÆ.

BRASSICA OLERACEA.

The larva of *Plutella cruciferarum* feeds on the under side of the leaves of Cabbage and some other plants of this order.

TILLIACEÆ.

TILLIA AMERICANA. Basswood or Linden.

Lithocolletis lucetiella, Clem. Larva in tentiform mine in under surface of leaves.

L. tilliœella, Cham. Larva in tentiform mine on upper surface of leaves.

Coleophora tilliæfoliella, Clem. Larva only is known. It lives in a case and feeds on the under side of leaves.

ANACARDIACEÆ.

RHUS, *sp.?*

Chrysocoris erythriella, Clem. The larva feeds on the fruit-racemes.

RHUS TOXICODENDRON. Poison Oak or Poison Ivy.

Lithocolletis guttifinitella, Clem. The larva feeds in a flat blotch mine in upper surface of the leaves.

Gracilaria rhoifoliella, Cham. Larva at first mines, and then feeds externally, rolling the leaf.

RHUS, *sp.*

Gelechia rhoifructella Clem. Larva feeds on fruit-racemes.

Gracilaria rhoifoliella, Cham. Larva feeds as in *R. toxicodendron* (*supra*).

VITACEÆ.

VITIS. Various species of Grape.

Phyllocnistis vitigenella, Clem. } Larvæ make long, linear, winding
Phyllocnistis vitifoliella, Cham. } mines in upper surface of leaves.

Antispila issabella, Clem. }
Antispila viticordifoliella, Clem. & Cham. } Larvæ in blotch mines in upper surface of leaves,
Antispila ampelopsifoliella, Cham. } cutting out cases, in which they pass the pupa state on the ground.

AMPELOPSIS QUINQUEFOLIA. Virginia Creeper.

Phyllocnistis ampelopsiella, Cham. Larva in a white, convoluted mine on under (*very* rarely also on upper) surface of leaves.

Antispila ampelopsifoliella, Cham. Larva in flat blotch mine in upper surface of leaves, cutting out a case in which it pupates on the ground.

SAPINDACEÆ.

ÆSCULUS GLABRA. Buckeye, or Horse Chestnut.

Lithocolletis guttifinitella, Clem., var. *æsculisella*, Cham. Larva in flat blotch mine in upper surface of leaves.

ACERACEÆ.

ACER SACCHARINUM. Sugar Maple.

Lithocolletis aceriella, Clem. Larva in a flat blotch mine in upper surface of leaves.

Lithocolletis lucidicostella, Clem. } Larvæ in tentiform mines in under
Lithocolletis clemensella, Cham. } surface of leaves.

Gracilaria packardella, Cham. Larva rolls the leaf downward into a conical figure.

Incurvaria acerifoliella, Fitch. Larva in a blotch mine, from which it cuts out a case.

Catastega aceriella, Clem. Larva only is known. It at first mines the leaf, and afterward constructs a case of its "frass". (Does not belong to *Tineina?*)

ACER GLABRUM. Mountain Bush Maple.

Gracilaria acerifoliella, Cham. Larva curls the edge of the leaf down into a cone.

NEGUNDO ACEROIDES. Box Elder.

Gracilaria negundella, Cham. Larva curls down the edge of a leaf.

CELASTRACEÆ.

EUONYMUS ATROPURPUREUS (and other species?). Indian Arrow Root or Burning Bush.

Hyponomeuta evonymellus, Schop. Larvæ social in a large web, feeding on leaves.

H. icakarusa, Gaumer (*? = H. evonymellus*).

CELASTRUS SCANDENS. Bitter Sweet, or Staff-tree.

Adela bella, Cham. Imago on the flowers in May and June. Larva unknown.

LEGUMINOSÆ.

GLEDITSCHIA TRIACANTHUS. Honey Locust.

Laverna? gleditschiæella, Cham. Larva burrows in the thorns.

Helicepallidochrella, Cham. } The larvæ of these species no doubt
Agnippe biscolorella, Cham. } feed *in some way* on this tree. A larva (of one of them?) feeds in the "honey" inside the seed-pods.

CERCIS CANADENSIS. Judas-tree, or Redbud.

Gelechia cercerisella, Cham. Larva sews together the leaves.

THERMOPSIS FABACEA *var.* MONTANA.

Gracilaria thermopsella, Cham. Larva in a flat, irregular mine in upper surface of leaves.

DESMODIUM, *sp.?* Tick Trefoil.

Lithocolletis desmodiella, Clem. Larva in a small tentiform mine in under surface of the leaves.

Gracilaria desmodifoliella, Clem. Larva at first mines, and then rolls the leaf.

Gracilaria (*Parectopa*) *robiniella*, Clem. Larva in a flat, digitate mine in upper surface of leaves.

Gelechia desmodifoliella, Cham. Larva only is known. It feeds on the flowers.

Gelechia, sp.? The larva only is known. It feeds in a silken tube on the under side of the leaves.

LESPEDEZA, *sp.?*

Gracilaria (*Parectopa*) *lespedezæfoliella*, Clem. Larva in flat, acutely digitate mine in upper surface.

TRIFOLIUM PRATENSE. Red Clover (and other species?).

Gelechia roseosuffusella, Clem. Larva mines the leaves.

Anaphora agrotipennella, Grote. Larva feeds in clover-sod.

AMORPHA FRUTICOSA. False Indigo.

Walshia amorphella, Clem. Larva burrows in the stem.

Lithocolletis amorphœella, Cham. Larva in tentiform mine on under side of leaves.

Gelechia amorphœella, Cham. Larva sews together the terminal leaves.

ROBINIA PSEUDACACIA. Black Locust.

ROBINIA VISCOSA. Clammy Locust.

ROBINIA HISPIDA. Rose Acacia.

Lithocolletis robiniella, Clem. Larva in white tentiform mine on both surfaces of the leaflets.

Lithocolletis ornatella, Cham. Larva in yellowish blotch mines on both surfaces.

Gracilaria (Parectopa) robiniella, Clem. Larva in flat digitate mines on upper surface.

Gelechia pseudacaciella, Cham. Larva feeds externally on the leaves and also in the mines of *Lithocolletis robiniella*.

Xylesthia clemensella, Cham. Larva bores in dead Locust timber, posts, &c.

AMPHICARPÆA MONOICA. Hog Peanut.

Lithocolletis amphicarpeœella, Clem. & Cham. Larva in white tentiform mine in under surface.

Leucanthiza amphicarpeœfoliella, Clem. Larva in flat mine in upper surface.

GLYCYRRHIZA LEPIDOTA. Licorice-plant.

Gelechia glycyrrhizœella, Cham. Larva sews together the terminal leaves.

ROSACEÆ.

CERASUS SEROTINA. Wild Cherry.

Lithocolletis cratœgella, Clem. Larva in tentiform mine in under surface of leaves.

Aspidisca splendoriferella, Clem. Larva in a minute flat mine in August, and later cuts out a case, in which it pupates.

Ornix prunivorella, Cham. Larva at first in a tentiform mine in under surface of leaves, at the margin; leaves the mine to pupate.

Coleophora pruniella, Clem. Imago unknown; the larva lives in a case which it attaches to the leaves.

Nepticula ? prunifoliella. Insect unknown. Dr. Clemens gave the name to an unknown larva, *possibly* Dipterous, which makes a crooked, linear mine on the upper surface of the leaves. Possibly it is identical with the next species.

Nepticula serotinœella, Cham. Larva makes a red, crooked, linear mine in the upper surface of the leaves.

Machimia tentoriferella, Clem. Imago unknown; the larva lives in a web on the under side of a leaf.

PRUNUS AMERICANA. Red Wild Plum.

Lithocolletis cratægella, Clem. Larva as in *Cerasus serotina* (*supra*).

Anarsia pruniella, Clem. Larva feeding in woody excrescences.

Evippe prunifoliella, Cham. Larva feeds under the tip of the leaf, turned down.

Xylesthia pruniramiella, Clem. Larva feeds in woody excrescences. There is also a larva of an unknown species which makes a linear mine, ending in a blotch, and which leaves the mine to pupate.

AMELANCHIER CANADENSIS. June- or Serviceberry.

Ornix quadripunctella, Clem. Larva in a tentiform mine in the leaves.

Nepticula amelanchierella, Clem. Larva makes a linear, crooked mine in the leaves; imago unknown.

CRATÆGUS, different species. Blackthorn, Hawthorn.

Lithocolletis cratægella, Clem. Larva and mine as in *Cerasus serotina* (*supra*).

Aspidisca splendoriferella, Clem. Larva and mine as in *Cerasus serotina* (*supra*).

Tischeria malifoliella, Clem. Larva in a flat, trumpet-shaped, yellowish mine in upper surface of leaves.

Ornix cratægifoliella, Clem. Larva in tentiform mine on under side of leaves.

Ornix inusitatumella, Cham. Larva in white flat mine, specked with "frass", in upper surface; pupates in the mine.

Nepticula cratægifoliella, Clem. Larva in a crooked, linear mine in upper surface of leaves; imago unknown.

PYRUS CORONARIA. Fragrant Crab.

Lithocolletis cratægella, Clem. Larva as in *Cerasus serotina* (*supra*).

Tischeria malifoliella, Clem. Larva as in *Cratægus* (*supra*).

Aspidisca splendoriferella, Clem. Larva as in *Cerasus serotina* (*supra*).

PYRUS MALUS. Apple.

Bucculatrix pomifoliella, Clem. Larva at first a miner, then feeds externally. As to other species, see *Pyrus coronaria* (*supra*).

PYRUS COMMUNIS. Common Pear.

Lithocolletis nidificansella, Packard. Said to mine the leaves; is most probably a *Lyonetia*.

CYDONIA VULGARIS. Common Quince.

CYDONIA JAPONICA. Japan or Flowering Quince.

Lithocolletis cratægella, Clem. Larva and mine as in *Cerasus serotina* (*supra*).

ROSA. Various species of Rose.

Coleophora rosæfoliella, Clem. Larva in a case feeds on leaves of *Rosa centifolia*.

Coleophora rosacella, Clem. Larva in a case feeds on leaves of Sweet-brier.

Tischeria roseticola, Frey & Boll. Larva mines the leaves.

Nepticula rosæfoliella, Clem. Larva makes crooked, linear mines in leaves.

Gelechia rosæella, Cham. Imago unknown. Larva feeds in seed-capsules.

AGRIMONIA EUPATORIA.

Gelechia agrimoniella, Clem. The larva rolls the leaves and feeds on them.

RUBUS VILLOSUS. Blackberry.

Tischeria ænia, Frey & Boll. Larva makes a flat, somewhat trumpet-shaped, mine in upper surface of leaves.

Nepticula rubifoliella, Clem. Larva makes a linear crooked mine in the upper surface of the leaves.

RUBUS OCCIDENTALIS. Raspberry.

RUBUS CANADENSIS. Dewberry.

Tischeria ænia. See *Rubus villosus* (*supra*).

ONAGRACEÆ.

ŒNOTHERA (various species). Primrose.

Laverna œnotheræella, Cham. =?*Phyllocnistis magnatella*, Zell. Larva burrows in the stalk of *Œnothera missouriensis*.

Laverna œnotheræseminella, Cham. Larva feeds in the seeds.

Laverna circumscriptella, Zell. Larva feeds in the seeds.

Laverna murtfeldtella, Cham. Larva feeds on the flowers.

GROSSULACEÆ.

RIBES. Currant.

Gelechia ribesella, Cham. Larva folds and feeds on leaves of the Rocky Mountain Red Currant.

Gracilaria ribesella, Cham. Same food-plant, and feeds in the same way with *Gelechia ribesella*. Imago unknown.

SAXIFRAGACEÆ.

HYDRANGIA RADIATA. Wild Hydrangia.

Antispila hydrangiæella, Cham. Larva in small blotch mine; cuts out a case in which it descends to the ground to pupate.

HAMAMELACEÆ.

HAMAMELIS VIRGINICA. Witch Hazel.

Gracilaria superbifrontella, Clem. Larva at first a miner, afterward feeds externally, rolling the leaf into a cone.

Lithocolletis, sp.? Only the larva is known. It is possibly *L. aceriella* Clem., and makes a flat mine in the upper surface.

Catastega hamameliella, Clem. Imago unknown. The larva is at first a miner, and then makes a tube of "frass", in which it dwells.

LIQUIDAMBAR STYRACIFLUA. Sweet Gum.

Phyllocnistis liquidambarisella, Cham. Larva in a long, winding, linear mine in upper surface.

CORNACEÆ.

CORNUS FLORIDA. Dogwood.

Antispila cornifoliella, Clem. Larva in a blotch mine; afterward cuts out a case, in which it pupates on the ground.

NYSSA MULTIFLORA. Gum-tree.

Antispila nyssæfoliella, Clem. Larval habits as in *A. cornifoliella* (*supra*).

Nepticula nyssæella, Clem. Imago unknown. The larva makes a crooked, linear mine in the upper surface.

CAPRIFOLIACEÆ.

LONICERA SEMPERVIRENS. Honeysuckle.

Lithocolletis trifasciella?, Haw. Larva makes a tentiform mine in under side of leaves.

SYMPHORICARPA VULGARIS. Waxberry, or Indian Currant.

Lithocolletis trifasciella, Haw. (*Vid. Lonicera supra.*)

Lithocolletis symphoricarpæella, Cham. Larvæ in tentiform mines in under side of leaves.

VIBURNUM OPULUS. Snowball.

Coleophora viburnæella, Clem. Imago unknown. Larva in a case feeding on the leaves.

RUBIACEÆ.

CEPHALANTHUS OCCIDENTALIS. Button-bush.

Laverna cephalanthiella, Cham. The larva at first in a small, somewhat trumpet-shaped mine beginning at the midrib; afterward leaves it, and makes one or more larger ones nearer the edge of the leaf.

COMPOSITÆ.

Suborder TUBULIFLORÆ.

Tribe VERNONIACEÆ.

VERNONIA (various species). Iron-weed.

Coleophora vernoniæella, Cham. Imago unknown. Larva in a very long, slender case, feeding on the leaves.

Tribe EUPATORIACEÆ.

EUPATORIUM AGERATOIDES. Boneset.

Depressaria eupatoriiella, Cham. Larva feeds on under side of the leaves, which it wrinkles or slightly folds.

Gracilaria eupatoriiella, Cham. Larva makes a large tentiform mine in under surface of leaves, the cuticle becoming wrinkled and contracted over the mined space.

Nothris eupatoriiella, Cham. Larval habits similar to those of *Depressaria eupatoriiella* (*supra*).

Tribe ASTEROIDEÆ.

ASTER (various species). Starworts.

Gracilaria astericola, Frey & Boll. Larva mines and afterward rolls the leaves.

Butalis matutella, Clem. Larva in a web on under side of leaves, from which it mines out the parenchyma, feeding between the upper and lower cuticle. Imago with *B. flavifrontella* and *Coleophora corruscipennella* Clem. on the flowers.

ERIGERON (various species?). Flea-bane.

Gracilaria erigeronella, Cham. Larva in a tentiform under-side mine; leaves the mine to pupate.

SOLIDAGO (various species?). Golden-rod.

Tischeria solidaginisella, Clem. Larva in a blotch mine in upper sides.

Gelechia gallæsolidaginis, Riley. Larva burrows in the stem, making a fusiform swelling.

Tribe SENECIONIDÆ.

AMBROSIA TRIFIDA. Horse- or Hog-weed.

Lithocolletis ambrosiæella, Cham. Larva in tentiform mine in under side of leaves.

Bucculatrix ambrosiæella, Cham. Larva, when very young, a miner; afterward feeds externally on the leaves.

Tischeria ambrosiæella, Cham. } Larva in blotch mines, with an opaque
Tischeria heliopsisella, Cham. } *nidus*, from which the imago emerges.

In one species, the *nidus* is on the upper, in the other on the lower surface of the leaf.

Butalis matutella, Clem. See under *Aster* (*supra*).

Gelechia ambrosiæella, Cham. Larva feeds in the seed.

AMBROSIA ARTEMISIFOLIA. Rag-weed.

Tischeria ambrosiæfoliella, Cham. Larva in a blotch mine at the margin of the leaf.

Cryptolechia, sp.? (undescribed). Possibly *C. quercicella*, Clem. Larva feeds on the leaves externally.

Gelechia dubitella, Cham. Larva folds a leaf so as to form a case, in which it feeds.

Gelechia chambersella, Murtfeldt. Larva feeds externally on the leaves.

HELIOPSIS (various species). Oxeye.

Tischeria heliopsisella, Cham. Larval habit as in *Ambrosia trifida* (*supra*).

HELIANTHUS (various species). Sunflowers.

Lithocolletis ambrosiæella, Cham. Larval habit as in *Ambrosia trifida* (*supra*).

Lithocolletis helianthivorella, Cham. Larval habits as in the last species (*ambrosiaella*); that is, it lives in a tentiform under-side mine.

Glyphipteryx montisella, Cham. Imago found on the flowers in August. Larva unknown.

ERECHTITES HIERACIFOLIUS. Fire-weed.

Phyllocnistis erechtitisella, Cham. Imago unknown. Larva in a long, narrow, linear, winding mine in upper surface of the leaves.

AQUIFOLIACEÆ.

ILEX OPACA. Holly.*

Cryptolechia cryptolechiella, Cham. Larva sews together the leaves. (Having only a leaf, I am not certain of the plant.)

EBENACEÆ.

DIOSPYROS VIRGINIANA. Persimmon.

Aspidisca diospyriella, Cham. Larva in a minute blotch mine, from which it cuts out a case in which it pupates.

PRIMULACEÆ.

LYSIMACHIA LANCEOLATA. Loose-strife.

Lithocolletis lysimachiæella, Cham. Imago unknown. Larva in a small tentiform mine in under surface of leaves.

LABIATÆ.

SCUTELLARIA (various species). Skullcap.

Gelechia scutellariæella, Cham. Larva in a case attached to the under side of the leaves, and from which it mines out the parenchyma between the cuticles.

CONVOLVULACEÆ.

IPOMEA and PHARBITES (various species). Morning Glory.

Bedellia somnulentella, Stainton. Larva makes a web on under side

* In Washington, D. C., in January, I have found empty mines of two species of *Tincina*, both of which are undescribed. They were found in leaves of different species of Holly. One mine is probably that of a *Lithocolletis* larva, of the flat group, in leaves of *I. opaca*. The other is probably that of a *Nepticula*, and was in leaves of another species.

of the leaves, from which it eats out the parenchyma between the cuticles. (Similar to the habit of *Butalis matutella* on leaves of *Ambrosia trifida* and Asters.)

SOLANACEÆ.

SOLANUM CAROLINENSE. Horse Nettle.

Gelechia solaniiella, Cham. Larva in a small blotch mine.

PHYSALIS VISCOSA. Ground Cherry.

Gelechia physaliella, Cham. Larva in a tentiform mine in the under surface.

Gelechia physalivorella, Cham. Larva feeds on the leaves in a way not yet discovered. A larva, probably of a *Laverna*, burrows in the stem in Colorado, causing a fusiform swelling.

NYCTAGINACEÆ.

ABRONIA FRAGRANS.

Lithariapteryx abroniœella, Cham. Larva mines the leaves, frequently leaving one mine to make another. Imago common about the plant in July and August in Colorado.

CHENOPODIACEÆ.

CHENOPODIUM and ATRIPLEX. Goosefoot.

Gelechia hermanella, Fab. Larva mines the leaves, making an irregular, somewhat serpentine, track, with scattered "frass".

LAURACEÆ.

SASSAFRAS OFFICINALE. Sassafras.

Gracilaria sassafrasella, Cham. Larva, when very young, mines the leaves; older, it rolls them downward.

ULMACEÆ.

ULMUS AMERICANA. Elm.

Lithocolletis argentinotella, Clem. Larva makes a tentiform mine in the under side of the leaves; *rarely* in the upper side.

Lithocolletis ulmella, Cham. Larva makes a flat mine in the upper side of the leaves.

(*Argyresthia austerella* Zeller, I am convinced, feeds in some way on it; and in latter May and in June the imago may be found about the trees.)

CELTIS OCCIDENTALIS. Hackberry.

Lithocolletis celtisella, Cham. Larva in a blotch mine showing about as plainly on one surface as on the other. *Very* abundant.

Lithocolletis celtifoliella, Cham. Larva in a tentiform mine in the under surface. *Very* rare.

PLATANACEÆ.

PLATANUS OCCIDENTALIS. Sycamore, Buttonwood, Plane-tree.

Nepticula platea, Clem.
Nepticula maximella, Cham.
Nepticula clemensella, Cham.
} Larva of these three species in the upper surfaces of leaves. For description of the mines and species see Can. Ent. v. 125.

Cirrha platanella, Cham. Larva feeds on the under side of the leaves, and pupates in a tube composed of silk and the down from the leaves. There is also an unknown larva, which makes a large mine, exactly like that made by *Coriscium albanotella* Cham. in Oak leaves.

JUGLANDACEÆ.

JUGLANS NIGRA. Black Walnut.

Lithocolletis caryæfoliella, Clem. Larva in irregular blotch mine in upper surface of leaves. (*L. juglandiella* Clem. is the same species.)

Gracilaria blandella, Clem. Larva when small in a linear whitish mine in upper surface of leaves; afterward feeding and pupating under the edge of the leaf turned down.

Gracilaria juglandisnigræella, Cham. Larva at first mining the leaves beneath; afterward feeding and pupating under the edge turned up.

Aspidisca juglandiella, Cham. Larva in a very small blotch mine, from which it cuts out a case in which it pupates.

Nepticula juglandifoliella, Cham. (& Clem.?). Larva in small, linear, crooked mines; many on a leaf sometimes. Mine in upper surface.

JUGLANS CINEREA. Butternut.

Lithocolletis caryæfoliella, Clem. As in *Juglans nigra* (*supra*).

CARYA ALBA. Hickory.

Lithocolletis caryæfoliella, Clem. See under *Juglans nigra* (*supra*).

Lithocolletis caryæalbella, Cham. Larva in a tentiform mine in the under surface of the leaves.

Aspidisca luciflucella, Clem. Larva in a small blotch mine, from which it cuts out its pupal case.

Colcophora caryæfoliella, Cham. (& Clem.?). Larva feeds in a cylindrical case attached to the under surface of the leaves.

Nepticula caryæfoliella, Clem. Imago unknown. Larva in a linear crooked mine on the upper side of the leaves.

Ypsolophus caryæfoliella, Cham. Larva sews together the leaves.

Gracilaria, sp.? (probably *G. blandella* Clem.). Imago unknown. The larva when young makes a linear whitish mine in the upper surface of the leaves.

CUPULIFERÆ.

QUERCUS. Oak (various species).

(Different species of Oak are so frequently fed on by the same larvæ, that I have not attempted to arrange them according to the botanical species, since that would cause too frequent repetition of the account of each larva. I have therefore arranged them simply as miners of the upper and lower surfaces of the leaves, with an occasional note as to the species of Oak fed upon by the larva. The species which feed externally are arranged separately, following the leaf-mining species.)

Leaf-miners of the upper surface.

Lithocolletis cincinnatiella, Cham. Yellowish blotch mine.

Lithocolletis hamadryadella, Clem. Whitish blotch mine.

Lithocolletis tubiferella, Clem. } Mines somewhat like the track
Lithocolletis bifasciella, Cham. } made by a drop of water as to form.

Lithocolletis bicolorella, Cham. Yellowish blotch mine, like that of *L. ulmella* in Elm.

Lithocolletis unifasciella, Cham. } Irregular yellowish blotch mines,
Lithocolletis bethuneella, Cham. } smaller than that of *cincinnatiella*,
Lithocolletis castaneevella, Cham. } and usually in Red or Black Oaks.

Tischeria zelleriella, Clem.

Tischeria pruinoseella, Cham.

Tischeria castaneevella, Cham.

Tischeria badiiella, Cham.

Tischeria quercivorella, Cham.

Tischeria quercitella, Clem.

Tischeria citrinipennella, Clem.

Tischeria complanoides, Frey & Boll. (Doubtful species.)

Tischeria concolor, Zeller. (Food-plant uncertain.)

Tischeria tinctoriella, Cham.

Nepticula platea, Clem. } Imago unknown. Larvæ of both in
Nepticula anguinella, Clem. } crooked, linear mines.

Nepticula quercipulchella, Cham. }
Nepticula quercicastanella, Cham. } Larvæ in crooked, linear mines.
Nepticula saginella, Clem. }

Coriscium. Imago unknown. The larva, in Colorado, makes a large tentiform mine in the *upper* side of the leaves, which is almost a facsimile of that made in the Ohio Valley by the larva of *Coriscium albanotella*, Cham. in the *under* surface of the leaves.

Coleophora querciella, Clem. Imago unknown. The larva lives in a case which it attaches to the leaves.

Catastega timidella, Clem. Imago unknown. Larva at first mines the leaves, and afterward lives in a tube made of "frass". (?Not a *Tineina*.)

Leaf-miners of the under surface.

Lithocolletis quercitorum, Frey & Boll. }
Lithocolletis fitchella, Clem. |
Lithocolletis basistrigella, Clem. |
Lithocolletis œriferella, Clem. |
Lithocolletis quercipulchella, Cham. |
Lithocolletis quercialbella, Cham. } Tentiform mines.
Lithocolletis fuscocostella, Cham. |
Lithocolletis albanotella, Cham. |
Lithocolletis obstrictella, Clem. |
Lithocolletis hageni, Frey & Boll. |
Lithocolletis argentifimbriella, Clem. }
Lithocolletis intermedia, Frey & Boll. Doubtful species.
Lithocolletis mirifica, Frey & Boll. Doubtful species.
Ornix quercifoliella, Cham. Under edge of leaf turned down.
Coriscium albanotella, Cham. Large tentiform mine.

The following species either roll, fold, or sew the leaves together:—
Ypsolophus querciella, Cham.
Gelechia querciella, Cham.
Gelechia quercinigrœella, Cham.
Gelechia quercivorella, Cham.
Gelechia quercifoliella, Cham.
Cryptolechia quercicella, Clem.
Machimia tentoriferella, Clem. Larva in a web.

The following species feed in galls:—
Ypsolophus quercipomonella, Cham.
Gelechia gallœgenitella, Clem.
Hamadryas bassettella, Clem.
Blastobasis glandulella (*Holcocera glandulella* Riley) feeds in acorns.

CASTANEA AMERICANA. Chestnut.

Lithocolletis castaneœella, Cham. Larva in a blotch upper-surface mine in the leaves.

Lithocolletis, sp.? Imago unknown. Larva in tentiform mine in under surface of leaves.

Bucculatrix trifasciella, Clem. The larva *probably* feeds on it.

Tischeria castaneœella, Cham. Larva mines the upper surface of the leaves.

Nepticula castaneœfoliella, Cham. Larva in crooked, linear mines in the upper surface.

FAGUS SYLVATICA. Beech.

Cryptolechia faginella, Cham. The larva sews together the leaves in August and later.

CORYLUS AMERICANA. Hazel.

Lithocolletis coryliella, Cham. Larva in a nearly circular blotch mine in the upper surface.

Nepticula corylifoliella, Clem. Imago unknown. Larva in a linear, crooked mine in the upper surface.

Gelechia coryliella, Cham. Imago unknown. Larva in the male catkins in autumn.

Hyale coryliella, Cham. Larva in a web on under surface of the leaves.

OSTRYA VIRGINICA. Iron Wood or Hornbeam.

Lithocolletis obscuricostella, Clem. } Larva in tentiform mines in un-
Lithocolletis ostryæfoliella, Clem. } der side of leaves.

Lithocolletis coryliella, Cham. See under *Corylus* (*supra*).

Lithocolletis tritæniaella, Cham. Larva in roundish blotch mine in upper surface of the leaves.

Æœa ostryœella, Cham. Larva in a flat mine between two ribs, with a row of "frass" on each side.

Aspidisca ostryœfoliella, Clem. Imago unknown. Larva in a minute blotch mine in upper surface of leaves, from which it cuts out its pupal case.

Nepticula ostryœfoliella, Clem. } Imago unknown. Larvæ make
Nepticula virginiella, Clem. } linear, crooked mines in upper surface of leaves.

Gracilaria ostryœella, Cham. Imago unknown. The larva when very small makes a linear, whitish mine in the upper surface of the leaves.

Coleophora ostryæ, Clem. Imago unknown. The larva lives in a case and feeds on the under surface of the leaves.

CARPINUS AMERICANA. Waterbeech, Hornbeam.

Lithocolletis coryliella, Cham. See under *Corylus*.

BETULACEÆ.

ALNUS. Alders.

Lithocolletis alnivorella, Cham.
Lithocolletis alnifoliella, Hübner.
Lithocolletis auronitens, Frey & Boll. } Larvæ in tentiform mines in the under side of the leaves.

Gracilaria alnicolella, Cham. } When very young, the larvæ mine
Gracilaria alnivorella, Cham. } the leaves; when older, they roll them downward, *alnicolella* from the tip, *alnivorella* from the side.

Lyonetia alniella, Cham. The larva makes a large brownish blotch mine in the leaves.

SALICACEÆ.

SALIX (various species). Willows.

Lithocolletis salicifoliella, Cham. (& Clem.?). Larva in a tentiform mine in the under surface of leaves.

Gracilaria salicifoliella, Cham. Larva in a blotch mine in upper surface of the leaves.

Gracilaria purpuriella, Cham. Larva rolls the leaves from the tip so as to form a cone.

Cemiostoma albella, Cham. Larvæ in large blackish blotch mines.

Aspidisca saliciella, Clem. & Cham. Larva in a minute blotch mine, from which it cuts out its pupal case.

Nepticula fuscotibiæella, Clem. Larva in a linear mine bent back on itself.

Nepticula. Two unknown species make narrow, linear, crooked mines, one of which is in the upper and the other in the lower surface of the leaves.

Marmara salictella, Clem. Larva burrows in young twigs.

Batrachedra præangusta, Haw.
Batrachedra salicipomonella, Clem.
Batrachedra striolata, Zeller.
} The specific distinctness of the insects described under these names seems to me not sufficiently established. *B. salicipomonella* was bred from galls made by other insects on Willows. The mode of feeding of the others is not satisfactorily determined.

Gelechia salicifungella, Clem.
Gelechia fungivorella, Clem.
} Larvæ in galls made by *Cynips*.

Gelechia, sp.? Imago unknown. The larva sews together Willow leaves at great elevations in the Rocky Mountains.

POPULUS (various species). Poplars, Aspens, Cottonwood.

Cemiostoma albella, Cham. See under *Salix*.

Batrachedra præangusta, Haw.
Batrachedra salicipomonella, Clem.
Batrachedra striolata, Zeller.
} See under *Salix*.

Aspidisca sp.? Makes a minute mine in Aspen leaves in Oregon. Possibly it is *A. splendoriferella* Clem.

Gracilaria populiella, Cham. Larva rolls Aspen leaves in the Rocky Mountains.

G. purpuriella, Cham. Larva mines leaves of Silver-leaf Poplar. See under *Salix*.

Lithocolletis populiella, Cham. Larva in a tentiform mine in under side of leaves of Silver-leaf Poplar.

A larva of an unknown *Nepticula* (?) mines leaves of Cottonwoods in Colorado.

A larva, possibly not Lepidopterous, mines Cottonwood leaves at the tip in the upper surface in Colorado.

LILIACEÆ.

YUCCA (various species?). Soapweed, Spanish Bayonet, Bear's Grass.

Pronuba yuccasella, Riley. Larva feeds in the ovary on the seed. Imago found in the flowers.

SMILACEÆ.

SMILAX GLAUCA. Greenbrier, Sarsaparilla.

Phyllocnistis smilacisella. Imago unknown. The larva makes a linear white mine in the upper surface of the leaves.

GRAMINEÆ.

BRACHELYTRUM ANGUSTATUM.

Elachista brachelytrifoliella, Clem. Larva mines in the leaf-blades.

POA PRATENSE. Blue Grass.

Elachista præmaturella, Clem. Larva *probably* mines the blades of this grass.

PANICUM CLANDESTINUM. Panic Grass.

Cycloplasis panicifoliella, Clem. The larva mines the leaf-blades.

TRITICUM VULGARE. Wheat.

Gelechia cerealella, Auct. The larva feeds on the grain.

ART. V.—INDEX TO THE DESCRIBED TINEINA OF THE UNITED STATES AND CANADA.

By V. T. Chambers.

Having, in the last ten years, described a large number of new species of the *Tineina*, with notes on many other species previously known in various scientific periodicals, and the notes and descriptions referred to being, therefore, scattered through various volumes, I have been urged by other entomologists to catalogue the species. Many other species had been previously described by other authors, whose publications were equally scattered and inaccessible with my own, so that, for my own convenience in the study of the group, I had prepared an index for ready reference to the species, and that index needed but little alteration to make it complete, so far as I am acquainted with the species.

Convinced that a catalogue of my own species only would be of but little service to students, while the writings of others were so inaccessible, and, indeed, unknown to many American entomologists, it has seemed to me that a publication of this index would answer the purpose better than a mere catalogue of the species. I therefore offer it in the hope that it may prove as useful to brother entomologists as it has been to me.

It is only an index of the species *as American species.* Many of our species are identical with those of Europe, and I have not attempted to abstract the entomological literature of Europe as to these species.

As to the European literature of the subject (American *Tineina*), I have not attempted to bring it down to a later period than the latter part of the year 1875. For, having been absent in Colorado during the greater part of the time, it was impossible to keep *au courant* with it; and if any European publications have been made since that time they are unknown to me. A letter from a gentleman in Europe, received by me in 1875, informed me that Professor Frey was then engaged upon a work on American *Tineina*, but if it has been published I have not learned the fact. So far as American publications are concerned, the index is brought down to November, 1877, with references, also, to volume 10 of the Canadian Entomologist (1878), which will contain notes already prepared upon some species. There are also references to species described upon previous pages of this volume. These references are simply to the volume, not to the page.

Professors Zeller and Frey have described many of our species in various European publications. Usually (always?), however, these pa-

pers have been issued in a separate form, with different paging from that of the volumes in which they were originally published. In such cases, these separate publications will be more accessible to American students than the original publications, and I have, therefore, in the index used the paging as given in the separate papers instead of that of the volumes.

For the convenience of any who may not have Mr. Stainton's valuable republication of Dr. Clemens's papers, I have also given references to the Proceedings of the Academy of Natural Sciences, Philadelphia, and those of the Entomological Society of Philadelphia, in which his papers were originally published.

It has unfortunately so happened that Professors Zeller and Frey and I have been engaged in the study of the group at the same time, and each to a great extent in ignorance of what the other was doing, and the necessary result has been a confusion of the synonymy of some of the species. This I have corrected so far as I have been able from the descriptions and figures given by them; but doubtless a comparison of specimens would reveal other cases in which the same species has been more than once described under different names.

The genus *Gelechia* is in a chaotic condition. It includes almost anything of a certain general type of structure. Many attempts have been made to subdivide it, but, to my mind, they are all unsatisfactory. I have also, myself, sometimes attempted to define new subgroups in the genus, but my own efforts in this direction are not more satisfactory than those of others; and while I have given them in their proper place in the alphabetical arrangement, in *italics*, I have included all, or by far the greater part of them, under *Gelechia*. I have pursued, also, the same course with the genus *Laverna*, which, though not inconveniently large, is not much better limited than *Gelechia*.

By some mischance or other, I have seldom been able to look over the proof-sheets of papers heretofore published by me on the *Tineina*, scarcely a dozen proof-sheets having been examined by me. Owing to this fact, and to careless writing also, no doubt the names of species described or referred to by me are frequently incorrect, the same name sometimes appearing under two or three different forms.

In the following index I have attempted to correct these errors so far as it may be done, and the names herein given are those that were intended originally in such cases.

The imperfections of this work are many, no doubt, and are perhaps more evident to me than to any one else. Nevertheless, I hope it will answer sufficiently well for a present index, and for the basis of a more perfect catalogue hereafter.

Many of the generic names originally given by the authors, such as *Aspidisca*, *Blepharocera*, *Phœtusa*, *Wilsonia*, and others, are preoccupied, and will have to be changed. I have not, however, made any of these changes in this work, which purports to be nothing more than an "index" to what has already been published.

REFERENCES AND ABBREVIATIONS.*

Ag. Rep.—Agricultural Reports of United States Agricultural Department.
Am. Nat.—American Naturalist.
An. Ly. Nat. Hist.—Annals of the Lyceum of Natural History of New York.
Bei. z. Kennt.—Beiträge zur Kenntniss der Nordamerikanischen Nachtfalter.
Bul. Buff. Soc.—Bulletin of the Buffalo Society of Natural History.
Can. Ent.—Canadian Entomologist.
Cin. Quar. Jour. Sci.—Cincinnati Quarterly Journal of Science.
Ent. Mo. Mag.—Entomologists' Monthly Magazine.
Ent. Week. Int.—Entomologists' Weekly Intelligencer.
Guide.—Guide to the Study of Insects (Packard).
Hayd. Bul. Geo. Sur.—Bulletin of the United States Geological and Geographical Survey.
Lep. West. Amer.—Lepidoptera der Westküste Amerikas (Zeller).
Lin. Ent.—Zeller in "Linea Entomologica."
Nat. Hist. Tin.—Natural History of the Tineina by Stainton, Zeller and Frey.
Ont. Rep.—Report of the Entomological Society of Ontario (Canada).
Proc. Acad. Nat. Sci. Phila.—Proceedings of the Academy of Natural Science (Philadelphia), 2d series.
Proc. Ent. Soc. Phila.—Proceedings of the Entomological Society of Philadelphia.
Rep. Mass. Ag. Soc.—Report on the Injurious and Beneficial Insects of Massachusetts. State Board of Agriculture. Reports 1-3. 1871-1873.—Packard.
Rep. Nox. Ins. Mo.—Riley's "Reports on the Noxious, Beneficial, and Other Insects of Missouri".
Rep. Nox. Ins. N. Y.—Dr. Fitch's "Reports on the Noxious, Beneficial, and Other Insects of New York".
Sch. v. Eu.—Schmetterlinge von Europa.
S. E. Z.—Frey and Boll, in Stettiner Entomologische Zeitung, 1873.
Tin. Nor. Amer.—"Tineina of North America." (Stainton's republication of the Clemens papers.)
Treat. Ins.—Harris's Treatise on Insects Injurious to Vegetation.

ACANTHOCNEMES. (Chambers.)

A. FUSCOSCAPULELLA, Cham.—*Ante*, 104.

ADELA. (Latreille.)

A. BELLA, Cham.—Can. Ent. v. 73; ix. 207.
A. BIVIELLA, Zell.—Bei. z. Kennt. May, 1873, 26.—Can. Ent. ix. 206.
A. CHALYBEIS, Zell.—Bei. z. Kennt. May, 1873, 25.
A. (DICTE) CORRUSCIFASCIELLA, Cham.—Can. Ent. v. 74; ix. 207.
(*Dicte corruscifasciella*, Cham. *loc. cit.*)
(*Adela schlægeri*, Zell.—Bei. z. Kennt. May, 1873, 27.)
(*A. fasciella*, Cham.=*A. trigrapha*, Zell. *post.*)
A. FLAMENSELLA, Cham.—Can. Ent. viii. 104.
A. RIDINGSELLA, Clem.—Proc. Ent. Soc. Phila. 1864, ii. 426.—Tin. Nor. Amer. 250.—Guide, 348.

* Morris's "Synopsis"; contains brief descriptions of a few species but as they are copied or condensed from the original descriptions, which are referred to in this "Index", I have not deemed it necessary to refer further to them herein. The "Synopsis" is contained in the Smithsonian Miscellaneous Collections, v. 4, and has also been separately published.

(*A. schlægeri*, Zell.=*A. corruscifasciella*, Cham. *supra.*)
A. TRIFASCIELLA, Cham.—Can. Ent. viii. 103.
A. TRIGRAPHA, Zell.—Bei. z. Kennt. May, 1875, 136.
(*A. fasciella*, Cham.—Can Ent. viii. 103.)

(ADRASTEIA. Chambers.)

(*A. quercifoliella*, Cham. = *Gelechia quercifoliella*, Cham.)
(*A. querciella*, Cham. = *Gelechia querciella*, Cham.)
(*A. alexandriœella*, Cham. = *Gelechia alexandriœella*, Cham.)
(*A. fasciella*, Cham. = *Gelechia fasciella* Cham.)

ÆÆA. (Chambers.)

Æ. OSTRYÆELLA, Cham.—Can. Ent. vi. 74; viii. 172; x. p. —.
Æ. PURPURIELLA, Cham.—Can. Ent. vi. 73; x. p. —.
(*Chrysopeleia purpuriella*, Cham. *ibid.*)

(ÆSYLE. Chambers.)

(*Æ. fasciella*, Cham. = *Gracilaria fasciella*, Cham. *post.*)

AELOLE. (Chambers.)

A. BELLA, Cham.—Can. Ent. vii. 73.—Hayd. Bul. Geo. Sur. iii. 144.—Can. Ent. ix. 72.

AGNIPPE. (Chambers.)

A. BISCOLORELLA, Cham.—Can. Ent. iv. 195; v. 230; ix. 231.
(*A. fuscopulvella*, Cham. *ibid.* = *biscolorella*, var.)

(ALEUCITA. Auct.)

(*A. cerealella*, Oliv. = *Gelechia cerealella*, *post.*)

AMADRYA. (Clemens.)

A. EFFRENATELLA, Clem.—Tin. Nor. Amer. 39, 55, 59, 60, 86.—Proc. Acad. Nat. Sci. Phila. 1859, 260.—Cin. Quar. Jour. Sci. ii. 256.—Bei. z. Kennt. May, 1873, 19.
A. CLEMENSELLA, Cham.—Can. Ent. vi. 232.—Cin. Quar. Jour. Sci. ii. 256.

(ANACAMPSIS. Curtis.)

(*A. agrimoniella* = *Gelechia agrimoniella*, *post.*)
(*A. cerealella* = *Gelechia cerealella*, *post.*)
(*A. glandiferella?* = *G. glandiferella*, *post.*)
(*A. robiniella* = ? *G. robiniella*, *post.*)
(*A. sarcitella* = ? *G. sarcitella*, *post.*)

ANAPHORA. (Clemens.)

A. ARCANELLA, Clem.—Tin. Nor. Amer. 57, 58.—Proc. Acad. Nat. Sci. 1859, 262.—Can. Ent. iv. 143.—*Ante*, 79.

A. AGROTIPENNELLA, Grote.—Can. Ent. iv. 137; viii. 185.—*Ante*, 79.
A. BOMBYCINA, Zell.—Bei. z. Kennt. May, 1873, 16.—*Ante*, 79.
A. MORTIPENNELLA, Grote.—Can. Ent. iv. 137.
A. PLUMIFRONTELLA, Clem.—Tin. Nor. Amer. 39, 57, 59, 60.—Proc. Acad. Nat. Sci. Phila. 1859, 261.—Bei. z. Kennt. 1873, 17.
A. POPEANELLA, Clem.—Tin. Nor. Amer. 57.—Proc. Acad. Nat. Sci. Phila. 1859, 261.—Can. Ent. iv. 137, 143.—Bei. z. Kennt. 1873, 15. = *? scardina*, Zell.
A. SCARDINA, Zell. = *? popeanella*, Clem.—Bei. z. Kennt. May, 1873, 16.
A. TEXANELLA, Cham.—*Ante*, 79.

ANARSIA. (Zeller.)

A. LINEATELLA, Zell.—Tin. Nor. Amer. 36, 128.—Proc. Acad. Nat. Sci. Phila. 1860, 169.—Can. Ent. iv. 208; vi. 243.—Ag. Rep. 1872, 112.
(*A. pruniella*, Clem. = *A. lineatella*, *supra*.—Tin. Nor. Amer. and Acad. Nat. Sci. Phila. *loc. cit.*)
A. SUFFUSELLA, Cham.—Can. Ent. vi. 243.
A. TRIMACULELLA, Cham.—Can. Ent. vi. 243.—*Ante*, 92.

ANESYCHIA. (Hübner.)

A. DISCOSTRIGELLA, Cham.—Hayd. Bul. Geo. Sur. iii. pt. 1, 122, 144.
A. HAGENELLA, Cham.—*Ante*, 80.
A. MIRUSELLA, Cham.—Can. Ent. vi. 233.—Hayd. Bul. Geo. Sur. iii. pt. 1, 121, 141.
(*A multipunctella*, Cham. Can. Ent. vi. 233, = *Psecadia semilugens*, Zell. *post.*)
A. SPARCICELLA, Clem.—Tin. Nor. Amer. 255.—Proc. Ent. Soc. Phila. ii. 430.
A. TRIFURCELLA, Cham.—Can. Ent. v. 12.—*Ante*, 80.

ANORTHOSIA. (Clemens.)

A. PUNCTIPENNELLA, Clem.—Tin. Nor. Amer. 40, 111.—Proc. Acad. Nat. Sci. Phila. 1860, 161.—Can. Ent. vi. 245.

ANTISPILA. (Her.-Sch.)

A. AMPELOPSIELLA, Cham.—Can. Ent. vi. 168, 197; ix. 195.
A. CORNIFOLIELLA, Clem.—Tin. Nor. Amer. 103.—Proc. Acad. Nat. Sci. Phila. 1860, 11.—Can. Ent. vi. 166, 170, 198.
A. HYDRANGLÆELLA, Cham.—Can. Ent. vi. 170; ix. 195.
A. ISSABELLA, Clem.—Tin. Nor. Amer. 142.—Proc. Acad. Nat. Sci. Phila. 1860, 209.—Can. Ent. vi. 167, 198.
A. NYSSÆFOLIELLA, Clem.—Tin. Nor. Amer. 19, 22, 102.—Proc. Acad. Nat. Sci. Phila. 1860, 11.
A. VITICORDIFOLIELLA, Cham.—Tin. Nor. Amer. 142.—Proc. Acad. Nat. Sci. Phila. 1860, 209.—Can. Ent. vi. 168, 198.

ARGIOPE. (Chambers.)

A. DORSIMACULELLA, Cham.—Can. Ent. v. 13, 174.
(*Heribeia dorsimaculella*, Cham.—Can. Ent. iv. 43.)

ARGYRESTHIA. (Hübner.)

A. ABDOMINALIS, Zell.—Bei. z. Kennt. May, 1870, 106.
A. ALTISSIMELLA, Cham.—Hayd. Bul. Geo. Sur. iii. pt. 1, 130, 147.
A. ANDEREGIELLA, F. v. R.—Proc. Acad. Nat. Sci. Phila. 1860, 7.—Tin. Nor. Amer. 39, 93.—Can. Ent. vi. 10; vii. 145.—Bei. z. Kennt. May, 1873, 104.—? Hayd. Bul. Geo. Sur. iii. 131, 141.
(*A. oreasella*, Clem.—Tin. Nor. Amer. and Proc. Acad. Nat. Sci. *loc. cit. supra.*)
A. APICIMACULELLA, Cham.—Can. Ent. vi. 11 (and erroneously by a MS. name at vi. 145, as *visaliella*).
A. AUSTERELLA, Zell.—Bei. z. Kennt. May, 1873, 105.
(*A. undulatella*, Cham.—Can. Ent. vi. 10; vii. 145; ix. 72.)
A. BELANGERELLA, Cham.—Can. Ent. vii. 145.
A. DELETELLA, Zell.—Bei. z. Kennt. May, 1875, 105.
A. GŒDARTELLA?, Lin.—Can. Ent. vii. 144; viii. 19.—Ent. Mo. Mag. ii. 279.—Cin. Quar. Jour. Sci. ii. 294.—Hayd. Bul. Geo. Sur. iii. 131, 141, 147.
A. MONTELLA, Cham.—Hayd. Bul. Geo. Sur. iii. 130.
A. QUADRISTRIGELLA, Zell.—Bei. z. Kennt. 1873, 104.
A. QUERCICOLELLA, Cham.—Hayd. Bul. Geo. Sur. iii. 130.
(*A. oreasella*, Clem. = *A. anderegiella*, *ante.*)
A. PEDMONTELLA, Cham.—Hayd. Bul. Geo. Sur. iii. 131.
(*A. undulatella*, Cham. = *A. austerella*, Zell. *ante.*)

(ARGYROMIGES. Curtis.)

(*A. morrisella*, Fitch, = *Lithocolletis robiniella*, Clem. *post.*)
(*A. ostensackenella*, Fitch, = *Lithocolletis ostensackenella*, Fitch, *post.*)
(*A. pseudacaciella*, Fitch, = *Lithocolletis robiniella*, Fitch, *post.*)
(*A. quercialbella*, Fitch, = *Lithocolletis quercialbella*, Fitch, *post.*)
(*A. quercifoliella*, Fitch, = *Lithocolletis fitchella*, Clem. *post.*)
(*A. uhlerella*, Fitch, = *Lithocolletis uhlerella*, Fitch, *post.*)

ASPIDISCA. (Clemens.)

A. DIOSPYRIELLA, Cham. = ? *splendoriferella*, Clem.—Can. Ent. vi. 217.
A. ELLA, Cham. = ? *A. lucifluella*, Clem.—Can. Ent. iii. 224; vi. 152, 218.
A. JUGLANDIELLA, Cham. (? = *splendoriferella*, Clem. or ? = *lucifluella*, Clem.).—Can. Ent. vi. 151, 218 *et seq.*
A. LUCIFLUELLA, Clem.—Tin. Nor. Amer. 143; Proc. Acad. Nat. Sci. Phila. 1860, 209.—Can. Ent. iii. 224; vi. 218.
A. OSTRYÆFOLIELLA, Clem.—Tin. Nor. Amer. 171.—Proc. Ent. Soc. Phila. 1861, 82.

(*A. pruniella*, Clem. = *A. splendoriferella*, Clem.)

A. SALICIELLA, Cham. (and Clem.?).—Tin. Nor. Amer. 171.—Proc. Ent. Soc. Phila. 1861, 82.—Can. Ent. vi. 169.

A. SPLENDORIFERELLA, Clem.—Tin. Nor. Amer. 23, 26, 105.—Proc. Acad. Nat. Sci. Phila. 1860, 12.—Can. Ent. iii. 223; v. 50; vi. 149, 219.—Ent. Mo. Mag. ix. 17.

(*A. pruniella*, Clem.—Tin. Nor. Amer. 171.—Proc. Ent. Soc. Phila. 1861, 82.)

(*Lyonetia saccatella*, Pack. Guide, 355.—Can. Ent. iii. 223.)

(ASYCHNA? Stainton.)

(*A.? pulvella*, Cham.—Can. Ent. viii. 171; ix. 145.)

BATRACHEDRA. (Stainton.)

B. CLEMENSELLA, Cham. (doubtful species).—Hayd. Bul. Geo. Sur. iii 134.—Can. Ent. ix. 146.

B. PRÆANGUSTA, Haw.—Ins. Brit. iii. 230, and authorities there cited.—Hayd. Bul. Geo. Sur. iii. 134, 141.—Can. Ent. ix. 145.

B. SALICIPOMONELLA, Clem.—Tin. Nor. Amer. 265.—Proc. Ent. Soc. Phila. v. 142; vi. 273.—Bei. z. Kennt. 113.—Can. Ent. ix. 146.—Hayd. Bul. Geo. Sur. iii. 134.—Guide, 352.

B. STRIOLATA, Zell.—Bei. z. Kennt. 1873, 113.—Can. Ent. ix. 145.

BEDELLIA. (Stainton.)

B. SOMNULENTELLA, Zell.—Tin. Nor. Amer. 39, 189.—Proc. Ent. Soc. Phila. 1862, 147.—Cin. Quar. Jour. Sci. ii. 297.—Hayd. Bul. Geo. Sur. iii. 133, 141.

(*B. staintonella*, Clem.—Tin. Nor. Amer. 95.—Proc. Acad. Nat. Sci. Phila. 1860, 8.—Proc. Ent. Soc. Phila. 1862, 147.)

(BEGOE. Chambers.)

(*B. costoluteella*, Cham. = *Nothris eupatoriiella*, Cham. *post.*)

BLASTOBASIS. (Zeller.)

B.? AUFUGELLA, Zell.—Bei. z. Kennt. 100.

B. CHALCOFRONTELLA, Clem.

(*Holcocera chalcofrontella*, Clem.)—Tin. Nor. Amer. 226.—Proc. Ent. Soc. Phila. ii. 122.—Can. Ent. iv. 65; vi. 246.—Cin. Quar. Jour. Sci. ii. 256.—Bei. z. Kennt. May, 1873, 95.

B. CLEMENSELLA, Cham.

(*Holcocera clemensella*, Cham.)—Can. Ent. vi. 246.

B. FRACTILINEELLA, Zell.—Bei. z. Kennt. 1873, 98.

B. FLUXELLA, Zell.—Bei. z. Kennt. 1873, 101.

B. GIGANTELLA, Cham.—Can. Ent. viii. 219.—Hayd. Bul. Geo. Sur. iii. 149.

B. GILBOCILIELLA, Clem.

(*Holcocera gilbociliella*, Clem.)—Tin. Nor. Amer. 227.—Proc. Ent. Soc. Phila. ii. 122.—Bei. z. Kennt. 1873, 95.

B. GLANDULELLA, Riley.

(*Gelechia glandulella*, Riley.)—Can. Ent. iii. 18.

(*Holcocera glandulella*, Riley.)—Can. Ent. iv. 18, 38, 62, 65.—Rep. Nox. Ins. Mo. n. 4, 144.—Cin. Quar. Jour. Sci. ii. 256.

B. LIVOLELLA, Zell.—Bei. z. Kennt. May, 1873, 99.

B. MODESTELLA, Clem.

(*Holcocera modestella*, Clem.)—Tin. Nor. Amer. 227.—Proc. Ent. Soc. Phila. ii. 122.

B. NUBILELLA, Zell.—Bei. z. Kennt. 1873, 97; 1875, 139.

B. FUSCOPULVELLA, Clem.

(*Holcocera fuscopulvella*, Clem.)—Tin. Nor. Amer. 227.—Proc. Ent. Soc. Phila. ii. 122.

B. PURPUROCOMELLA, Clem.

(*Holcocera purpurocomella*, Clem.)—Tin. Nor. Amer. 227.—Proc. Ent. Soc. Phila. ii. 123.

B. QUISQUILIELLA, Zell.—Bei. z. Kennt. 1873, 97.

B. RETECTELLA, Zell.—Bei. z. Kennt. 1873, 97.

B. SCIAPHIELLA, Zell.—Bei. z. Kennt. 1873, 95.—Can. Ent. ix. 71.

B. SEGNELLA, Zell.—Bei. z. Kennt. 1873, 96.

B. TRIANGULARISELLA, Cham.—Cin. Quar. Jour. Sci. ii. 256.—Can. Ent. ix. 71.

(BLABOPHANES.)

(*B. rusticella* and *B. dorsistrigella*, Clem. *vid. Tinea.*)

BLEPHAROCERA. (Chambers.)

B. HAYDENELLA, Cham.—Hayd. Bul. Geo. Sur. iii. 145.

BRACHYLOMA. (Clemens.)

B. UNIPUNCTA, Clem.—Tin. Nor. Amer. 232.—Proc. Ent. Soc. Phila. 1863, 126.

BRENTHIA. (Clemens.)*

B. PAVONICELLA, Clem.—Tin. Nor. Amer. 41, 134.—Proc. Acad. Nat. Sci. Phila. 1860, 172.

B. INFLATELLA, Clem.—Tin. Nor. Amer. 209.—Proc. Ent. Soc. Phila. ii. 5.

B. VIRGINIELLA, Clem—Tin. Nor. Amer. 257.—Proc. Ent. Soc. Phila. iii. 505.

(?BRYOTROPHA.)

(*?B. operculella*, Zell. *vid. Gelechia operculella, post.*)

BUCCULATRIX. (Zeller.)

(*B. albella*, Cham. = *B. staintonella*, *post.*)

B. AGNELLA, Clem.—Tin. Nor. Amer. 147.—Proc. Acad. Nat. Sci. Phila. 1860, 211.

* Zeller (Verh. z.-b. Gesell. Wien, xxv. 320) refers these species to *C. areatis.*

B. AMBROSIÆFOLIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 119.
B. CANADENSISELLA, Cham.—Can. Ent. vii. 146.
B. CAPITIALBELLA, Cham.—Can. Ent. v. 150.
B. CORONATELLA, Clem.—Tin. Nor. Amer. 109.—Proc. Acad. Nat. Sci. 1860, 13.—Can. Ent. v. 151.
B. IMMACULATELLA, Cham.—Can. Ent. vii. 54.
B. LITIGIOSELLA, Zell.—Bei. z. Kennt. 1875, 148.
B. LUTEELLA, Cham.—Can. Ent. v. 151 ; x. p. —.
B. MAGNELLA, Cham.—Can. Ent. vii. 54.
B. NIVEELLA, Cham.—Can. Ent. vii. 54.
B. OBSCUROFASCIELLA, Cham.—Can. Ent. v. 150.
B. PACKARDELLA, Cham.—Can. Ent. v. 151.—Cin. Quar. Jour. Sci. ii. 120.
B. POMIFOLIELLA, Clem.—Tin. Nor. Amer. 146.—Proc. Acad. Nat. Sci. Phila. 1860, 211.—Can. Ent. v. 150.—Bei. z. Kennt. 1875, 147.—Rep. Nox. Ins. Mo. n. 4, 49.
B. QUINQUENOTELLA, Cham.—Cin. Quar. Jour. Sci. ii. 120.
B. STAINTONELLA, Cham.
(*B. albella*, Cham.—Hayd. Bul. Geo. Sur. iii. 140. This species was named and described in Colorado, without access to libraries, &c. On my return from there, I found that Mr. Stainton had recently described, by the same name, a species from Syria. I therefore rename this species for that distinguished entomologist.)
B. THUIELLA, Packard—Am. Nat. v. 152.—Rep. Nox. Ins. Mo. n. 4, 51.
B. TRIFASCIELLA, Clem.—Tin. Nor. Amer. 272.—Proc. Ent. Soc. Phila. v. 147.—Can. Ent. v. 149.—Cin. Quar. Jour. Sci. ii. 120.

BUTALIS. (Treit.)

B.? ALBAPENNELLA, Cham.—Can. Ent. vii. 11.
B. BASILARIS, Zell.—Lin. Ent. x. 230.—Tin. Nor. Amer. 40.
B. BREVISTRIGA, Cham.—Can. Ent. vii. 10, 54 (misprinted *buristriga*).—*Ante*, p. —.
(*B. cerealella*, *vid. Gelechia cerealella.*)
B DORSIPALLIDELLA, Cham.—Can. Ent. vii. 10, 54. *Ante*, p. —.
B. EBORACENSIS, Zell.—Bei. z. Kennt. 1873, 94.
B. FLAVIFRONTELLA, Clem.—Tin. Nor. Amer. 40, 126.—Proc. Acad. Nat. Sci. Phil. 1860, 169.—Can. Ent. vi. 8.—Bei. z. Kennt. 1873, 92. ? = *basilaris*, Zell.
B. FUSCICOMELLA, Clem.—Tin. Nor. Amer. 126.—Proc. Acad. Nat. Sci. Phila. 1860, 169.—Can. Ent. vi. 8.—Bei. z. Kennt. 1873, 92.
B. IMMACULATELLA, Cham.—Can. Ent. vii. 10.—Hayd. Bul. Geo. Sur. iii. 144.—*Ante*, p. —. (? = *eboracensis*, Zell.)
B. IMPOSITELLA, Zell.—Lin. Ent. x. 241.
B. MATUTELLA, Clem.—Tin. Nor. Amer. 40, 127.—Proc. Acad. Nat. Sci. Phila. 1860, 169. ? = *impositella*, Zell.

B. PILOSELLA, Zell.—Bei. z. Kenut. 1873, 93.
B. PLANIPENNELLA, Cham.—Can. Ent. vii. 10 (misprinted *plausipennella*).
B. TRIVINCTELLA, Zell.—Bei. z. Kenut. 1873, 92.—*Ante*, 93.

(CALLIMA. Clemens.)

(*C. argenticinctella*, Clem. *vid. Œcophora argenticinctella.*)

CATASTEGA. (Clemens.)

C. ACERIELLA, Clem.—Tin. Nor. Amer. 178.—Proc. Ent. Soc. Phila. i. 87.
C. HAMAMELIELLA, Clem.—*Ibid.*
C. TIMIDELLA, Clem.—*Ibid.*

The larvæ only of these three species are known, and they probably do not belong in *Tineina.*

CEMIOSTOMA. (Zeller.)

C. ALBELLA, Cham.—Can. Ent. iii. 23, 209.

(CEROSTOMA.)

(*C. brasicella*, Fitch, *vid. Plutella cruciferarum*, *post.*)

(CERATOPHORA.)

(*C. fullonella*, *vid. Gelechia fullonella*, *post.*)

(CHÆTOCHILUS.)

(The following species, placed by Dr. Fitch in *Chætochilus*, will be found under *Ypsolophus:—contubernalellus*, *malifoliellus*, *pometellus*, *trimaculellus*, and *ventrellus.*)

CHAULIODUS. (Treit.)

C. CANICINCTELLA, Clem.—Tin. Nor. Amer. 236.—Proc. Ent. Soc. ii. 129.

CHRYSOCORYS. Curtis.

C. ERYTHRIELLA, Clem.—Tin. Nor. Amer. 40, 132.—Proc. Acad. Nat. Sci. Phila. 1860, 171.

(CHRYSOPELEIA. Chambers.)

(*C. purpuriella*, Cham. *vid. Æcea purpuriella*, Cham.)

(CHRYSOPORA. Clemens.)

(*C. lingualacella*, Clem. = *Gelechia hermanella*, var.)

CIRRHA. Chambers.

C. PLATANELLA, Cham.—Can. Ent. iv. 146.
(*Depressaria albisparsella*, Cham.—Can. Ent. iv. 92, 128.)

CLEODORA. (Curtis.)

C. PALLIDELLA, Cham.—Can. Ent. vi. 245.—*Ante*, 91.
C. PALLIDESTRIGELLA, Cham.—Can. Ent. vi. 245.—*Ante*, 92.

COLEOPHORA. (Zeller.)

C. ÆNUSELLA, Cham.—Can. Ent. vi. 128.
C. ALBACOSTELLA, Cham.—Can. Ent. vii. 95.—*Ante*, 93.
C. ARGENTELLA, Cham.—Can. Ent. x. p. —.
(*C. argentialbella*, Can. Ent. vii. 75.—Hayd. Bul. Geo. Sur. iii. 133, 141. *Nec* Can. Ent. vi. 128.)
C. ARGENTIALBELLA, Cham.—Can. Ent. vi. 128; x. p. —.
C. ARTEMISICOLELLA, Cham.—Hayd. Bul. Geo. Sur. iii. 133, 144.
C. AUROPURPURIELLA, Cham.—Can. Ent. vi. 130.
C. BIMINIMMACULELLA, Cham.—*Ante*, 94.
C. BISTRIGELLA, Cham.—Can. Ent. vii. 75; ix. 14, 72; x. p. —.—Hayd. Bul. Geo. Sur. iii. 133, 134.
C. CÆNOSIPENNELLA, Clem.—Tin. Nor. Amer. 88; Proc. Acad. Nat. Sci. 1860, 5.
C. CARYÆFOLIELLA, Cham. (& Clem. ?).—Tin. Nor. Amer. 166.—Proc. Ent. Soc. Phil. i. 78.—Can. Ent. x. p. —.
C. CINERELLA, Cham.—*Ante*, 93.
C. CONCOLORELLA, Clem.—Tin. Nor. Amer. 211.—Proc. Ent. Soc. Phila. ii. 6.—Can. Ent. vi. 129.
(*C. coracipennella*, *vid. C. occidentalis.*)
C. CORRUSCIPENNELLA, Clem.—Tin. Nor. Amer. 39, 88.—Proc. Acad. Nat. Sci. 1860, 4.—Can. Ent. vii. 124.—Guide, 351. = *? C. fabriciella*, Bei. z. Kennt. 1873, 111.
C. CORYLIFOLIELLA, Clem.—Tin. Nor. Amer. 166.—Proc. Ent. Soc. Phila. i. 79.
C. CRATIPENNELLA, Clem.—Tin. Nor. Amer. 258.—Proc. Ent. Soc. Phila. iii. 506.
C. CRETATICOSTELLA, Clem.—Tin. Nor. Amer. 89.—Proc. Acad. Nat. Sci. Phila. 1860, 5.—Can. Ent. vii. 124.
(*C. fabriciella*, *vid. C. corruscipennella.*)
C. FAGICORTICELLA, Cham.—Can. Ent. vi. 129; x. p. —.
C. FUSCOSTRIGELLA, Cham.—*Ante*, 93.
C. GIGANTELLA, Cham.—Can. Ent. vi. 128; x. p. —.
C. INFUSCATELLA, Clem.—Tin. Nor. Amer. 89.—Proc. Acad. Nat. Sci. Phila. 1860, 5.
C. LATICORNELLA, Clem.—Tin. Nor. Amer. 88.—Proc. Acad. Nat. Sci. Phila. 1860, 5.

C. LINEAPULVELLA, Cham.—Can. Ent. vi. 130; x. p. —.
C. LEUCOCHRYSELLA, Clem.—Tin. Nor. Amer. 211.—Proc. Ent. Soc. Phila. ii. 6.
C. LUTEOCOSTELLA, Cham.—Cin. Quar. Jour. Sci. ii. 294.—Hayd. Bul. Geo. Sur. iii. 133.
(*C. mayrella*, H. *vid. corruscipennella.*)
C. MULTIPULVELLA, Cham.—*Ante*, 93.
C. NIGRELLA, Haw.—Bei. z. Kennt. 1873, 109.
C. NIGERLINEELLA, Cham.—Can. Ent. viii. 172.
C. OCHRELLA, Cham.—*Ante*, p. —.
C. OCCIDENTALIS?, Zell.—Bei. z. Kennt. 1873, 109. (? = *nigricella.*)
C. OSTRYÆ, Clem.—Tin. Nor. Amer. 167.—Proc. Ent. Soc. Phila. i. 79.
C. PRUNIELLA, Clem.—Tin. Nor. Amer. 167.—Proc. Ent. Soc. Phila. i. 79.—Bei. z. Kennt. 1873, 109.
C. QUADRILINEELLA, Cham.—*Ante*, 94.
C. QUERCIELLA, Clem.—Tin. Nor. Amer. 168.—Proc. Ent. Soc. Phila. i. 79.
C. ROSACELLA, Clem.—Tin. Nor. Amer. 251.—Proc. Ent. Soc. Phila. ii. 6.—Guide, 350.
C. ROSÆFOLIELLA, Clem.—Tin. Nor. Amer. 250.—Proc. Ent. Soc. Phila. ii. 6.—Guide, 350.
(*C. rufolutcella*, Cham.—Can. Ent. vi. 129. *Vid. caryæfoliella, ante.*)
C. SHALERIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 116.
C. SPARSIPULVELLA, Cham.—Cin. Quar. Jour. Sci. ii. 294.—Hayd. Bul. Geo. Sur. iii. 133.
C. TEXANELLA, Cham.—*Ante*, 93.
C. TILLIÆFOLIELLA, Clem.—Tin. Nor. Amer. 168.—Proc. Ent. Soc. Phila. i. 79.
C. TRILINEELLA, Cham.—Can. Ent. vii. 95.
C. UNICOLORELLA, Cham.—Can. Ent. vi. 129; x. p. —.
C. VERONIÆELLA, Cham.—Can. Ent. x. p. —.
C. VIBURNELLA, Clem.—Tin. Nor. Amer. 167.—Proc. Ent. Soc. Phila. i. 79.
C. ZELLERIELLA, Cham.—Can. Ent. vi. 128.

CORISCIUM. (Zeller.)

C. ALBANOTELLA, Cham.—Can. Ent. iv. 25; ix. 123.—Cin. Quar. Jour. Sci. i. 200.—Hayd. Bul. Geo. Sur. iii. pt. 1, 132.
C. PARADOXUM, Frey & Boll.—S. E. Z. xxxiv. 205.—Cin. Quar. Jour. Sci. i. 200.
(*C. quinquenotella*, Cham.—Can. Ent. ix. 126, 194. = *Gracilaria fasciella.*)
C. QUINQUESTRIGELLA, Cham.—Can. Ent. vii. 75; ix. 14, 124; x. p. —.
CORISCIUM, sp.?—Hayd. Bul. Geo. Sur. iii. 132.

(COSMIOTES. Clemens.)

(*Cosmiotes* = *Elachista*, which see for species *illictella*, *maculosella*, and *madarella* of Clem.)

COSMOPTERYX. (Hübner.)

C. GEMMIFERELLA, Clem.—Tin. Nor. Amer. 99, 100.—Proc. Acad. Nat. Sci. Phila. 1860, 10.—Cin. Quar. Jour. Sci. ii. 231.

C. CLEMENSELLA, Staint.—Tin. Nor. Amer. 39, 100.—Ent. Week. Int. ix. 31.

C. PULCHERRIMELLA, Cham.—Cin. Quar. Jour. Sci. ii. 231.

C. MONTISELLA, Cham.—Cin. Quar. Jour. Sci. ii. 297.—Hayd. Bul. Geo. Sur. iii. pt. 1, 134.

C. 4-LINEELLA, Cham.—*Ante*, 95.

CRYPTOLECHIA.

C. ATROPICTA, Zell.—Bei. z. Kennt. 1875, 137.

C. CRETACEA, Zell.—Bei. z. Kennt. 1873, 43.

C. CRYPTOLECHIÆELLA, Cham.—*Ante*, 84.

(*Depressaria cryptolechiœella*, Cham.)—Can. Ent. iv. 90, 129 *et seq.* 147.

(*Hagno cryptolechiœella* Cham.)

C. FAGINELLA, Cham.—*Ante*, 84.

(*Hagno faginella*, Cham.)—Can. Ent. iv. 131; vi. 231

C. FERUGINOSA, Zell.—Bei. z. Kennt. 1873, 43.

C. LITHOSINA, Zell.—Bei. z. Kennt. 1873, 44.

C. NEBECULOSA, Zell.—Bei. z. Kennt. 1873, 45.

C. OBSOLETELLA, Zell.—Bei. z. Kennt. 1873, 42.

C. OBSCUROMACULELLA, Cham.—*Ante*, 86.

C. PIPERATELLA, Zell.—Bei. z. Kennt. 1873, 39.

C. QUERCICELLA, Clem.—Bei. z. Kennt. 1873, 40.—Lep. West. Amer. 1874, 17.

(*Psilocorsis quercicella* Clem.)—Tin. Nor. Amer. 149.—Proc. Acad. Nat. Sci. Phila. 1860, 212.—*Ante*, p. —.—Can. Ent. iv. 131.

C. REFLEXA, Clem.

(*Psilocorsis reflexa*, Clem.)—Tin. Nor. Amer. 149.—Proc. Acad. Nat. Sci. Phila. 1860, 212.

C. SCHLÆGERI, Zell.—Bei. z. Kennt. 1873, 46.—Lin. Ent. 9, s. 372.

C. TENTORIFERELLA, Clem.

(*Machimia tentoriferella*, Clem.)—Tin. Nor. Amer. 148.—Proc. Acad. Sci. Nor. Amer. 1860, 212.—Bei. z. Kennt. 1873, 40.—*Ante*, 84.

C. VESTALIS, Zell.—Bei. z. Kennt. 1873, 47.

CYCLOPLASIS. (Clemens.)

C. PANICIFOLIELLA, Clem.—Tin. Nor. Amer. 248.—Proc. Ent. Soc. Phila. ii. 422.

CYANE. (Chambers.)

C. VISALIELLA, Cham.—Can. Ent. v. 113.

DASYCERA. (Haw.)

D. NEWMANELLA, Clem.—Tin. Nor. Amer. 252.—Proc. Ent. Soc. Phila. ii. 428.—Bei. z. Kennt. 1873, 89.

D. NONSTRIGELLA, Cham.—*Ante*, 92.

DEPRESSARIA. (Haw.)

(*D. albisparsella*, Cham. *vid. Cirrha platanella*, Cham.)

D. ATRODORSELLA, Clem.—Tin. Nor. Amer. 230.—Proc. Ent. Soc. Phila. ii. 124.—Can. Ent. iv. 91.—An. Ly. Nat. Hist. ix. 156.—Guide, 349.—Bei. z. Kennt. 1873, 33.

(*D.? bicostomaculella* Cham., *D.? bistrigella* Cham., *D.? bimaculella* Cham., and *D.? cercerisella* Cham., all referred to *Gelechia*, which see.)

D. CINEREOCOSTELLA, Clem.—Tin. Nor. Amer. 245.—Proc. Ent. Soc. ii. 422.—Can. Ent. iv. 91.—An. Ly. Nat. Hist. ix. 155.

(*D.? cryptolechiella* Cham. referred to *Cryptolechia*.)

D. EUPATORIELLA, Cham.—*Ante*, 82.

D. FERNALDELLA, Cham.—*Ante*, 83.

(*D.? fuscoochrella* Cham. and *D.? fuscoluteella* Cham. referred to *Gelechia*.)

D. GROTEELLA, Robinson.—An. Ly. Nat. Hist. ix. 157.

D. HERACLIANA, DeG.—Lin. Ent. ix. s. 312.—Her.-Schf. in Sch. v. Eu. v. f. 445.—Nat. Hist. Tin. i. 113.

(*D. ontariella*, Bethune.)—Can. Ent. ii. 3, 19; v. 82.—Bei. z. Kennt. 1873, 35.

D. HILARELLA, Zell.—Bei. z. Kennt. 1873, 34.

D. LECONTELLA, Clem.—Tin. Nor. Amer. 137.—Proc. Acad. Nat. Sci. Phila. 1860, 174.—Can. Ent. iv. 146.—An. Ly. Nat. Hist. ix. 157.

D. NEBULOSA, Zell.—Bei. z. Kennt. 1873, 37.

(*D.? obscurusella* Cham. referred to *Gelechia*.)

(*D. ontariella*, Bethune, = *D. heracliana*, DeG. *supra*.)

D.? PALLIDOCHRELLA, Cham.—Can. Ent. iv. 126, 129, 147, 148. (Should probably be referred to *Gelechia*.)

(*D.? pseudacaciella* Cham. referred to *Gelechia*.)

D. PULVIPENNELLA, Clem.—Tin. Nor. Amer. 244.—Can. Ent. iv. 91.—An. Ly. Nat. Hist. ix. 157.

(*D.? querciella* Cham. referred to *Gelechia*.)

D.? RILEYELLA, Cham.—Can. Ent. iv. 106, 129, 147, 148. (Should probably be referred to *Gelechia*.)

D. ROBINIELLA, Pack.—Guide, 349.—Can. Ent. iv. 107.—Cin. Quar. Jour. Sci. vi. 208.

D. SCABELLA, Zell.—Bei. z. Kennt. 1873, 36.

D.? VERSICOLORELLA, Cham.—Can. Ent. iv. 127, 129, 147, 148. (Should probably be referred to *Gelechia*.)

DIACHORISA. (Clemens.)

D. VELATELLA, Clem.—Lin. Nor. Amer. 107.—Proc. Acad. Nat. Sci. Phila. 1860, 13.

(DORYPHORA.)

(*D. piscipelis, vid. Gelechia piscipelis.*)

DRYOPE. (Chambers.)

D. MURTFELDTELLA, Cham.—Can. Ent. vi. 50.
(*D. luteopulvella*, Cham.—Can. Ent. vii. 73. Var. *D. murtfeldtella.*)

EIDO. (Chambers.)

E. ALBAPALPELLA, Cham.—Can. Ent. v. 72.
(*Venilia albapalpella*, Cham.—Can. Ent. iv. 207.)

(EIDOTHEA, Chambers.)

(*E. vagatiocella, vid. Gelechia vagatiocella, post.*)

ELACHISTA. (Treit.)

E. BRACHYELYTRIFOLIELLA, Clem.—Tin. Nor. Amer. 248.—Proc. Ent. Soc. Phila. 1860, 425.
E.? CRISTATELLA, Cham.—Can. Ent. viii. 172.
E. CONCOLORELLA, Cham.—Can. Ent. vii. 55.
E. ILLICTELLA, Clem.
(*Cosmiotes illictella*, Clem.)—Tin. Nor. Amer. 98.—Proc. Acad. Nat. Sci. Phila. 1860, 9.
E. INORNATELLA, Cham.—Can. Ent. vii. 93.
E. MACULOSEELLA, Clem.
(*Cosmiotes maculoseella*, Clem.)—Tin. Nor. Amer. 98.—Proc. Acad. Nat. Sci. Phila. 1860, 9.
E. MADARELLA, Clem.
(*Cosmiotes madarella*, Clem.)—Tin. Nor. Amer. 98.—Proc. Acad. Nat. Sci. Phila. 1860, 9.
E.? ORICHALCELLA, Clem.—Tin. Nor. Amer. 256.—Proc. Ent. Soc. Phila. ii. 430.—Guide, 352.
E. PARVIPULVELLA, Cham.—Can. Ent. vii. 56.
E. PRÆMATURELLA, Clem.—Tin. Nor. Amer. 133.—Proc. Acad. Nat. Sci. Phila. 1860, 172.—Can. Ent. vi. 76.—Hayd. Bul. Geo. Sur. iii. pt. 1, 143.
E. STAINTONELLA, Cham.—*Ante*, 96.
E. TEXANELLA, Cham.—*Ante*, 96.
E. UNIFASCIELLA, Cham.—Can. Ent. vii. 147.

ENÆMIA. (Zeller.)

E. PSAMMITIS, Zell.—Bei. z. Kennt. 1872, 116; 1875, 139.
(*Mieza subfervens*, Wkr.)—List Bomb. ii. 528.
(*Eustixis subfervens*, Grote.)—Bul. Buff. Soc. ii. 152.
E. CRASSINERVELLA, Zell.—Bei. z. Kennt. 1872, 116; 1875, 139.
(*Mieza igninix*, Wkr.)—List Bomb. ii. 527.
(*Eustixis igninix*, Grote.)—Bul. Buff. Soc. ii. 152.

ENCHRYSA. (Zeller.)

E. DISSECTELLA, Zell.—Bei. z. Kennt. 1873, 83.

ENDROSIS. (Hübner.)

E. FENESTRELLA, Scop.—Cin. Quar. Jour. Sci. ii. 244.
(*E. kennicottella*, Clem.)—Tin. Nor. Amer. 119.—Proc. Acad. Nat. Sci. Phila. 1860, 165.

ENICOSTOMA? (Steph.)

E.? PACKARDELLA, Clem.—Tin. Nor. Amer. 231.—Proc. Ent. Soc. Phila. ii. 125.

EPICORTHYLIS. (Zeller.)

E. INVERSELLA, Zell.—Bei. z. Kennt. 1873, 48.—Can. Ent. x. p. —.

(ERGATIS.)

(*E. roseosuffusella* and *E. pudibundella*, *vid. sub Gelechia.*)

ERIPHIA. (Chambers.)

E. CONCOLORELLA, Cham.—Can. Ent. vii. 55, 56, 94.—Hayd. Bul. Geo. Sur. iii. pt. 1, 137, 141.—*Ante*, 96.
E.? ALBALINEELLA, Cham.—*Ante*, 95.
E.? NIGRILINEELLA, Cham.—*Ante*, 96.

EUDARCIA. (Clemens.)

E. SIMULATRICELLA, Clem.—Tin. Nor. Amer. 102.—Proc. Acad. Nat. Sci. Phila. 1860, 11.

EUPLOCAMUS. (Latreille.)

E.? FUSCOFASCIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 257.

EURYNOME. (Chambers.)

E. LUTEELLA, Cham.—Cin. Quar. Jour. Sci. ii. 304.—Hayd. Bul. Geo. Sur. iii. pt. 1, 140.
E. ALBELLA, Cham.—Hayd. Bul. Geo. Sur. iii. pt. 1, 140.

(EUSTIXIS, *vid.* ENÆMIA, *supra.*)

EVAGORA. (Clemens.)

E. APICITRIPUNCTELLA, Clem.—Tin. Nor. Amer. 120.—Proc. Acad. Nat. Sci. Phila. 1860, 165.

EVIPPE. (Chambers.)

(*E. prunifoliella*, Cham. *vid. Gelechia prunifoliella*, Cham.)

GELECHIA. (Zeller.)

G. ADERUCELLA, Zell.—Can. Ent. iv. 125.

G. ÆQUEPULVELLA, Cham.—Can. Ent. iv. 192; vi. 230 *et seq.*—Cin. Quar. Jour. Sci. ii. 246.—Hayd. Bul. Geo. Sur. iii. pt. 1, 125, 141.

G. AGRIMONIELLA, Clem.—Tin. Nor. Amer. 40, 112.—Proc. Ent. Soc. Phila. ii. 120.—Proc. Acad. Nat. Sci. Phila. 1860, 162.

G. ALACELLA, Clem.
(*Trichotaphe alacella* Clem.)—Tin. Nor. Amer. 180.—Proc. Ent. Soc. Phila. i. 132.

G. ALBILORELLA, Zell.—Bei. z. Kennt. May, 1872, 61.

G. ALBOMARGINELLA, Cham.—Cin. Quar. Jour. Sci. ii. 291.—Hayd. Bul. Geo. Sur. iii. 128.

G. ALBOMACULELLA, Cham.—Can. Ent. vii. 209.

G. ALEXANDRIÆELLA, Cham.
(*Adrasteia alexandriæella*, Cham.)—Can. Ent. iv. 149.

G. AMBROSIÆELLA, Cham.—Cin. Quar. Jour. Sci. ii. 239.

G. AMORPHÆELLA, Cham.—Hayd. Bul. Geo. Sur. iii. pt. 1, 126.

G. ANGUSTIPENNELLA, Clem.—Tin. Nor. Amer. 222, 224.—Proc. Ent. Soc. Phila. ii. 119.

G. APICILINEELLA, Clem.—Tin. Nor. Amer. 223, 224.—Proc. Ent. Soc. Phila. 120.

G. APICISTRIGELLA, Cham.—Can. Ent. iv. 175.
(*Parasia apicistrigella*, Cham.—*Ibid.* 66.)

G. ARGENTIALBELLA, Cham.—Can. Ent. vi. 241.

G. AURIMACULELLA, Cham.—Can. Ent. iv. 172.

G. BADIOMACULELLA, Cham.—Can. Ent. iv. 192.

G. BASISTRIGELLA, Zell.—Bei. z. Kennt. 1873, 70.
(*Pœcilia basistrigella.*)

G. BASIFASCIELLA, Zell.—Bei. z. Kennt. 1873, 70.

G. BELANGERELLA, Cham.—Can. Ent. vii. 210.

G. BICOSTOMACULELLA, Cham.—Hayd. Bul. Geo. Sur. iii. pt. 1, 127.

G. BICRISTATELLA, Cham.—Can. Ent. vii. 210.

G. BIDISCOMACULELLA, Cham.—Can. Ent. vi. 241.

G. BILOBELLA, Zell.—Bei. z. Kennt. 1873, 80.
(*Malacotricha bilobella.*)

G. BIMACULELLA, Cham.
(*Depressaria bimaculella*, Cham.)—Can. Ent. iv. 108, 128, 147, 148.

G. BISTRIGELLA, Cham.
(*Depressaria bistrigella*, Cham.)—Can. Ent. iv. 28, 92, 147, 148.
G.? BOSQUELLA, Cham.—Can. Ent. vii. 124.
(*Œcophora bosquella*.—Can. Ent. vii. 92.—*Ante*, 87.)
G. BRUMELLA, Clem.—Tin. Nor. Amer. 239.—Proc. Ent. Soc. Phila. ii. 416.
G. CAECELLA, Zell.—Bei. z. Kennt. 1873, 52.
G. CANOPULVELLA, Cham.—*Ante*, 91.
G. CAPITEOCHRELLA, Cham.—Cin. Quar. Jour. Sci. ii. 252.
G. CERCERISELLA, Cham.—Can. Ent. vi. 230, 231; ix. 23.
(*Depressaria cercerisella*, Cham.—Can. Ent. iv. 108, 128, 147, 148.)
G. CEREALELLA.—Tin. Nor. Amer. 112, 224.—Proc. Acad. Nat. Sci. Phila. 1860, 162.—Ag. Rep. 1854, 67; 1858, 23; 1864, 556.
(*Anacampsis* (*Butalis*) *cerealella*, Harris.)—Treat. Ins. 392, 499, 506.—Guide, 350.
(*Aleucita cerealella*, Oliv., *Œcophora cerealella*, Lat., *Tinea hordei*, K. & S., and *Ypsolophus granulellus*, K. & S.)—Ont. Rep. 1871, 61.
(*Butalis cerealella*, Fitch.)—Report, n. 7, 127.
G. CHAMBERSELLA, Murt.—Can. Ent. vi. 222.—Cin. Quar. Jour. Sci. ii. 240.
G. CONSONELLA, Zell.—Bei. z. Kennt. 1873, 51.
(*Tachyptilia consonella*.)
G.? CILIALINEELLA, Cham.—Can Ent. vi. 242.—*Ante*, 91.
G. CLEMENSELLA, Cham.—Can. Ent. ix. 103.
G. COLLINUSELLA, Cham.—Hayd. Bul. Geo. Sur. iii. 128.
G. CONCINUSELLA, Cham.—Cin. Quar. Jour. Sci. ii. 253.—Hayd. Bul. Geo. Sur. iii. pt. 1, 127.
G. CONFUSELLA, Cham.—Cin. Quar. Jour. Sci. ii. 251.
G. COSTORUFOELLA, Cham.—Can. Ent. vi. 240.
G. CRESCENTIFASCIELLA, Cham.—Can. Ent. vi. 237.—Cin. Quar. Jour. Sci. ii. 255.—*Ante*, p. —.
G. CRISTATELLA, Cham.—Cin. Quar. Jour. Sci. ii. 241.
G. CRISTIFASCIELLA, Cham.—*Ante*, p.
G. CURVILINEELLA, Cham.—Can. Ent. iv. 172.
G. 10-MACULELLA, Cham.—Cin. Quar. Jour. Sci. ii. 290.—Hayd. Bul. Geo. Sur. iii. pt. 1, 128.
G. DEPRESSOSTRIGELLA, Cham.—Can. Ent. vi. 236.—Cin. Quar. Jour. Sci. ii. 255.
G.? DETERSELLA, Clem.—Tin. Nor. Amer. 40, 116, 225.—Proc. Acad. Nat. Sci. Phila. 1860, 164.
G. DIFFICILISELLA, Cham.—Can. Ent. iv. 192; v. 186, 187, 185, 229.
(*Evagora difficilisella*, Cham.)—Can. Ent. iv. 66.
(*Taygete difficilisella*, Cham.)—Can. Ent. v. 231; vii. 105; viii. 19.

G. GILVOMACULELLA, Clem.—Tin. Nor. Amer. 219, 225.—Proc. Ent. Soc. Phila. ii. 12, 121.

G. GILVOSCOPELLA, Zell.—Bei. z. Kennt. 1873, 66.
(*Teleia gilvoscopella.*)

(*G. glandulella*, Riley, *vid. Blastobasis glandulella.*)

G. GLANDIFERELLA, Zell.—Bei. z. Kennt. 1873, 75.
(*G. sella*, Cham.)—Can. Ent. vi. 238; ix. 14, 23.

G. GLEDITSCHIÆELLA, Cham.—Can. Ent. x. p. —.
(*Helice* (*Gelechia*) *pallidochrella*, Cham.—Can. Ent. v. 188, 229; vii. 105; ix. 15; x. 231.)

G. GLOCHINELLA, Zell.—Bei. z. Kennt. 1873, 63.

G. GLYCYRRHIZÆELLA, Cham.—Hayd. Bul. Geo. Sur. iii. 124.

G. GRISELLA, Cham.—Can. Ent. iv. 171.

G. GRISSEELLA, Cham.
(*Parasia? grisscella*, Cham.)—Can. Ent. iv. 88.

G. GRISSEFASCIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 253.

G. GRISSEOCHRELLA, Cham.—Cin. Quar. Jour. Sci. ii. 247.

G. HERMANELLA, Fab.—Nat. Hist. Tin. ix. 263.—Can. Ent. iv. 67, 169, 173; x. p. —.—Ent. Mo. Mag. xi. 279.

G. INÆQUEPULVELLA, Cham.—Cin. Quar. Jour. Sci. ii. 239.

G. INNOCUELLA, Zell.—Bei. z. Kennt. 1873, 49.
(*Tachyptilia innocuella.*)

G. INTERMEDIELLA, Cham.—*Ante*, 89.

G. JUNCIDELLA, Clem.
(*Trichotaphe juncidella*, Clem.)—Tin. Nor. Amer. 122.—Proc. Acad. Nat. Sci. Phila. 1860, 166.

G. LABRADORICA, Moeschler.—Can. Ent. iv. 125.

G. LABRADORIELLA, Clem.—Nat. Hist. Tin. 220, 224, 239—Proc. Ent. Soc. Phila. ii. 12, 120.

G. LACTEUSOCHRELLA, Cham.—Cin. Quar. Jour. Sci. ii. 244.

G. LACTIFLOSELLA, Cham.—*Ante*, 89.

G. LATIFASCIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 251.

G. LITUROSELLA, Zell.—Bei. z. Kennt. 1873, 65.
(*Lita liturosella.*)

G. LEUCONOTA, Zell.—Bei. z. Kennt. 1873, 68.
(*Teleia leuconota.*)

G. LONGIFASCIELLA, Clem.—Tin. Nor. Amer. 219, 225.—Proc. Ent. Soc. Phila. ii. 12, 122.
(*Telphusa curvistrigella*, Cham.)—Can. Ent. iv. 132, 174.

G. LYNCEELLA, Zell.—Bei. z. Kennt. 1873, 55.

G. MACULATUSELLA, Cham.—Cin. Quar. Jour. Sci. ii. 245.

G. MACULOMARGINELLA, Cham.—Can. Ent. vi. 241.

G. MARMORELLA, Cham.—Cin. Quar. Jour. Sci. ii. 239.

G. MEDIOFUSCELLA, Clem.—Tin. Nor. Amer. 218, 224.—Proc. Ent. Soc. Phila. ii. 11, 121.

G. MILLERIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 253.

G. PHYSALIVORELLA, Cham.—Cin. Quar. Jour. Sci. ii. 238.

G. PLUTELLA, Cham.—Can. Ent. vi. 238.

G. PRAVINOMINELLA, Cham.

(*G. 4-maculella*, Cham.)—Can. Ent. x. p. —.—Cin. Quar. Jour. Sci. ii. 290.—Hayd. Bul. Geo. Sur. iii. 128. (*Vid. 4-maculella.*)

G. PRUNIFOLIELLA, Cham.

(*Evippe prunifoliella*, Cham.)—Can. Ent. v. 186; vii. 105; ix. 23.

G. PSEUDACACIELLA, Cham.

(*Depressaria pseudacaciella*, Cham.)—Can. Ent. iv. 9, 107, 129, 147, 148.—Cin. Quar. Jour. Sci. i. 208.

G. PUDIBUNDELLA, Zell.—Bei. z. Kennt. 1873, 73.

G. PULLIFIMBRIELLA, Clem.—Tin. Nor. Amer. 223, 225.—Proc. Ent. Soc. Phila. ii. 120, 121.—Can. Ent. ix. 23.

G. PULLUSELLA, Cham.—Can. Ent. vi. 237.

G. PUNCTIFERELLA, Clem.—Tin. Nor. Amer. 222, 224.—Proc. Ent. Soc. Phila. ii. 119, 120.

G. QUADRIMACULELLA, Cham.—Can Ent. vi. 237. (*Non 4-maculella*, Cin. Quar. Jour. Sci. ii. 29, *vid. pravinominella.*)

(*G. quinella*, Zell.—Bei. z. Kennt. 1873, 60. Var. *cercerisella.*—Can. Ent. vi. 230 *et seq.;* ix. 23.)

G. QUERCINIGRÆELLA, Cham.—Can. Ent. iv. 170.

G. QUERCIFOLIELLA, Cham.

(*Depressaria bicostomaculella*, Cham.)—Can. Ent. iv. 127, 128, 129, 147, 148.

Adrasteia quercifoliella, Cham.—Can. Ent. iv. 206.

Psoricoptera gibbosella, Stainton.—Can. Ent. v. 72, 174.

G. QUERCIVORELLA, Cham.—Can. Ent. iv. 173.

G. QUERCIELLA, Cham.

(*Depressaria querciella*, Cham.)—Can. Ent. iv. 127, 147.

(*Adrasteia querciella*, Cham.)—Can. Ent. iv. 207.

G. QUINQUEANULELLA, Cham.—Can. Ent. iv. 191.

G. QUINQUECRISTATELLA, Cham.—*Ante*, 88.

G. RHOIFRUCTELLA, Clem.—Tin. Nor. Amer. 40, 114, 225.—Proc. Acad. Nat. Sci. Phila. 1860, 163.—Proc. Ent. Soc. Phila. ii. 121.—Can. Ent. iv. 68.—Bei. z. Kennt. May, 1873, 52.

G. RIBESELLA, Cham.—Cin. Quar. Jour. Sci. ii. 29.—Hayd. Bul. Geo. Sur. iii. pt. 1, 128.

G. ? ROBINIELLA.

(*Anacampsis robiniella*, Fitch.)—Rep. v. 334.—Can. Ent. iii. 55, 57, 163, 183.—Tin. Nor. Amer. 208.

G. ROSEOSUFFUSELLA, Clem.—Tin. Nor. Amer. 40, 113, 225.—Proc. Acad. Nat. Sci. Phila. 1860, 162.—Proc. Ent. Soc. Phila. ii. 121.—Cham. *in* Can. Ent. iv. 69, 148, 169, 193; vi. 231; ix. 14; Cin. Quar. Jour. Sci. ii. 290; Hayd. Bul. Geo. Sur. iii. pt. 1, 125, 141.—Murt. *in* Can. Ent. vi. 222.—Zell. *in* Bei. z. Kennt. 1873, 72.

G. RUBENSELLA, Cham.—Can. Ent. iv. 40, 193.—Murt. *in* Can. Ent. vi. 222. (*Vid. ante sub G. intermediella.*)

G. RUBIDELLA, Clem.—Tin. Nor. Amer. 40, 115, 225.—Proc. Acad. Nat. Sci. Phila. 1860, 163.—Proc. Ent. Soc. Phila. ii. 121.

G. RUFUSELLA, Cham.—Can. Ent. vi. 240.

G. SAPHARINELLA, Cham.—Cin. Quar. Jour. Sci. ii. 250

G.? SARCITELLA, Har.

(*Anacampsis sarcitella*, Har.)—Treat. Ins. 493.

G. SALICIFUNGIELLA, Clem.—Tin. Nor. Amer. 262.—Proc. Ent. Soc. Phila. iii. 508; vi. 273.

G. SAUNDERSELLA, Cham.—Can. Ent. viii. 173.

G. SCUTELLARIÆELLA, Cham.—Can. Ent. v. 175.

(*G. sella*, Cham. = *G. glandiferella*, Zell. *q. v.*)

G. SEQUAX, Haw.—Nat. Hist. Tin. x. 70.—Bei. z. Kennt. 1873, 65.

G. SERRATIPALPELLA, Cham.—Hayd. Bul. Geo. Sur. iii. 123.

G. SERRATIVITTELLA, Zell.

(*Trichotaphe serrativittella*, Zell.)—Bei. z. Kennt. 1873, 80.—Can. Ent. ix. 24.

G. SETOSELLA, Clem.

(*Trichotaphe setosella*, Clem.)—Tin. Nor. Amer. 121.—Proc. Acad. Nat. Sci. Phila. 1860, 166.

G. SIMPLICIELLA, Cham.—Cin Quar. Jour. Sci. ii. 238.

(*G. similiella*, Cham. = *G. solaniiella*, *post.*)

G. SOLANIIELLA, Cham.

(*G. similiella*, Cham.)—Can. Ent. iv. 193; v. 176; x. p. —.—Cin. Quar. Jour. Sci. ii. 238, 239.—Hayd. Bul. Geo. Sur. iii. 143.

G. SUBRUBERELLA, Cham.—Can. Ent. vi. 240.—Cin. Quar. Jour. Sci. ii. 254.

G. SUFFUSELLA, Cham.—Can. Ent. iv. 171.

G. SYLVÆCOLELLA, Cham.—*Ante*, 86.

G. TEPHRIASELLA, Cham.—Can. Ent. iv. 68.

G. TERNARIELLA, Zell.—Bei. z. Kennt. 1873, 64.

(*Lita ternariella.*)

G. THORACEALBELLA, Cham.—Can. Ent. vi. 235.

G. THORACEOCHRELLA, Cham.—Can. Ent. iv. 169, 170.

G. THORACEFASCIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 246.—Can. Ent. x. p. —.

G. THORACENIGRÆELLA, Cham.—Cin. Quar. Jour. Sci. ii. 246.

G. THORACESTRIGELLA, Cham.—Cin. Quar. Jour. Sci. ii. 245.

G. TRIALBAMACULELLA, Cham.—Cin. Quar. Jour. Sci. ii. 250 *et seq.*

G. TRIFASCIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 252.—Can. Ent. vii. 23.

G. TRILINEELLA, Cham.—Hayd. Bul. Geo. Sur. iii. 125.

G. TRIMACULELLA, Cham.—Can. Ent. vi. 238.

G. TRIOCELELLA, Cham.—Hayd. Bul. Geo. Sur. iii. 127.—*Ante*, 87.

G. UNCTULELLA, Zell.—Bei. z. Kennt. 1873, 57.

G. VAGATIOELLA, Cham.

(*Eidothea vagatioella*, Cham.)—Can. Ent. v. 187, 229; vii. 105.

G. VIOLACEO-FUSCA, Zell.—Bei. z. Kennt. 1873, 58.
G. VARIIELLA, Cham.—Can. Ent. iv. 174.
G. VERSUTELLA, Zell.—Bei. z. Kennt. 1873, 53.
G. WACOELLA, Cham.—Can. Ent. vi. 237.

GLAUCE. (Chambers.) (= *? Gelechia, pars.*)

G. PECTEN-ALÆELLA, Cham.—Can. Ent. vii. 12.

GLYPHIPTERYX.

G. IMPIGRITELLA, Clem.—Tin. Nor. Amer. 214.—Proc. Ent. Soc. Phila. ii. 9.—Cin. Quar. Jour. Sci. ii. 234.
G. EXOPTALELLA, Cham.—Cin. Quar. Jour. Sci. ii. 234, 293.
G. MONTISELLA, Cham.—Cin. Quar. Jour. Sci. ii. 292.—Hayd. Bul. Geo. Sur. iii. 129, 143, 149.—Can. Ent. ix. 14.

GRACILARIA. (Haw.)

G. ACERIFOLIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 299.—Hayd. Bul. Geo. Sur. iii. 132.
G. ALNICOLELLA, Cham.—Cin. Quar. Jour. Sci. ii. 299.—Hayd. Bul. Geo. Sur. iii. 132.
G. ALNIVORELLA, Cham.—Cin. Quar. Jour. Sci. ii. 298.—Can. Ent. ix. 15.—Hayd. Bul. Geo. Sur. iii. 132.
G. ASTERICOLA, Frey & Boll.—S. E. Z. xxxiv. 204.—Cin. Quar. Jour. Sci. ii. 200.
G. ATOMOSELLA, Zell.—Bei. z. Kennt. 1873, 109.
G. BOSQUELLA, Cham.—Can. Ent. viii. 33.—Hayd. Bul. Geo. Sur. iii. 132.
G. ? BEHRENSELLA, Cham.—Can. Ent. viii. 32.
G. BELFRAGEELLA, Cham.—Can. Ent. vii. 92.
G. BLANDELLA, Zell.—Tin. Nor. Amer. 257.—Proc. Ent. Soc. Phila. iii. 505; v. 145.—Can. Ent. v. 13, 47.
G. BURGESSIELLA, Zell.—Bei. z. Kennt. 1873, 107.
G. CORONIELLA, Clem.—Tin. Nor. Amer. 243.—Proc. Ent. Soc. Phila. ii. 421; v. 145.
G. 12-LINEELLA, Cham.—Can. Ent. iv. 11; ix. 124.
G. DESMODIFOLIELLA, Clem.—Tin. Nor. Amer. 268 *et seq.*—Proc. Ent. Soc. Phila. v. 145.
(*G. violaeella*, Clem.)—Proc. Acad. Nat. Sci. Phila. 1860, 7.—Tin. Nor. Amer. 93.—Cham. *in* Can. Ent. iv. 26; v. 46; Cin. Quar. Jour. Sci. i. 208.—Zell. *in* Bei. z. Kennt. 1873, 108.
(*G. elegantella*, Frey & Boll, *vid. G. packardella, post.*)
G. ERIGERONELLA, Cham.
(*G. plantaginisella*, Cham.)—Can. Ent. iv. 10; v. 46.)
G. geiella, MS. name—error.)—Cin. Quar. Jour. Sci. i. 200.—Can. Ent. ix. 127.
(*G. eupatoriiella*, Cham., ? = *G. venustella*, Clem. *post.*)

G. VENUSTELLA, Clem.—Tin. Nor. Amer. 92, 216.—Proc. Acad. Nat. Sci. Phila. 1860, 6.—Proc. Ent. Soc. Phila. ii. 10; v. 145.
(*G. eupatoriiella*, Cham.)—Can. Ent. iv. 9; v. 44, 46.
(*G. violacella*, Clem. *vid. G. desmodifoliella*, Clem.)

(HAGNO. Chambers.)

(*H. cryptolechiœella* Cham. and *H. faginella* Cham. referred to *Cryptolechia.*)

HAMADRYAS. Clemens.

H. BASSETTELLA, Clem.—Tin. Nor. Amer. 246.—Proc. Ent. Soc. Phila. ii. 423.—Can. Ent. vi. 231; x. p. —.—Cin. Quar. Jour. Sci. ii. 115.

HARPALYCE. Cham. (*non* Steph.).

H. ALBELLA, Cham.—Can. Ent. vi. 235.
H. CANUSELLA, Cham.—Can. Ent. vi. 235.
H. TORTRICELLA, Cham.—Can. Ent. vi. 235.—Hayd. Bul. Geo. Sur. iii. 122, 141.

(HERIBEIA.)

(*H. incertella*, Cham. *vid. Argiope dorsimaculella.*)

(HELICE. Chambers.)

(*H. pallidochrella*, Cham. *vid. Gelechia gleditschiœella*, Cham.)

HELIOZELLA. (Her.-Sch.)

H. ÆSELLA, Cham.—Can. Ent. ix. 108.
H. GRACILIS, Zell.—Bei. z. Kennt. 1873, 114.

(HOMOSETIA. Clemens.)

(*H. tricingulatella*, Clem. *vid. Tinea tricingulatella.*)
(*H. costisignella*, Clem. *vid. Tinea costisignella.*)

HYALE. Chambers.

H. CORYLIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 242 (?= *Menestra tortriciformella* Clem.)

HYBROMA. Clemens.

H. SERVULELLA, Clem.—Tin. Nor. Amer. 187.—Proc. Ent. Soc. Phila. i. 137.

HYPONOMEUTA. (Zeller.)

H. APICIPUNCTELLA, Cham.—Can. Ent. vii. 8.
H. EVONYMELLA, Cham.
(*H. orbimaculella*, Cham.)—Can. Ent. iv. 42; v. 12.

H. LONGIMACULELLA, Cham.—Can. Ent. iv. 43.
H. MULTIPUNCTELLUS, Clem.—Tin. Nor. Amer. 95.—Proc. Acad. Nat. Sci. Phila. 1860, 8.—Can. Ent. iv. 42.—Guide, 348 (as *millepunctellus*).—Bei. z. Kennt. 1873, 28.
H. QUINQUEPUNCTELLA, Cham.—Can. Ent. vii. 7.
H. WAKARUSA, Gaumer.—Observer of Nature, p. — (? = *evonymella*).
H. ZELLERIELLA, Cham.—*Ante*, 80.

HYPATIMA.

H. SUBSENSELLA, Zell.—Bei. z. Kennt. 1873, 102.
H. CONFECTELLA, Zell.—Bei. z. Kennt. 1873, 103.

INCURVARIA.

I. ACERIFOLIELLA, Fitch.—Tin. Nor. Amer. 90.—Proc. Acad. Nat. Sci. Phila. 1860, 5.
(*Ornix acerifoliella*, Fitch.)—Rep. Nox. Ins. pts. 1 and 2, 269.—Ont. Rep. 1873, 42.
I. IRIDELLA, Cham.
(*Tinea iridella*, Cham.)—Can. Ent. v. 86.
I. LABRADORELLA, Clem.—Tin. Nor. Amer. 238.—Proc. Ent. Soc. Phila. ii. 416.
I. MEDIOSTRIALELLA, Clem.—Tin. Nor. Amer. 273.—Proc. Ent. Soc. Phila. v. 147.
(*Tinea auristrigella*, Cham.)—Can. Ent. v. 86; ix. 207.
I. RUSSATELLA, Clem.—Tin. Nor. Amer. 89.—Proc. Acad. Nat. Sci. Phila. 1860, 5.

(IPHOME. Chambers.) = (PERIMEDE. Chambers.)

(*I. unomaculella*, Cham. = *Perimede unomaculella*, Cham., and referred to *Laverna*, *q. v.*)

LAVERNA.

L.? ALBELLA, Cham.—Cin. Quar. Jour. Sci. ii. 295.
(*L. albocapitella*, Cham. = *L. murtfeldtella*, Cham.)
L. ALBOPALPELLA, Cham.—Cin. Quar. Jour. Sci. ii. 295.
L. BIFASCIELLA, Cham.—Can. Ent. viii. 158.
L. CEPHALANTHIELLA, Cham.—Can. Ent. iii. 221; vii. 53; x. p. —.
L. CIRCUMSCRIPTELLA, Zell.—Bei. z. Kennt. 1873, 112.—Can. Ent. x. p. —.
L.? COLORADOELLA, Cham.—Hayd. Bul. Geo. Sur. iii. 136.
L. DEFINITELLA, Zell.—Bei. z. Kennt. 1873, 111.
(*L. unicristatella*, Cham.)—Can. Ent. vii. 32; ix. 74.
L. ELOISELLA, Clem.—Tin. Nor. Amer. 131.—Proc. Acad. Nat. Sci. Phila. 1860, 171.—Can. Ent. ix. 74.
L.? ERRANSELLA, Cham.
(*Perimede erransella*, Cham.)—Can. Ent. vi. 52; vii. 52; ix. 147; x. p. —.

L.? fuscocristatella, Cham. *vid. Nœra fuscocristatella*, Cham.)

L.? IGNOBILISELLA, Cham.—Can. Ent. vii. 33, 51; x. p. —.

L.? GLEDITSCHIÆELLA, Cham.—Can. Ent. viii. 135, 171; x. p. 232.

L GRANDISELLA, Cham.—Cin. Quar. Jour. Sci. ii. 296.—Hayd. Bul. Geo. Sur. iii. 144.

(*L. grisseella*, Cham. *vid. L. murtfeldtella.*)

L. LUCIFERELLA, Clem.—Tin. Nor. Amer. 130.—Proc. Acad. Nat. Sci. Phila. 1860, 171.

L.? MAGNATELLA.—Can. Ent. ix. 73.

(*L.? œnotherœella*, Cham.)—Can. Ent. vii. 30.

(*Phyllocnistis magnatella*, Zell.)—Bei. z. Kennt. 1873, 115.

L. MISCECOLORELLA, Cham.—Can. Ent. vii. 51.—Hayd. Bul. Geo. Sur. iii. 144.

L. MURTFELDTELLA, Cham.—Cin. Quar. Jour. Sci. ii. 237; viii. 159; ix. 13; x. p. —.

(*L. albocapitella*, Cham.)—Can. Ent. vii. 33.—Hayd. Bul. Geo. Sur. iii. 144.

(*L. grisseella*, Cham.)—Cin. Quar. Jour. Sci. ii. 295.—Hayd. Bul. Geo. Sur. iii. 141.

L.? OBSCURUSELLA, Cham.—Can. Ent. vii. 53; x. p. —.

L. ŒNOTHERÆSEMINELLA, Cham.—Can. Ent. viii. 138; x. p. —.

L.? PARVICRISTATELLA, Cham.—Can. Ent. vii. 34.

L. RUFOCRISTATELLA, Cham.—Can. Ent. vii. 33.

(*L. unicristatella*, Cham. *vid. L. definitella*, Zell.)

L. UNIFASCIELLA, Cham.—Can. Ent. viii. 159 (var.? *murtfeldtella*).

LEUCANTHIZA. (Clemens.)

L. AMPHICARPEÆFOLIELLA, Clem.—Tin. Nor. Amer. 85, 87–88.—Proc. Acad. Nat. Sci. Phila. 1859, 328.—Can. Ent. iii. 162; x. p. —.

(*L. saundersella*, Cham.)—Can. Ent. iii. 205.

(*L. ornatella*, Cham. *vid. Lithocolletis ornatella*, Cham.)

LEUCOPHRYNE. (Chambers.)

(Perhaps this might be included in *Laverna.*)

L. TRICRISTATELLA, Cham.—Can. Ent. vii. 211.

LITHARIAPTERYX. (Chambers.)

L. ABRONIÆELLA, Cham.—Can. Ent. viii. 217.—Hayd. Bul. Geo. Sur. iii. 124, 149.

(LITA.)

(*L. ternariella* and *L. lituroselle* referred to *Gelechia.*)

LITHOCOLLETIS.* (Zeller.)

L. ACERIELLA, Clem.—Tin. Nor. Amer. 65, 75.—Proc. Acad. Nat. Sci. 1859, 319, 323.—Can. Ent. iii. 130.

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* *Vid.* Psyche, January, 1878.

L. CONGLOMERATELLA, Zell.—Bei. z. Kennt. 1875, 140.

L. CONSIMILELLA, Frey & Boll.—S. E. Z. xxxiv. 214.—Cin. Quar. Jour. Sci. i. 202.

L. CORYLIELLA, Cham.—Can. Ent. iii. 111, 127; x. p. —.

L. CRATÆGELLA, Clem.—Tin. Nor. Amer. 66, 77, 141.—Proc. Acad. Nat. Sci. Phila. 1859, 319, 324; 1860, 208.—Can. Ent. iii. 55, 108, 166; v. 50; vi. 150.—*Ante*, p. —. —Cin. Quar. Jour. Sci. i. 206, 201.

L. CURVILINEATELLA, Pack.—Guide, 354.—Can. Ent. iii. 183. (Not a *Lithocolletis ?*)

L. DESMODIELLA, Clem.—Tin. Nor. Amer. 65, 68.—Proc. Acad. Nat. Sci. Phila. 1859, 319, 220.—Can. Ent. i. 127, 152.

L. FITCHELLA, Clem.—Tin. Nor. Amer. 139.—Proc. Acad. Nat. Sci. Phila. 1860, 207.—Can. Ent. iii. 183.—Cin. Quar. Jour. Sci. i. 201.—Guide, 353.—Hayd. Bul. Geo. Sur. iii. 139.—Can. Ent. x. p. —.

Argyromiges quercifoliella, Fitch.—Rep. 5, sec. 327.

L. FUSCOCOSTELLA, Cham.—Cin. Quar. Jour. Sci. ii. 102.

L. GEMINATELLA, Pack.—Guide, 353.—Can. Ent. iii. 183. (Not a *Lithocolletis ?*)

L. GEMMEA, Frey & Boll.—S. E. Z. xxxiv. 218.—Cin. Quar. Jour. Sci. i. 206 *et seq.* 339; ii. 227.

L. GUTTIFINITELLA, Clem.—Tin. Nor. Amer. 65, 76.—Proc. Acad. Nat. Sci. Phila. 1859, 319, 324.—Can. Ent. iii. 110 *et seq.*—Cin. Quar. Jour. Sci. i. 201 *et seq* —*Ante*, 102.

L. HAGENI, Frey & Boll.—S. E. Z. xxxiv. 208.—Cin. Quar. Jour. Sci. i. 201 *et seq.*—*Ante*, 100.

L. HAMADRYADELLA, Clem.—Tin. Nor. Amer. 65, 77.—Proc. Acad. Nat. Sci. Phila. 1859, 319, 324.—Can. Ent. iii. 55, 164, 182.—Cin. Quar. Jour. Sci. ii. 201 *et seq.*

L. HELEANITHIVORELLA, Cham.—Cin. Quar. Jour. Sci. ii. 100, 230.

L. NIDIFICANSELLA, Pack.—Guide, 354.—Can. Ent. iii. 184. (? A *Lyonetia.*)

L. IGNOTA, Frey & Boll.—S. E. Z. xxxiv. 215.—Cin. Quar. Jour. Sci. i. 205; ii. 230.

L. INTERMEDIA, Frey & Boll.—S. E. Z. xxxiv. 210.—Cin. Quar. Jour. Sci. i. 201; ii. 230.

(*L. juglandiella*, Clem.=*L. caryæfoliella*, Clem.—Tin. Nor. Amer. 170.—Proc. Ent. Soc. Phila. i. 81.—Can. Ent. iii. 165; vii. 126; x. p. —.—Guide, 353.)

L. LONGISTRIATA, Frey & Boll.—S. E. Z. xxxiv. 209, 210.—Cin. Quar. Jour. Sci. i. 201; ii. 229.

L. LUCETIELLA, Clem.—Tin. Nor. Amer. 65, 73.—Proc. Acad. Nat. Sci. Phila. 1859, 319, 322.—Can. Ent. iii. 56.

L. LYSIMACHIÆELLA, Cham.—Cin. Quar. Jour. Sci. ii. 100.

L. LUCIDICOSTELLA, Clem.—Tin. Nor. Amer. 39, 64, 66.—Proc. Acad. Nat. Sci. Phila. 1859, 318, 319.—Cin. Quar. Jour. Sci. ii. 102.—Can. Ent. iii. 57, 182. (The statement that the larva mines leaves of the Sycamore (*Platanus*) is incorrect.)

(*L. mariœella*, Cham. *vid. L. alniella*, Zell.)

L. MIRIFICA, Frey & Boll.—S. E. Z. xxxiv. 212.—Cin. Quar. Jour. Sci. i. 202.

L. NECOPINUSELLA, Cham.—*Ante*, 100.

(*L. nonfaseiella*, Cham.—Can. Ent. iii. 108.—Cin. Quar. Jour. Sci. i. 201.) (This must be dropped from the list: there is no such species. It was described from varieties and old specimens of *L. celtisella* Cham.)

L. OBSCURICOSTELLA, Clem.—Tin. Nor. Amer. 64, 71.—Proc. Acad. Nat. Sci. Phila. 1859, 318, 321.—Can. Ent. iii. 85; x. p. 102.

L. OBSOLETELLA, Frey & Boll.—S. E. Z. xxxiv. 211.—Cin. Quar. Jour. Sci. i. 202.

L. OBSTRICTELLA, Clem.—Tin. Nor. Amer. 64, 73.—Proc. Acad. Nat. Sci. Phila. 1859, 318, 322.—Can. Ent. iii. 183.—*Ante* 102.

L. ORNATELLA, Cham.—Can. Ent. iii. 161; iv. 107; x. p. —.—Cin. Quar. Jour. Sci. i. 201 *et seq.* 339; ii. 228.—S. E. Z. xxxiv. 217.—Bei. z. Kennt. 1875, 141.

(*Leucanthiza ornatella.*)—Can. Ent. iii. 87, 127.

L. OSTENSACKENELLA, Fitch.

(*Argyromiges ostensackenella*, Fitch.)—Can. Ent. iii. 183.—Rep. Nox. Ins. New York, n. 5. sec. 338.

L. OSTRYÆFOLIELLA, Clem.—Tin. Nor. Amer. 64, 71.—Proc. Acad. Nat. Sci. Phila. 1859, 318, 322.—Can. Ent. iii. 85.—Cin. Quar. Jour. Sci. i. 202.

(*L. ostryœella*, Cham. var. *L. coryliella*, Cham. *q. v.*)

L. POPULIELLA, Cham.—*Ante*, 101.

L. QUERCIALBELLA, Fitch.—Rep. Nox. Ins. N. Y. n. 5, sec. 328.—Can. Ent. iii. 57.

L. QUERCIBELLA, Cham.—Cin. Quar. Jour. Sci. ii. 102.

(*L. quercifoliel a*, Fitch, *vid. L. fitchella*, Clem.)

L. QUERCITORUM, Frey & Boll.—S. E. Z. xxxiv. 207.—Cin. Quar. Jour. Sci. i. 201; ii. 229.—Bei. z. Kennt. 1875, 140.—Hayd. Bul. Geo. Sur. iii. 139, 141.—Can. Ent. x. p. —.

L. RILEYELLA, Cham.—Cin. Quar. Jour. Sci. ii. 236.

L. ROBINIELLA, Clem.—Tin. Nor. Amer. 14 *et seq.* 22, 64, 66, 208.—Proc. Acad. Nat. Sci. Phila. 1859, 318, 319; 1860, 209.—Can. Ent. iii. 54 *et seq.* 87, 163, 183, 185; iv. 9, 117.—S. E. Z. xxxiv. p. —.—Cin. Quar. Jour. Sci. vi. 203, 208, 339; ii. 228.—Bei. z. Kennt. 1875, 142.—Hayd. Bul. Geo. Sur. 132, 137.

(*Argyromiges pseudacaeiella*, Fitch.)—Rep. Nox. Ins. N. Y. n. 5, sec. 335.

? A. uhlerella, Fitch.—*Ibid.* 337.

? A. morrisella, Fitch.—*Ibid.* 336.

L. SALICIFOLIELLA, Clem.—Tin. Nor. Amer. 169.—Proc. Ent. Soc. Phila. i. 81.—Can. Ent. iii. 163, 185.—Guide, 353.—Hayd. Bul. Geo. Sur. iii. 139, 141.

(*L. scudderella*, Frey & Boll.)—S. E. Z. xxxiv. 212.—Cin. Quar. Jour. Sci. ii. 202.

L. SYMPHORICARPEÆELLA, Cham.—Cin. Quar. Jour. Sci. ii. 98.

(*L. scudderella*, Frey & Boll. *vid. L. salicifoliella, supra.*)

L. TILLIÆELLA, Cham.—Can. Ent. iii. 56.—Cin. Quar. Jour. Sci. vi. 203.

L. TRIFASCIELLA, Haw.—S. E. Z. xxxiv. 215.—Cin. Quar. Jour. Sci. i. 205.—Can. Ent. x. p.—.

L. TRITÆNIAELLA, Cham.—Can. Ent. iii. 110, 184; v. 48; x. p. —.—Cin. Quar. Jour. Sci. i. 202.

L. TEXANELLA, Zell.—Bei. z. Kennt. 1875, 143.—Hayd. Bul. Geo. Sur. v. 132, 137.

L. TUBIFERELLA, Clem.—Tin. Nor. Amer. 140.—Proc. Acad. Nat. Sci. Phila. 1860, 208.—Can. Ent. iii. 165, 183.

L. ULMELLA, Cham.—Can. Ent. iii. 148.—Cin. Quar. Jour. Sci. i. 202, 204; ii. 101.—S. E. Z. xxxiv. 214.

L. UNIFASCIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 103 *et seq.*

(*L. virginiella*, Cham.—Can. Ent. iii. 84; x. p. —. = *L. ostryæfoliella*, Clem.)

LYONETIA. (Hübner.)

L. ALNIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 303.—Hayd. Bul. Geo. Sur. iii. 140.

L. APICISTRIGELLA, Cham.—Cin. Quar. Jour. Sci. ii. 105.—Can. Ent. x. p. —.

L. GRACILELLA, Cham.—Can. Ent. viii, 34; x. p. —.

L.? NIDIFICANSELLA, Pack.

(*Lithocolletis nidificansella*, Pack.)—Guide, 354.—Can. Ent. x. p. —.

(*L. saccatella*, Pack. *vid. Aspidisca splendoriferella.*)

L. SPECULELLA, Clem.—Tin. Nor. Amer. 184.—Proc. Ent. Soc. Phila. i. 134.—Can. Ent. x. p. —.

(MACHIMIA. Clemens.)

(*M. tentoriferella, vid. Cryptolechia tentoriferella.*)

(MALACHOTRICHA.)

(*M. bilobella*, Zell. *vid. Gelechia bilobella.*)

MARMARA. (Clemens.)

M. SALICLELLA, Clem.—Tin. Nor. Amer. 212.—Proc. Ent. Soc. Phila. ii. 7.

MENESTRA. (Clemens.)

M. TORTRICIFORMELLA.—Tin. Nor. Amer. 151.—Proc. Acad. Nat. Sci. Phila. 1860, 213.

MICROPTERYX.

M. POMIVORELLA, Pack.—Rep. Mass. Ag. Soc. 1870.—Am. Nat. vi. 685.

(MIEZA, *vid.* ENÆMIA.)

NÆRA. (Chambers.)

N. FUSCOCRISTATELLA, Cham.—Can. Ent. vii. 9, 51.
(*Laverna fuscocristatella*, Cham.)—Can. Ent. vii. 34.

NEDA. (Chambers.)

N. PLUTELLA, Cham.—Can. Ent. vi. 243; vii. 105.

NEPTICULA. (Zeller.)

N. AMELANCHIERELLA, Clem.—Tin. Nor. Amer. 174.—Proc. Ent. Soc. Phila. i. 84.—Guide, 356.
N. ANGUINELLA, Clem.—Tin. Nor. Amer. 175.—Proc. Ent. Soc. Phila. i. 85.
N. APICIALBELLA, Cham.—Can. Ent. v. 127.—Cin. Quar. Jour. Sci. ii. 118.
N. BADIOCAPITELLA, Cham.—Can. Ent. viii. 160.
N. BELFRAGEELLA, Cham.—Can. Ent. vii. 75.
N. BIFASCIELLA, Cham.—Tin. Nor. Amer. 183.—Proc. Ent. Soc. Phila. i. 133; v. 146.
N. BOSQUEELLA, Cham.—*Ante*, 106.
N. CASTANEÆFOLIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 117.
N. CARYÆFOLIELLA.—Tin. Nor. Amer. 174.—Proc. Ent. Soc. Phila. i. 84.
N. CILLIÆFUSCELLA, Cham.—Can. Ent. v. 128.—Cin. Quar. Jour. Sci. ii. 117. (= *N. fuscotibiœella* Clem.)
N. CLEMENSELLA, Cham.—Can. Ent. v. 125.
N. CORYLIFOLIELLA, Clem.—Tin. Nor. Amer. 172.—Proc. Ent. Soc. Phila. i. 83.—Guide, 356.
N. CRATÆGIFOLIELLA, Clem.—Tin. Nor. Amer. 173.—Proc. Ent. Soc. Phila. i. 83.
N. FUSCOCAPITELLA, Cham.—Can. Ent. v. 128.
N. FUSCOTIBIÆELLA, Clem.—Tin. Nor. Amer. 182.—Proc. Ent. Soc. Phila. i. 133; v. 146.—Can. Ent. v. 127.—Cin. Quar. Jour. Sci. ii. 114.
N. JUGLANDIFOLIELLA, Cham.—Tin. Nor. Amer. 173.—Proc. Ent. Soc. Phila. i. 84.—*Ante*, 105.
N. LATIFASCIELLA, Cham.—*Ante*, 106.

N. MAXIMELLA, Cham.—Can. Ent. v. 126.
N. MINIMELLA, Cham.—Can. Ent. v. 127.
N. NIGRIVERTICELLA, Cham.—Cin. Quar. Jour. Sci. ii. 118.
N. OCHREFASCIELLA, Cham.—Can. Ent. v. 128.
N. OSTRYÆFOLIELLA, Clem.—Tin. Nor. Amer. 172.—Proc. Ent. Soc. Phila. i. 83.
N. PLATANELLA, Clem.—Tin. Nor. Amer. 173, 183.—Proc. Ent. Soc. Phila. i. 83, 133; v. 146.—Can. Ent. v. 125.—Guide, 356.
N. PLATEA, Clem.—Tin. Nor. Amer. 175.—Proc. Ent. Soc. Phila. i. 85.
N. PRUNIFOLIELLA, Clem.—Tin. Nor. Amer. 174.—Proc. Ent. Soc. Phila. i. 84.—Can. Ent. v. 126. (*? serotinœella* or ? Dipterous.)
N. QUERCICASTANELLA, Cham.—Can. Ent. v. 127.—*Ante*, p. —.—Can. Ent. x. 105.
N. QUERCIPULCHELLA, Cham.—*Ante*, 105.
N. RESPLENDENSELLA, Cham.—Cin. Quar. Jour. Sci. ii. 118.
N. ROSÆFOLIELLA, Clem.—Tin. Nor. Amer. 176.—Proc. Ent. Soc. Phila. i. 86.
N. RUBIFOLIELLA, Clem.—Tin. Nor. Amer. 32, 42, 45, 152.—Proc. Ent. Soc. Phila. v. 146.
N. SAGINELLA, Clem.—Tin. Nor. Amer. 175, 270.—Proc. Ent. Soc. Phila. i. 85, 144.
N. SEROTINÆELLA, Cham.—Can. Ent. v. 126; x. p. —.
N. THORACEALBELLA, Cham.—Can. Ent. v. 127.
N. UNIFASCIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 119.—*Ante*, p. —.
N. VILLOSELLA, Clem.—Tin. Nor. Amer. 174.—Proc. Ent. Soc. Phila. i. 84.
N. VIRGINIELLA, Clem.—Tin. Nor. Amer. 172.—Proc. Ent. Soc. Phila. i. 83.

(NOMIA. Clemens.)

(*N. lingualacella*, Clem. *vid. Chrysopora lingualacella.*)

NOTHRIS. (Hübner.)

N.? BIMACULELLA, Cham.—Hayd. Bul. Geo. Sur. iii. 122.
N. EUPATORIIELLA, Cham.—Can. Ent. ix. 23.
(*Ypsolophus eupatoriiella*, Cham.)—Can. Ent. iv. 221.
(*Nothris dolabella*, Zell.)—Bei. z. Kennt. 1873, 88.
N. GRISSEELLA, Cham.—Can. Ent. vi. 245.

ŒCOPHORA. (Zeller.)

Œ. ARGENTICINCTELLA, Clem.—Can. Ent. v. 188–190.—Cin. Quar. Jour. Sci. ii. 114.
(*Callima argenticinctella*, Clem.)—Tin. Nor. Amer. 12, 46, 123.—Proc. Acad. Nat. Sci. Phila. 1860, 167.
Œ. BORKHAUSENII, Zell.—Bei. z. Kennt. 1873, 90.

Œ. BOREASELLA, Cham.—Can. Ent. v. 189.—Cin. Quar. Jour. Sci. ii. 114, 292.—Hayd. Bul. Geo. Sur. iii. 129, 141.
(*Œ. bosquella*, Cham. *vid. Gelechia bosquella.*)
(*Œ. constrictella*, Zell. *vid. Theisoa constrictella.*)
Œ. DETERMINATELLA, Zell.—Bei. z. Kennt. 1873, 89.
(*Œ. australisella*, Cham.)—Can. Ent. vii. 124; ix. 23.—Cin. Quar. Jour. Sci. ii. 114.
(*Œ. granella*, Lat. *vid. Gelechia granella.*)
Œ. 4-MACULELLA, Cham.—Cin. Quar. Jour. Sci. ii. 292.—Hayd. Bul. Geo. Sur. iii. 129.
Œ. SHALERIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 114.

ŒNOE. (Chambers.)

Œ. HYBROMELLA, Cham.—Can. Ent. vi. 50.

ŒSEIS. (Chambers.)

Œ. BIANULELLA. Cham.—Cin. Quar. Jour. Sci. ii. 255.

ŒTA. (Grote.)

Œ. PUNCTELLA, Cra.—Bei. z. Kennt. 1873, 28.
(*Pœciloptera compta*, Clem.)—Proc. Acad. Nat. Sci. 1860, 546.
(*Œta compta*, Grote.)—Proc. Ent. Soc. Phila. v. 230.—Riley's Rep. Nox. Ins. Mo. 1869, 151.—Zell. Ent. Zeit. 1871, s. 178.
(*Tinea pustulella*, Fab.)—Ent. Syst. iii. pt. ii. 292.
(*Phalena punctella*, Cramer.—Ins. 31.)

OPOSTEGA. (Zeller.)

O. ALBOGALLERIELLA, Clem.—Tin. Nor. Amer. 180.—Proc. Ent. Soc. Phila. i. 131.
O. 4-STRIGELLA, Cham.—Cin. Quar. Jour. Sci. ii. 106.

ORNIX. (Zeller.)

(*O. acerifoliella*, Fitch, *vid. Incurvaria acerifoliella.*)
O. BOREASELLA, Clem.—Tin. Nor. Amer. 237.—Proc. Ent. Soc. Phila. ii. 415.
O. CRATÆGIFOLIELLA, Clem.—Tin. Nor. Amer. 94.—Proc. Acad. Nat. Sci. Phila. 1860, 8.—Can. Ent. v. 48.
O. FESTINELLA, Clem.—Tin. Nor. Amer. 94.—Proc. Acad. Nat. Sci. Phila. 1860, 97.
O. INUSITATUMELLA, Cham.—Can. Ent. v. 47; viii. 19.
O. PRUNIVORELLA, Cham.—Can. Ent. v. 50.—Cin. Quar. Jour. Sci. ii. 301.—Hayd. Bul. Geo. Sur. iii. 133, 141.
O. QUADRIPUNCTELLA, Clem.—Tin. Nor. Amer. 177.—Proc. Ent. Soc. Phila. i. 86.

O. QUERCIFOLIELLA, Cham.—Can. Quar. Jour. Sci. ii. 116.
O. TREPIDELLA, Clem.—Tin. Nor. Amer. 94.—Proc. Acad. Nat. Sci. Phila. 1860, 7.

PARASIA. (Dup.)

(*P. apicistrigella*, Cham. *vid. Gelechia apicistrigella.*)
(*P. apicipunctella*, *vid. Evagora apicipunctella.*)
(*P. grisseella*, Cham. *vid. Gelechia grisseella.*)
P. SUBSIMELLA, Clem.—Tin. Nor. Amer. 137.—Proc. Acad. Nat. Sci. Phila. 1860, 173.

(PARECTOPA. Clemens.)

(*P. lespedezæfoliella et robiniella*, Clem. *vid. sub Gracilaria.*)

PHAETUSA. (Chambers.)

P. PLUTELLA, Cham.—Can. Ent. vii. 105; x. p.—.

(PERIMEDE. Chambers.)

(*P. erransella et P.* (*Ithome*) *unomaculella*, Cham. *vid. sub Laverna.*)

PHIGALIA. (Chambers.)

P. ALBELLA, Cham.—Can. Ent. vii. 107.
P. OCHREMACULELLA, Cham.—*Ibid.*

PHILONOME. (Chambers.)

P. CLEMENSELLA, Cham.—Can. Ent. vi. 97; viii. 136; ix. 13; x. p.—.

PHYLLOCNISTIS. (Zeller.)

P. AMPELOPSIELLA, Cham.—Can. Ent. iii. 207 (206 erroneously *ampelopsifoliella*).—Cin. Quar. Jour. Sci. ii. 107, 303.—Hayd. Bul. Geo. Sur. iii. 140, 141.
P. ERECHTITISELLA, Cham.—*Ante*, 104.
P. LIRIODENDRONELLA, Clem.—Tin. Nor. Amer. 220.—Proc. Ent. Soc. Phila. ii. 13.—Can. Ent. iii. 185, 206, 207.
P. LIQUIDAMBARISELLA, Cham.—Cin. Quar. Jour. Sci. ii. 106.
(*P. magnatella*, Zell. *vid. Laverna? magnatella.*)
P. POPULIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 106, 303.—Can. Ent. viii. 19.—Hayd. Bul. Geo. Sur. iii. 140, 141, 147.
P. SMILACICELLA, Cham.—Cin. Quar. Jour. Sci. ii. 107.
P. VITIGENELLA, Clem.—Tin. Nor. Amer. 22, 23, 39, 83.—Proc. Acad. Nat. Sci. Phila. 1859, 327.—Can. Ent. iii. 206; vi. 169.
P. VITIFOLIELLA, Cham.—Can. Ent. iii. 206 *et seq.*; vi. 169.

PIGRITIA. (Clemens.)

P. LATICAPITELLA, Clem.—Tin. Nor. Amer. 41, 136.—Proc. Acad. Nat. Sci. Phila. 1860, 173.
P. OCHRELLA, Clem.—Tin. Nor. Amer. 232.—Proc. Ent. Soc. Phila. ii. 126.
P. OCHROCOMELLA, Clem.—Tin. Nor. Amer. 232.—Proc. Ent. Soc. Phila. ii. 126.

PITYS. (Chambers.)

P. AURICRISTATELLA, Cham.—Can. Ent. v. 110; ix. 207.
P. FASCIELLA, Cham.—*Ibid.*; ix. 207.
P. FUSCOCRISTATELLA, Cham.—*Ibid.*
P. MISCECRISTATELLA, Cham.—*Ibid.*

PLUTELLA. (Schr.)

P. CRUCIFERARUM, Zell.—Tin. Nor. Amer. 39, 90.—Proc. Acad. Nat. Sci. Phila. 1860, 6.—Can. Ent. viii. 119; vi. 230, 232.—Bei. z. Kennt. 1873, 33.—Rep. Bost. Ag. Soc. ii. 11.—Hayd. Bul. Geo. Sur. iii. 122, 141, 144, 147.
(*P. limbipennella*, Clem.)—*Ibid.*
(*Cerostoma brassicella*, Fitch.)—*Ibid.* and Rep. Nox. Ins. N. Y. i. 170–5.—Ag. Rep. 1871, 82.
(*P. zylostella.*)—Rep. Mass. Ag. Soc. ii. 11.
(*P. mollipedella*, Clem. *loc. cit. sup.*, ? = *cruciferarum.*)
P. PORRECTELLA, Linn. *loc. cit. sup.* (*vigilaciella*, Clem.).

(PŒCILIA.)

(*P. bifasciella*, Clem., *basistrigella*, Clem., and *fragmentella*, *vid. Gelechia.*)

(PŒCILOPTERYX. Clemens.)

(*P. compta*, *vid. Œta punctella.*)

POLYHYMNO. (Chambers.)

(*P. fuscostrigella*, Cham.—Can. Ent. viii. 30. = *luteostrigella.*)
P. LUTEOSTRIGELLA, Cham.—*Loc. cit. sup.* and Can. Ent. vi. 247.
P. 6-STRIGELLA, Cham.—Can. Ent. vi. 248.

PRONUBA. (Riley.)

P. YUCCASELLA, Riley.—Proc. Acad. Sci. Mo. iii. 55, 333.—Rep. Nox. Ins. Mo. v. 151; vi. 131.—Can. Ent. iv. 182.—Hayd. Bul. Geo. Sur. iii. 121, 141.
(*Tegeticula alba*, Zell.)—Bei. z. Kennt. 1873, 32; 1875, 139.

PSECADIA. (Hübner.)

P. SEMILUGENS, Zell.—Bei. z. Kennt. 1872, 115.—Cin. Quar. Jour. Sci. ii. 258.—Can. Ent. vi. 233. (As *Anesychia multipunctella*, Cham.)

(PSILOCORSIS. Clemens.)

(*P. querciella*, Clem. and *P. reflexa*, Clem. *vid. sub Cryptolechia.*)

(RHINOSIA.)

(*R. pometellus*, Harris, *vid. Ypsolophus pometellus.*)

SAGARITIS. (Chambers.)

S. GRACILELLA, Cham.—Can. Ent. iv. 226; vi. 245.

SEMELE. (Chambers.)

S. ARGENTISTRIGELLA, Cham.—Can. Ent. viii. 105.
(*Tinea argentistrigella*, Cham.)—Can. Ent. v. 89.
S. ARGENTINOTELLA, Cham.—Can. Ent. viii. 104.
(*S. bifasciella*, Cham. MS. name inadvertently used = *cristatella.*)—Can. Ent. viii. 105; ix. 208.
S. CRISTATELLA, Cham.—Can. Quar. Jour. Sci. ii. 243.—Can. Ent. ix. 208.

SETOMORPHA. (Zeller.)

S. OPEROSELLA, Zell.—Bei. z. Kennt. 1873, 23.
S. INAMŒNELLA, Zell.—Bei. z. Kennt. 1873, 23.
S. RUDERELLA, Zell.—Bei. z. Kennt. 1873, 23.

(SINOE. Chambers.)

(*S. fuscopallidella*, Cham. *vid. Gelechia.*)

SOLENOBIA. (Zeller.)

S. WALSHELLA, Clem.—Tin. Nor. Amer. 181.—Proc. Ent. Soc. Phila. i. 132.—Guide, 346.—Can. Ent. v. 74; vii. 125; viii. 19.

STILBOSIS. (Clemens.)

S. TESQUATELLA, Clem.—Tin. Nor. Amer. 40, 129.—Proc. Acad. Nat. Sci. Phila. 1860, 170.

STROBISIA. (Clemens.)

S. ALBACILIAELLA, Cham.—Can. Ent. x. p. —.
S. ARGENTICILIÆELLA, Cham.—Can. Ent. x. p. —.
S. EMBLEMELLA, Clem.—Tin. Nor. Amer. 40, 118.—Proc. Acad. Nat. Sci. Phila. 1860, 164.
(*S. venustella*, Cham.)—Can. Ent. iv. 90.
S. IRIPENNELLA, Clem.—*Loc. cit. sup.*
(*S. aphroditeella*, Cham.)—Can. Ent. iv. 88.
S. LEVIPEDELLA, Clem.—Tin. Nor. Amer. 207.—Proc. Ent. Soc. Phila. ii. 4.

(TACHIPTILIA.)

(*T. consonella et inocuella, vid. Gelechia.*)

(TELEIA.)

T. sequax, scopella, et dorsivittella, Zell., *vid. Gelechia.*)

(TEGETICULA.)

(*T. alba*, Zell. *vid. Pronuba yuccasella.*)

TENAGA. (Clemens.)

T. POMILIELLA, Clem.—Tin. Nor. Amer. 184.—Proc. Ent. Soc. Phila. i. 136.

(TELPHUSA.)

(*T. curvistrigella*, Cham. = *Gelechia longifasciella*, Clem.)

TINEA. (Haw.)

T. ACAPNOPENNELLA, Clem.—Tin. Nor. Amer. 233.—Proc. Acad. Nat. Sci. Phila. 1859, 257.

T. APICIMACULELLA, Cham.—Cin. Quar. Jour. Sci. ii. 257.

T. AUROPULVELLA, Cham.—Can. Ent. v. 90; vii. 125; viii. 19.

(*T. auristrigella*, Cham. = *Incurvaria mediostriatella*, Clem.)

T. AUROSUFFUSELLA, Cham.—Can. Ent. v. 87.

T. BEHRENSELLA, Cham.—Cin. Quar. Jour. Sci. ii. 249.

(*T. biflavimaculella*, Clem. *vid. T. rustacella.*)

T. BIMACULELLA, Cham.—Can. Ent. v. 87.

T. BISELIELLA, Hum.—Ins. Brit. iii. 34, and authorities there cited.—Bei. z. Kennt. 1873, 23.

(*T. lanariella*, Clem.)—Tin. Nor. Amer. 39, 50, 52, 60.—Proc. Acad. Nat. Sci. Phila. 1859, 251, 258. *Vid. post, crinella, flavifrontella*, and *lanariella.*

(*T. carnariella*, Clem. = *T. pellionella.*)

T. CŒMETARIÆELLA, Cham.—Can. Ent. v. 85; viii. 105.

T. (HOMOSETIA) COSTOSIGNELLA, Clem.—Tin. Nor. Amer. 235.—Proc. Ent. Soc. Phila. ii. 128.

T. COSTOSTRIGELLA, Cham.—Can. Ent. v. 87.

(*T. crinella, vid. biseliella* and Treat. Ins. 493.)

T. CROCICAPITELLA, Clem.—Tin. Nor. Amer. 49, 51, 60.—Proc. Acad. Nat. Sci. Phila. 1859, 257 *et seq.*

T. CROCEOVERTICELLA, Cham.—Can. Ent. viii. 106.

T. DEFECTELLA, Zell.—Bei. z. Kennt. 1873, 20.

T. (BLABOPHANES) DORSISTRIGELLA, Clem.—Tin. Nor. Amer. 38, 49, 50.—Proc. Acad. Nat. Sci. Phila. 1859, 257 *et seq.*—Bei. z. Kennt. 1873, 20; 1875, 136.

(*T. flavifrontella*, Linn.—Guide, 346.—Treat. Ins. 494.—Ont. Rep. 1873, 27.—Am. Nat. i. 422, *biseliella*.—Ag. Rep. 1864, 556.)

T. FUSCIPUNCTELLA, Haw.—Ins. Brit. 33, and authorities there cited.—Bei. z. Kennt. 1873, 22.

(*T. nubilipennella*, Clem.)—Tin. Nor. Amer. 39, 50, 52.—Proc. Acad. Nat. Sci. 1859, 257, 259.

T. FUSCOMACULELLA, Cham.—Can. Ent. v. 88.

T. FUSCOPULVELLA, Cham.—Can. Ent. v. 90.

T. GRANELLA.—Guide, 347.—Treat. Ins. 496.—Ag. Rep. 1854, 65; 1855, 98; 1864, 556. (*? variatella*, Clem.)

T. GRISSEELLA, Cham.—Can. Ent. v. 88.

T. GRUMELLA, Zell.—Bei. z. Kennt. 1873, 21.

(*T. hordei* = *T. cerealella* = *Gelechia cerealella*.)

T. IMITATORELLA, Cham.—Can. Ent. viii. 105.

(*T. iridella*, Cham. *vid. Incurvaria iridella*.)

(*T. lanariella*, Clem. = *biseliella*.)

T. MACULABELLA, Cham.—Can. Ent. v. 90.

T. MACULIMARGINELLA, Cham.—Can. Ent. vii. 212.

T. MARGINISTRIGELLA, Cham.—Can. Ent. v. 88.

T. MARMORELLA, Cham.—Can. Ent. vii. 212.

T. MINUTIPULVELLA, Cham.—Can. Ent. vii. 212.

T. MISELLA, Zell.—Bei. z. Kennt. 1873, 23.

T. MISCEELLA, Cham.—Can. Ent. v. 86.

T. NIVEOCAPITELLA, Cham.—Cin. Quar. Jour. Sci. ii. 249.

(*T. nubilipennella*, Clem. = *fuscipunctella*.)

T. OBSCUROSTRIGELLA, Cham.—Can. Ent. vi. 232.

T. ORLEANSELLA, Cham.—Can. Ent. v. 85.

T. PELLIONELLA, Lin.—Ins. Brit. 32.—Tin. Nor. Amer. 49, 51.—Proc. Acad. Nat. Sci. Phila. 1859, 256, 257 (as *carnariella*, Clem.).

(*T. pustulella*, *vid. Œta pustulella*.)

T. STRAMINIELLA, Cham.—Can. Ent. v. 86.

T. 7-STRIGELLA, Cham.—*Ante*, p. —.

T. TAPETZELLA, Lin.—Ins. Brit. iii. 28.—Tin. Nor. Amer. 258.—Proc. Ent. Soc. Phila. iii. 505.—Can. Ent. vii. 124.—Rep. Nox. Ins. Mo. iii. 10.—Guide, 347.—Amer. Ent. and Bot. i. 90.

T. THORACESTRIGELLA, Cham.—Can. Ent. viii. 106.

T. (HOMOSETIA) TRICINGULATELLA, Clem.—Tin. Nor. Amer. 234.—Proc. Ent. Soc. Phila. ii. 128.

T. TRIMACULELLA, Cham.—Can. Ent. v. 88.

T. UNOMACULELLA, Cham.—Cin. Quar. Jour. Sci. ii. 258.

(*T. vestianella*, *vid. rusticella*.)

T. RUSTICELLA, Hüb.—Ins. Brit. iii. 27.

(*T. biflavimaculella*, Clem.)—Tin. Nor. Amer. 38, 49, 50, 237.—Proc. Acad. Nat. Sci. Phila. 1859, 257.—Proc. Ent. Soc. Phila. ii. 413.—Bei. z. Kennt. 1873, 20.

(*T. vestianella*.)—Rep. Nox. Ins. Mo. iii. 10.—Amer. Ent. and Bot. i. 90.

T. VARIATELLA, Clem., ?= *granella*.—Tin. Nor. Amer. 50, 53.—Proc. Acad. Nat. Sci. Phila. 1859, 257, 259.—Can. Ent. vii. 125.

T. ZEÆ, Fitch.—Rep. Nox. Ins. N. Y. i. 320.

THEISOA. (Chambers.)

T. CONSTRICTELLA.

(*Œcophora constrictella*, Zell.)—Bei. z. Kennt. 1873, 91.

(*Theisoa bifasciella*, Cham.)—Can. Ent. vi. 75; vii. 93; ix. 24.

T. MULTIFASCIELLA, Cham.—Can. Ent. vi. 75; vii. 93.

TISCHERIA. (Zeller.)

T. ÆNIA, Frey & Boll.—S. E. Z. xxxiv. 222.—Cin. Quar. Jour. Sci. i. 210.—*Ante*, 99.

T. AMBROSIÆELLA, Cham.—Cin. Quar. Jour. Sci. ii. 112, 238.

T. BADIIELLA, Cham.—Can. Ent. vii. 124.—Cin. Quar. Jour. Sci. ii. 109, 111.

T. CASTANEÆELLA, Cham.—Cin. Quar. Jour. Sci. ii. 111.

T. CITRINIPENELLA, Clem.—Tin. Nor. Amer. 39, 80, 82.—Proc. Acad. Nat. Sci. Phila. 1859, 324.—Can Ent. iii. 208.

T. COMPLANOIDES, Frey & Boll., ?= *zelleriella*, Clem.—S. E. Z. xxxiv. 220.—*Ante*, 99.

T. CONCOLOR, Zell.—Bei. z. Kennt. 1875, 146.

T. FUSCOMARGINELLA, Cham.—Cin. Quar. Jour. Sci. ii. 110.

T. HELIOPSISELLA, Cham.—Cin. Quar. Jour. Sci. ii. 113, 238.

T. LATIPENNELLA, Cham.—*Ante*, 97.

T. MALIFOLIELLA, Clem.—Tin. Nor. Amer. 141.—Proc. Acad. Nat. Sci. Phila. 1860, 208.—Can. Ent. iii. 208; v. 50; vi. 150.—S. E. Z. xxxiv. 222.—Cin. Quar. Jour. Sci. ii. 111.

T. PULVELLA, Cham.—*Ante*, 99.

T. PRUINOSEELLA, Cham.—Cin. Quar. Jour. Sci. ii. 110.—*Ante*, 97.

T. QUERCITELLA, Clem.—Tin. Nor. Amer. 221.—Proc. Ent. Soc. Phila. ii. 13.—Can. Ent. iii. 208.—S. E. Z. xxxiv. 221.—Cin. Quar. Jour. Sci. ii. 111.—Bei. z. Kennt. 1875, 146.—*Ante*, 97.

T. QUERCIVORELLA, Cham.—Cin. Quar. Jour. Sci. ii. 109, 111.—*Ante*, 97.

T. ROSETICOLA, Frey & Boll.—S. E. Z. xxxiv. 223.—Cin. Quar. Jour. Sci. i. 210; ii. 112.

T. SOLADIGINIFOLIELLA, Clem.—Tin. Nor. Amer. 80, 81.—Proc. Acad. Nat. Sci. Phila. 1859, 326.—Can. Ent. iii. 208.

T. TINCTORIIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 108, 111.

T. ZELLERIELLA, Clem.—Tin. Nor. Amer. 80, 81.—Proc. Acad. Nat. Sci. Phila. 1859, 326.—Can. Ent. iii. 208.—S. E. Z. xxxiv. 220.—Cin. Quar. Jour. Sci. ii. 109 *et seq.*—Bei. z. Kennt. 1875, 147.—*Ante*, 98.

TRIFURCELLA. (Zeller.)

T. OBRUTELLA, Zell.—Bei. z. Kennt. 1873, 116.

(TRICHOTAPHE. Clemens.)

(*T. flavicostella, juncadella, serrativittella, setosella et ochrepalpella*, Clem. *vid. sub Gelechia.*)

TRIPANISMA. Clemens.

T. PRUDENS, Clem.—Tin. Nor. Amer. 125.—Proc. Acad. Nat. Sci. Phila. 1860, 168.

(VENILIA. Chambers.)

(*T. albapalpella, vid. Eido albapalpella.*)

WALSHIA. (Clemens.)

W. AMORPHÆELLA, Clem.—Tin. Nor. Amer. 241.—Proc. Ent. Soc. Phila. ii. 419.—Rep. Nox. Ins. Mo. iii. 133.

WILSONIA. (Clemens.)

W. BREVIVITTELLA, Clem.—Tin. Nor. Amer. 254.—Proc. Ent. Soc. Phila. ii. 428.

XYLESTHIA. (Clemens.)

X. CLEMENSELLA, Cham.—Can. Ent. v. 174; ix. 208.

X. CONGEMINATELLA, Zell.—Bei. z. Kennt. 1873, 18. ?=*clemensella.*

X. PRUNIRAMIELLA, Clem.—Tin. Nor. Amer. 39, 54, 59, 60.—Bei. z. Kennt. 1873, 17.

YPSOLOPHUS. (Haw.)

Y. CARYÆFOLIELLA, Cham.—Can. Ent. iv. 224.

Y. CONTUBERNALELLUS.

(*Chætochilus contubernalellus*, Fitch.)—Rep. Nox. Ins. N. Y. n. 1, 231; n. 3, sec. 44.

(*Y. eupatoriiella, vid. Nothris eupatoriiella.*)

Y. FLAVIVITTELLUS, Clem.—Tin. Nor. Amer. 254.—Proc. Ent. Soc. Phila. ii. 429.—Bei. z. Kennt. 1873, 83.

Y. MALIFOLIELLUS.

(*Chætochilus malifoliellus*, Fitch.)—Rep. Nox. Ins. N. Y. n. 1, 221; n. 3, sec. 43.

Y. PAUCIGUTTELLUS, Clem.—Tin. Nor. Amer. 228.—Proc. Ent. Soc. Phila. ii. 124.—Bei. z. Kennt. 1873, 83.

Y. POMETELLUS.

(*Rhinosia pometellus*, Har.)—Treat. Ins. p. —.

(*Chætochilus pometellus*, Fitch.)—Rep. Nox. Ins. n. 1, 221; n. 3, sec. 42.

Y. PUNCTIDISCELLUS, Clem.—Tin. Nor. Amer. 228.—Proc. Ent. Soc. Phila. ii. 124.—Bei. z. Kennt. 1873, 85.

ART. IV.—TINEINA AND THEIR FOOD-PLANTS.

By V. T. Chambers.

The following is intended as a catalogue of plants which are fed upon by the *Tineina* within the limits of the United States and Canada so far as they are at present known.

The best descriptions of these insects may fail to enable one to identify captured species, when, as frequently happens, two or three minute species differ only in a shade of color, or in the presence or absence of a mark of microscopic dimensions; but when the larvæ, food-plants, and modes of larval and pupal life, with the character of the mines in mining species, are known, there need be little difficulty in recognizing bred specimens. With knowledge of an insect in these particulars, even a very imperfect description of the imago will usually enable us to recognize a species which has been bred from the larva, for although two species may resemble each other so closely that even the best written description may not enable us to determine which of the two it is, yet it will be a very rare occurrence that this close resemblance will hold good throughout its history as larva and pupa, including its food-plant, mode of feeding, larval case, or mine, or burrow, or mode of sewing or folding leaves, mode of pupation, cocoons, &c. The case is very rare that in all these respects two species approach each other so closely that nothing distinctive and clearly marked is left of either. Yet, rare as they are, cases do sometimes occur where we are still left in doubt as to the distinct specific characters even of bred specimens, as, for instance, it may yet be considered doubtful whether *Aspidisca splendorifuella* Clem., *A. juglandiella* Cham., *A. diospyriella* Cham., and the species mentioned by Mr. Stainton as having been found by Lord Walsingham mining Poplar leaves in Oregon, are distinct species, the chief reason for considering them distinct being the difference in food, it being a very unusual thing to find one of these little leaf-mining species feeding on so many and diverse plants.

As to a great majority of the species, we are ignorant what they feed upon or whether they feed at all in the imago. With the exception of half a dozen species mentioned hereinafter, I have never seen any of these little species feeding upon anything except in the larval state.

It is to aid in the identification of species that this catalogue has been prepared. A species having been bred, and the food-plant thus known, and its characters as larva or pupa, and its mode of feeding,

character of mine, &c., having been noted, and, better still, if it be recognized as belonging to any established genus, a reference to the catalogue will give the names of the species known to feed upon that plant; and a reference to the published accounts of those species will usually enable one to determine whether the species is new, or to recognize it if already made known.

When only the larva is known, that fact is distinctly stated; when the food of the imago is known, that also is distinctly stated. In all other cases, the remarks refer to the food-plants of larvæ of which the imago also is known; and when the larva is a leaf-miner, the surface (upper or lower) mined is stated.

MAGNOLIACEÆ.

MAGNOLIA UMBRELLA (and probably some other Magnolias).

The larva of *Phyllocnistis magnoliæella* Cham. makes a long, winding, linear, mine on either surface of the leaves. The imago is unknown, and it may prove to be *P. liriodendronella* Clem.

LIRIODENDRON TULIPIFERA. Tulip-tree.

The larva of *Phyllocnistis liriodendronella* Clem. makes a long, winding, linear mine on either surface of the leaves.

CRUCIFERÆ.

BRASSICA OLERACEA.

The larva of *Plutella cruciferarum* feeds on the under side of the leaves of Cabbage and some other plants of this order.

TILLIACEÆ.

TILLIA AMERICANA. Basswood or Linden.

Lithocolletis lucetiella, Clem. Larva in tentiform mine in under surface of leaves.

L. tilliœella, Cham. Larva in tentiform mine on upper surface of leaves.

Coleophora tilliœfoliella, Clem. Larva only is known. It lives in a case and feeds on the under side of leaves.

ANACARDIACEÆ.

RHUS, *sp.?*

Chrysocoris erythriella, Clem. The larva feeds on the fruit-racemes.

RHUS TOXICODENDRON. Poison Oak or Poison Ivy.

Lithocolletis guttifinitella, Clem. The larva feeds in a flat blotch mine in upper surface of the leaves.

Gracilaria rhoifoliella, Cham. Larva at first mines, and then feeds externally, rolling the leaf.

RHUS, *sp.*

Gelechia rhoifructella Clem. Larva feeds on fruit-racemes.

Gracilaria rhoifoliella, Cham. Larva feeds as in *R. toxicodendron* (*supra*).

VITACEÆ.

VITIS. Various species of Grape.

Phyllocnistis vitigenella, Clem. } Larvæ make long, linear, winding
Phyllocnistis vitifoliella, Cham. } mines in upper surface of leaves.

Antispila issabella, Clem. }
Antispila viticordifoliella, Clem. & Cham. } Larvæ in blotch mines in upper surface of leaves,
Antispila ampelopsifoliella, Cham. } cutting out cases, in which they pass the pupa state on the ground.

AMPELOPSIS QUINQUEFOLIA. Virginia Creeper.

Phyllocnistis ampelopsiella, Cham. Larva in a white, convoluted mine on under (*very* rarely also on upper) surface of leaves.

Antispila ampelopsifoliella, Cham. Larva in flat blotch mine in upper surface of leaves, cutting out a case in which it pupates on the ground.

SAPINDACEÆ.

ÆSCULUS GLABRA. Buckeye, or Horse Chestnut.

Lithocolletis guttifinitella, Clem., var. *æsculisella*, Cham. Larva in flat blotch mine in upper surface of leaves.

ACERACEÆ.

ACER SACCHARINUM. Sugar Maple.

Lithocolletis aceriella, Clem. Larva in a flat blotch mine in upper surface of leaves.

Lithocolletis lucidicostella, Clem. } Larvæ in tentiform mines in under
Lithocolletis clemensella, Cham. } surface of leaves.

Gracilaria packardella, Cham. Larva rolls the leaf downward into a conical figure.

Incurvaria acerifoliella, Fitch. Larva in a blotch mine, from which it cuts out a case.

Catastega aceriella, Clem. Larva only is known. It at first mines the leaf, and afterward constructs a case of its "frass". (Does not belong to *Tineina?*)

ACER GLABRUM. Mountain Bush Maple.

Gracilaria acerifoliella, Cham. Larva curls the edge of the leaf down into a cone.

NEGUNDO ACEROIDES. Box Elder.

Gracilaria negundella, Cham. Larva curls down the edge of a leaf.

CELASTRACEÆ.

EUONYMUS ATROPURPUREUS (and other species?). Indian Arrow Root or Burning Bush.

Hyponomeuta evonymellus, Schop. Larvæ social in a large web, feeding on leaves.

H. wakarusa, Gaumer (*? = H. evonymellus*).

CELASTRUS SCANDENS. Bitter Sweet, or Staff-tree.

Adela bella, Cham. Imago on the flowers in May and June. Larva unknown.

LEGUMINOSÆ.

GLEDITSCHIA TRIACANTHUS. Honey Locust.

Laverna? gleditschiwella, Cham. Larva burrows in the thorns.

Helice pallidochrella, Cham. } The larvæ of these species no doubt
Agnippe biscolorella, Cham. } feed *in some way* on this tree. A larva (of one of them?) feeds in the "honey" inside the seed-pods.

CERCIS CANADENSIS. Judas-tree, or Redbud.

Gelechia cercerisella, Cham. Larva sews together the leaves.

THERMOPSIS FABACEA *var.* MONTANA.

Gracilaria thermopsella, Cham. Larva in a flat, irregular mine in upper surface of leaves.

DESMODIUM, *sp.?* Tick Trefoil.

Lithocolletis desmodiella, Clem. Larva in a small tentiform mine in under surface of the leaves.

Gracilaria desmodifoliella, Clem. Larva at first mines, and then rolls the leaf.

Gracilaria (*Parectopa*) *robiniella*, Clem. Larva in a flat, digitate mine in upper surface of leaves.

Gelechia desmodifoliella, Cham. Larva only is known. It feeds on the flowers.

Gelechia, sp.? The larva only is known. It feeds in a silken tube on the under side of the leaves.

LESPEDEZA, *sp.?*

Gracilaria (*Parectopa*) *lespedezæfoliella*, Clem. Larva in flat, acutely digitate mine in upper surface.

TRIFOLIUM PRATENSE. Red Clover (and other species?).

Gelechia roseosuffusella, Clem. Larva mines the leaves.

Anaphora agrotipennella, Grote. Larva feeds in clover-sod.

AMORPHA FRUTICOSA. False Indigo.

Walshia amorphella, Clem. Larva burrows in the stem.

Lithocolletis amorphœella, Cham. Larva in tentiform mine on under side of leaves.

Gelechia amorphœella, Cham. Larva sews together the terminal leaves.

ROBINIA PSEUDACACIA. Black Locust.

ROBINIA VISCOSA. Clammy Locust.

ROBINIA HISPIDA. Rose Acacia.

Lithocolletis robiniella, Clem. Larva in white tentiform mine on both surfaces of the leaflets.

Lithocolletis ornatella, Cham. Larva in yellowish blotch mines on both surfaces.

Gracilaria (Parectopa) robiniella, Clem. Larva in flat digitate mines on upper surface.

Gelechia pseudacaciella, Cham. Larva feeds externally on the leaves and also in the mines of *Lithocolletis robiniella*.

Xylesthia clemensella, Cham. Larva bores in dead Locust timber, posts, &c.

AMPHICARPÆA MONOICA. Hog Peanut.

Lithocolletis amphicarpeœella, Clem. & Cham. Larva in white tentiform mine in under surface.

Leucanthiza amphicarpeœfoliella, Clem. Larva in flat mine in upper surface.

GLYCYRRHIZA LEPIDOTA. Licorice-plant.

Gelechia glycyrrhizœella, Cham. Larva sews together the terminal leaves.

ROSACEÆ.

CERASUS SEROTINA. Wild Cherry.

Lithocolletis cratœgella, Clem. Larva in tentiform mine in under surface of leaves.

Aspidisca splendoriferella, Clem. Larva in a minute flat mine in August, and later cuts out a case, in which it pupates.

Ornix pruuivorella, Cham. Larva at first in a tentiform mine in under surface of leaves, at the margin; leaves the mine to pupate.

Coleophora pruniella, Clem. Imago unknown; the larva lives in a case which it attaches to the leaves.

Nepticula ? prunifoliella. Insect unknown. Dr. Clemens gave the name to an unknown larva, *possibly* Dipterous, which makes a crooked, linear mine on the upper surface of the leaves. Possibly it is identical with the next species.

Nepticula serotinœella, Cham. Larva makes a red, crooked, linear mine in the upper surface of the leaves.

Machimia tentoriferella, Clem. Imago unknown; the larva lives in a web on the under side of a leaf.

PRUNUS AMERICANA. Red Wild Plum.

Lithocolletis cratægella, Clem. Larva as in *Cerasus serotina* (*supra*).

Anarsia pruniella, Clem. Larva feeding in woody excrescences.

Evippe prunifoliella, Cham. Larva feeds under the tip of the leaf, turned down.

Xylesthia pruniramiella, Clem. Larva feeds in woody excrescences. There is also a larva of an unknown species which makes a linear mine, ending in a blotch, and which leaves the mine to pupate.

AMELANCHIER CANADENSIS. June- or Serviceberry.

Ornix quadripunctella, Clem. Larva in a tentiform mine in the leaves.

Nepticula amelanchierella, Clem. Larva makes a linear, crooked mine in the leaves; imago unknown.

CRATÆGUS, different species. Blackthorn, Hawthorn.

Lithocolletis cratægella, Clem. Larva and mine as in *Cerasus serotina* (*supra*).

Aspidisca splendoriferella, Clem. Larva and mine as in *Cerasus serotina* (*supra*).

Tischeria malifoliella, Clem. Larva in a flat, trumpet-shaped, yellowish mine in upper surface of leaves.

Ornix cratægifoliella, Clem. Larva in tentiform mine on under side of leaves.

Ornix inusitatumella, Cham. Larva in white flat mine, specked with "frass", in upper surface; pupates in the mine.

Nepticula cratægifoliella, Clem. Larva in a crooked, linear mine in upper surface of leaves; imago unknown.

PYRUS CORONARIA. Fragrant Crab.

Lithocolletis cratægella, Clem. Larva as in *Cerasus serotina* (*supra*).

Tischeria malifoliella, Clem. Larva as in *Cratægus* (*supra*).

Aspidisca splendorifcrella, Clem. Larva as in *Cerasus serotina* (*supra*).

PYRUS MALUS. Apple.

Bucculatrix pomifoliella, Clem. Larva at first a miner, then feeds externally. As to other species, see *Pyrus coronaria* (*supra*).

PYRUS COMMUNIS. Common Pear.

Lithocolletis nidificansella, Packard. Said to mine the leaves; is most probably a *Lyonetia*.

CYDONIA VULGARIS. Common Quince.

CYDONIA JAPONICA. Japan or Flowering Quince.

Lithocolletis cratægella, Clem. Larva and mine as in *Cerasus serotina* (*supra*).

ROSA. Various species of Rose.

Coleophora rosæfoliella, Clem. Larva in a case feeds on leaves of *Rosa centifolia*.

Coleophora rosaecella, Clem. Larva in a case feeds on leaves of Sweet-brier.

Tischeria roseticola, Frey & Boll. Larva mines the leaves.

Nepticula rosæfoliella, Clem. Larva makes crooked, linear mines in leaves.

Gelechia rosæella, Cham. Imago unknown. Larva feeds in seed-capsules.

AGRIMONIA EUPATORIA.

Gelechia agrimoniella, Clem. The larva rolls the leaves and feeds on them.

RUBUS VILLOSUS. Blackberry.

Tischeria ænia, Frey & Boll. Larva makes a flat, somewhat trumpet-shaped, mine in upper surface of leaves.

Nepticula rubifoliella, Clem. Larva makes a linear crooked mine in the upper surface of the leaves.

RUBUS OCCIDENTALIS. Raspberry.

RUBUS CANADENSIS. Dewberry.

Tischeria ænia. See *Rubus villosus* (*supra*).

ONAGRACEÆ.

ŒNOTHERA (various species). Primrose.

Laverna œnotheræella, Cham. =*?Phylloenistis magnatella*, Zell. Larva burrows in the stalk of *Œnothera missouriensis*.

Laverna œnotheræseminella, Cham. Larva feeds in the seeds.

Laverna circumscriptella, Zell. Larva feeds in the seeds.

Laverna murtfeldtella, Cham. Larva feeds on the flowers.

GROSSULACEÆ.

RIBES. Currant.

Gelechia ribesella, Cham. Larva folds and feeds on leaves of the Rocky Mountain Red Currant.

Gracilaria ribesella, Cham. Same food-plant, and feeds in the same way with *Gelechia ribesella*. Imago unknown.

SAXIFRAGACEÆ.

HYDRANGIA RADIATA. Wild Hydrangia.

Antispila hydrangiæella, Cham. Larva in small blotch mine; cuts out a case in which it descends to the ground to pupate.

HAMAMELACEÆ.

HAMAMELIS VIRGINICA. Witch Hazel.

Gracilaria superbifrontella, Clem. Larva at first a miner, afterward feeds externally, rolling the leaf into a cone.

Lithocolletis, sp.? Only the larva is known. It is possibly *L. acerifella* Clem., and makes a flat mine in the upper surface.

Catastega hamameliella, Clem. Imago unknown. The larva is at first a miner, and then makes a tube of "frass", in which it dwells.

LIQUIDAMBAR STYRACIFLUA. Sweet Gum.

Phyllocnistis liquidambarisella, Cham. Larva in a long, winding, linear mine in upper surface.

CORNACEÆ.

CORNUS FLORIDA. Dogwood.

Antispila cornifoliella, Clem. Larva in a blotch mine; afterward cuts out a case, in which it pupates on the ground.

NYSSA MULTIFLORA. Gum-tree.

Antispila nyssæfoliella, Clem. Larval habits as in *A. cornifoliella* (*supra*).

Nepticula nyssæella, Clem. Imago unknown. The larva makes a crooked, linear mine in the upper surface.

CAPRIFOLIACEÆ.

LONICERA SEMPERVIRENS. Honeysuckle.

Lithocolletis trifasciella?, Haw. Larva makes a tentiform mine in under side of leaves.

SYMPHORICARPA VULGARIS. Waxberry, or Indian Currant.

Lithocolletis trifasciella, Haw. (*Vid. Lonicera supra.*)

Lithocolletis symphoricarpæella, Cham. Larvæ in tentiform mines in under side of leaves.

VIBURNUM OPULUS. Snowball.

Coleophora viburnæella, Clem. Imago unknown. Larva in a case feeding on the leaves.

RUBIACEÆ.

CEPHALANTHUS OCCIDENTALIS. Button-bush.

Laverna cephalanthiella, Cham. The larva at first in a small, somewhat trumpet-shaped mine beginning at the midrib; afterward leaves it, and makes one or more larger ones nearer the edge of the leaf.

COMPOSITÆ.

Suborder TUBULIFLORÆ.

Tribe VERNONIACEÆ.

VERNONIA (various species). Iron-weed.

Coleophora vernoniæella, Cham. Imago unknown. Larva in a very long, slender case, feeding on the leaves.

Tribe EUPATORIACEÆ.

EUPATORIUM AGERATOIDES. Boneset.

Depressaria eupatoriiella, Cham. Larva feeds on under side of the leaves, which it wrinkles or slightly folds.

Gracilaria eupatoriiella, Cham. Larva makes a large tentiform mine in under surface of leaves, the cuticle becoming wrinkled and contracted over the mined space.

Nothris eupatoriiella, Cham. Larval habits similar to those of *Depressaria eupatoriiella* (*supra*).

Tribe ASTEROIDEÆ.

ASTER (various species). Starworts.

Gracilaria astericola, Frey & Boll. Larva mines and afterward rolls the leaves.

Butalis matutella, Clem. Larva in a web on under side of leaves, from which it mines out the parenchyma, feeding between the upper and lower cuticle. Imago with *B. flavifrontella* and *Coleophora corruscipennella* Clem. on the flowers.

ERIGERON (various species?). Flea-bane.

Gracilaria erigeronella, Cham. Larva in a tentiform under-side mine; leaves the mine to pupate.

SOLIDAGO (various species?). Golden-rod.

Tischeria solidaginisella, Clem. Larva in a blotch mine in upper sides.

Gelechia gallæsolidaginis, Riley. Larva burrows in the stem, making a fusiform swelling.

Tribe SENECIONIDÆ.

AMBROSIA TRIFIDA. Horse- or Hog-weed.

Lithocolletis ambrosiæella, Cham. Larva in tentiform mine in under side of leaves.

Bucculatrix ambrosiæella, Cham. Larva, when very young, a miner; afterward feeds externally on the leaves.

Tischeria ambrosiæella, Cham. } Larva in blotch mines, with an opaque
Tischeria heliopsiscella, Cham. } *nidus*, from which the imago emerges.

In one species, the *nidus* is on the upper, in the other on the lower surface of the leaf.

Butalis matutella, Clem. See under *Aster* (*supra*).

Gelechia ambrosiæella, Cham. Larva feeds in the seed.

AMBROSIA ARTEMISIFOLIA. Rag-weed.

Tischeria ambrosiæfoliella, Cham. Larva in a blotch mine at the margin of the leaf.

Cryptolechia, sp.? (undescribed). Possibly *C. quercicella*, Clem. Larva feeds on the leaves externally.

Gelechia dubitella, Cham. Larva folds a leaf so as to form a case, in which it feeds.

Gelechia chambersella, Murtfeldt. Larva feeds externally on the leaves.

HELIOPSIS (various species). Oxeye.

Tischeria heliopsisella, Cham. Larval habit as in *Ambrosia trifida* (*supra*).

HELIANTHUS (various species). Sunflowers.

Lithocolletis ambrosiœella, Cham. Larval habit as in *Ambrosia trifida* (*supra*).

Lithocolletis helianthivorella, Cham. Larval habits as in the last species (*ambrosiœella*); that is, it lives in a tentiform under-side mine.

Glyphipteryx montisella, Cham. Imago found on the flowers in August. Larva unknown.

ERECHTITES HIERACIFOLIUS. Fire-weed.

Phyllocnistis erechtitisella, Cham. Imago unknown. Larva in a long, narrow, linear, winding mine in upper surface of the leaves.

AQUIFOLIACEÆ.

ILEX OPACA. Holly.*

Cryptolechia cryptolechiella, Cham. Larva sews together the leaves. (Having only a leaf, I am not certain of the plant.)

EBENACEÆ.

DIOSPYROS VIRGINIANA. Persimmon.

Aspidisca diospyriella, Cham. Larva in a minute blotch mine, from which it cuts out a case in which it pupates.

PRIMULACEÆ.

LYSIMACHIA LANCEOLATA. Loose-strife.

Lithocolletis lysimachiœella, Cham. Imago unknown. Larva in a small tentiform mine in under surface of leaves.

LABIATÆ.

SCUTELLARIA (various species). Skullcap.

Gelechia scutellariœella, Cham. Larva in a case attached to the under side of the leaves, and from which it mines out the parenchyma between the cuticles.

CONVOLVULACEÆ.

IPOMEA and PHARBITES (various species). Morning Glory.

Bedellia somnulentella, Stainton. Larva makes a web on under side

* In Washington, D. C., in January, I have found empty mines of two species of *Tincina*, both of which are undescribed. They were found in leaves of different species of Holly. One mine is probably that of a *Lithocolletis* larva, of the flat group, in leaves of *I. opaca*. The other is probably that of a *Nepticula*, and was in leaves of another species.

of the leaves, from which it eats out the parenchyma between the cuticles. (Similar to the habit of *Butalis matutella* on leaves of *Ambrosia trifida* and Asters.)

SOLANACEÆ.

SOLANUM CAROLINENSE. Horse Nettle.

Gelechia solaniiella, Cham. Larva in a small blotch mine.

PHYSALIS VISCOSA. Ground Cherry.

Gelechia physaliella, Cham. Larva in a tentiform mine in the under surface.

Gelechia physalivorella, Cham. Larva feeds on the leaves in a way not yet discovered. A larva, probably of a *Laverna*, burrows in the stem in Colorado, causing a fusiform swelling.

NYCTAGINACEÆ.

ABRONIA FRAGRANS.

Lithariapteryx abroniœella, Cham. Larva mines the leaves, frequently leaving one mine to make another. Imago common about the plant in July and August in Colorado.

CHENOPODIACEÆ.

CHENOPODIUM and ATRIPLEX. Goosefoot.

Gelechia hermanella, Fab. Larva mines the leaves, making an irregular, somewhat serpentine, track, with scattered "frass".

LAURACEÆ.

SASSAFRAS OFFICINALE. Sassafras.

Gracilaria sassafrasella, Cham. Larva, when very young, mines the leaves; older, it rolls them downward.

ULMACEÆ.

ULMUS AMERICANA. Elm.

Lithocolletis argentinotella, Clem. Larva makes a tentiform mine in the under side of the leaves; *rarely* in the upper side.

Lithocolletis ulmella, Cham. Larva makes a flat mine in the upper side of the leaves.

(*Argyresthia austerella* Zeller, I am convinced, feeds in some way on it; and in latter May and in June the imago may be found about the trees.)

CELTIS OCCIDENTALIS. Hackberry.

Lithocolletis celtisella, Cham. Larva in a blotch mine showing about as plainly on one surface as on the other. *Very* abundant.

Lithocolletis celtifoliella, Cham. Larva in a tentiform mine in the under surface. *Very* rare.

PLATANACEÆ.

PLATANUS OCCIDENTALIS. Sycamore, Buttonwood, Plane-tree.

Nepticula platea, Clem.
Nepticula maximella, Cham.
Nepticula clemensella, Cham.
} Larva of these three species in the upper surfaces of leaves. For description of the mines and species see Can. Ent. v. 125.

Cirrha platanella, Cham. Larva feeds on the under side of the leaves, and pupates in a tube composed of silk and the down from the leaves. There is also an unknown larva, which makes a large mine, exactly like that made by *Coriscium albanotella* Cham. in Oak leaves.

JUGLANDACEÆ.

JUGLANS NIGRA. Black Walnut.

Lithocolletis caryæfoliella, Clem. Larva in irregular blotch mine in upper surface of leaves. (*L. juglandiella* Clem. is the same species.)

Gracilaria blandella, Clem. Larva when small in a linear whitish mine in upper surface of leaves; afterward feeding and pupating under the edge of the leaf turned down.

Gracilaria juglandisnigræella, Cham. Larva at first mining the leaves beneath; afterward feeding and pupating under the edge turned up.

Aspidisca juglandiella, Cham. Larva in a very small blotch mine, from which it cuts out a case in which it pupates.

Nepticula juglandifoliella, Cham. (& Clem.?). Larva in small, linear, crooked mines; many on a leaf sometimes. Mine in upper surface.

JUGLANS CINEREA. Butternut.

Lithocolletis caryæfoliella, Clem. As in *Juglans nigra* (*supra*).

CARYA ALBA. Hickory.

Lithocolletis caryæfoliella, Clem. See under *Juglans nigra* (*supra*).

Lithocolletis caryæalbella, Cham. Larva in a tentiform mine in the under surface of the leaves.

Aspidisca lucifluella, Clem. Larva in a small blotch mine, from which it cuts out its pupal case.

Coleophora caryæfoliella, Cham. (& Clem.?). Larva feeds in a cylindrical case attached to the under surface of the leaves.

Nepticula caryæfoliella, Clem. Imago unknown. Larva in a linear crooked mine on the upper side of the leaves.

Ypsolophus caryæfoliella, Cham. Larva sews together the leaves.

Gracilaria, sp.? (probably *G. blandella* Clem.). Imago unknown. The larva when young makes a linear whitish mine in the upper surface of the leaves.

CUPULIFERÆ.

QUERCUS. Oak (various species).

(Different species of Oak are so frequently fed on by the same larvæ, that I have not attempted to arrange them according to the botanical species, since that would cause too frequent repetition of the account of each larva. I have therefore arranged them simply as miners of the upper and lower surfaces of the leaves, with an occasional note as to the species of Oak fed upon by the larva. The species which feed externally are arranged separately, following the leaf-mining species.)

Leaf-miners of the upper surface.

Lithocolletis cincinnatiella, Cham. Yellowish blotch mine.
Lithocolletis hamadryadella, Clem. Whitish blotch mine.
Lithocolletis tubiferella, Clem. } Mines somewhat like the track
Lithocolletis bifasciella, Cham. } made by a drop of water as to form.
Lithocolletis bicolorella, Cham. Yellowish blotch mine, like that of *L. ulmella* in Elm.
Lithocolletis unifasciella, Cham. } Irregular yellowish blotch mines,
Lithocolletis bethuneella, Cham. } smaller than that of *cincinnatiella*,
Lithocolletis castaneæella, Cham. } and usually in Red or Black Oaks.
Tischeria zelleriella, Clem.
Tischeria pruinoseella, Cham.
Tischeria castaneæella, Cham.
Tischeria badiiella, Cham.
Tischeria quercivorella, Cham.
Tischeria quercitella, Clem.
Tischeria citrinipennella, Clem.
Tischeria complanoides, Frey & Boll. (Doubtful species.)
Tischeria concolor, Zeller. (Food-plant uncertain.)
Tischeria tinctoriella, Cham.
Nepticula platea, Clem. } Imago unknown. Larvæ of both in
Nepticula anguinella, Clem. } crooked, linear mines.
Nepticula quercipulchella, Cham. }
Nepticula quercicastanella, Cham. } Larvæ in crooked, linear mines.
Nepticula saginella, Clem. }

Coriscium. Imago unknown. The larva, in Colorado, makes a large tentiform mine in the *upper* side of the leaves, which is almost a facsimile of that made in the Ohio Valley by the larva of *Coriscium albanotella*, Cham. in the *under* surface of the leaves.

Coleophora querciella, Clem. Imago unknown. The larva lives in a case which it attaches to the leaves.

Catastega timidella, Clem. Imago unknown. Larva at first mines the leaves, and afterward lives in a tube made of "frass". (?Not a *Tineina*.)

Leaf-miners of the under surface.

Lithocolletis quercitorum, Frey & Boll. }
Lithocolletis fitchella, Clem. |
Lithocolletis basistrigella, Clem. |
Lithocolletis æriferella, Clem. |
Lithocolletis quercipulchella, Cham. |
Lithocolletis quercialbella, Cham. } Tentiform mines.
Lithocolletis fuscocostella, Cham. |
Lithocolletis albanotella, Cham. |
Lithocolletis obstrictella, Clem. |
Lithocolletis hageni, Frey & Boll. |
Lithocolletis argentifimbriella, Clem. }
Lithocolletis intermedia, Frey & Boll. Doubtful species.
Lithocolletis mirifica, Frey & Boll. Doubtful species.
Ornix quercifoliella, Cham. Under edge of leaf turned down.
Coriscium albanotella, Cham. Large tentiform mine.

The following species either roll, fold, or sew the leaves together:—
Ypsolophus querciella, Cham.
Gelechia querciella, Cham.
Gelechia quercinigræella, Cham.
Gelechia quercivorella, Cham.
Gelechia quercifoliella, Cham.
Cryptolechia quercicella, Clem.
Machimia tentoriferella, Clem. Larva in a web.

The following species feed in galls:—
Ypsolophus quercipomonella, Cham.
Gelechia gallægenitella, Clem.
Hamadryas bassettella, Clem.
Blastobasis glandulella (*Holcocera glandulella* Riley) feeds in acorns.

CASTANEA AMERICANA. Chestnut.

Lithocolletis castaneæella, Cham. Larva in a blotch upper-surface mine in the leaves.

Lithocolletis, sp.? Imago unknown. Larva in tentiform mine in under surface of leaves.

Bucculatrix trifaseiella, Clem. The larva *probably* feeds on it.

Tischeria castaneæella, Cham. Larva mines the upper surface of the leaves.

Neptieula castaneæfoliella, Cham. Larva in crooked, linear mines in the upper surface.

FAGUS SYLVATICA. Beech.

Cryptolechia faginella, Cham. The larva sews together the leaves in August and later.

CORYLUS AMERICANA. Hazel.

Lithocolletis coryliella, Cham. Larva in a nearly circular blotch mine in the upper surface.

Nepticula corylifoliella, Clem. Imago unknown. Larva in a linear, crooked mine in the upper surface.

Gelechia coryliella, Cham. Imago unknown. Larva in the male catkins in autumn.

Hyale coryliella, Cham. Larva in a web on under surface of the leaves.

OSTRYA VIRGINICA. Iron Wood or Hornbeam.

Lithocolletis obscuricostella, Clem. } Larva in tentiform mines in un-
Lithocolletis ostryæfoliella, Clem. } der side of leaves.

Lithocolletis coryliella, Cham. See under *Corylus* (*supra*).

Lithocolletis tritæniaella, Cham. Larva in roundish blotch mine in upper surface of the leaves.

Æœa ostryœella, Cham. Larva in a flat mine between two ribs, with a row of "frass" on each side.

Aspidisca ostryœfoliella, Clem. Imago unknown. Larva in a minute blotch mine in upper surface of leaves, from which it cuts out its pupal case.

Nepticula ostryœfoliella, Clem. } Imago unknown. Larvæ make
Nepticula virginiella, Clem. } linear, crooked mines in upper surface of leaves.

Gracilaria ostryœella, Cham. Imago unknown. The larva when very small makes a linear, whitish mine in the upper surface of the leaves.

Coleophora ostryœ, Clem. Imago unknown. The larva lives in a case and feeds on the under surface of the leaves.

CARPINUS AMERICANA. Waterbeech, Hornbeam.

Lithocolletis coryliella, Cham. See under *Corylus*.

BETULACEÆ.

ALNUS. Alders.

Lithocolletis alnivorella, Cham.
Lithocolletis alnifoliella, Hübner.
Lithocolletis auronitens, Frey & Boll. } Larvæ in tentiform mines in the under side of the leaves.

Gracilaria alnicolella, Cham. } When very young, the larvæ mine
Gracilaria alnivorella, Cham. } the leaves; when older, they roll them downward, *alnicolella* from the tip, *alnivorella* from the side.

Lyonetia alniella, Cham. The larva makes a large brownish blotch mine in the leaves.

SALICACEÆ.

SALIX (various species). Willows.

Lithocolletis salicifoliella, Cham. (& Clem.?). Larva in a tentiform mine in the under surface of leaves.

Gracilaria salicifoliella, Cham. Larva in a blotch mine in upper surface of the leaves.

Gracilaria purpuriella, Cham. Larva rolls the leaves from the tip so as to form a cone.

Cemiostoma albella, Cham. Larvæ in large blackish blotch mines.

Aspidisca saliciella, Clem. & Cham. Larva in a minute blotch mine, from which it cuts out its pupal case.

Nepticula fuscotibiæella, Clem. Larva in a linear mine bent back on itself.

Nepticula. Two unknown species make narrow, linear, crooked mines, one of which is in the upper and the other in the lower surface of the leaves.

Marmara salictella, Clem. Larva burrows in young twigs.

Batrachedra præangusta, Haw.
Batrachedra salicipomonella, Clem.
Batrachedra striolata, Zeller.
} The specific distinctness of the insects described under these names seems to me not sufficiently established. *B. salicipomonella* was bred from galls made by other insects on Willows. The mode of feeding of the others is not satisfactorily determined.

Gelechia salicifungella, Clem.
Gelechia fungivorella, Clem.
} Larvæ in galls made by *Cynips*.

Gelechia, sp.? Imago unknown. The larva sews together Willow leaves at great elevations in the Rocky Mountains.

POPULUS (various species). Poplars, Aspens, Cottonwood.

Cemiostoma albella, Cham. See under *Salix*.

Batrachedra præangusta, Haw.
Batrachedra salicipomonella, Clem.
Batrachedra striolata, Zeller.
} See under *Salix*.

Aspidisca sp.? Makes a minute mine in Aspen leaves in Oregon. Possibly it is *A. splendoriferella* Clem.

Gracilaria populiella, Cham. Larva rolls Aspen leaves in the Rocky Mountains.

G. purpuriella, Cham. Larva mines leaves of Silver-leaf Poplar. See under *Salix*.

Lithocolletis populiella, Cham. Larva in a tentiform mine in under side of leaves of Silver-leaf Poplar.

A larva of an unknown *Nepticula* (?) mines leaves of Cottonwoods in Colorado.

A larva, possibly not Lepidopterous, mines Cottonwood leaves at the tip in the upper surface in Colorado.

LILIACEÆ.

YUCCA (various species?). Soapweed, Spanish Bayonet, Bear's Grass.

Pronuba yuccasella, Riley. Larva feeds in the ovary on the seed. Imago found in the flowers.

SMILACEÆ.

SMILAX GLAUCA. Greenbrier, Sarsaparilla.

Phyllocnistis smilacisella. Imago unknown. The larva makes a linear white mine in the upper surface of the leaves.

GRAMINEÆ.

BRACHELYTRUM ANGUSTATUM.

Elachista brachelytrifoliella, Clem. Larva mines in the leaf-blades.

POA PRATENSE. Blue Grass.

Elachista præmaturella, Clem. Larva *probably* mines the blades of this grass.

PANICUM CLANDESTINUM. Panic Grass.

Cycloplasis panicifoliella, Clem. The larva mines the leaf-blades.

TRITICUM VULGARE. Wheat.

Gelechia cerealella, Auct. The larva feeds on the grain.

ART. V.—INDEX TO THE DESCRIBED TINEINA OF THE UNITED STATES AND CANADA.

By V. T. Chambers.

Having, in the last ten years, described a large number of new species of the *Tineina*, with notes on many other species previously known in various scientific periodicals, and the notes and descriptions referred to being, therefore, scattered through various volumes, I have been urged by other entomologists to catalogue the species. Many other species had been previously described by other authors, whose publications were equally scattered and inaccessible with my own, so that, for my own convenience in the study of the group, I had prepared an index for ready reference to the species, and that index needed but little alteration to make it complete, so far as I am acquainted with the species.

Convinced that a catalogue of my own species only would be of but little service to students, while the writings of others were so inaccessible, and, indeed, unknown to many American entomologists, it has seemed to me that a publication of this index would answer the purpose better than a mere catalogue of the species. I therefore offer it in the hope that it may prove as useful to brother entomologists as it has been to me.

It is only an index of the species *as American species.* Many of our species are identical with those of Europe, and I have not attempted to abstract the entomological literature of Europe as to these species.

As to the European literature of the subject (American *Tineina*), I have not attempted to bring it down to a later period than the latter part of the year 1875. For, having been absent in Colorado during the greater part of the time, it was impossible to keep *au courant* with it; and if any European publications have been made since that time they are unknown to me. A letter from a gentleman in Europe, received by me in 1875, informed me that Professor Frey was then engaged upon a work on American *Tineina*, but if it has been published I have not learned the fact. So far as American publications are concerned, the index is brought down to November, 1877, with references, also, to volume 10 of the Canadian Entomologist (1878), which will contain notes already prepared upon some species. There are also references to species described upon previous pages of this volume. These references are simply to the volume, not to the page.

Professors Zeller and Frey have described many of our species in various European publications. Usually (always?), however, these pa-

pers have been issued in a separate form, with different paging from that of the volumes in which they were originally published. In such cases, these separate publications will be more accessible to American students than the original publications, and I have, therefore, in the index used the paging as given in the separate papers instead of that of the volumes.

For the convenience of any who may not have Mr. Stainton's valuable republication of Dr. Clemens's papers, I have also given references to the Proceedings of the Academy of Natural Sciences, Philadelphia, and those of the Entomological Society of Philadelphia, in which his papers were originally published.

It has unfortunately so happened that Professors Zeller and Frey and I have been engaged in the study of the group at the same time, and each to a great extent in ignorance of what the other was doing, and the necessary result has been a confusion of the synonymy of some of the species. This I have corrected so far as I have been able from the descriptions and figures given by them; but doubtless a comparison of specimens would reveal other cases in which the same species has been more than once described under different names.

The genus *Gelechia* is in a chaotic condition. It includes almost anything of a certain general type of structure. Many attempts have been made to subdivide it, but, to my mind, they are all unsatisfactory. I have also, myself, sometimes attempted to define new subgroups in the genus, but my own efforts in this direction are not more satisfactory than those of others; and while I have given them in their proper place in the alphabetical arrangement, in *italics*, I have included all, or by far the greater part of them, under *Gelechia*. I have pursued, also, the same course with the genus *Laverna*, which, though not inconveniently large, is not much better limited than *Gelechia*.

By some mischance or other, I have seldom been able to look over the proof-sheets of papers heretofore published by me on the *Tineina*, scarcely a dozen proof-sheets having been examined by me. Owing to this fact, and to careless writing also, no doubt the names of species described or referred to by me are frequently incorrect, the same name sometimes appearing under two or three different forms.

In the following index I have attempted to correct these errors so far as it may be done, and the names herein given are those that were intended originally in such cases.

The imperfections of this work are many, no doubt, and are perhaps more evident to me than to any one else. Nevertheless, I hope it will answer sufficiently well for a present index, and for the basis of a more perfect catalogue hereafter.

Many of the generic names originally given by the authors, such as *Aspidisca*, *Blepharocera*, *Phœtusa*, *Wilsonia*, and others, are preoccupied, and will have to be changed. I have not, however, made any of these changes in this work, which purports to be nothing more than an "index" to what has already been published.

REFERENCES AND ABBREVIATIONS.*

Ag. Rep.—Agricultural Reports of United States Agricultural Department.
Am. Nat.—American Naturalist.
An. Ly. Nat. Hist.—Annals of the Lyceum of Natural History of New York.
Bei. z. Kennt.—Beiträge zur Kenntniss der Nordamerikanischen Nachtfalter.
Bul. Buff. Soc.—Bulletin of the Buffalo Society of Natural History.
Can. Ent.—Canadian Entomologist.
Cin. Quar. Jour. Sci.—Cincinnati Quarterly Journal of Science.
Ent. Mo. Mag.—Entomologists' Monthly Magazine.
Ent. Week. Int.—Entomologists' Weekly Intelligencer.
Guide.—Guide to the Study of Insects (Packard).
Hayd. Bul. Geo. Sur.—Bulletin of the United States Geological and Geographical Survey.
Lep. West. Amer.—Lepidoptera der Westküste Amerikas (Zeller).
Lin. Ent.—Zeller in "Linea Entomologica."
Nat. Hist. Tin.—Natural History of the Tineina by Stainton, Zeller and Frey.
Ont. Rep.—Report of the Entomological Society of Ontario (Canada).
Proc. Acad. Nat. Sci. Phila.—Proceedings of the Academy of Natural Science (Philadelphia), 2d series.
Proc. Ent. Soc. Phila.—Proceedings of the Entomological Society of Philadelphia.
Rep. Mass. Ag. Soc.—Report on the Injurious and Beneficial Insects of Massachusetts. State Board of Agriculture. Reports 1-3. 1871-1873.—Packard.
Rep. Nox. Ins. Mo.—Riley's "Reports on the Noxious, Beneficial, and Other Insects of Missouri".
Rep. Nox. Ins. N. Y.—Dr. Fitch's "Reports on the Noxious, Beneficial, and Other Insects of New York".
Sch. v. Eu.—Schmetterlinge von Europa.
S. E. Z.—Frey and Boll, in Stettiner Entomologische Zeitung, 1873.
Tin. Nor. Amer.—"Tineina of North America." (Stainton's republication of the Clemens papers.)
Treat. Ins.—Harris's Treatise on Insects Injurious to Vegetation.

ACANTHOCNEMES. (Chambers.)

A. FUSCOSCAPULELLA, Cham.—*Ante*, 104.

ADELA. (Latreille.)

A. BELLA, Cham.—Can. Ent. v. 73; ix. 207.
A. BIVIELLA, Zell.—Bei. z. Kennt. May, 1873, 26.—Can. Ent. ix. 206.
A. CHALYBEIS, Zell.—Bei. z. Kennt. May, 1873, 25.
A. (DICTE) CORRUSCIFASCIELLA, Cham.—Can. Ent. v. 74; ix. 207.
(*Dicte corruscifasciella*, Cham. *loc. cit.*)
(*Adela schlægeri*, Zell.—Bei. z. Kennt. May, 1873, 27.)
(*A. fasciella*, Cham.=*A. trigrapha*, Zell. *post.*)
A. FLAMENSELLA, Cham.—Can. Ent. viii. 104.
A. RIDINGSELLA, Clem.—Proc. Ent. Soc. Phila. 1864, ii. 426.—Tin. Nor. Amer. 250.—Guide, 348.

* Morris's "Synopsis"; contains brief descriptions of a few species but as they are copied or condensed from the original descriptions, which are referred to in this "Index", I have not deemed it necessary to refer further to them herein. The "Synopsis" is contained in the Smithsonian Miscellaneous Collections, v. 4, and has also been separately published.

(*A. schlægeri*, Zell.=*A. corruscifasciella*, Cham. *supra.*)
A. TRIFASCIELLA, Cham.—Can. Ent. viii. 103.
A. TRIGRAPHA, Zell.—Bei. z. Kennt. May, 1875, 136.
(*A. fasciella*, Cham.—Can Ent. viii. 103.)

(ADRASTEIA. Chambers.)

(*A. quercifoliella*, Cham. = *Gelechia quercifoliella*, Cham.)
(*A. querciella*, Cham. = *Gelechia querciella*, Cham.)
(*A. alexandriœella*, Cham. = *Gelechia alexandriœella*, Cham.)
(*A. fasciella*, Cham. = *Gelechia fasciella* Cham.)

ÆÆA. (Chambers.)

Æ. OSTRYÆELLA, Cham.—Can. Ent. vi. 74; viii. 172; x. p. —.
Æ. PURPURIELLA, Cham.—Can. Ent. vi. 73; x. p. —.
(*Chrysopeleia purpuriella*, Cham. *ibid.*)

(ÆSYLE. Chambers.)

(*Æ. fasciella*, Cham. = *Gracilaria fasciella*, Cham. *post.*)

AELOLE. (Chambers.)

A. BELLA, Cham.—Can. Ent. vii. 73.—Hayd. Bul. Geo. Sur. iii. 144.—Can. Ent. ix. 72.

AGNIPPE. (Chambers.)

A. BISCOLORELLA, Cham.—Can. Ent. iv. 195; v. 230; ix. 231.
(*A. fuscopulvella*, Cham. *ibid.* = *biscolorella*, var.)

(ALEUCITA. Auct.)

(*A. cercalella*, Oliv. = *Gelechia cerealella*, *post.*)

AMADRYA. (Clemens.)

A. EFFRENATELLA, Clem.—Tin. Nor. Amer. 39, 55, 59, 60, 86.—Proc. Acad. Nat. Sci. Phila. 1859, 260.—Cin. Quar. Jour. Sci. ii. 256.—Bei. z. Kennt. May, 1873, 19.
A. CLEMENSELLA, Cham.—Can. Ent. vi. 232.—Cin. Quar. Jour. Sci. ii. 256.

(ANACAMPSIS. Curtis.)

(*A. agrimoniella* = *Gelechia agrimoniella*, *post.*)
(*A. cerealella* = *Gelechia cerealella*, *post.*)
(*A. glandiferella?* = *G. glandiferella*, *post.*)
(*A. robiniella* = *? G. robiniella*, *post.*)
(*A. sarcitella* = *? G. sarcitella*, *post.*)

ANAPHORA. (Clemens.)

A. ARCANELLA, Clem.—Tin. Nor. Amer. 57, 58.—Proc. Acad. Nat. Sci. 1859, 262.—Can. Ent. iv. 143.—*Ante*, 79.

A. AGROTIPENNELLA, Grote.—Can. Ent. iv. 137; viii. 185.—*Ante*, 79.
A. BOMBYCINA, Zell.—Bei. z. Kennt. May, 1873, 16.—*Ante*, 79.
A. MORTIPENNELLA, Grote.—Can. Ent. iv. 137.
A. PLUMIFRONTELLA, Clem.—Tin. Nor. Amer. 39, 57, 59, 60.—Proc. Acad. Nat. Sci. Phila. 1859, 261.—Bei. z. Kennt. 1873, 17.
A. POPEANELLA, Clem.—Tin. Nor. Amer. 57.—Proc. Acad. Nat. Sci. Phila. 1859, 261.—Can. Ent. iv. 137, 143.—Bei. z. Kennt. 1873, 15. = *? scardina*, Zell.
A. SCARDINA, Zell. = *? popeanella*, Clem.—Bei. z. Kennt. May, 1873, 16.
A. TEXANELLA, Cham.—*Ante*, 79.

ANARSIA. (Zeller.)

A. LINEATELLA, Zell.—Tin. Nor. Amer. 36, 128.—Proc. Acad. Nat. Sci. Phila. 1860, 169.—Can. Ent. iv. 208; vi. 243.—Ag. Rep. 1872, 112.
(*A. pruniella*, Clem. = *A. lineatella*, *supra*.—Tin. Nor. Amer. and Acad. Nat. Sci. Phila. *loc. cit.*)
A. SUFFUSELLA, Cham.—Can. Ent. vi. 243.
A. TRIMACULELLA, Cham.—Can. Ent. vi. 243.—*Ante*, 92.

ANESYCHIA. (Hübner.)

A. DISCOSTRIGELLA, Cham.—Hayd. Bul. Geo. Sur. iii. pt. 1, 122, 144.
A. HAGENELLA, Cham.—*Ante*, 80.
A. MIRUSELLA, Cham.—Can. Ent. vi. 233.—Hayd. Bul. Geo. Sur. iii. pt. 1, 121, 141.
(*A multipunctella*, Cham. Can. Ent. vi. 233, = *Psecadia semilugens*, Zell. *post.*)
A. SPARCICELLA, Clem.—Tin. Nor. Amer. 255.—Proc. Ent. Soc. Phila. ii. 430.
A. TRIFURCELLA, Cham.—Can. Ent. v. 12.—*Ante*, 80.

ANORTHOSIA. (Clemens.)

A. PUNCTIPENNELLA, Clem.—Tin. Nor. Amer. 40, 111.—Proc. Acad. Nat. Sci. Phila. 1860, 161.—Can. Ent. vi. 245.

ANTISPILA. (Her.-Sch.)

A. AMPELOPSIELLA, Cham.—Can. Ent. vi. 168, 197; ix. 195.
A. CORNIFOLIELLA, Clem.—Tin. Nor. Amer. 103.—Proc. Acad. Nat. Sci. Phila. 1860, 11.—Can. Ent. vi. 166, 170, 198.
A. HYDRANGIÆELLA, Cham.—Can. Ent. vi. 170; ix. 195.
A. ISSABELLA, Clem.—Tin. Nor. Amer. 142.—Proc. Acad. Nat. Sci. Phila. 1860, 209.—Can. Ent. vi. 167, 198.
A. NYSSÆFOLIELLA, Clem.—Tin. Nor. Amer. 19, 22, 102.—Proc. Acad. Nat. Sci. Phila. 1860, 11.
A. VITICORDIFOLIELLA, Cham.—Tin. Nor. Amer. 142.—Proc. Acad. Nat. Sci. Phila. 1860, 209.—Can. Ent. vi. 168, 198.

ARGIOPE. (Chambers.)

A. DORSIMACULELLA, Cham.—Can. Ent. v. 13, 174.
(*Heribeia dorsimaculella*, Cham.—Can. Ent. iv. 43.)

ARGYRESTHIA. (Hübner.)

A. ABDOMINALIS, Zell.—Bei. z. Kennt. May, 1870, 106.
A. ALTISSIMELLA, Cham.—Hayd. Bul. Geo. Sur. iii. pt. 1, 130, 147.
A. ANDEREGIELLA, F. v. R.—Proc. Acad. Nat. Sci. Phila. 1860, 7.—Tin. Nor. Amer. 39, 93.—Can. Ent. vi. 10; vii. 145.—Bei. z. Kennt. May, 1873, 104.—?Hayd. Bul. Geo. Sur. iii. 131, 141.
(*A. oreasella*, Clem.—Tin. Nor. Amer. and Proc. Acad. Nat. Sci. *loc. cit. supra.*)
A. APICIMACULELLA, Cham.—Can. Ent. vi. 11 (and erroneously by a MS. name at vi. 145, as *visaliella*).
A. AUSTERELLA, Zell.—Bei. z. Kennt. May, 1873, 105.
(*A. undulatella*, Cham.—Can. Ent. vi. 10; vii. 145; ix. 72.)
A. BELANGERELLA, Cham.—Can. Ent. vii. 145.
A. DELETELLA, Zell.—Bei. z. Kennt. May, 1875, 105.
A. GŒDARTELLA?, Lin.—Can. Ent. vii. 144; viii. 19.—Ent. Mo. Mag. ii. 279.—Cin. Quar. Jour. Sci. ii. 294.—Hayd. Bul. Geo. Sur. iii. 131, 141, 147.
A. MONTELLA, Cham.—Hayd. Bul. Geo. Sur. iii. 130.
A. QUADRISTRIGELLA, Zell.—Bei. z. Kennt. 1873, 104.
A. QUERCICOLELLA, Cham.—Hayd. Bul. Geo. Sur. iii. 130.
(*A. oreasella*, Clem. = *A. anderegiella*, *ante.*)
A. PEDMONTELLA, Cham.—Hayd. Bul. Geo. Sur. iii. 131.
(*A. undulatella*, Cham. = *A. austerella*, Zell. *ante.*)

(ARGYROMIGES. Curtis.)

(*A. morrisella*, Fitch, = *Lithocolletis robiniella*, Clem. *post.*)
(*A. ostensackenella*, Fitch, = *Lithocolletis ostensackenella*, Fitch, *post.*)
(*A. pseudacaciella*, Fitch, = *Lithocolletis robiniella*, Fitch, *post.*)
(*A. quercialbella*, Fitch, = *Lithocolletis quercialbella*, Fitch, *post.*)
(*A. quercifoliella*, Fitch, = *Lithocolletis fitchella*, Clem. *post.*)
(*A. uhlerella*, Fitch, = *Lithocolletis uhlerella*, Fitch, *post.*)

ASPIDISCA. (Clemens.)

A. DIOSPYRIELLA, Cham. = ?*splendoriferella*, Clem.—Can. Ent. vi. 217.
A. ELLA, Cham. = ?*A. lucifluella*, Clem.—Can. Ent. iii. 224; vi. 152, 218.
A. JUGLANDIELLA, Cham. (? = *splendoriferella*, Clem. or ? = *lucifluella*, Clem.).—Can. Ent. vi. 151, 218 *et seq.*
A. LUCIFLUELLA, Clem.—Tin. Nor. Amer. 143; Proc. Acad. Nat. Sci. Phila. 1860, 209.—Can. Ent. iii. 224; vi. 218.
A. OSTRYÆFOLIELLA, Clem.—Tin. Nor. Amer. 171.—Proc. Ent. Soc. Phila. 1861, 82.

(*A. pruniella*, Clem. = *A. splendoriferella*, Clem.)

A. SALICIELLA, Cham. (and Clem.?).—Tin. Nor. Amer. 171.—Proc. Ent. Soc. Phila. 1861, 82.—Can. Ent. vi. 169.

A. SPLENDORIFERELLA, Clem.—Tin. Nor. Amer. 23, 26, 105.—Proc. Acad. Nat. Sci. Phila. 1860, 12.—Can. Ent. iii. 223; v. 50; vi. 149, 219.—Ent. Mo. Mag. ix. 17.

(*A. pruniella*, Clem.—Tin. Nor. Amer. 171.—Proc. Ent. Soc. Phila. 1861, 82.)

(*Lyonetia saccatella*, Pack. Guide, 355.—Can. Ent. iii. 223.)

(ASYCHNA? Stainton.)

(*A.? pulvella*, Cham.—Can. Ent. viii. 171; ix. 145.)

BATRACHEDRA. (Stainton.)

B. CLEMENSELLA, Cham. (doubtful species).—Hayd. Bul. Geo. Sur. iii 134.—Can. Ent. ix. 146.

B. PRÆANGUSTA, Haw.—Ins. Brit. iii. 230, and authorities there cited.—Hayd. Bul. Geo. Sur. iii. 134, 141.—Can. Ent. ix. 145.

B. SALICIPOMONELLA, Clem.—Tin. Nor. Amer. 265.—Proc. Ent. Soc. Phila. v. 142; vi. 273.—Bei. z. Kennt. 113.—Can. Ent. ix. 146.—Hayd. Bul. Geo. Sur. iii. 134.—Guide, 352.

B. STRIOLATA, Zell —Bei. z. Kennt. 1873, 113.—Can. Ent. ix. 145.

BEDELLIA. (Stainton.)

B. SOMNULENTELLA, Zell.—Tin. Nor. Amer. 39, 189.—Proc. Ent. Soc. Phila. 1862, 147.—Cin. Quar. Jour. Sci. ii. 297.—Hayd. Bul. Geo. Sur. iii. 133, 141.

(*B. staintonella*, Clem.—Tin. Nor. Amer. 95.—Proc. Acad. Nat. Sci. Phila. 1860, 8.—Proc. Ent. Soc. Phila. 1862, 147.)

(BEGOE. Chambers.)

(*B. costolutcella*, Cham. = *Nothris eupatoriiella*, Cham. *post.*)

BLASTOBASIS. (Zeller.)

B.? AUFUGELLA, Zell.—Bei. z. Kennt. 100.

B. CHALCOFRONTELLA, Clem.

(*Holcocera chalcofrontella*, Clem.)—Tin. Nor. Amer. 226.—Proc. Ent. Soc. Phila. ii. 122.—Can. Ent. iv. 65; vi. 246.—Cin. Quar. Jour. Sci. ii. 256.—Bei. z. Kennt. May, 1873, 95.

B. CLEMENSELLA, Cham.

(*Holcocera clemensella*, Cham.)—Can. Ent. vi. 246.

B. FRACTILINEELLA, Zell.—Bei. z. Kennt. 1873, 98.

B. FLUXELLA, Zell.—Bei. z. Kennt. 1873, 101.

B. GIGANTELLA, Cham.—Can. Ent. viii. 219.—Hayd. Bul. Geo. Sur. iii. 149.

B. GILBOCILIELLA, Clem.
(*Holcocera gilbociliella*, Clem.)—Tin. Nor. Amer. 227.—Proc. Ent. Soc. Phila. ii. 122.—Bei. z. Kennt. 1873, 95.

B. GLANDULELLA, Riley.
(*Gelechia glandulella*, Riley.)—Can. Ent. iii. 18.
(*Holcocera glandulella*, Riley.)—Can. Ent. iv. 18, 38, 62, 65.—Rep. Nox. Ins. Mo. n. 4, 144.—Cin. Quar. Jour. Sci. ii. 256.

B. LIVOLELLA, Zell.—Bei. z. Kennt. May, 1873, 99.

B. MODESTELLA, Clem.
(*Holcocera modestella*, Clem.)—Tin. Nor. Amer. 227.—Proc. Ent. Soc. Phila. ii. 122.

B. NUBILELLA, Zell.—Bei. z. Kennt. 1873, 97; 1875, 139.

B. FUSCOPULVELLA, Clem.
(*Holcocera fuscopulvella*, Clem.)—Tin. Nor. Amer. 227.—Proc. Ent. Soc. Phila. ii. 122.

B. PURPUROCOMELLA, Clem.
(*Holcocera purpurocomella*, Clem.)—Tin. Nor. Amer. 227.—Proc. Ent. Soc. Phila. ii. 123.

B. QUISQUILIELLA, Zell.—Bei. z. Kennt. 1873, 97.

B. RETECTELLA, Zell.—Bei. z. Kennt. 1873, 97.

B. SCIAPHIELLA, Zell.—Bei. z. Kennt. 1873, 95.—Can. Ent. ix. 71.

B. SEGNELLA, Zell.—Bei. z. Kennt. 1873, 96.

B. TRIANGULARISELLA, Cham.—Cin. Quar. Jour. Sci. ii. 256.—Can. Ent. ix. 71.

(BLABOPHANES.)

(*B. rusticella* and *B. dorsistrigella*, Clem. *vid. Tinea.*)

BLEPHAROCERA. (Chambers.)

B. HAYDENELLA, Cham.—Hayd. Bul. Geo. Sur. iii. 145.

BRACHYLOMA. (Clemens.)

B. UNIPUNCTA, Clem.—Tin. Nor. Amer. 232.—Proc. Ent. Soc. Phila. 1863, 126.

BRENTHIA. (Clemens.)*

B. PAVONICELLA, Clem.—Tin. Nor. Amer. 41, 134.—Proc. Acad. Nat. Sci. Phila. 1860, 172.

B. INFLATELLA, Clem.—Tin. Nor. Amer. 209.—Proc. Ent. Soc. Phila. ii. 5.

B. VIRGINIELLA, Clem—Tin. Nor. Amer. 257.—Proc. Ent. Soc. Phila. iii. 505.

(?BRYOTROPHA.)

(*?B. operculella*, Zell. *vid. Gelechia operculella*, *post.*)

BUCCULATRIX. (Zeller.)

(*B. albella*, Cham. = *B. staintonella*, *post.*)

B. AGNELLA, Clem.—Tin. Nor. Amer. 147.—Proc. Acad. Nat. Sci. Phila. 1860, 211.

* Zeller (Verh. z.-b. Gesell. Wien, xxv. 320) refers these species to *Cucullia*.

B. AMBROSIÆFOLIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 119.
B. CANADENSISELLA, Cham.—Can. Ent. vii. 146.
B. CAPITIALBELLA, Cham.—Can. Ent. v. 150.
B. CORONATELLA, Clem.—Tin. Nor. Amer. 109.—Proc. Acad. Nat. Sci. 1860, 13.—Can. Ent. v. 151.
B. IMMACULATELLA, Cham.—Can. Ent. vii. 54.
B. LITIGIOSELLA, Zell.—Bei. z. Kennt. 1875, 148.
B. LUTEELLA, Cham.—Can. Ent. v. 151; x. p. —.
B. MAGNELLA, Cham.—Can. Ent. vii. 54.
B. NIVEELLA, Cham.—Can. Ent. vii. 54.
B. OBSCUROFASCIELLA, Cham.—Can. Ent. v. 150.
B. PACKARDELLA, Cham.—Can. Ent. v. 151.—Cin. Quar. Jour. Sci. ii. 120.
B. POMIFOLIELLA, Clem.—Tin. Nor. Amer. 146.—Proc. Acad. Nat. Sci. Phila. 1860, 211.—Can. Ent. v. 150.—Bei. z. Kennt. 1875, 147.—Rep. Nox. Ins. Mo. n. 4, 49.
B. QUINQUENOTELLA, Cham.—Cin. Quar. Jour. Sci. ii. 120.
B. STAINTONELLA, Cham.

(*B. albella*, Cham.—Hayd. Bul. Geo. Sur. iii. 140. This species was named and described in Colorado, without access to libraries, &c. On my return from there, I found that Mr. Stainton had recently described, by the same name, a species from Syria. I therefore rename this species for that distinguished entomologist.)

B. THUIELLA, Packard—Am. Nat. v. 152.—Rep. Nox. Ins. Mo. n. 4, 51.
B. TRIFASCIELLA, Clem.—Tin. Nor. Amer. 272.—Proc. Ent. Soc. Phila. v. 147.—Can. Ent. v. 149.—Cin. Quar. Jour. Sci. ii. 120.

BUTALIS. (Treit.)

B.? ALBAPENNELLA, Cham.—Can. Ent. vii. 11.
B. BASILARIS, Zell.—Lin. Ent. x. 230.—Tin. Nor. Amer. 40.
B. BREVISTRIGA, Cham.—Can. Ent. vii. 10, 54 (misprinted *buristriga*).—*Ante*, p. —.
(*B. cerealella, vid. Gelechia cerealella.*)
B DORSIPALLIDELLA, Cham.—Can. Ent. vii. 10, 54. *Ante*, p. —.
B. EBORACENSIS, Zell.—Bei. z. Kennt. 1873, 94.
B. FLAVIFRONTELLA, Clem.—Tin. Nor. Amer. 40, 126.—Proc. Acad. Nat. Sci. Phil. 1860, 169.—Can. Ent. vi. 8.—Bei. z. Kennt. 1873, 92. ? = *basilaris*, Zell.
B. FUSCICOMELLA, Clem.—Tin. Nor. Amer. 126.—Proc. Acad. Nat. Sci. Phila. 1860, 169.—Can. Ent. vi. 8.—Bei. z. Kennt. 1873, 92.
B. IMMACULATELLA, Cham.—Can. Ent. vii. 10.—Hayd. Bul. Geo. Sur. iii. 144.—*Ante*, p. —. (? = *eboracensis*, Zell.)
B. IMPOSITELLA, Zell.—Lin. Ent. x. 241.
B. MATUTELLA, Clem.—Tin. Nor. Amer. 40, 127.—Proc. Acad. Nat. Sci. Phila. 1860, 169. ? = *impositella*, Zell.

B. PILOSELLA, Zell.—Bei. z. Kennt. 1873, 93.
B. PLANIPENNELLA, Cham.—Can. Ent. vii. 10 (misprinted *plausipennella*).
B. TRIVINCTELLA, Zell.—Bei. z. Kennt. 1873, 92.—*Ante*, 93.

(CALLIMA. Clemens.)

(*C. argenticinctella*, Clem. *vid. Œcophora argenticinctella.*)

CATASTEGA. (Clemens.)

C. ACERIELLA, Clem.—Tin. Nor. Amer. 178.—Proc. Ent. Soc. Phila. i. 87.
C. HAMAMELIELLA, Clem.—*Ibid.*
C. TIMIDELLA, Clem.—*Ibid.*
The larvæ only of these three species are known, and they probably do not belong in *Tineina.*

CEMIOSTOMA. (Zeller.)

C. ALBELLA, Cham.—Can. Ent. iii. 23, 209.

(CEROSTOMA.)

(*C. brasicella*, Fitch, *vid. Plutella cruciferarum, post.*)

(CERATOPHORA.)

(*C. fullonella, vid. Gelechia fullonella, post.*)

(CHÆTOCHILUS.)

(The following species, placed by Dr. Fitch in *Chætochilus*, will be found under *Ypsolophus:—contubernalellus, malifoliellus, pometellus, trimaculellus*, and *ventrellus.*)

CHAULIODUS. (Treit.)

C. CANICINCTELLA, Clem.—Tin. Nor. Amer. 236.—Proc. Ent. Soc. ii. 129.

CHRYSOCORYS. Curtis.

C. ERYTHRIELLA, Clem.—Tin. Nor. Amer. 40, 132.—Proc. Acad. Nat. Sci. Phila. 1860, 171.

(CHRYSOPELEIA. Chambers.)

(*C. purpuriella*, Cham. *vid. Æœa purpuriella*, Cham.)

(CHRYSOPORA. Clemens.)

(*C. lingulacella*, Clem. = *Gelechia hermanella*, var.)

CIRRHA. Chambers.

C. PLATANELLA, Cham.—Can. Ent. iv. 146.
(*Depressaria albisparsella*, Cham.—Can. Ent. iv. 92, 128.)

CLEODORA. (Curtis.)

C. PALLIDELLA, Cham.—Can. Ent. vi. 245.—*Ante*, 91.
C. PALLIDESTRIGELLA, Cham.—Can. Ent. vi. 245.—*Ante*, 92.

COLEOPHORA. (Zeller.)

C. ÆNUSELLA, Cham.—Can. Ent. vi. 128.
C. ALBACOSTELLA, Cham.—Can. Ent. vii. 95.—*Ante*, 93.
C. ARGENTELLA, Cham.—Can. Ent. x. p. —.
(*C. argentialbella*, Can. Ent. vii. 75.—Hayd. Bul. Geo. Sur. iii. 133, 141. *Nec* Can. Ent. vi. 128.)
C. ARGENTIALBELLA, Cham.—Can. Ent. vi. 128; x. p. —.
C. ARTEMISICOLELLA, Cham.—Hayd. Bul. Geo. Sur. iii. 133, 144.
C. AUROPURPURIELLA, Cham.—Can. Ent. vi. 130.
C. BIMINIMMACULELLA, Cham.—*Ante*, 94.
C. BISTRIGELLA, Cham.—Can. Ent. vii. 75; ix. 14, 72; x. p. —.—Hayd. Bul. Geo. Sur. iii. 133, 134.
C. CÆNOSIPENNELLA, Clem.—Tin. Nor. Amer. 88; Proc. Acad. Nat. Sci. 1860, 5.
C. CARYÆFOLIELLA, Cham. (& Clem. ?).—Tin. Nor. Amer. 166.—Proc. Ent. Soc. Phil. i. 78.—Can. Ent. x. p. —.
C. CINERELLA, Cham.—*Ante*, 93.
C. CONCOLORELLA, Clem.—Tin. Nor. Amer. 211.—Proc. Ent. Soc. Phila. ii. 6.—Can. Ent. vi. 129.
(*C. coracipennella*, *vid. C. occidentalis.*)
C. CORRUSCIPENNELLA, Clem.—Tin. Nor. Amer. 39, 88.—Proc. Acad. Nat. Sci. 1860, 4.—Can. Ent. vii. 124.—Guide, 351. = ? *C. fabriciella*, Bei. z. Kennt. 1873, 111.
C. CORYLIFOLIELLA, Clem.—Tin. Nor. Amer. 166.—Proc. Ent. Soc. Phila. i. 79.
C. CRATIPENNELLA, Clem.—Tin. Nor. Amer. 258.—Proc. Ent. Soc. Phila. iii. 506.
C. CRETATICOSTELLA, Clem.—Tin. Nor. Amer. 89.—Proc. Acad. Nat. Sci. Phila. 1860, 5.—Can. Ent. vii. 124.
(*C. fabriciella*, *vid. C. corruscipennella.*)
C. FAGICORTICELLA, Cham.—Can. Ent. vi. 129; x. p. —.
C. FUSCOSTRIGELLA, Cham.—*Ante*, 93.
C. GIGANTELLA, Cham.—Can. Ent. vi. 128; x. p. —.
C. INFUSCATELLA, Clem.—Tin. Nor. Amer. 89.—Proc. Acad. Nat. Sci. Phila. 1860, 5.
C. LATICORNELLA, Clem.—Tin. Nor. Amer. 88.—Proc. Acad. Nat. Sci. Phila. 1860, 5.

C. LINEAPULVELLA, Cham.—Can. Ent. vi. 130; x. p. —.
C. LEUCOCHRYSELLA, Clem.—Tin. Nor. Amer. 211.—Proc. Ent. Soc. Phila. ii. 6.
C. LUTEOCOSTELLA, Cham.—Cin. Quar. Jour. Sci. ii. 294.—Hayd. Bul. Geo. Sur. iii. 133.
(*C. mayrella*, H. *vid. corruscipennella.*)
C. MULTIPULVELLA, Cham.—*Ante*, 93.
C. NIGRELLA, Haw.—Bei. z. Kennt. 1873, 109.
C. NIGERLINEELLA, Cham.—Can. Ent. viii. 172.
C. OCHRELLA, Cham.—*Ante*, p. —.
C. OCCIDENTALIS?, Zell.—Bei. z. Kennt. 1873, 109. (? = *nigricella.*)
C. OSTRYÆ, Clem.—Tin. Nor. Amer. 167.—Proc. Ent. Soc. Phila. i. 79.
C. PRUNIELLA, Clem.—Tin. Nor. Amer. 167.—Proc. Ent. Soc. Phila. i. 79.—Bei. z. Kennt. 1873, 109.
C. QUADRILINEELLA, Cham.—*Ante*, 94.
C. QUERCIELLA, Clem.—Tin. Nor. Amer. 168.—Proc. Ent. Soc. Phila. i. 79.
C. ROSACELLA, Clem.—Tin. Nor. Amer. 251.—Proc. Ent. Soc. Phila. ii. 6.—Guide, 350.
C. ROSÆFOLIELLA, Clem.—Tin. Nor. Amer. 250.—Proc. Ent. Soc. Phila. ii. 6.—Guide, 350.
(*C. rufolutcella*, Cham.—Can. Ent. vi. 129. *Vid. caryæfoliella, ante.*)
C. SHALERIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 116.
C. SPARSIPULVELLA, Cham.—Cin. Quar. Jour. Sci. ii. 294.—Hayd. Bul. Geo. Sur. iii. 133.
C. TEXANELLA, Cham.—*Ante*, 93.
C. TILLIÆFOLIELLA, Clem.—Tin. Nor. Amer. 168.—Proc. Ent. Soc. Phila. i. 79.
C. TRILINEELLA, Cham.—Can. Ent. vii. 95.
C. UNICOLORELLA, Cham.—Can. Ent. vi. 129; x. p. —.
C. VERONIÆELLA, Cham.—Can. Ent. x. p. —.
C. VIBURNELLA, Clem.—Tin. Nor. Amer. 167.—Proc. Ent. Soc. Phila. i. 79.
C. ZELLERIELLA, Cham.—Can. Ent. vi. 128.

CORISCIUM. (Zeller.)

C. ALBANOTELLA, Cham.—Can. Ent. iv. 25; ix. 123.—Cin. Quar. Jour. Sci. i. 200.—Hayd. Bul. Geo. Sur. iii. pt. 1, 132.
C. PARADOXUM, Frey & Boll.—S. E. Z. xxxiv. 205.—Cin. Quar. Jour. Sci. i. 200.
(*C. quinquenotella*, Cham.—Can. Ent. ix. 126, 194. = *Gracilaria fasciella.*)
C. QUINQUESTRIGELLA, Cham.—Can. Ent. vii. 75; ix. 14, 124; x. p. —.
CORISCIUM, sp.?—Hayd. Bul. Geo. Sur. iii. 132.

(COSMIOTES. Clemens.)

(*Cosmiotes* = *Elachista*, which see for species *illictella*, *maculosella*, and *madarella* of Clem.)

COSMOPTERYX. (Hübner.)

C. GEMMIFERELLA, Clem.—Tin. Nor. Amer. 99, 100.—Proc. Acad. Nat. Sci. Phila. 1860, 10.—Cin. Quar. Jour. Sci. ii. 231.

C. CLEMENSELLA, Staint.—Tin. Nor. Amer. 39, 100.—Ent. Week. Int. ix. 31.

C. PULCHERRIMELLA, Cham.—Cin. Quar. Jour. Sci. ii. 231.

C. MONTISELLA, Cham.—Cin. Quar. Jour. Sci. ii. 297.—Hayd. Bul. Geo. Sur. iii. pt. 1, 134.

C. 4-LINEELLA, Cham.—*Ante*, 95.

CRYPTOLECHIA.

C. ATROPICTA, Zell.—Bei. z. Kennt. 1875, 137.

C. CRETACEA, Zell.—Bei. z. Kennt. 1873, 43.

C. CRYPTOLECHIÆELLA, Cham.—*Ante*, 84.

(*Depressaria cryptolechiœella*, Cham.)—Can. Ent. iv. 90, 129 *et seq.* 147.

(*Hagno cryptolechiœella* Cham.)

C. FAGINELLA, Cham.—*Ante*, 84.

(*Hagno faginella*, Cham.)—Can. Ent. iv. 131; vi. 231

C. FERUGINOSA, Zell.—Bei. z. Kennt. 1873, 43.

C. LITHOSINA, Zell.—Bei. z. Kennt. 1873, 44.

C. NEBECULOSA, Zell.—Bei. z. Kennt. 1873, 45.

C. OBSOLETELLA, Zell.—Bei. z. Kennt. 1873, 42.

C. OBSCUROMACULELLA, Cham.—*Ante*, 86.

C. PIPERATELLA, Zell.—Bei. z. Kennt. 1873, 39.

C. QUERCICELLA, Clem.—Bei. z. Kennt. 1873, 40.—Lep. West. Amer. 1874, 17.

(*Psilocorsis quercicella* Clem.)—Tin. Nor. Amer. 149.—Proc. Acad. Nat. Sci. Phila. 1860, 212.—*Ante*, p. —.—Can. Ent. iv. 131.

C. REFLEXA, Clem.

(*Psilocorsis reflexa*, Clem.)—Tin. Nor. Amer. 149.—Proc. Acad. Nat. Sci. Phila. 1860, 212.

C. SCHLÆGERI, Zell.—Bei. z. Kennt. 1873, 46.—Lin. Ent. 9, s. 372.

C. TENTORIFERELLA, Clem.

(*Machimia tentoriferella*, Clem.)—Tin. Nor. Amer. 148.—Proc. Acad. Sci. Nor. Amer. 1860, 212.—Bei. z. Kennt. 1873, 40.—*Ante*, 84.

C. VESTALIS, Zell.—Bei. z. Kennt. 1873, 47.

CYCLOPLASIS. (Clemens.)

C. PANICIFOLIELLA, Clem.—Tin. Nor. Amer. 248.—Proc. Ent. Soc. Phila. ii. 422.

CYANE. (Chambers.)

C. VISALIELLA, Cham.—Can. Ent. v. 113.

DASYCERA. (Haw.)

D. NEWMANELLA. Clem.—Tin. Nor. Amer. 252.—Proc. Ent. Soc. Phila. ii. 428.—Bei. z. Kennt. 1873, 89.

D. NONSTRIGELLA, Cham.—*Ante*, 92.

DEPRESSARIA. (Haw.)

(*D. albisparsella*, Cham. *vid. Cirrha platanella*, Cham.)

D. ATRODORSELLA. Clem.—Tin. Nor. Amer. 230.—Proc. Ent. Soc. Phila. ii. 124.—Can. Ent. iv. 91.—An. Ly. Nat. Hist. ix. 156.—Guide, 349.—Bei. z. Kennt. 1873. 33.

(*D.? bicostomaculella* Cham., *D.? bistrigella* Cham., *D.? bimaculella* Cham., and *D.? cercerisella* Cham., all referred to *Gelechia*, which see.)

D. CINEREOCOSTELLA. Clem.—Tin. Nor. Amer. 245.—Proc. Ent. Soc. ii. 422.—Can. Ent. iv. 91.—An. Ly. Nat. Hist. ix. 155.

(*D.? cryptolechiella* Cham. referred to *Cryptolechia*.)

D. EUPATORIELLA, Cham.—*Ante*, 82.

D. FERNALDELLA. Cham.—*Ante*, 83.

(*D.? fuscoochrella* Cham. and *D.? fuscoluteella* Cham. referred to *Gelechia*.)

D. GROTELLA, Robinson.—An. Ly. Nat. Hist. ix. 157.

D. HERACLIANA, DeG.—Lin. Ent. ix. s. 312.—Her.-Schf. in Sch. v. Ent. v. f. 445.—Nat. Hist. Tin. i. 113.

(*D. ontariella*, Bethune.)—Can. Ent. ii. 3, 19; v. 82.—Bei. z. Kennt. 1873. 35.

D. HILARELLA. Zell.—Bei. z. Kennt. 1873. 34.

D. LECONTELLA. Clem.—Tin. Nor. Amer. 137.—Proc. Acad. Nat. Sci. Phila. 1860, 174.—Can. Ent. iv. 146.—An. Ly. Nat. Hist. ix. 157.

D. NEBULOSA. Zell.—Bei. z. Kennt. 1873. 37.

(*D.? obscurusella* Cham. referred to *Gelechia*.)

(*D. ontariella*, Bethune. = *D. heraclii na*, DeG. *supra*.)

D.? PALLIDOCHRELLA. Cham.—Can. Ent. iv. 126, 129, 147, 148. (Should probably be referred to *Gelechia*.)

(*D.? pseudacaciella* Cham. referred to *Gelechia*.)

D. PULVIPENNELLA. Clem.—Tin. Nor. Amer. 244.—Can. Ent. iv. 91.—An. Ly. Nat. Hist. ix. 157.

(*D.? querciella* Cham. referred to *Gelechia*.)

D.? RILEYELLA, Cham.—Can. Ent. iv. 106, 129, 147, 148. (Should probably be referred to *Gelechia*.)

D. ROBINIELLA. Pack.—Guide, 349.—Can. Ent. iv. 107.—Cin. Quar. Jour. Sci. vi. 208.

D. SCABELLA, Zell.—Bei. z. Kennt. 1873, 36.

D.? VELSICOLORELLA, Cham.—Can. Ent. iv. 127, 129, 147, 148. (Should probably be referred to *Gelechia*.)

DIACHORISA. (Clemens.)

D. VELATELLA, Clem.—Lin. Nor. Amer. 107.—Proc. Acad. Nat. Sci. Phila. 1860, 13.

(DORYPHORA.)

(*D. piscipelis, vid. Gelechia piscipelis.*)

DRYOPE. (Chambers.)

D. MURTFELDTELLA, Cham.—Can. Ent. vi. 50.
(*D. luteopulvella*, Cham.—Can. Ent. vii. 73. Var. *D. murtfeldtella.*)

EIDO. (Chambers.)

E. ALBAPALPELLA, Cham.—Can. Ent. v. 72.
(*Venilia albapalpella*, Cham.—Can. Ent. iv. 207.)

(EIDOTHEA, Chambers.)

(*E. vagatiocella, vid. Gelechia vagatiocella, post.*)

ELACHISTA. (Treit.)

E. BRACHYELYTRIFOLIELLA, Clem.—Tin. Nor. Amer. 248.—Proc. Ent. Soc. Phila. 1860, 425.
E.? CRISTATELLA, Cham.—Can. Ent. viii. 172.
E. CONCOLORELLA, Cham.—Can. Ent. vii. 55.
E. ILLICTELLA, Clem.
(*Cosmiotes illictella*, Clem.)—Tin. Nor. Amer. 98.—Proc. Acad. Nat. Sci. Phila. 1860, 9.
E. INORNATELLA, Cham.—Can. Ent. vii. 93.
E. MACULOSELLA, Clem.
(*Cosmiotes maculosella*, Clem.)—Tin. Nor. Amer. 98.—Proc. Acad. Nat. Sci. Phila. 1860, 9.
E. MADARELLA, Clem.
(*Cosmiotes madarella*, Clem.)—Tin. Nor. Amer. 98.—Proc. Acad. Nat. Sci. Phila. 1860, 9.
E.? ORICHALCELLA, Clem.—Tin. Nor. Amer. 256.—Proc. Ent. Soc. Phila. ii. 430.—Guide, 352.
E. PARVIPULVELLA, Cham.—Can. Ent. vii. 56.
E. PRÆMATURELLA, Clem.—Tin. Nor. Amer. 133.—Proc. Acad. Nat. Sci. Phila. 1860, 172.—Can. Ent. vi. 76.—Hayd. Bul. Geo. Sur. iii. pt. 1, 143.
E. STAINTONELLA, Cham.—*Ante*, 96.
E. TEXANELLA, Cham.—*Ante*, 96.
E. UNIFASCIELLA, Cham.—Can. Ent. vii. 147.

ENÆMIA. (Zeller.)

E. PSAMMITIS, Zell.—Bei. z. Kennt. 1872, 116; 1875, 139.
(*Mieza subfervens*, Wkr.)—List Bomb. ii. 528.
(*Eustixis subfervens*, Grote.)—Bul. Buff. Soc. ii. 152.
E. CRASSINERVELLA, Zell.—Bei. z. Kennt. 1872, 116; 1875, 139.
(*Mieza igninix*, Wkr.)—List Bomb. ii. 527.
(*Eustixis igninix*, Grote.)—Bul. Buff. Soc. ii. 152.

ENCHRYSA. (Zeller.)

E. DISSECTELLA, Zell.—Bei. z. Kennt. 1873, 83.

ENDROSIS. (Hübner.)

E. FENESTRELLA, Scop.—Cin. Quar. Jour. Sci. ii. 244.
(*E. kennicottella*, Clem.)—Tin. Nor. Amer. 119.—Proc. Acad. Nat. Sci. Phila. 1860, 165.

ENICOSTOMA? (Steph.)

E.? PACKARDELLA, Clem.—Tin. Nor. Amer. 231.—Proc. Ent. Soc. Phila. ii. 125.

EPICORTHYLIS. (Zeller.)

E. INVERSELLA, Zell.—Bei. z. Kennt. 1873, 48.—Can. Ent. x. p. —.

(ERGATIS.)

(*E. roseosuffusella* and *E. pudibundella*, *vid. sub Gelechia.*)

ERIPHIA. (Chambers.)

E. CONCOLORELLA, Cham.—Can. Ent. vii. 55, 56, 94.—Hayd. Bul. Geo. Sur. iii. pt. 1, 137, 141.—*Ante*, 96.
E.? ALBALINEELLA, Cham.—*Ante*, 95.
E.? NIGRILINEELLA, Cham.—*Ante*, 96.

EUDARCIA. (Clemens.)

E. SIMULATRICELLA, Clem.—Tin. Nor. Amer. 102.—Proc. Acad. Nat. Sci. Phila. 1860, 11.

EUPLOCAMUS. (Latreille.)

E.? FUSCOFASCIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 257.

EURYNOME. (Chambers.)

E. LUTEELLA, Cham.—Cin. Quar. Jour. Sci. ii. 304.—Hayd. Bul. Geo. Sur. iii. pt. 1, 140.
E. ALBELLA, Cham.—Hayd. Bul. Geo. Sur. iii. pt. 1, 140.

(EUSTIXIS, *vid.* ENÆMIA, *supra.*)

EVAGORA. (Clemens.)

E. APICITRIPUNCTELLA, Clem.—Tin. Nor. Amer. 120.—Proc. Acad. Nat. Sci. Phila. 1860, 165.

EVIPPE. (Chambers.)

(*E. prunifoliella*, Cham. *vid. Gelechia prunifoliella*, Cham.)

GELECHIA. (Zeller.)

G. ADERUCELLA, Zell.—Can. Ent. iv. 125.

G. ÆQUEPULVELLA, Cham.—Can. Ent. iv. 192; vi. 230 *et seq.*—Cin. Quar. Jour. Sci. ii. 246.—Hayd. Bul. Geo. Sur. iii. pt. 1, 125, 141.

G. AGRIMONIELLA, Clem.—Tin. Nor. Amer. 40, 112.—Proc. Ent. Soc. Phila. ii. 120.—Proc. Acad. Nat. Sci. Phila. 1860, 162.

G. ALACELLA, Clem.
(*Trichotaphe alacella* Clem.)—Tin. Nor. Amer. 180.—Proc. Ent. Soc. Phila. i. 132.

G. ALBILORELLA, Zell.—Bei. z. Kennt. May, 1872, 61.

G. ALBOMARGINELLA, Cham.—Cin. Quar. Jour. Sci. ii. 291.—Hayd. Bul. Geo. Sur. iii. 128.

G. ALBOMACULELLA, Cham.—Can. Ent. vii. 209.

G. ALEXANDRIÆELLA, Cham.
(*Adrasteia alexandriœella*, Cham.)—Can. Ent. iv. 149.

G. AMBROSIÆELLA, Cham.—Cin. Quar. Jour. Sci. ii. 239.

G. AMORPHÆELLA, Cham.—Hayd. Bul. Geo. Sur. iii. pt. 1, 126.

G. ANGUSTIPENNELLA, Clem.—Tin. Nor. Amer. 222, 224.—Proc. Ent. Soc. Phila. ii. 119.

G. APICILINEELLA, Clem.—Tin. Nor. Amer. 223, 224.—Proc. Ent. Soc. Phila. 120.

G. APICISTRIGELLA, Cham.—Can. Ent. iv. 175.
(*Parasia apicistrigella*, Cham.—*Ibid.* 66.)

G. ARGENTIALBELLA, Cham.—Can. Ent. vi. 241.

G. AURIMACULELLA, Cham.—Can. Ent. iv. 172.

G. BADIOMACULELLA, Cham.—Can. Ent. iv. 192.

G. BASISTRIGELLA, Zell.—Bei. z. Kennt. 1873, 70.
(*Pœcilia basistrigella.*)

G. BASIFASCIELLA, Zell.—Bei. z. Kennt. 1873, 70.

G. BELANGERELLA, Cham.—Can. Ent. vii. 210.

G. BICOSTOMACULELLA, Cham.—Hayd. Bul. Geo. Sur. iii. pt. 1, 127.

G. BICRISTATELLA, Cham.—Can. Ent. vii. 210.

G. BIDISCOMACULELLA, Cham.—Can. Ent. vi. 241.

G. BILOBELLA, Zell.—Bei. z. Kennt. 1873, 80.
(*Malacotricha bilobella.*)

G. BIMACULELLA, Cham.
(*Depressaria bimaculella*, Cham.)—Can. Ent. iv. 108, 128, 147, 148.

G. BISTRIGELLA, Cham.
(*Depressaria bistrigella*, Cham.)—Can. Ent. iv. 28, 92, 147, 148.
G.? BOSQUELLA, Cham.—Can. Ent. vii. 124.
(*Œcophora bosquella*.—Can. Ent. vii. 92.—*Ante*, 87.)
G. BRUMELLA, Clem.—Tin. Nor. Amer. 239.—Proc. Ent. Soc. Phila. ii. 416.
G. CAECELLA, Zell.—Bei. z. Kennt. 1873, 52.
G. CANOPULVELLA, Cham.—*Ante*, 91.
G. CAPITEOCHRELLA, Cham.—Cin. Quar. Jour. Sci. ii. 252.
G. CERCERISELLA, Cham.—Can. Ent. vi. 230, 231; ix. 23.
(*Depressaria cercerisella*, Cham.—Can. Ent. iv. 108, 128, 147, 148.)
G. CEREALELLA.—Tin. Nor. Amer. 112, 224.—Proc. Acad. Nat. Sci. Phila. 1860, 162.—Ag. Rep. 1854, 67; 1858, 23; 1864, 556.
(*Anacampsis* (*Butalis*) *cerealella*, Harris.)—Treat. Ins. 392, 499, 506.—Guide, 350.
(*Aleucita cerealella*, Oliv., *Œcophora cerealella*, Lat., *Tinea hordei*, K. & S., and *Ypsolophus granulellus*, K. & S.)—Ont. Rep. 1871, 61.
(*Butalis cerealella*, Fitch.)—Report, n. 7, 127.
G. CHAMBERSELLA, Murt.—Can. Ent. vi. 222.—Cin. Quar. Jour. Sci. ii. 240.
G. CONSONELLA, Zell.—Bei. z. Kennt. 1873, 51.
(*Tachyptilia consonella*.)
G.? CILIALINEELLA, Cham.—Can Ent. vi. 242.—*Ante*, 91.
G. CLEMENSELLA, Cham.—Can. Ent. ix. 103.
G. COLLINUSELLA, Cham.—Hayd. Bul. Geo. Sur. iii. 128.
G. CONCINUSELLA, Cham.—Cin. Quar. Jour. Sci. ii. 253.—Hayd. Bul. Geo. Sur. iii. pt. 1, 127.
G. CONFUSELLA, Cham.—Cin. Quar. Jour. Sci. ii. 251.
G. COSTORUFOELLA, Cham.—Can. Ent. vi. 240.
G. CRESCENTIFASCIELLA, Cham.—Can. Ent. vi. 237.—Cin. Quar. Jour. Sci. ii. 255.—*Ante*, p. —.
G. CRISTATELLA, Cham.—Cin. Quar. Jour. Sci. ii. 241.
G. CRISTIFASCIELLA, Cham.—*Ante*, p.
G. CURVILINEELLA, Cham.—Can. Ent. iv. 172.
G. 10-MACULELLA, Cham.—Cin. Quar. Jour. Sci. ii. 290.—Hayd. Bul. Geo. Sur. iii. pt. 1, 128.
G. DEPRESSOSTRIGELLA, Cham.—Can. Ent. vi. 236.—Cin. Quar. Jour. Sci. ii. 255.
G.? DETERSELLA, Clem.—Tin. Nor. Amer. 40, 116, 225.—Proc. Acad. Nat. Sci. Phila. 1860, 164.
G. DIFFICILISELLA, Cham.—Can. Ent. iv. 192; v. 186, 187, 185, 229.
(*Evagora difficilisella*, Cham.)—Can. Ent. iv. 66.
(*Taygete difficilisella*, Cham.)—Can. Ent. v. 231; vii. 105; viii. 19.

G. GILVOMACULELLA, Clem.—Tin. Nor. Amer. 219, 225.—Proc. Ent. Soc. Phila. ii. 12, 121.

G. GILVOSCOPELLA, Zell.—Bei. z. Kennt. 1873, 66.
(*Teleia gilvoscopella.*)

(*G. glandulella*, Riley, *vid. Blastobasis glandulella.*)

G. GLANDIFERELLA, Zell.—Bei. z. Kennt. 1873, 75.
(*G. sella*, Cham.)—Can. Ent. vi. 238; ix. 14, 23.

G. GLEDITSCHIÆELLA, Cham.—Can. Ent. x. p. —.
(*Helice* (*Gelechia*) *pallidochrella*, Cham.—Can. Ent. v. 188, 229; vii. 105; ix. 15; x. 231.)

G. GLOCHINELLA, Zell.—Bei. z. Kennt. 1873, 63.

G. GLYCYRRHIZÆELLA, Cham.—Hayd. Bul. Geo. Sur. iii. 124.

G. GRISELLA, Cham.—Can. Ent. iv. 171.

G. GRISSEELLA, Cham.
(*Parasia? grisseella*, Cham.)—Can. Ent. iv. 88.

G. GRISSEFASCIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 253.

G. GRISSEOCHRELLA, Cham.—Cin. Quar. Jour. Sci. ii. 247.

G. HERMANELLA, Fab.—Nat. Hist. Tin. ix. 263.—Can. Ent. iv. 67, 169, 173; x. p. —.—Ent. Mo. Mag. xi. 279.

G. INÆQUEPULVELLA, Cham.—Cin. Quar. Jour. Sci. ii. 239.

G. INNOCUELLA, Zell.—Bei. z. Kennt. 1873, 49.
(*Tachyptilia innocuella.*)

G. INTERMEDIELLA, Cham.—*Ante*, 89.

G. JUNCIDELLA, Clem.
(*Trichotaphe juncidella*, Clem.)—Tin. Nor. Amer. 122.—Proc. Acad. Nat. Sci. Phila. 1860, 166.

G. LABRADORICA, Moeschler.—Can. Ent. iv. 125.

G. LABRADORIELLA, Clem.—Nat. Hist. Tin. 220, 224, 239—Proc. Ent. Soc. Phila. ii. 12, 120.

G. LACTEUSOCHRELLA, Cham.—Cin. Quar. Jour. Sci. ii. 244.

G. LACTIFLOSELLA, Cham.—*Ante*, 89.

G. LATIFASCIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 251.

G. LITUROSELLA, Zell.—Bei. z. Kennt. 1873, 65.
(*Lita lituroselle.*)

G. LEUCONOTA, Zell.—Bei. z. Kennt. 1873, 68.
(*Teleia leuconota.*)

G. LONGIFASCIELLA, Clem.—Tin. Nor. Amer. 219, 225.—Proc. Ent. Soc. Phila. ii. 12, 122.
(*Telphusa curvistrigella*, Cham.)—Can. Ent. iv. 132, 174.

G. LYNCEELLA, Zell.—Bei. z. Kennt. 1873, 55.

G. MACULATUSELLA, Cham.—Cin. Quar. Jour. Sci. ii. 245.

G. MACULOMARGINELLA, Cham.—Can. Ent. vi. 241.

G. MARMORELLA, Cham.—Cin. Quar. Jour. Sci. ii. 239.

G. MEDIOFUSCELLA, Clem.—Tin. Nor. Amer. 218, 224.—Proc. Ent. Soc. Phila. ii. 11, 121.

G. MILLERIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 253.

G. PHYSALIVORELLA, Cham.—Cin. Quar. Jour. Sci. ii. 238.

G. PLUTELLA, Cham.—Can. Ent. vi. 238.

G. PRAVINOMINELLA, Cham.

(*G. 4-maculella*, Cham.)—Can. Ent. x. p. —.—Cin. Quar. Jour. Sci. ii. 290.—Hayd. Bul. Geo. Sur. iii. 128. (*Vid. 4-maculella.*)

G. PRUNIFOLIELLA, Cham.

(*Eripne prunifoliella*, Cham.)—Can. Ent. v. 186; vii. 105; ix. 23.

G. PSEUDACACIELLA, Cham.

(*Depressaria pseudacaciella*, Cham.)—Can. Ent. iv. 9, 107, 129, 147, 148.—Cin. Quar. Jour. Sci. i. 208.

G. PUDIBUNDELLA, Zell.—Bei. z. Kennt. 1873, 73.

G. PULLIFIMBRIELLA, Clem.—Tin. Nor. Amer. 223, 225.—Proc. Ent. Soc. Phila. ii. 120, 121.—Can. Ent. ix. 23.

G. PULLUSELLA, Cham.—Can. Ent. vi. 237.

G. PUNCTIFERELLA, Clem.—Tin. Nor. Amer. 222, 224.—Proc. Ent. Soc. Phila. ii. 119, 120.

G. QUADRIMACULELLA, Cham.—Can Ent. vi. 237. (*Non 4-maculella*, Cin. Quar. Jour. Sci. ii. 29, *vid. pravinominella.*)

(*G. quinella*, Zell.—Bei. z. Kennt. 1873, 60. Var. *cercerisella.*—Can. Ent. vi. 230 *et seq.;* ix. 23.)

G. QUERCINIGRÆELLA, Cham.—Can. Ent. iv. 170.

G. QUERCIFOLIELLA, Cham.

(*Depressaria bicostomaculella*, Cham.)—Can. Ent. iv. 127, 128, 129, 147, 148.

Adrasteia quercifoliella, Cham.—Can. Ent. iv. 206.

Psoricoptera gibbosella, Stainton.—Can. Ent. v. 72, 174.

G. QUERCIVORELLA, Cham.—Can. Ent. iv. 173.

G. QUERCIELLA, Cham.

(*Depressaria querciella*, Cham.)—Can. Ent. iv. 127, 147.

(*Adrasteia querciella*, Cham.)—Can. Ent. iv. 207.

G. QUINQUEANULELLA, Cham.—Can. Ent. iv. 191.

G. QUINQUECRISTATELLA, Cham.—*Ante*, 88.

G. RHOIFRUCTELLA, Clem.—Tin. Nor. Amer. 40, 114, 225.—Proc. Acad. Nat. Sci. Phila. 1860, 163.—Proc. Ent. Soc. Phila. ii. 121.—Can. Ent. iv. 68.—Bei. z. Kennt. May, 1873, 52.

G. RIBESELLA, Cham.—Cin. Quar. Jour. Sci. ii. 29.—Hayd. Bul. Geo. Sur. iii. pt. 1, 128.

G. ? ROBINIELLA.

(*Anacampsis robiniella*, Fitch.)—Rep. v. 334.—Can. Ent. iii. 55, 57, 163, 183.—Tin. Nor. Amer. 208.

G. ROSEOSUFFUSELLA, Clem.—Tin. Nor. Amer. 40, 113, 225.—Proc. Acad. Nat. Sci. Phila. 1860, 162.—Proc. Ent. Soc. Phila. ii. 121.—Cham. *in* Can. Ent. iv. 69, 148, 169, 193; vi. 231; ix. 14; Cin. Quar. Jour. Sci. ii. 290; Hayd. Bul. Geo. Sur. iii. pt. 1, 125, 141.—Murt. *in* Can. Ent. vi. 222.—Zell. *in* Bei. z. Kennt. 1873, 72.

G. VIOLACEO-FUSCA, Zell.—Bei. z. Kennt. 1873, 58.
G. VARIELLA, Cham.—Can. Ent. iv. 174.
G. VERSUTELLA, Zell.—Bei. z. Kennt. 1873, 53.
G. WACOELLA, Cham.—Can. Ent. vi. 237.

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G. PECTEN-ALÆELLA, Cham.—Can. Ent. vii. 12.

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G. IMPIGRITELLA, Clem.—Tin. Nor. Amer. 214.—Proc. Ent. Soc. Phila. ii. 9.—Cin. Quar. Jour. Sci. ii. 234.
G. EXOPTALELLA, Cham.—Cin. Quar. Jour. Sci. ii. 234, 293.
G. MONTISELLA, Cham.—Cin. Quar. Jour. Sci. ii. 292.—Hayd. Bul. Geo. Sur. iii. 129, 143, 149.—Can. Ent. ix. 14.

GRACILARIA. (Haw.)

G. ACERIFOLIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 299.—Hayd. Bul. Geo. Sur. iii. 132.
G. ALNICOLELLA, Cham.—Cin. Quar. Jour. Sci. ii. 299.—Hayd. Bul. Geo. Sur. iii. 132.
G. ALNIVORELLA, Cham.—Cin. Quar. Jour. Sci. ii. 298.—Can. Ent. ix. 15.—Hayd. Bul. Geo. Sur. iii. 132.
G. ASTERICOLA, Frey & Boll.—S. E. Z. xxxiv. 204.—Cin. Quar. Jour. Sci. ii. 200.
G. ATOMOSELLA, Zell.—Bei. z. Kennt. 1873, 109.
G. BOSQUELLA, Cham.—Can. Ent. viii. 33.—Hayd. Bul. Geo. Sur. iii. 132.
G. ? BEHRENSELLA, Cham.—Can. Ent. viii. 32.
G. BELFRAGEELLA, Cham.—Can. Ent. vii. 92.
G. BLANDELLA, Zell.—Tin. Nor. Amer. 257.—Proc. Ent. Soc. Phila. iii. 505; v. 145.—Can. Ent. v. 13, 47.
G. BURGESSIELLA, Zell.—Bei. z. Kennt. 1873, 107.
G. CORONIELLA, Clem.—Tin. Nor. Amer. 243.—Proc. Ent. Soc. Phila. ii. 421; v. 145.
G. 12-LINEELLA, Cham.—Can. Ent. iv. 11; ix. 124.
G. DESMODIFOLIELLA, Clem.—Tin. Nor. Amer. 268 *et seq.*—Proc. Ent. Soc. Phila. v. 145.
(*G. violacella*, Clem.)—Proc. Acad. Nat. Sci. Phila. 1860, 7.—Tin. Nor. Amer. 93.—Cham. *in* Can. Ent. iv. 26; v. 46; Cin. Quar. Jour. Sci. i. 208.—Zell. *in* Bei. z. Kennt. 1873, 108.
(*G. elegantella*, Frey & Boll, *vid. G. packardella, post.*)
G. ERIGERONELLA, Cham.
(*G. plantaginisella*, Cham.)—Can. Ent. iv. 10; v. 46.)
G. geiella, MS. name—error.)—Cin. Quar. Jour. Sci. i. 200.—Can. Ent. ix. 127.
(*G. eupatoriiella*, Cham., ? = *G. venustella*, Clem. *post.*)

G. FALCONIPENNELLA, Hiib.—Bei. z. Kennt. 1873, 107.

G. FASCIELLA, Cham.

(*Aesyle fasciella*, Cham.)—Cin. Quar. Jour. Sci. ii. 97.—Can. Ent. vii. 93; ix. 123, 194.

G. FULGIDELLA, Clem.—Tin. Nor. Amer. 92.—Proc. Acad. Nat. Sci. Phila. 1860, 6.—Proc. Ent. Soc. Phila. v. 145.—Can. Ent. x. p. —.

(*G. geiella*, *vid. supra G. erigeronella.*)

(*G. inornatella*, Cham.)—Can. Ent. viii. 31; ix. 194.

G. JUGLANDISNIGRÆELLA, Cham.

(*G. juglandiella*, Cham.)—Can. Ent. iv. 28, 88; v. 15, 47.

G. LESPEDEZÆFOLIELLA, Clem.

(*Parectopa lespedezæfoliella*, Clem.)—Tin. Nor. Amer. 144.—Proc. Acad. Nat. Sci. Phila. 1860, 210.—Cham. *in* Can. Ent. iv. 7; v. 47; viii. 19; Hayd. Bul. Geo. Sur. iii. 132.

(*G. mirabilis*, Zell. = *G. robiniella*, Clem. *post.*)

G. NEGUNDELLA, Cham.—Can. Ent. viii. 18.—Hayd. Bul. Geo. Sur. iii. 132.

G. PACKARDELLA, Cham.—Can. Ent. iv. 27; ix. 194.—Cin. Quar. Jour. Sci. i. 200.

(*G. elegantella*, Frey & Boll.)—S. E. Z. xxxiv. 3.—Cin. Quar. Jour. Sci. ii. 227.

(*G. plantaginisella*, *vid. G. erigeronella.*)

G. POPULIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 301.—Hayd. Bul. Geo. Sur. iii. 13.

G. PULCHELLA, Cham.—Can. Ent. vii. 146.

G. PURPURIELLA, Cham.—Can. Ent. iv. 27; v. 46; ix. 126, 194.

G. RHOIFOLIELLA, Cham.—Can. Ent. viii. 31.

G. RIBESELLA, Cham.—Hayd. Bul. Geo. Sur. i. 132.

G. ROBINIELLA, Clem.—Can. Ent. iii. 87; iv. 7; v. 47; viii. 33.—Hayd. Bul. Geo. Sur. iii. 132.

(*Parectopa robiniella*, Clem.)—Tin. Nor. Amer. 207.—Proc. Ent. Soc. Phila. ii. 4.

(*Lithocolletis gemmea?*, Frey & Boll.)—S. E. Z. xxxiv. 218.—Cin. Quar. Jour. Sci. i. 206, 339; ii. 227.

G. SALICIFOLIELLA, Cham.—Can. Ent. iv. 25; v. 15, 46, 186.—Cin. Quar. Jour. Sci. i. 340.

G. SAUZALITOELLA, Cham.—Can. Ent. viii. 32.

G. SASSAFRASELLA, Cham.—Can. Ent. viii. 33.

G. STRIGIFINITELLA, Clem.—Tin. Nor. Amer. 92.—Proc. Acad. Nat. Sci. Phila. 1860, 6.—Proc. Ent. Soc. Phila. v. 145.

G. SUPERBIFRONTELLA, Clem.—Tin. Nor. Amer. 91.—Proc. Acad. Nat. Sci. Phila. 1861, 5.—Proc. Ent. Soc. Phila. v. 145.—S. E. Z. xxxiv. 1.—Cin. Quar. Jour. Sci. i. 200; ii. 226.

G. THERMOPSELLA, Cham.—Cin. Quar. Jour. Sci. ii. 300.—Hayd. Bul. Geo. Sur. iii. 132.

G. VENUSTELLA, Clem.—Tin. Nor. Amer. 92, 216.—Proc. Acad. Nat. Sci. Phila. 1860, 6.—Proc. Ent. Soc. Phila. ii. 10; v. 145.
(*G. eupatoriiella*, Cham.)—Can. Ent. iv. 9; v. 44, 46.
(*G. violacella*, Clem. *vid. G. desmodifoliella*, Clem.)

(HAGNO. Chambers.)

(*H. cryptolechiœella* Cham. and *H. faginella* Cham. referred to *Cryptolechia.*)

HAMADRYAS. Clemens.

H. BASSETTELLA, Clem.—Tin. Nor. Amer. 246.—Proc. Ent. Soc. Phila. ii. 423.—Can. Ent. vi. 231; x. p. —.—Cin. Quar. Jour. Sci. ii. 115.

HARPALYCE. Cham. (*non* Steph.).

H. ALBELLA, Cham.—Can. Ent. vi. 235.
H. CANUSELLA, Cham.—Can. Ent. vi. 235.
H. TORTRICELLA, Cham.—Can. Ent. vi. 235.—Hayd. Bul. Geo. Sur. iii. 122, 141.

(HERIBEIA.)

(*H. incertella*, Cham. *vid. Argiope dorsimaculella.*)

(HELICE. Chambers.)

(*H. pallidochrella*, Cham. *vid. Gelechia gleditschiœella*, Cham.)

HELIOZELLA. (Her.-Sch.)

H. ÆSELLA, Cham.—Can. Ent. ix. 108.
H. GRACILIS, Zell.—Bei. z. Kennt. 1873, 114.

(HOMOSETIA. Clemens.)

(*H. tricingulatella*, Clem. *vid. Tinea tricingulatella.*)
(*H. costisignella*, Clem. *vid. Tinea costisignella.*)

HYALE. Chambers.

H. CORYLIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 242 (?= *Menestra tortriciformella* Clem.)

HYBROMA. Clemens.

H. SERVULELLA, Clem.—Tin. Nor. Amer. 187.—Proc. Ent. Soc. Phila. i. 137.

HYPONOMEUTA. (Zeller.)

H. APICIPUNCTELLA, Cham.—Can. Ent. vii. 8.
H. EVONYMELLA, Cham.
(*H. orbimaculella*, Cham.)—Can. Ent. iv. 42; v. 12.

H. LONGIMACULELLA, Cham.—Can. Ent. iv. 43.
H. MULTIPUNCTELLUS, Clem.—Tin. Nor. Amer. 95.—Proc. Acad. Nat. Sci. Phila. 1860, 8.—Can. Ent. iv. 42.—Guide, 348 (as *millepunctellus*).—Bei. z. Kennt. 1873, 28.
H. QUINQUEPUNCTELLA, Cham.—Can. Ent. vii. 7.
H. WAKARUSA, Gaumer.—Observer of Nature, p. — (? = *evonymella*).
H. ZELLERIELLA, Cham.—*Ante*, 80.

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H. SUBSENSELLA, Zell.—Bei. z. Kennt. 1873, 102.
H. CONFECTELLA, Zell.—Bei. z. Kennt. 1873, 103.

INCURVARIA.

I. ACERIFOLIELLA, Fitch.—Tin. Nor. Amer. 90.—Proc. Acad. Nat. Sci. Phila. 1860, 5.
(*Ornix acerifoliella*, Fitch.)—Rep. Nox. Ins. pts. 1 and 2, 269.—Ont. Rep. 1873, 42.
I. IRIDELLA, Cham.
(*Tinea iridella*, Cham.)—Can. Ent. v. 86.
I. LABRADORELLA, Clem.—Tin. Nor. Amer. 238.—Proc. Ent. Soc. Phila. ii. 416.
I. MEDIOSTRIALELLA, Clem.—Tin. Nor. Amer. 273.—Proc. Ent. Soc. Phila. v. 147.
(*Tinea auristrigella*, Cham.)—Can. Ent. v. 86; ix. 207.
I. RUSSATELLA, Clem.—Tin. Nor. Amer. 89.—Proc. Acad. Nat. Sci. Phila. 1860, 5.

(ITHOME. Chambers.) = (PERIMEDE. Chambers.)

(*I. unomaculella*, Cham. = *Perimede unomaculella*, Cham., and referred to *Laverna*, *q. v.*)

LAVERNA.

L.? ALBELLA, Cham.—Cin. Quar. Jour. Sci. ii. 295.
(*L. albocapitella*, Cham. = *L. murtfeldtella*, Cham.)
L. ALBOPALPELLA, Cham.—Cin. Quar. Jour. Sci. ii. 295.
L. BIFASCIELLA, Cham.—Can. Ent. viii. 158.
L. CEPHALANTHIELLA, Cham.—Can. Ent. iii. 221; vii. 53; x. p. —.
L. CIRCUMSCRIPTELLA, Zell.—Bei. z. Kennt. 1873, 112.—Can. Ent. x. p. —.
L.? COLORADOELLA, Cham.—Hayd. Bul. Geo. Sur. iii. 136.
L. DEFINITELLA, Zell.—Bei. z. Kennt. 1873, 111.
(*L. unicristatella*, Cham.)—Can. Ent. vii. 32; ix. 74.
L. ELOISELLA, Clem.—Tin. Nor. Amer. 131.—Proc. Acad. Nat. Sci. Phila. 1860, 171.—Can. Ent. ix. 74.
L.? ERRANSELLA, Cham.
(*Perimede erransella*, Cham.)—Can. Ent. vi. 52; vii. 52; ix. 147; x. p. —.

L.? fuscocristatella, Cham. *vid. Nœra fuscocristatella*, Cham.)

L.? IGNOBILISELLA, Cham.—Can. Ent. vii. 33, 51; x. p. —.

L.? GLEDITSCHIÆELLA, Cham.—Can. Ent. viii. 135, 171; x. p. 232.

L GRANDISELLA, Cham.—Cin. Quar. Jour. Sci. ii. 296.—Hayd. Bul. Geo. Sur. iii. 144.

(*L. grisseella*, Cham. *vid. L. murtfeldtella.*)

L. LUCIFERELLA, Clem.—Tin. Nor. Amer. 130.—Proc. Acad. Nat. Sci. Phila. 1860, 171.

L.? MAGNATELLA.—Can. Ent. ix. 73.

(*L.? œnotherœella*, Cham.)—Can. Ent. vii. 30.

(*Phylloenistis magnatella*, Zell.)—Bei. z. Kennt. 1873, 115.

L. MISCECOLORELLA, Cham.—Can. Ent. vii. 51.—Hayd. Bul. Geo. Sur. iii. 144.

L. MURTFELDTELLA, Cham.—Cin. Quar. Jour. Sci. ii. 237; viii. 159; ix. 13; x. p. —.

(*L. albocapitella*, Cham.)—Can. Ent. vii. 33.—Hayd. Bul. Geo. Sur. iii. 144.

(*L. grisseella*, Cham.)—Cin. Quar. Jour. Sci. ii. 295.—Hayd. Bul. Geo. Sur. iii. 141.

L.? OBSCURUSELLA, Cham.—Can. Ent. vii. 53; x. p. —.

L. ŒNOTHERÆSEMINELLA, Cham.—Can. Ent. viii. 138; x. p. —.

L.? PARVICRISTATELLA, Cham.—Can. Ent. vii. 34.

L. RUFOCRISTATELLA, Cham.—Can. Ent. vii. 33.

(*L. unicristatella*, Cham. *vid. L. definitella*, Zell.)

L. UNIFASCIELLA, Cham.—Can. Ent. viii. 159 (var.? *murtfeldtella*).

LEUCANTHIZA. (Clemens.)

L. AMPHICARPEÆFOLIELLA, Clem.—Tin. Nor. Amer. 85, 87–88.—Proc. Acad. Nat. Sci. Phila. 1859, 328.—Can. Ent. iii. 162; x. p. —.

(*L. saundersella*, Cham.)—Can. Ent. iii. 205.

(*L. ornatella*, Cham. *vid. Lithocolletis ornatella*, Cham.)

LEUCOPHRYNE. (Chambers.)

(Perhaps this might be included in *Laverna.*)

L. TRICRISTATELLA, Cham.—Can. Ent. vii. 211.

LITHARIAPTERYX. (Chambers.)

L. ABRONIÆELLA, Cham.—Can. Ent. viii. 217.—Hayd. Bul. Geo. Sur. iii. 124, 149.

(LITA.)

(*L. ternariella* and *L. liturosella* referred to *Gelechia.*)

LITHOCOLLETIS.* (Zeller.)

L. ACERIELLA, Clem.—Tin. Nor. Amer. 65, 75.—Proc. Acad. Nat. Sci. 1859, 319, 323.—Can. Ent. iii. 130.

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* *Vid.* Pysche, January, 1878.

L. CONGLOMERATELLA, Zell.—Bei. z. Kennt. 1875, 140.

L. CONSIMILELLA, Frey & Boll.—S. E. Z. xxxiv. 214.—Cin. Quar. Jour. Sci. i. 202.

L. CORYLIELLA, Cham.—Can. Ent. iii. 111, 127; x. p. —.

L. CRATÆGELLA, Clem.—Tin. Nor. Amer. 66, 77, 141.—Proc. Acad. Nat. Sci. Phila. 1859, 319, 324; 1860, 208.—Can. Ent. iii. 55, 108, 166; v. 50; vi. 150.—*Ante*, p. —.—Cin. Quar. Jour. Sci. i. 206, 201.

L. CURVILINEATELLA, Pack.—Guide, 354.—Can. Ent. iii. 183. (Not a *Lithocolletis ?*)

L. DESMODIELLA, Clem.—Tin. Nor. Amer. 65, 68.—Proc. Acad. Nat. Sci. Phila. 1859, 319, 220.—Can. Ent. i. 127, 152.

L. FITCHELLA, Clem.—Tin. Nor. Amer. 139.—Proc. Acad. Nat. Sci. Phila. 1860, 207.—Can. Ent. iii. 183.—Cin. Quar. Jour. Sci. i. 201.—Guide, 353.—Hayd. Bul. Geo. Sur. iii. 139.—Can. Ent. x. p. —.

Argyromiges quercifoliella, Fitch.—Rep. 5, sec. 327.

L. FUSCOCOSTELLA, Cham.—Cin. Quar. Jour. Sci. ii. 102.

L. GEMINATELLA, Pack.—Guide, 353.—Can. Ent. iii. 183. (Not a *Lithocolletis ?*)

L. GEMMEA, Frey & Boll.—S. E. Z. xxxiv. 218.—Cin. Quar. Jour. Sci. i. 206 *et seq.* 339; ii. 227.

L. GUTTIFINITELLA, Clem.—Tin. Nor. Amer. 65, 76.—Proc. Acad. Nat. Sci. Phila. 1859, 319, 324.—Can. Ent. iii. 110 *et seq.*—Cin. Quar. Jour. Sci. i. 201 *et seq.*—*Ante*, 102.

L. HAGENI, Frey & Boll.—S. E. Z. xxxiv. 208.—Cin. Quar. Jour. Sci. i. 201 *et seq.*—*Ante*, 100.

L. HAMADRYADELLA, Clem.—Tin. Nor. Amer. 65, 77.—Proc. Acad. Nat. Sci. Phila. 1859, 319, 324.—Can. Ent. iii. 55, 164, 182.—Cin. Quar. Jour. Sci. ii. 201 *et seq.*

L. HELEANITHIVORELLA, Cham.—Cin. Quar. Jour. Sci. ii. 100, 230.

L. NIDIFICANSELLA, Pack.—Guide, 354.—Can. Ent. iii. 184. (? A *Lyonetia.*)

L. IGNOTA, Frey & Boll.—S. E. Z. xxxiv. 215.—Cin. Quar. Jour. Sci. i. 205; ii. 230.

L. INTERMEDIA, Frey & Boll.—S. E. Z. xxxiv. 210.—Cin. Quar. Jour. Sci. i. 201; ii. 230.

(*L. juglandiella*, Clem.=*L. caryæfoliella*, Clem.—Tin. Nor. Amer. 170.—Proc. Ent. Soc. Phila. i. 81.—Can. Ent. iii. 165; vii. 126; x. p. —.—Guide, 353.)

L. LONGISTRIATA, Frey & Boll.—S. E. Z. xxxiv. 209, 210.—Cin. Quar. Jour. Sci. i. 201; ii. 229.

L. LUCETIELLA, Clem.—Tin. Nor. Amer. 65, 73.—Proc. Acad. Nat. Sci. Phila. 1859, 319, 322.—Can. Ent. iii. 56.

L. LYSIMACHIÆELLA, Cham.—Cin. Quar. Jour. Sci. ii. 100.

L. LUCIDICOSTELLA, Clem.—Tin. Nor. Amer. 39, 64, 66.—Proc. Acad. Nat. Sci. Phila. 1859, 318, 319.—Cin. Quar. Jour. Sci. ii. 102.—Can. Ent. iii. 57, 182. (The statement that the larva mines leaves of the Sycamore (*Platanus*) is incorrect.)

(*L. mariœella*, Cham. *vid. L. alniella*, Zell.)

L. MIRIFICA, Frey & Boll.—S. E. Z. xxxiv. 212.—Cin. Quar. Jour. Sci. i. 202.

L. NECOPINUSELLA, Cham.—*Ante*, 100.

(*L. nonfasciella*, Cham.—Can. Ent. iii. 108.—Cin. Quar. Jour. Sci. i. 201.) (This must be dropped from the list: there is no such species. It was described from varieties and old specimens of *L. celtisella* Cham.)

L. OBSCURICOSTELLA, Clem.—Tin. Nor. Amer. 64, 71.—Proc. Acad. Nat. Sci. Phila. 1859, 318, 321.—Can. Ent. iii. 85; x. p. 102.

L. OBSOLETELLA, Frey & Boll.—S. E. Z. xxxiv. 211.—Cin. Quar. Jour. Sci. i. 202.

L. OBSTRICTELLA, Clem.—Tin. Nor. Amer. 64, 73.—Proc. Acad. Nat. Sci. Phila. 1859, 318, 322.—Can. Ent. iii. 183.—*Ante* 102.

L. ORNATELLA, Cham.—Can. Ent. iii. 161; iv. 107; x. p. —.—Cin. Quar. Jour. Sci. i. 201 *et seq.* 339; ii. 228.—S. E. Z. xxxiv. 217.—Bei. z. Kennt. 1875, 141.

(*Leucanthiza ornatella.*)—Can. Ent. iii. 87, 127.

L. OSTENSACKENELLA, Fitch.

(*Argyromiges ostensackenella*, Fitch.)—Can. Ent. iii. 183.—Rep. Nox. Ins. New York, n. 5. sec. 338.

L. OSTRYÆFOLIELLA, Clem.—Tin. Nor. Amer. 64, 71.—Proc. Acad. Nat. Sci. Phila. 1859, 318, 322.—Can. Ent. iii. 85.—Cin. Quar. Jour. Sci. i. 202.

(*L. ostryœella*, Cham. var. *L. coryliella*, Cham. *q. v.*)

L. POPULIELLA, Cham.—*Ante*, 101.

L. QUERCIALBELLA, Fitch.—Rep. Nox. Ins. N. Y. n. 5, sec. 328.—Can. Ent. iii. 57.

L. QUERCIBELLA, Cham.—Cin. Quar. Jour. Sci. ii. 102.

(*L. quercifoliel a*, Fitch, *vid. L. fitchella*, Clem.)

L. QUERCITORUM, Frey & Boll.—S. E. Z. xxxiv. 207.—Cin. Quar. Jour. Sci. i. 201; ii. 229.—Bei. z. Kennt. 1875, 140.—Hayd. Bul. Geo. Sur. iii. 139, 141.—Can. Ent. x. p. —.

L. RILEYELLA, Cham.—Cin. Quar. Jour. Sci. ii. 236.

L. ROBINIELLA, Clem.—Tin. Nor. Amer. 14 *et seq.* 22, 64, 66, 208.—Proc. Acad. Nat. Sci. Phila. 1859, 318, 319; 1860, 209.—Can. Ent. iii. 54 *et seq.* 87, 163, 183, 185; iv. 9, 117.—S. E. Z. xxxiv. p. —.—Cin. Quar. Jour. Sci. vi. 203, 208, 339; ii. 228.—Bei. z. Kennt. 1875, 142.—Hayd. Bul. Geo. Sur. 132, 137.

(*Argyromiges pseudacaciella*, Fitch.)—Rep. Nox. Ins. N. Y. n. 5, sec. 335.

? A. uhlerella, Fitch.—*Ibid.* 337.

? A. morrisella, Fitch.—*Ibid.* 336.

L. SALICIFOLIELLA, Clem.—Tin. Nor. Amer. 169.—Proc. Ent. Soc. Phila. i. 81.—Can. Ent. iii. 163, 185.—Guide, 353.—Hayd. Bul. Geo. Sur. iii. 139, 141.
(*L. scudderella*, Frey & Boll.)—S. E. Z. xxxiv. 212.—Cin. Quar. Jour. Sci. ii. 202.

L. SYMPHORICARPEÆELLA, Cham.—Cin. Quar. Jour. Sci. ii. 98.

(*L. scudderella*, Frey & Boll. *vid. L. salicifoliella, supra.*)

L. TILLIÆELLA, Cham.—Can. Ent. iii. 56.—Cin. Quar. Jour. Sci. vi. 203.

L. TRIFASCIELLA, Haw.—S. E. Z. xxxiv. 215.—Cin. Quar. Jour. Sci. i. 205.—Can. Ent. x. p.—.

L. TRITÆNIAELLA, Cham.—Can. Ent. iii. 110, 184; v. 48; x. p. —.—Cin. Quar. Jour. Sci. i. 202.

L. TEXANELLA, Zell.—Bei. z. Kennt. 1875, 143.—Hayd. Bul. Geo. Sur. v. 132, 137.

L. TUBIFERELLA, Clem.—Tin. Nor. Amer. 140.—Proc. Acad. Nat. Sci. Phila. 1860, 208.—Can. Ent. iii. 165, 183.

L. ULMIELLA, Cham.—Can. Ent. iii. 148.—Cin. Quar. Jour. Sci. i. 202, 204; ii. 101.—S. E. Z. xxxiv. 214.

L. UNIFASCIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 103 *et seq.*

(*L. virginiella*, Cham.—Can. Ent. iii. 84; x. p. —. = *L. ostryæfoliella*, Clem.)

LYONETIA. (Hübner.)

L. ALNIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 303.—Hayd. Bul. Geo. Sur. iii. 140.

L. APICISTRIGELLA, Cham.—Cin. Quar. Jour. Sci. ii. 105.—Can. Ent. x. p. —.

L. GRACILELLA, Cham.—Can. Ent. viii, 34; x. p. —.

L.? NIDIFICANSELLA, Pack.
(*Lithocolletis nidificansella*, Pack.)—Guide, 354.—Can. Ent. x. p. —.

(*L. saccatella*, Pack. *vid. Aspidisca splendoriferella.*)

L. SPECULELLA, Clem.—Tin. Nor. Amer. 184.—Proc. Ent. Soc. Phila. i. 134.—Can. Ent. x. p. —.

(MACHIMIA. Clemens.)

(*M. tentoriferella*, *vid. Cryptolechia tentoriferella.*)

(MALACHOTRICHA.)

(*M. bilobella*, Zell. *vid. Gelechia bilobella.*)

MARMARA. (Clemens.)

M. SALICLELLA, Clem.—Tin. Nor. Amer. 212.—Proc. Ent. Soc. Phila. ii. 7.

MENESTRA. (Clemens.)

M. TORTRICIFORMELLA.—Tin. Nor. Amer. 151.—Proc. Acad. Nat. Sci. Phila. 1860, 213.

MICROPTERYX.

M. POMIVORELLA, Pack.—Rep. Mass. Ag. Soc. 1870.—Am. Nat. vi. 685.

(MIEZA, *vid.* ENÆMIA.)

NÆRA. (Chambers.)

N. FUSCOCRISTATELLA, Cham.—Can. Ent. vii. 9, 51.
(*Laverna fuscocristatella*, Cham.)—Can. Ent. vii. 34.

NEDA. (Chambers.)

N. PLUTELLA, Cham.—Can. Ent. vi. 243; vii. 105.

NEPTICULA. (Zeller.)

N. AMELANCHIERELLA, Clem.—Tin. Nor. Amer. 174.—Proc. Ent. Soc. Phila. i. 84.—Guide, 356.
N. ANGUINELLA, Clem.—Tin. Nor. Amer. 175.—Proc. Ent. Soc. Phila. i. 85.
N. APICIALBELLA, Cham.—Can. Ent. v. 127.—Cin. Quar. Jour. Sci. ii. 118.
N. BADIOCAPITELLA, Cham.—Can. Ent. viii. 160.
N. BELFRAGEELLA, Cham.—Can. Ent. vii. 75.
N. BIFASCIELLA, Cham.—Tin. Nor. Amer. 183.—Proc. Ent. Soc. Phila. i. 133; v. 146.
N. BOSQUEELLA, Cham.—*Ante*, 106.
N. CASTANEÆFOLIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 117.
N. CARYÆFOLIELLA.—Tin. Nor. Amer. 174.—Proc. Ent. Soc. Phila. i. 84.
N. CILLIÆFUSCELLA, Cham.—Can. Ent. v. 128.—Cin. Quar. Jour. Sci. ii. 117. (= *N. fuscotibiwella* Clem.)
N. CLEMENSELLA, Cham.—Can. Ent. v. 125.
N. CORYLIFOLIELLA, Clem.—Tin. Nor. Amer. 172.—Proc. Ent. Soc. Phila. i. 83.—Guide, 356.
N. CRATÆGIFOLIELLA, Clem.—Tin. Nor. Amer. 173.—Proc. Ent. Soc. Phila. i. 83.
N. FUSCOCAPITELLA, Cham.—Can. Ent. v. 128.
N. FUSCOTIBIÆELLA, Clem.—Tin. Nor. Amer. 182.—Proc. Ent. Soc. Phila. i. 133; v. 146.—Can. Ent. v. 127.—Cin. Quar. Jour. Sci. ii. 114.
N. JUGLANDIFOLIELLA, Cham.—Tin. Nor. Amer. 173.—Proc. Ent. Soc. Phila. i. 84.—*Ante*, 105.
N. LATIFASCIELLA, Cham.—*Ante*, 106.

N. MAXIMELLA, Cham.—Can. Ent. v. 126.
N. MINIMELLA, Cham.—Can. Ent. v. 127.
N. NIGRIVERTICELLA, Cham.—Cin. Quar. Jour. Sci. ii. 118.
N. OCHREFASCIELLA, Cham.—Can. Ent. v. 128.
N. OSTRYÆFOLIELLA, Clem.—Tin. Nor. Amer. 172.—Proc. Ent. Soc. Phila. i. 83.
N. PLATANELLA, Clem.—Tin. Nor. Amer. 173, 183.—Proc. Ent. Soc. Phila. i. 83, 133; v. 146.—Can. Ent. v. 125.—Guide, 356.
N. PLATEA, Clem.—Tin. Nor. Amer. 175.—Proc. Ent. Soc. Phila. i. 85.
N. PRUNIFOLIELLA, Clem.—Tin. Nor. Amer. 174.—Proc. Ent. Soc. Phila. i. 84.—Can. Ent. v. 126. (*? serotinœella* or ? Dipterous.)
N. QUERCICASTANELLA, Cham.—Can. Ent. v. 127.—*Ante*, p. —.—Can. Ent. x. 105.
N. QUERCIPULCHELLA, Cham.—*Ante*, 105.
N. RESPLENDENSELLA, Cham.—Cin. Quar. Jour. Sci. ii. 118.
N. ROSÆFOLIELLA, Clem.—Tin. Nor. Amer. 176.—Proc. Ent. Soc. Phila. i. 86.
N. RUBIFOLIELLA, Clem.—Tin. Nor. Amer. 32, 42, 45, 152.—Proc. Ent. Soc. Phila. v. 146.
N. SAGINELLA, Clem.—Tin. Nor. Amer. 175, 270.—Proc. Ent. Soc. Phila. i. 85, 144.
N. SEROTINÆELLA, Cham.—Can. Ent. v. 126; x. p. —.
N. THORACEALBELLA, Cham.—Can. Ent. v. 127.
N. UNIFASCIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 119.—*Ante*, p. —.
N. VILLOSELLA, Clem.—Tin. Nor. Amer. 174.—Proc. Ent. Soc. Phila. i. 84.
N. VIRGINIELLA, Clem.—Tin. Nor. Amer. 172.—Proc. Ent. Soc. Phila. i. 83.

(NOMIA. Clemens.)

(*N. lingualacella*, Clem. *vid. Chrysopora lingualacella.*)

NOTHRIS. (Hübner.)

N.? BIMACULELLA, Cham.—Hayd. Bul. Geo. Sur. iii. 122.
N. EUPATORIIELLA, Cham.—Can. Ent. ix. 23.
(*Ypsolophus eupatoriiella*, Cham.)—Can. Ent. iv. 221.
(*Nothris dolabella*, Zell.)—Bei. z. Kennt. 1873, 88.
N. GRISSEELLA, Cham.—Can. Ent. vi. 245.

ŒCOPHORA. (Zeller.)

Œ. ARGENTICINCTELLA, Clem.—Can. Ent. v. 188–190.—Cin. Quar. Jour. Sci. ii. 114.
(*Callima argenticinctella*, Clem.)—Tin. Nor. Amer. 12, 46, 123.—Proc. Acad. Nat. Sci. Phila. 1860, 167.
Œ. BORKHAUSENII, Zell.—Bei. z. Kennt. 1873, 90.

Œ. BOREASELLA, Cham.—Can. Ent. v. 189.—Cin. Quar. Jour. Sci. ii. 114, 292.—Hayd. Bul. Geo. Sur. iii. 129, 141.
(*Œ. bosquella*, Cham. *vid. Gelechia bosquella.*)
(*Œ. constrictella*, Zell. *vid. Theisoa constrictella.*)
Œ. DETERMINATELLA, Zell.—Bei. z. Kennt. 1873, 89.
(*Œ. australisella*, Cham.)—Can. Ent. vii. 124; ix. 23.—Cin. Quar. Jour. Sci. ii. 114.
(*Œ. granella*, Lat. *vid. Gelechia granella.*)
Œ. 4-MACULELLA, Cham.—Cin. Quar. Jour. Sci. ii. 292.—Hayd. Bul. Geo. Sur. iii. 129.
Œ. SHALERIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 114.

ŒNOE. (Chambers.)

Œ. HYBROMELLA, Cham.—Can. Ent. vi. 50.

ŒSEIS. (Chambers.)

Œ. BIANULELLA. Cham.—Cin. Quar. Jour. Sci. ii. 255.

ŒTA. (Grote.)

Œ. PUNCTELLA, Cra.—Bei. z. Kennt. 1873, 28.
(*Pœciloptera compta*, Clem.)—Proc. Acad. Nat. Sci. 1860, 546.
(*Œta compta*, Grote.)—Proc. Ent. Soc. Phila. v. 230.—Riley's Rep. Nox. Ins. Mo. 1869, 151.—Zell. Ent. Zeit. 1871, s. 178.
(*Tinea pustulella*, Fab.)—Ent. Syst. iii. pt. ii. 292.
(*Phalena punctella*, Cramer.—Ins. 31.)

OPOSTEGA. (Zeller.)

O. ALBOGALLERIELLA, Clem.—Tin. Nor. Amer. 180.—Proc. Ent. Soc. Phila. i. 131.
O. 4-STRIGELLA, Cham.—Cin. Quar. Jour. Sci. ii. 106.

ORNIX. (Zeller.)

(*O. acerifoliella*, Fitch, *vid. Incurvaria acerifoliella.*)
O. BOREASELLA, Clem.—Tin. Nor. Amer. 237.—Proc. Ent. Soc. Phila. ii. 415.
O. CRATÆGIFOLIELLA, Clem.—Tin. Nor. Amer. 94.—Proc. Acad. Nat. Sci. Phila. 1860, 8.—Can. Ent. v. 48.
O. FESTINELLA, Clem.—Tin. Nor. Amer. 94.—Proc. Acad. Nat. Sci. Phila. 1860, 97.
O. INUSITATUMELLA, Cham.—Can. Ent. v. 47; viii. 19.
O. PRUNIVORELLA, Cham.—Can. Ent. v. 50.—Cin. Quar. Jour. Sci. ii. 301.—Hayd. Bul. Geo. Sur. iii. 133, 141.
O. QUADRIPUNCTELLA, Clem.—Tin. Nor. Amer. 177.—Proc. Ent. Soc. Phila. i. 86.

O. QUERCIFOLIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 116.
O. TREPIDELLA, Clem.—Tin. Nor. Amer. 94.—Proc. Acad. Nat. Sci. Phila. 1860, 7.

PARASIA. (Dup.)

(*P. apicistrigella*, Cham. *vid. Gelechia apicistrigella.*)
(*P. apicipunctella*, *vid. Evagora apicipunctella.*)
(*P. grisseella*, Cham. *vid. Gelechia grisseella.*)
P. SUBSIMELLA, Clem.—Tin. Nor. Amer. 137.—Proc. Acad. Nat. Sci. Phila. 1860, 173.

(PARECTOPA. Clemens.)

(*P. lespedezæfoliella et robiniella*, Clem. *vid. sub Gracilaria.*)

PHAETUSA. (Chambers.)

P. PLUTELLA, Cham.—Can. Ent. vii. 105; x. p. —.

(PERIMEDE. Chambers.)

(*P. erransella et P.* (*Ithome*) *unomaculella*, Cham. *vid. sub Laverna.*)

PHIGALIA. (Chambers.)

P. ALBELLA, Cham.—Can. Ent. vii. 107.
P. OCHREMACULELLA, Cham.—*Ibid.*

PHILONOME. (Chambers.)

P. CLEMENSELLA, Cham.—Can. Ent. vi. 97; viii. 136; ix. 13; x. p. —.

PHYLLOCNISTIS. (Zeller.)

P. AMPELOPSIELLA, Cham.—Can. Ent. iii. 207 (206 erroneously *ampelopsifoliella*).—Cin. Quar. Jour. Sci. ii. 107, 303.—Hayd. Bul. Geo. Sur. iii. 140, 141.
P. ERECHTITISELLA, Cham.—*Ante*, 104.
P. LIRIODENDRONELLA, Clem.—Tin. Nor. Amer. 220.—Proc. Ent. Soc. Phila. ii. 13.—Can. Ent. iii. 185, 206, 207.
P. LIQUIDAMBARISELLA, Cham.—Cin. Quar. Jour. Sci. ii. 106.
(*P. magnatella*, Zell. *vid. Laverna? magnatella.*)
P. POPULIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 106, 303.—Can. Ent. viii. 19.—Hayd. Bul. Geo. Sur. iii. 140, 141, 147.
P. SMILACICELLA, Cham.—Cin. Quar. Jour. Sci. ii. 107.
P. VITIGENELLA, Clem.—Tin. Nor. Amer. 22, 23, 39, 83.—Proc. Acad. Nat. Sci. Phila. 1859, 327.—Can. Ent. iii. 206; vi. 169.
P. VITIFOLIELLA, Cham.—Can. Ent. iii. 206 *et seq.*; vi. 169.

PIGRITIA. (Clemens.)

P. LATICAPITELLA, Clem.—Tin. Nor. Amer. 41, 136.—Proc. Acad. Nat. Sci. Phila. 1860, 173.
P. OCHREELLA, Clem.—Tin. Nor. Amer. 232.—Proc. Ent. Soc. Phila. ii. 126.
P. OCHROCOMELLA, Clem.—Tin. Nor. Amer. 232.—Proc. Ent. Soc. Phila. ii. 126.

PITYS. (Chambers.)

P. AURICRISTATELLA, Cham.—Can. Ent. v. 110; ix. 207.
P. FASCIELLA, Cham.—*Ibid.*; ix. 207.
P. FUSCOCRISTATELLA, Cham.—*Ibid.*
P. MISCECRISTATELLA, Cham.—*Ibid.*

PLUTELLA. (Schr.)

P. CRUCIFERARUM, Zell.—Tin. Nor. Amer. 39, 90.—Proc. Acad. Nat. Sci. Phila. 1860, 6.—Can. Ent. viii. 119; vi. 230, 232.—Bei. z. Kennt. 1873, 33.—Rep. Bost. Ag. Soc. ii. 11.—Hayd. Bul. Geo. Sur. iii. 122, 141, 144, 147.
(*P. limbipennella*, Clem.)—*Ibid.*
(*Cerostoma brassicella*, Fitch.)—*Ibid.* and Rep. Nox. Ins. N. Y. i. 170–5.—Ag. Rep. 1871, 82.
(*P. zylostella.*)—Rep. Mass. Ag. Soc. ii. 11.
(*P. mollipedella*, Clem. *loc. cit. sup.*, ? = *cruciferarum.*)
P. PORRECTELLA, Linn. *loc. cit. sup.* (*vigilaciella*, Clem.).

(PŒCILIA.)

(*P. bifasciella*, Clem., *basistrigella*, Clem., and *fragmentella*, *vid. Gelechia.*)

(PŒCILOPTERYX. Clemens.)

(*P. compta*, *vid. Œta punctella.*)

POLYHYMNO. (Chambers.)

(*P. fuscostrigella*, Cham.—Can. Ent. viii. 30. = *luteostrigella.*)
P. LUTEOSTRIGELLA, Cham.—*Loc. cit. sup.* and Can. Ent. vi. 247.
P. 6-STRIGELLA, Cham.—Can. Ent. vi. 248.

PRONUBA. (Riley.)

P. YUCCASELLA, Riley.—Proc. Acad. Sci. Mo. iii. 55, 333.—Rep. Nox. Ins. Mo. v. 151; vi. 131.—Can. Ent. iv. 182.—Hayd. Bul. Geo. Sur. iii. 121, 141.
(*Tegeticula alba*, Zell.)—Bei. z. Kennt. 1873, 32; 1875, 139.

PSECADIA. (Hübner.)

P. SEMILUGENS, Zell.—Bei. z. Kennt. 1872, 115.—Cin. Quar. Jour. Sci. ii. 258.—Can. Ent. vi. 233. (As *Anesychia multipunctella*, Cham.)

(PSILOCORSIS. Clemens.)

(*P. querciella*, Clem. and *P. reflexa*, Clem. *vid. sub Cryptolechia.*)

(RHINOSIA.)

(*R. pometellus*, Harris, *vid. Ypsolophus pometellus.*)

SAGARITIS. (Chambers.)

S. GRACILELLA, Cham.—Can. Ent. iv. 226; vi. 245.

SEMELE. (Chambers.)

S. ARGENTISTRIGELLA, Cham.—Can. Ent. viii. 105.
(*Tinea argentistrigella*, Cham.)—Can. Ent. v. 89.
S. ARGENTINOTELLA, Cham.—Can. Ent. viii. 104.
(*S. bifasciella*, Cham. MS. name inadvertently used = *cristatella.*)—Can. Ent. viii. 105; ix. 208.
S. CRISTATELLA, Cham.—Cin. Quar. Jour. Sci. ii. 243.—Can. Ent. ix. 208.

SETOMORPHA. (Zeller.)

S. OPEROSELLA, Zell.—Bei. z. Kennt. 1873, 23.
S. INAMŒNELLA, Zell.—Bei. z. Kennt. 1873, 23.
S. RUDERELLA, Zell.—Bei. z. Kennt. 1873, 23.

(SINOE. Chambers.)

(*S. fuscopallidella*, Cham. *vid. Gelechia.*)

SOLENOBIA. (Zeller.)

S. WALSHELLA, Clem.—Tin. Nor. Amer. 181.—Proc. Ent. Soc. Phila. i. 132.—Guide, 346.—Can. Ent. v. 74; vii. 125; viii. 19.

STILBOSIS. (Clemens.)

S. TESQUATELLA, Clem.—Tin. Nor. Amer. 40, 129.—Proc. Acad. Nat. Sci. Phila. 1860, 170.

STROBISIA. (Clemens.)

S. ALBACILIAELLA, Cham.—Can. Ent. x. p. —.
S. ARGENTICILLAELLA, Cham.—Can. Ent. x. p. —.
S. EMBLEMELLA, Clem.—Tin. Nor. Amer. 40, 118.—Proc. Acad. Nat. Sci. Phila. 1860, 164.
(*S. venustella*, Cham.)—Can. Ent. iv. 90.
S. IRIPENNELLA, Clem.—*Loc. cit. sup.*
(*S. aphroditeella*, Cham.)—Can. Ent. iv. 88.
S. LEVIPEDELLA, Clem.—Tin. Nor. Amer. 207.—Proc. Ent. Soc. Phila. ii. 4.

(TACHIPTILIA.)

(*T. consonella et inocuella, vid. Gelechia.*)

(TELEIA.)

T. sequax, scopella, et dorsivittella, Zell., *vid. Gelechia.*)

(TEGETICULA.)

(*T. alba*, Zell. *vid. Pronuba yuccasella.*)

TENAGA. (Clemens.)

T. POMILIELLA, Clem.—Tin. Nor. Amer. 184.—Proc. Ent. Soc. Phila. i. 136.

(TELPHUSA.)

(*T. curvistrigella*, Cham. = *Gelechia longifasciella*, Clem.)

TINEA. (Haw.)

T. ACAPNOPENNELLA, Clem.—Tin. Nor. Amer. 233.—Proc. Acad. Nat. Sci. Phila. 1859, 257.

T. APICIMACULELLA, Cham.—Cin. Quar. Jour. Sci. ii. 257.

T. AUROPULVELLA, Cham.—Can. Ent. v. 90; vii. 125; viii. 19.

(*T. auristrigella*, Cham. = *Incurvaria mediostriatella*, Clem.)

T. AUROSUFFUSELLA, Cham.—Can. Ent. v. 87.

T. BEHRENSELLA, Cham.—Cin. Quar. Jour. Sci. ii. 249.

(*T. biflavimaculella*, Clem. *vid. T. rustacella.*)

T. BIMACULELLA, Cham.—Can. Ent. v. 87.

T. BISELIELLA, Hum.—Ins. Brit. iii. 34, and authorities there cited.—Bei. z. Kennt. 1873, 23.

(*T. lanariella*, Clem.)—Tin. Nor. Amer. 39, 50, 52, 60.—Proc. Acad. Nat. Sci. Phila. 1859, 251, 258. *Vid. post, crinella, flavifrontella*, and *lanariella.*

(*T. carnariella*, Clem. = *T. pellionella.*)

T. CŒMETARIÆELLA, Cham.—Can. Ent. v. 85; viii. 105.

T. (HOMOSETIA) COSTOSIGNELLA, Clem.—Tin. Nor. Amer. 235.—Proc. Ent. Soc. Phila. ii. 128.

T. COSTOSTRIGELLA, Cham.—Can. Ent. v. 87.

(*T. crinella, vid. biselielle* and Treat. Ins. 493.)

T. CROCICAPITELLA, Clem.—Tin. Nor. Amer. 49, 51, 60.—Proc. Acad. Nat. Sci. Phila. 1859, 257 *et seq.*

T. CROCEOVERTICELLA, Cham.—Can. Ent. viii. 106.

T. DEFECTELLA, Zell.—Bei. z. Kennt. 1873, 20.

T. (BLABOPHANES) DORSISTRIGELLA, Clem.—Tin. Nor. Amer. 38, 49, 50.—Proc. Acad. Nat. Sci. Phila. 1859, 257 *et seq.*—Bei. z. Kennt. 1873, 20; 1875, 136.

(*T. flavifrontella*, Linn.—Guide, 346.—Treat. Ins. 494.—Ont. Rep. 1873, 27.—Am. Nat. i. 422, *biseliella*.—Ag. Rep. 1864, 556.)

T. FUSCIPUNCTELLA, Haw.—Ins. Brit. 33, and authorities there cited.—Bei. z. Kennt. 1873, 22.

(*T. nubilipennella*, Clem.)—Tin. Nor. Amer. 39, 50, 52.—Proc. Acad. Nat. Sci. 1859, 257, 259.

T. FUSCOMACULELLA, Cham.—Can. Ent. v. 88.

T. FUSCOPULVELLA, Cham.—Can. Ent. v. 90.

T. GRANELLA.—Guide, 347.—Treat. Ins. 496.—Ag. Rep. 1854, 65; 1855, 98; 1864, 556. (*? variatella*, Clem.)

T. GRISSEELLA, Cham.—Can. Ent. v. 88.

T. GRUMELLA, Zell.—Bei. z. Kennt. 1873, 21.

(*T. hordei* = *T. cerealella* = *Gelechia cerealella*.)

T. IMITATORELLA, Cham.—Can. Ent. viii. 105.

(*T. iridella*, Cham. *vid. Incurvaria iridella*.)

(*T. lanariella*, Clem. = *biseliella*.)

T. MACULABELLA, Cham.—Can. Ent. v. 90.

T. MACULIMARGINELLA, Cham.—Can. Ent. vii. 212.

T. MARGINISTRIGELLA, Cham.—Can. Ent. v. 88.

T. MARMORELLA, Cham.—Can. Ent. vii. 212.

T. MINUTIPULVELLA, Cham.—Can. Ent. vii. 212.

T. MISELLA, Zell.—Bei. z. Kennt. 1873, 23.

T. MISCEELLA, Cham.—Can. Ent. v. 86.

T. NIVEOCAPITELLA, Cham.—Cin. Quar. Jour. Sci. ii. 249.

(*T. nubilipennella*, Clem. = *fuscipunctella*.)

T. OBSCUROSTRIGELLA, Cham.—Can. Ent. vi. 232.

T. ORLEANSELLA, Cham.—Can. Ent. v. 85.

T. PELLIONELLA, Lin.—Ins. Brit. 32.—Tin. Nor. Amer. 49, 51.—Proc. Acad. Nat. Sci. Phila. 1859, 256, 257 (as *carnariella*, Clem.).

(*T. pustulella*, *vid. Œta pustulella*.)

T. STRAMINIELLA, Cham.—Can. Ent. v. 86.

T. 7-STRIGELLA, Cham.—*Ante*, p. —.

T. TAPETZELLA, Lin.—Ins. Brit. iii. 28.—Tin. Nor. Amer. 258.—Proc. Ent. Soc. Phila. iii. 505.—Can. Ent. vii. 124.—Rep. Nox. Ins. Mo. iii. 10.—Guide, 347.—Amer. Ent. and Bot. i. 90.

T. THORACESTRIGELLA, Cham.—Can. Ent. viii. 106.

T. (HOMOSETIA) TRICINGULATELLA, Clem.—Tin. Nor. Amer. 234.—Proc. Ent. Soc. Phila. ii. 128.

T. TRIMACULELLA, Cham.—Can. Ent. v. 88.

T. UNOMACULELLA, Cham.—Cin. Quar. Jour. Sci. ii. 258.

(*T. vestianella*, *vid. rusticella*.)

T. RUSTICELLA, Hüb.—Ins. Brit. iii. 27.

(*T. biflavimaculella*, Clem.)—Tin. Nor. Amer. 38, 49, 50, 237.—Proc. Acad. Nat. Sci. Phila. 1859, 257.—Proc. Ent. Soc. Phila. ii. 413.—Bei. z. Kennt. 1873, 20.

(*T. vestianella*.)—Rep. Nox. Ins. Mo. iii. 10.—Amer. Ent. and Bot. i. 90.

T. VARIATELLA, Clem., ?=*granella*.—Tin. Nor. Amer. 50, 53.—Proc. Acad. Nat. Sci. Phila. 1859, 257, 259.—Can. Ent. vii. 125.

T. ZEÆ, Fitch.—Rep. Nox. Ins. N. Y. i. 320.

THEISOA. (Chambers.)

T. CONSTRICTELLA.
(*Œcophora constrictella*, Zell.)—Bei. z. Kennt. 1873, 91.
(*Theisoa bifasciella*, Cham.)—Can. Ent. vi. 75; vii. 93; ix. 24.

T. MULTIFASCIELLA, Cham.—Can. Ent. vi. 75; vii. 93.

TISCHERIA. (Zeller.)

T. ÆNIA, Frey & Boll.—S. E. Z. xxxiv. 222.—Cin. Quar. Jour. Sci. i. 210.—*Ante*, 99.

T. AMBROSIÆELLA, Cham.—Cin. Quar. Jour. Sci. ii. 112, 238.

T. BADIELLA, Cham.—Can. Ent. vii. 124.—Cin. Quar. Jour. Sci. ii. 109, 111.

T. CASTANEÆELLA, Cham.—Cin. Quar. Jour. Sci. ii. 111.

T. CITRINIPENELLA, Clem.—Tin. Nor. Amer. 39, 80, 82.—Proc. Acad. Nat. Sci. Phila. 1859, 324.—Can Ent. iii. 208.

T. COMPLANOIDES, Frey & Boll., ?= *zelleriella*, Clem.—S. E. Z. xxxiv. 220.—*Ante*, 99.

T. CONCOLOR, Zell.—Bei. z. Kennt. 1875, 146.

T. FUSCOMARGINELLA, Cham.—Cin. Quar. Jour. Sci. ii. 110.

T. HELIOPSISELLA, Cham.—Cin. Quar. Jour. Sci. ii. 113, 238.

T. LATIPENNELLA, Cham.—*Ante*, 97.

T. MALIFOLIELLA, Clem.—Tin. Nor. Amer. 141.—Proc. Acad. Nat. Sci. Phila. 1860, 208.—Can. Ent. iii. 208; v. 50; vi. 150.—S. E. Z. xxxiv. 222.—Cin. Quar. Jour. Sci. ii. 111.

T. PULVELLA, Cham.—*Ante*, 99.

T. PRUINOSEELLA, Cham.—Cin. Quar. Jour. Sci. ii. 110.—*Ante*, 97.

T. QUERCITELLA, Clem.—Tin. Nor. Amer. 221.—Proc. Ent. Soc. Phila. ii. 13.—Can. Ent. iii. 208.—S. E. Z. xxxiv. 221.—Cin. Quar. Jour. Sci. ii. 111.—Bei. z. Kennt. 1875, 146.—*Ante*, 97.

T. QUERCIVORELLA, Cham.—Cin. Quar. Jour. Sci. ii. 109, 111.—*Ante*, 97.

T. ROSETICOLA, Frey & Boll.—S. E. Z. xxxiv. 223.—Cin. Quar. Jour. Sci. i. 210; ii. 112.

T. SOLADIGINIFOLIELLA, Clem.—Tin. Nor. Amer. 80, 81.—Proc. Acad. Nat. Sci. Phila. 1859, 326.—Can. Ent. iii. 208.

T. TINCTORIIELLA, Cham.—Cin. Quar. Jour. Sci. ii. 108, 111.

T. ZELLERIELLA, Clem.—Tin. Nor. Amer. 80, 81.—Proc. Acad. Nat. Sci. Phila. 1859, 326.—Can. Ent. iii. 208.—S. E. Z. xxxiv. 220.—Cin. Quar. Jour. Sci. ii. 109 *et seq.*—Bei. z. Kennt. 1875, 147.—*Ante*, 98.

TRIFURCELLA. (Zeller.)

T. OBRUTELLA, Zell.—Bei. z. Kennt. 1873, 116.

(TRICHOTAPHE. Clemens.)

(*T. flavicostella, juncadella, serrativittella, setosella et ochrepalpella*, Clem. *vid. sub Gelechia.*)

TRIPANISMA. Clemens.

T. PRUDENS, Clem.—Tin. Nor. Amer. 125.—Proc. Acad. Nat. Sci. Phila. 1860, 168.

(VENILIA. Chambers.)

(*T. albapalpella, vid. Eido albapalpella.*)

WALSHIA. (Clemens.)

W. AMORPHÆELLA, Clem.—Tin. Nor. Amer. 241.—Proc. Ent. Soc. Phila. ii. 419.—Rep. Nox. Ins. Mo. iii. 133.

WILSONIA. (Clemens.)

W. BREVIVITTELLA, Clem.—Tin. Nor. Amer. 254.—Proc. Ent. Soc. Phila. ii. 428.

XYLESTHIA. (Clemens.)

X. CLEMENSELLA, Cham.—Can. Ent. v. 174; ix. 208.
X. CONGEMINATELLA, Zell.—Bei. z. Kennt. 1873, 18. ?=*clemensella.*
X. PRUNIRAMIELLA, Clem.—Tin. Nor. Amer. 39, 54, 59, 60.—Bei. z. Kennt. 1873, 17.

YPSOLOPHUS. (Haw.)

Y. CARYÆFOLIELLA, Cham.—Can. Ent. iv. 224.
Y. CONTUBERNALELLUS.
(*Chætochilus contubernalellus*, Fitch.)—Rep. Nox. Ins. N. Y. n. 1, 231; n. 3, sec. 44.
(*Y. eupatoriiella, vid. Nothris eupatoriiella.*)
Y. FLAVIVITTELLUS, Clem.—Tin. Nor. Amer. 254.—Proc. Ent. Soc. Phila. ii. 429.—Bei. z. Kennt. 1873, 83.
Y. MALIFOLIELLUS.
(*Chætochilus malifoliellus*, Fitch.)—Rep. Nox. Ins. N. Y. n. 1, 221; n. 3, sec. 43.
Y. PAUCIGUTTELLUS, Clem.—Tin. Nor. Amer. 228.—Proc. Ent. Soc. Phila. ii. 124.—Bei. z. Kennt. 1873, 83.
Y. POMETELLUS.
(*Rhinosia pometellus*, Har.)—Treat. Ins. p. —.
(*Chætochilus pometellus*, Fitch.)—Rep. Nox. Ins. n. 1, 221; n. 3, sec. 42.
Y. PUNCTIDISCELLUS, Clem.—Tin. Nor. Amer. 228.—Proc. Ent. Soc. Phila. ii. 124.—Bei. z. Kennt. 1873, 85.

Y. QUERCICELLA, Cham.—Can. Ent. iv. 223 *et seq.*—*Ante*, p. —.
Y. QUERCIPOMONELLA, Cham.—Can. Ent. iv. 223 *et seq.*
Y. RUDERELLA, Cham.—Can. Ent. iv. 222. (? Var. *pometellus.*)
Y. STRAMINEELLA, Cham.—Can. Ent. iv. 224. (? Var. *punctidiscellus.*)
Y. TRIMACULELLUS,
(*Chætochilus trimaculellus*, Fitch.)—Rep. Nox. Ins. N. Y. n. 1, 223.
Y. UNICIPUNCTELLUS, Clem.—Tin. Nor. Amer. 229.—Proc. Ent. Soc. Phila. ii. 125.—Bei. z. Kennt. 1873, 86.
Y. VENTRELLUS.
(*Chætochilus ventrellus*, Fitch.)—Rep. Nox. Ins. n. 1, 224.

ART. VI.—THE TINEINA OF COLORADO.

By V. T. Chambers.

Descriptions and notes of many of these species have heretofore been published in the Cincinnati Quarterly Journal of Science, and in the Canadian Entomologist. It has, however, been deemed best to give a list of the species, with brief notes upon them, in the present paper, which, with the new species now first described, presents a compendium of all that has been published upon the subject to this time.

Pronuba yuccasella Riley.—Very abundant in the flowers of "soapweed" (*Yucca*) as high up on the mountains as 7,000 feet, in the vicinity of Colorado Springs. Mr. Riley says (Fifth Annual Report Noxious and Beneficial Insects of Missouri, p. 151), "Front wings uniformly silvery white", but at least half of the numerous specimens observed by me in Colorado had the wings more or less spotted with black (like *Hyponomeuta*, to which in the form and neuration of the wings it seems somewhat allied, though its affinities seem to be rather with the true *Tineidæ;* it is, however, *sui generis*). These spots vary in number from 0 to 13, and when all are present are arranged as follows: one (the largest) at the end of the disk, with three others before it, making a coffin-shaped figure; one on the dorsal margin before the cilia; and eight others around the apex. The one at the end of the cell is found oftener than any of the others, and those around the apex oftener than the other four. The expanse of wings is given by Mr. Riley at 1.00 inch for the ♀ and 0.90 inch for the ♂. The largest ♀ specimen observed by me scarcely exceeded 10 lines and the smallest ♂ was scarcely 6 lines, so that it seems to attain a greater development of wings in the East than in the West, contrary to the rule said by Prof. Baird, Dr. Packard, and others to prevail among other insects and birds.

A large proportion of the seed-pods examined by me, fully one-third, showed no trace of the larva.

Anesychia mirusella Cham. (Can. Ent., vol. vi, p. 233).—First described from Texas, from numerous specimens, all of which seem to have been somewhat faded, or are a little different from the Colorado specimens. In these, the outer surface of the second joint of the palpi is dark-brown, the inner surface white; third joint white, with the tip and a wide annulus in the middle brown; antennæ fuscous; head, thorax above, and patagia white; a brown spot on the middle of the anterior margin of the thorax, and four others, two on each side, one of them about the

middle and the other before the tip; costal margin and dorsal half of the fore wings white; a wide brownish-ocherous basal streak occupying the remaining portion of the wing from base to tip. In the white of the dorsal margin before the middle is a small brown spot, and there are some others extending around the apex, four of them on the dorsal, three on the costal side; cilia white; hind wings and cilia pale fuscous; abdomen stramineous; anal tuft yellow; legs sordid grayish-white. Expanse of wings, $\frac{11}{16}$ inch. Edgerton, among oaks; altitude, 6,500 feet.

A. discostrigella n. sp.—Allied to the preceding species, but having the fore wing of nearly the same general color with the wide basal streak of that species, and the margins not white; this color may perhaps be called a purplish-gray, with a slight ocherous tinge in this species, and it is sprinkled with white. The scales are fine. A white streak extends along the fold, and contains three blackish streaks, the first near the base, the last about the middle. Above the fold is a narrow, wavy, blackish line, margined with white, ending, at the end of the cell, in a distinct blackish spot, beneath which is a white spot, margined behind by another small black spot, and a row of black spots around the base of the cilia, which are white. Head and upper surface of thorax white, with a black spot on the anterior margin of the thorax, a small one on each of the patagia, and two others (one about the middle, and before the tip on each side of the thorax); antennæ with alternate annulations of white and black, the white prevailing in the basal and the black in the apical portions; palpi white, the second joint dusted externally with black, with a black annulus near the tip, and the tip of the third joint blackish; abdomen and anal tuft ocherous-yellow; legs blackish on the anterior, and ocherous-yellow on the hinder surface. Expanse of wings, 1 inch. Edgerton, among oaks; altitude, 6,500 feet.

To the naked eye, the fore wings appear of a watery-gray or leaden hue, with a row of white spots along the middle, each margined by one or two smaller blackish spots, and a row of black spots around the apex.

Nothris? bimaculella n. sp.—Third joint of palpi slender and much longer than the second, pointed; second joint with a brush, as in *N. verbascella;* hind wings trapezoidal, wide, not incised beneath the tip. Pale creamy-yellow, with a silky luster, with a minute brown spot on the fold and one at the end of the cell; outer surface of the second joint of palpi fuscous. Expanse of wings, 8 lines. Edgerton, in June.

Harpalyce tortricella Cham. (Can. Ent., vol. vi, p. 235).—A single damaged specimen was taken among scrub-oaks. I am convinced, however, that it is identical with the Texas species.

This generic name, of course, cannot stand. How I came to overlook the fact that it was pre-occupied among *Geometridæ*, by Stephens, need not now be explained.

Plutella cruciferarum Auct.—Captured on Berthoud's Pass. Altitude about 11,500 feet.

Gelechia serratipalpella n. sp.—From the peculiar structure of the palpi, this species will probably be excluded from the true *Gelechia;* they resemble those of *G. gallæsolidaginis* Riley, except that the scales along the lower edge or surface are arranged like the teeth of a saw, more especially those of the second joint, as in *gallæsolidaginis*, both the second and third joints are laterally compressed, the third joint having a blade-like form. In this species, the tip of the third joint projects as a minute point beyond the scales. Hind wings sharply emarginate beneath the tip, and again a little so behind the anal angle (that is, there is a slight projection, or tooth, between the tip and the anal angle, and another very little one *at* the anal angle). Both pairs of wings rather narrow. Palpi, head, thorax, and antennæ gray (under a lens of higher power they appear pale-gray, dusted with brown), with one or two faintly-indicated pale gray annuli on the palpi, and the antennæ are alternately annulate with pale gray and brown. Fore wings pale orange-yellow, the base and the dorsal margin to and around the apex gray; cilia of the costal margin and the extreme costal margin to the base also gray; base of the cilia dusted with brown, and the orange-yellow of the apical part of the wings is also sparsely dusted with brown. At the base of the wing, the gray portion is externally margined with brown, and the gray of the hind margin sends three small projections, or teeth, into the yellow. One of these projections is beneath the fold before the middle of the wing-length; the others are above the fold, one of them about the middle of the wing-length, and the other a little farther back. Each of these projections is tipped with brown scales, and immediately behind the last one the usual costal and dorsal spots, the dorsal being the largest, are indicated by a paler gray than that of the surrounding portion of the wing. In the cilia, at the apex of the wing, is a small brown spot, and there are one or two others before it in the costal cilia. Hind wings pale leaden-gray, with pale stramineous cilia. Legs and abdomen gray, the tarsi annulate with white. Lower surface of abdomen pale-gray: anal tuft white. Expanse of wings, 7½ lines. Edgerton, in July.

G. pedmontella n. sp.—Resembles the preceding species somewhat structurally and slightly in the pattern of ornamentation. Palpi but little compressed laterally; third joint not blade-like, but with the point projecting, as in the preceding species: second joint serrated, but less distinctly so than in *serratipalpella*. Both pair of wings rather narrow, the hind pair sharply emarginate beneath the apex, but the margin not toothed. Palpi dark reddish-brown, marked with white, especially along the upper and inner surface of the second joint, and forming an indistinct annulus on the third joint. Head, upper surface of thorax, and the antennæ rich brown. Fore wings red-brown or maroon color, sparsely dusted with dark-brown on the disk, but densely so along the margins, especially in the apical part of the wing, where brown is the prevailing hue and is dusted with white: cilia of the hind margin of a

pale smoky hue. Hind wings pale leaden-gray, with stramineous cilia; abdomen above of the same hue with the fore wings, but paler, and the under surface gray and reddish-brown mixed; anal tuft silvery-gray; legs and tarsi dark reddish-brown or brown, the tarsi annulate with white. Expanse of wings, $\frac{9}{16}$ inch. Edgerton, June.

G. glycyrhizœella n. sp.—I hesitate about giving this species this specific name, because of some doubt whether it really feeds on *Glycyrhiza lepidota*, although it—a single specimen—and only it, came from a collection of leaves of that plant, with larvæ of a *Gelechia* feeding on them. The larvæ and their mode of feeding seemed to me to be identical with others feeding on an allied plant, *Amorpha fruticosa*, and from which I bred the very different species described (*post*) as *G. amorphœella*.

In ornamentation, this species resembles that just described (*G. pedmontella*), but is paler, larger, and with wider wings, and the palpi are very different, not being at all compressed or serrated; the second joint is brush-like and longer than the third; hind wings emarginate beneath the apex. Second joint ocherous, paler on the inner side, brownish on the outer surface; third joint brown, with a whitish line along the inner surface; head ocherous, each scale tipped with blackish; antennæ brown; upper surface of thorax and fore wings yellowish-ocherous, the wings dusted densely with brown and somewhat with white along both margins, the dusted portion on the dorsal margin wider than that on the costal margin; cilia whitish or pale ocherous, dusted with fuscous, the dusting forming three hinder marginal lines, one before and one behind the middle of the cilia, and a fainter one at the tip; hind wings of a pale leaden hue, with pale stramineous cilia. Upper surface of abdomen and anal tuft ocherous, the under surface of the abdomen ocherous, dusted with fuscous, as are also the legs and tarsi. Expanse of wings, 8 lines. Edgerton, July and August.

G. amorphœella n. sp.—Bred from larvæ sewing together the terminal leaves of young specimens of *Amorpha fruticosa*, and, as stated above, supposed to be the same larva found feeding in the same way on *Glycyrhiza lepidota*. It may therefore turn out, either that these four specimens did not come from the larva feeding on *Amorpha*, or that the species described above did not come from the larva on *Glycyrhiza*.

Second joint of the palpi brush-like; hind wings slightly emarginate. Dark steel-gray, with two minute darker spots, one on the disk, the other at the end of the cell; under surface of abdomen yellowish. Expanse of wings, 8½ lines. Edgerton, July and August.

Larva.—Head and next segment pale straw-color, the hind margin of the first segment brown, and with two small black spots on top of each of the first three or four segments; five longitudinal pale purplish stripes beginning on the second segment. It becomes bright pinkish-red before becoming a pupa.

A captured specimen which I believe belongs to this species has the head and palpi paler than the thorax.

G. æquipulvella Cham. (Can. Ent., vol. iv, p. 192).—Two specimens taken at Edgerton in June. A widely-distributed species, having been heretofore described from Kentucky, Texas, and California. It is possible, however, that two closely-related species have been confounded by me.

G. roseosuffusella Clem. (Proc. Acad. Nat. Sci. Phila., 1860).—Rare in Colorado. Two specimens taken at Edgerton in July. As widely distributed as the preceding.

G. monumentella n. sp.—Second joint of palpi with the scales thickened beneath, hind wings excised beneath the tip. Pale ocherous, irrorate with pale gray, with several small fuscous specks on the fore wings, two of which are on the fold, and a series of indistinct ones around the base of the cilia; fourth, fifth, sixth, and seventh segments of the abdomen fuscous on top, and segment pale straw-color; tarsi brown, annulate with whitish; hind wings pale fuliginous. Expanse of wings, 6½ lines. Monument Park, June.

G. trilineella n. sp.—Second joint of the palpi with a divided brush, the scales of the brush longest at the base and gradually shortening to the apex; third joint rather slender, pointed, and about as long as the second. Hind wings excised beneath the tip. Gray; face and inner surface of palpi pale or whitish-gray; thorax gray, with a narrow line along its middle, and one at the patagia darker gray. Upper surface of the fore wings suffused with whitish-gray, with three short black streaks, one of which is about the middle of the fold, another (sometimes this one is interrupted) about the middle of the disk, and one at the end of it; sometimes this latter one is absent. At about the apical third of the wing-length is a dark spot or streak of irregular form and not very definitely outlined, and behind it an angulated fascia, formed by the usual opposite costal and dorsal spots touching or nearly touching each other, is indicated by a paler or whitish-gray portion of the wing; it is much more distinct in some specimens than in others: behind it, nearly to the apex, the wing is darker than before it, but becomes whitish again around the apex, with an indistinct dark spot at the apex. Cilia gray, with a dark hinder marginal line at their base, and dusted with dark scales. In some specimens, the courses of the veins beyond the cell in the dark apical portion are indistinctly marked by still darker lines. Scarcely any two specimens are alike in the marks on the wings, some being much darker than others; some have a distinct fascia, nearly straight; in others, it is angulated, or not distinct, and in some only traces of the opposite costal and dorsal spots are visible, and in some the hinder marginal line is not distinct from the dusting of the cilia. In all my specimens, however, the black longitudinal lines on the fold and disk are distinct. Hind wings pale fuscous or smoky, with pale stramineous cilia; abdomen pale yellowish above, pale gray dusted with darker scales beneath; legs gray; tarsi annulate with white. Expanse of wings, 8 lines. Edgerton, in July. It shows strong affinities with *G. depressostrigella* Cham. from Texas.

G. ? ocellella n. sp.—Second joint of palpi with a tuft, as in the ♀ *Anarsia*, except that it does not project quite so far forward; something between that of *Anarsia* and *Chelaria*, as figured in Ins. Brit., v. 3. Hind wings slightly emarginate beneath the apex; third joint of palpi smooth and pointed, and as long as the second antennæ, slender, simple, with close-set joints, not denticulate. Basal half of outer surface of second joint of palpi blackish, apical half whitish, the two colors distinctly marked, and not shading into each other; inner surface pale gray; third joint pale gray, except the outer surface at the tip, which is blackish; antennæ dark gray; head, thorax, and fore wings pale gray, the course of the veins beyond the cell distinctly marked by dark lines, the discal cell dark gray, with a nearly circular disk, central whitish spot containing a dark gray pupil; abdomen pale gray above, whitish beneath, with a dark line along each side; on the upper surface of each of the first three segments are two ocherous yellow spots separated by a dark gray line; legs brownish. Expanse of wings, 9 lines. A single ♀ taken at Edgerton in July.

G. ? anarsiella n. sp.—This species, which is quite common about Edgerton in June and July, has very much the appearance of an *Anarsia*, though the brush of the second joint of the palpi scarcely projects enough in front, being almost exactly as in *G. ocellella* (*supra*). Eight specimens before me are all ♀. I have not seen the male. The antennæ are slender and not denticulated. The neuration of the hind wings is the same with Mr. Stainton's figure (Ins. Brit., v. iii) of that of *G. rufescens*, except that in this species the cell is closed; that of the fore wings is identical with *Nothris verbascella*. A worn specimen of this species (?) was also taken at Twin Lakes, altitude 10,000 feet.

The hind wings are sharply emarginate beneath the tip. Dark steel-gray except a whitish spot on the second joint of the palpi; white annulations on the tarsi and two or three microscopic whitish specks or white scales scattered over the wings, and the cilia are pale-gray, dusted with dark gray or blackish scales. Hind wings of a bluish smoky hue, with paler cilia. Expanse of wings, 7½ lines.

G. ochreostrigella n. sp.—Palpi robust, not very long, with the scales of the second joint divided beneath, but scarcely forming a brush; third joint with the tip suddenly sharpened; hind wings emarginate beneath the tip.

Several attempts to describe this species without looking at the previous trials have each given a different account of the wings. Under a strong lens, the color appears to be hoary, almost white, but so densely dusted with brownish as to obscure the ground-color, and streaked with ocherous; under a lower power, it appears pale grayish, tinged with ocherous, and with the ocherous streaks still distinct, and with some short blackish streaks; while to the naked eye it appears very pale gray, tinged with ocherous. Under the lens, the two most distinct ocherous streaks are one along the fold and one from the base within the costal

margin, and one along the hinder portion of the cell, which contains two small dark spots, one of which is at the end of the cell; both of these spots, however, are sometimes wanting. Hind wings pale grayish, with stramineous cilia. Antennæ whitish, annulate with brown. Head and thorax of the general hue of the wings or more ocherous; outer surface of the second joint of palpi densely dusted with brownish, and two brownish annuli on the third joint. Expanse of wings, 6½ lines. Edgerton, June.

G. bicostomaculella n. sp.—Palpi slender and simple; antennæ robust, with the joints very distinct; hind wings scarcely emarginate beneath the apex. Second joint of palpi pale yellow, marked externally with fuscous; third joint fuscous, with the tip and an annulus about the middle yellow; antennæ fuscous, annulate with yellow; face yellow; vertex and thorax brown. Fore wings pale creamy-yellow, with a silky luster, very sparsely (microscopically) dusted with fuscous, with the base, a small triangular costal spot before the middle, and a large one behind the middle brown, and a line of brown scales around the apex. Hind wings paler than the fore wings; abdomen and legs pale yellowish, the tarsi annulate with brown, and the tibia stained with fuscous on the outer surface. Expanse of wings, 7 lines. Edgerton, in July.

G. triocellella n. sp.—Second joint of palpi with a spreading brush; third joint about as long as second; posterior wings incised beneath the tip. Brownish-gray; second joint of palpi white on inner and upper surfaces; third joint with a large white spot on top about the middle and a minute one close to the apex; antennæ annulate with whitish. On the fore wing are three ocellated spots, one on the disk, one at the end of the disk, and one on the fold; they are ocherous, with a brown pupil; a small ocherous basal streak near to the costal margin; hind wings pale grayish, with a slight fuscous tinge; legs and under surface of the body whitish, densely dusted with gray-brown. Expanse of wings, ½ inch. The ocellated spots on the fore wings are indistinct to the naked eye. It is the most common "micro" about Edgerton in June.

G. concinnisella Cham.—Formerly described from Texas (Cin. Quar. Jour., vol. ii, p. 253). By some mistake the alar expanse is there stated to be 3-16th inch; it should be 9-16th. It may prove to be identical with *G. apicistrigella* Cham. from Kentucky, but I think not. *Apicistrigella* is silvery white, suffused with pale yellowish, while this species has the fore wings suffused with fuscous, especially the apical half, but it is white at the apex, while *apicistrigella* has the apex suffused with reddish-ocherous. In *apicistrigella* there are three short white costal streaks following the long oblique one; in this specimen there are only two, which are scarcely visible (owing to denudation?) in the Texas specimens. The "apical spot, or dash", is just within the dorsal margin, not strictly at the apex, and margins posteriorly the white of the apex. Edgerton, June.

G. collinusella n. sp.—Thorax, head, palpi, and antennæ white, the outer surface of the second joint of the palpi with two small patches of brownish dusting, the antennæ annulate with brown, and the thorax faintly stained with pale yellowish. Fore wings very pale yellow, almost whitish, with three whitish fasciæ not very distinct from the surrounding parts of the wing, except by the brownish scales with which they are dusted; the first is about the basal fourth, the second about the middle, and the third just before the cilia, and each of the first two contains a small brownish spot placed just above the fold; apex and cilia sparsely dusted with brownish scales. Hind wings pale fuscous, with paler cilia *excised beneath the tip*. Abdomen pale fuscous above, white beneath; anal tuft white. Expanse of wings, nearly 8 lines. Foot-hills near Edgerton; altitude about 7,000 feet.

G. gallæsolidaginis Riley.—Specimens bred from galls in *Solidago* gathered in Middle Park (altitude 8,000 feet) in August are smaller and with the markings much less distinct than those from the Mississippi Valley. See remarks in Cin. Quar. Jour. Sci., vol. ii, p. 290.

G. 10-maculella Cham. (Cin. Quar. Jour. Sci., vol. ii, p. 290); *G. 4-maculella* Cham. (Cin. Quar. Jour. Sci., vol. ii, p. 290); *G. 8-maculella* Cham. (Cin. Quar. Jour. Sci., vol. ii, p. 291); *G. albimarginella* Cham. (Cin. Quar. Jour. Sci., vol. ii, p. 291).—All captured at Spanish Bar in July and August; not met with elsewhere except a few specimens of the last two taken in Middle Park.

G. ribesella Cham. (Cin. Quar. Jour. Sci., vol. ii, p. 290).—A pretty species, the larva of which sews together the leaves of the red wild currant in the mountains. Altitude, 8,500 feet.

Larvæ of Gelechia.—Several larvæ of this species were met with which I did not succeed in rearing to the imago. One of these feeds on the leaves of *Thermopsis montana*, sewing many of them together in a bunch. It is pale greenish-white, head stramineous, next segment pale stramineous, and has five greenish-yellow or sometimes almost reddish longitudinal stripes extending over the other segments.

Another when very small mines, and when older sews together, leaves of *Physalia viscosa*. It has the head and next segment piceous, and on each of the other segments six minute black spots (two behind the other four), and in the latter part of June is one-fourth inch long. Young specimens scarcely show the black spots. It is at first pale greenish, then becomes bright apple-green, and when full grown the head and upper surface of the next segment are ferrugineous, divided on the segment into two spots, that segment and the next one being bright apple-green and the remaining segments purple. I have little doubt that it is the larva of *G. physaliella* Cham., heretofore described from Kentucky.

Another feeds on oak-leaves. Head and next segment reddish stramineous or pale ferrugineous. Next three segments green, remainder

yellowish-white, four small black spots on each segment, and six longitudinal purplish lines.

Another was taken at the highest altitude at which any Lepidopterous larva was observed; that is, at an altitude of nearly 12,000 feet. The timber-line on Mount Elbert, where this larva was found, is given by Hayden (Report, 1873) as 11,871, but the dwarfed and stunted willows usually extend along the courses of the little rivulets some feet higher than timber-line as popularly understood (that is, the limit of growth of trees—pines and aspens). Feeding on the leaves of these dwarfed willows, and sewing them together in little bundles, I found this larva, but, unfortunately, did not succeed in rearing it (one pupa still living may produce an imago next spring). It is at first green, but as the larva gets older it becomes dark olive-green, with the black tubercular spots placed 4–2. Head and upper surface of next segment black. It attains about one-half inch in length.

Another larva sews together leaves of aspens, and is found up to the extreme limit of the growth of that tree. The head and thorax are dark brown, the other segments purplish-brown, with black tubercular spots placed as in the last species (*supra*), and with six longitudinal white lines extending over the other segments; length over two-thirds of an inch. Another, or probably a younger stage of the same larva, has the head and next segment pale stramineous and the other segments paler.

Another, found also sewing together aspen-leaves, but possibly the larva of a *Tortrix*, is greenish-white, with a spot on each side of each segment piceous; length, three-fourths of an inch.

Œcophora borcasella Cham. (Can. Ent., vol. v, p. 189).—From near Covington, Ky., altitude about 1,200 feet; London, Ontario, Canada; and Belleview Mountain, near Idaho Springs, Colorado, altitude about 10,000 feet.

Œ. 4-maculella Cham. (Cin. Quar. Jour. Sci., vol. ii, p. 292).—From Spanish Bar.

Glyphipteryx montisella Cham. (Cin. Quar. Jour. Sci., vol. ii, p. 292).—A handsome and very variable species, taken in large numbers in July and August at Spanish Bar, feeding on flowers of *Helianthus* and *Heliopsis;* altitude, 7,800 feet. The food-plant of the larva is unknown. A single specimen which I believe to belong to this species was observed but not captured on Mount Elbert, at an altitude of about 10,000 feet.

Lithariapteryx abronicella Cham. (Can. Ent., vol. viii).—Among all the little gems (*Litharia*) of the entomological world, a large proportion of which belong to the *Tineina*, I know of none that surpass this species in the beauty and elegance of its adornment. As a mere object of beauty for the low powers of the microscope (say 5 to 10 diameters), it is almost unrivaled. It is also interesting structurally, for its relation to four other genera of *Glyphipterygidæ*, being about equally related to *Glyphipteryx*, *Æchmia*, *Perittia*, and *Tinagma*. The imago is fond of

the bright sunshine of July and August, and may be found especially in the afternoon fluttering about the food-plant of the larva, the fragrant *Abronia* (*A. fragrans*), the leaves of which are mined by the larvæ. A more detailed account of it is given in the Canadian Entomologist.

Argyresthia montella n. sp.—Face and palpi yellowish; tuft and thorax white; antennæ fuscous, annulate with white; fore wings fuscous, the apical portion indistinctly dusted with white, and with indistinct short, white, costal streaks before the apex, each dark-margined before; the dorsal margin is white as far as the fold, and very faintly dusted; *no dorsal fuscous streak;* there is a row of fuscous scales around the base of the cilia, which at the apex have to the naked eye the appearance of a minute spot. Hind wings, cilia, and upper surface of the abdomen pale grayish; under surface of the wings grayish-fuscous, and tuft whitish; legs whitish, the tarsi stained with yellowish. Expanse of wings, 7 lines. Among scrub-oaks at Edgerton in July.

A. quercicolella n. sp.—Palpi, head, thorax, and antennæ white, the antennæ dusted with brown. Fore wings pale saffron-yellow (in some lights pale golden), with the basal fourth of the dorsal margin white, terminating in an oblique white dorsal streak, which crosses the fold; there is also a basal white streak, which extends along the fold to the dorsal oblique streak, so that with the white of the dorsal margin it incloses a basal streak of the pale saffron hue between the fold and the dorsal margin; the oblique dorsal streak is dark-margined both before and behind. The basal white streak along the margin is sometimes faintly dark-margined internally, and the one along the fold is sometimes dark-margined on both sides. Behind the middle of the wing is an oblique, white fascia, which is nearest to the base on the dorsal margin, and is dark-margined both before and behind; the space before it as far as the dorsal oblique streak is suffused with fuscous, and the costal half of the fascia is sometimes dusted with fuscous. The apical part of the wing is rather densely dusted with fuscous, and has two small white costal spots, and a dorsal one placed opposite to the first of the two, giving the appearance of a fascia, the middle of which is dusted with fuscous. Sometimes all these spots are small and inconspicuous, and the apical half of the wing is dusted with white and fuscous intermixed. Cilia pale fuscous, with the tips and a hinder marginal line at the base dark brown. Hind wings pale fuscous; both fore and hind wings dark fuscous beneath. Under surface of the body white; legs yellowish-white; upper surface of abdomen pale fuscous, with a bluish tinge. Expanse of wings, 5 lines.

The neuration of the hind wings is like that of *A. nitidella*, as figured in Ins. Brit. vol. iii; the fore wings have the apical vein furcate, as in *A. arcenthina* (*loc. cit.*), but have five instead of four veins beneath it. Edgerton, in June, among scrub-oak.

A. altissimella n. sp.—Of a leaden hue, except that the vertex is whit-

ish, the antennæ annulate with white, the palpi are a little darker than the general hue, except the under surface of the second joint, which is whitish. Cilia paler than the wings. Expanse of wings, scant 6 lines In some lights, the fore wings appear silvery or pale golden. Taken in July, among dwarf-willows, on the side of Mount Elbert. Altitude, 11,000 feet.

A. pedmontella n. sp.—Resembles *A. bélangerella* Cham. closely, and possibly a larger series of specimens might connect them. Head and appendages white, the antennæ annulate with brown; thorax white; fore wings grayish-brown above the fold, white beneath it, the white sparsely sprinkled with grayish-brown, but in the apical part of the wing the grayish-brown is densely dusted with white; about the middle of the dorsal margin, the white is interrupted by a slightly oblique brown, nearly square spot, which extends to the fold, and is faintly outlined by whitish margins across the fold as far as the middle of the wing; there are three or four very indistinct whitish costal streaks in the apical part of the wing, scarcely distinguishable from the white dusting of that portion. A brown streak extends around the apex at the base of the cilia, interrupted by two small white spots on the dorsal margin, and by one on the costal margin, and with another one before it. (Perhaps it would be as correct to say that a row of alternate brown and white spots extends around the base of the cilia, becoming fainter the farther we proceed away from the apex.) Cilia fuscous, with an indistinct whitish hinder marginal line about their middle; hind wings grayish-fuscous, with paler cilia; abdomen fuscous; legs brown on their anteroir, white on their posterior surfaces. Expanse of wings, 6 lines. Edgerton, in July, among oaks.

A. gædartella ? Linn.—This species was first recorded from this country by me on the strength of a single specimen received by me from M. Bélanger, taken at Quebec; and I then noted some points in which it seemed to differ from *gædartella* as described by Mr. Stainton. I have found it abundant in the mountains among willows and alders, and one specimen was taken among willows on the side of Mount Elbert at an altitude of about 11,000 feet. *A. gædartella* feeds in Europe on birch, and it is possible that the American insects which I have placed in the species may belong to a new species closely allied to *gædartella*, or it may be a mere variety of *anduegiella*.

A. anduegiella ? F. v. R.—Taken at Edgerton in July among scrub-oak. In all my specimens there is a short basal streak slightly diverging from the costa, and the second fascia is produced along the middle of the apical part of the wing nearly to the apex, where it is furcate, one branch going to each margin, and both branches connected by a distinct golden-brown hinder marginal line around the base of the cilia, which are tipped with golden brown. The first fascia is dark-margined on each side, the vertex is white, and the face and palpi are pale yellow-

ish. In these respects they seem to differ from Mr. Stainton's description of *anduegiella* and from Dr. Clemens's description of *orcasella*, which Mr. Stainton says is the same species; but I have little doubt they belong to that species, though the absence of apple and thorn bushes, on which *anduegiella* feeds, from that region, and the fact that these specimens were found among oaks, might suggest a doubt.

Gracilaria alnivorella Cham. (Cin. Quar. Jour. Sci., vol. ii, p. 298); *G. alnicolella* Cham. (Cin. Quar. Jour. Sci., vol. ii, p. 298).—Both species feed in the larval state upon leaves of the black alder (*Alnus* sp.?) as far up on the mountain-sides as those plants are found—over 10,000 feet.

G. accrifoliella Cham. (Cin. Quar. Jour. Sci., vol. ii, p. 299).—The larva feeds upon the bush-maple up as high as the food-plant is found, say nearly 10,000 feet.

G. populiella Cham. (Cin. Quar. Jour. Sci., vol. ii, p. 301).—The larva feeds on leaves of aspen up to over 10,000 feet altitude.

G. negundella Cham. (Can. Ent., vol. viii, p. 18).—The larva feeds upon leaves of the box-elder at Denver; altitude, 4,500 feet. No doubt, it will be found in the states east of the plains.

G. ribesella Cham.—This species is known only in the larval condition. It folds the leaves of the red wild currant so that the folded leaf resembles exactly one folded by *Gelechia ribesella*.

G. thermopsella Cham. (Cin. Quar. Jour., *loc. cit.*).—The larva mines leaves of *Thermopsis montana*. The mine is like that of *G.* (*Parectopa*) *robiniella* Clem., which the imago resembles.

The relationship of this species to *G. bosquella* Cham., *G.* (*Parectopa*) *robiniella* Clem., and *G.* (*Parectopa*) *lespidegæfoliella* Clem., affords a parallel to that of *Lithocolletis robiniella* Clem., *L. amphicarpœella* Cham., *L. amorphœella* Cham., and *L. texana* Zell., mentioned on a subsequent page. In each genus, four very closely allied species are found feeding on allied genera of *Leguminosæ*. The species of each genus are closely allied, not only structurally and in ornamentation, but in larval habits and the character of mines made by the larvæ in the leaves. The resemblance in ornamentation, however, is perhaps scarcely so close between the four *Gracilariæ* as between the four species of *Lithocolletis* (vide post, *Lithocolletis amorphœella*, &c.).

Corisceum, sp. indet.—Fifteen mines and larvæ of a species of this genus were met with in Cheyenne Cañon, but all died after spinning their cocoons. They were found upon a single bush of scrub-oak. The mine is on the *upper* surface, and is a *fac simile* of that made by *C. albanotella* Cham. on the *under* surface of white oaks in Kentucky. It is, however, a different species, I think.

Corisceum may be considered as a *Gracilaria* with tufted palpi.

Ornix.—This genus is also very closely allied to *Gracilaria*, differing from it mainly in its plainer colors and tufted vertex.

O. prunivorella Cham. (Can. Ent., vol. v, p. 50).—Described originally from Kentucky, but it is also found mining leaves of the wild cherry in the mountains up at least to 8,000 feet altitude.

Gracilaria and its allies are common everywhere, but seem to be especially numerous, both in individuals and species, in the mountains.

Coleophora argentialbella Cham. (Can. Ent., vol. vii, p. 75).—Formerly described from Texas. Taken also at Edgerton, Colo., among scrub-oak; altitude, 6,000 feet.

C. bistrigella Cham. (*loc. cit. sup.*).—Also originally described from Texas. A better description of it, however, will be found in Can. Ent., vol. ix. Taken in company with *C. argentialbella*.

C. basistrigella n. sp.—Antennæ simple; second joint of palpi with a minute tuft. Second joint of palpi white, marked with blackish scales on the outer surface; third joint with a blackish line *beneath*. Head whitish; antennæ and upper surface of thorax sordid grayish or pale fuscous; patagia and margins of thorax whitish. Fore wings pale egg-yellow, with a white streak from the base along the fold to the basal third of the wing-length; then leaving the fold, it passes backward above it as far as the end of the cell, the basal portion along the fold being margined *beneath* by a narrow brown line, and containing a small dark brown spot just before its end. The fore wings are narrowly margined along both the costal and dorsal margins from base to apex with white, the basal half of the white margins being narrowly margined internally by a line of brown scales, and the apical half by a series of brown dots or short lines. Hind wings pale grayish-fuscous; cilia of both wings pale straminеous. Abdomen brown above, whitish beneath, and tuft whitish. Hind legs yellowish, with tibia pale egg-yellow, and tarsi white. Legs of first and second pair fuscous on the anterior surfaces, with the joints and tarsi white. Expanse of wings, 6½ lines. South Park, in July; altitude, 9,500 feet. A pretty and singularly-marked species.

C. artemisicolella n. sp.—Second joint of palpi with a small tuft; basal joint of antennæ a little enlarged. Whitish, in some lights showing a faint ocherous tinge, and the fore wings well dusted with brown scales. Head, thorax, and palpi but little dusted; antennæ white, annulate with fuscous; abdomen brown above, paler beneath; anal tuft yellowish silvery; legs fuscous on their anterior surfaces. Expanse of wings, 7½ to 8 lines. Common in July about Twin Lakes up to about 10,000 feet altitude among sage-brush (*Artemisia*), upon which probably the larva feeds.

C. luteocostella Cham. (Cin. Quar. Jour. Sci., vol. ii, p. 294).—From Spanish Bar.

C. sparsipulvella Cham. (Cin. Quar. Jour. Sci., vol. ii, p. 294).—From Spanish Bar.

Bedellia somnulentella St.—Common in Europe and America. The

larva mines the leaves of morning-glory (*Ipomœa*). I have found it in Colorado at an altitude of over 6,000 feet.

Cosmopteryx montisella Cham. (Cin. Quar. Jour. Sci., vol. ii, p. 297).—One of the prettiest species of this splendid genus.

Batrachedra clemensella n. sp.?—Six specimens (2 ♂ 4 ♀) taken at Colorado Springs in June differ so much from two others (1 ♂ 1 ♀) taken in the valley of the Upper Arkansas on Cottonwood Creek, near Mount Harvard, in July, that I fail to recognize them as of the same species, while the resemblance is such as to make their separation as distinct species hazardous. I have not seen *B. salicipominella* Clem., but I cannot recognize either of these forms in his description. Neither have I seen *B. prœangusta* Hw., and the description in Ins. Brit., vol. iii (necessarily very brief in a work of that character), is my only means of determining whether my specimens belong to that species. Before I found the specimens from the Upper Arkansas, I had doubtfully referred those from Colorado Springs to *prœangusta;* but the resemblance of the specimens from Colorado Springs to those from the Arkansas is such that I am unwilling to separate them, while the latter differ so much from the description of *prœangusta* (*loc. cit.*) that I am equally unwilling to unite them. Both forms were found among cottonwoods, poplars, and willows. *B. prœangusta* is said to sew together the leaves of poplars, while *salicipomonella* feeds, according to Mr. Walsh, as quoted by Dr. Clemens (Proc. Ent. Soc., Phila., vol. v), in Dipterous and Teuthredinous galls in willow-leaves. Great numbers of these galls were found in willow-leaves from the foot of the mountains nearly up to timber-line, and in a few of them a Lepidopterous larva was found, but I have been unable to find my notes upon it, and cannot say whether it is the same described by Mr. Walsh or not. So, likewise, the leaves of cottonwoods, aspens, and willows are sewed together by Lepidopterous larvæ up to the limit of the growth of those trees; but none of these larvæ agree at all with Mr. Walsh's description of the larvæ of *salicipomonella*. Some of them are larvæ of *Gelechia;* some, I think, belong to the *Tortricidæ*. One of them, a greenish-white larva, with the head and a spot on each side of each segment piceous, approaches nearer to the larva described by Walsh than any of the others. *B. salicipomonella* evidently resembles *prœangusta* (as indeed Dr. Clemens states) closely; and in view of the doubt which seems to rest on the food-plant of *prœangusta*, and of the habits of the larvæ of *salicipomonella* which (on a very similar larva) Mr. Walsh found not only in the two species of galls above mentioned, but also on oak-leaves, I would suggest that all, including the Rocky Mountain species, may belong to one variable species, but for the fact that Mr. Stainton, who has seen both *prœangusta* and *salicipomonella*, makes no question (Staint., ed. Clem., *pass.*, p. 261) of their specific difference.

The specimens taken at Colorado Springs (*prœangusta?*) are sordid or ochreous white, dusted with dark grayish-brown or blackish scales, the

dusting almost equally dispersed over the head, thorax, and fore wings, but in fresh specimens it appears to be a little more dense above than below the fold, and is not quite so dense on the head. Palpi of the general hue, the second joint dark brown externally, with the tip and a band across the middle whitish third joint with two annuli, and the extreme tip fuscous; antennæ of the general hue, annulate with fuscous to a point beyond the middle, and thence to the tip fuscous, with only four or five wide whitish annuli. (Thus far the species from the Arkansas agree with those from Colorado Springs, except that the former have only two whitish annuli in the apical brown part of the antennæ.) The dusting is a little more dense on the wings of two of the six specimens than on the others; in all there is a distinct though faint golden ocherous streak along the fold, interrupted in one specimen by two fuscous dashes and in the others by one; there is another pale golden ocherous streak parallel to the fold, beginning on the disk and extending to the apex, interrupted by two brown dashes in four specimens and by only one in the other two, one of these two being the same that has two dashes on the fold; cilia whitish, those of the dorsal margin with a fuliginous tinge; hind wings of a smoky hue. Abdomen of the general hue, densly dusted above with fuscous, and with the posterior margin of each segment white without dusting; anal tuft whitish; legs dark gray-brown, annulate with white. Evidently this is much nearer *prœangusta* than *salicipomonella*, but the alar expanse scarcely exceeds five lines, nearly that of *salicipomnoella*, which Mr. Stainton gives as 5½ lines, while he gives that of *prœangusta* as seven lines.

The first thing which strikes one on comparing with the above the two specimens from the Arkansas (*clemensella*) is the much greater size and darker color of the latter. The expanse of wings of these is a little over seven lines, and while the Arkansas species appear to the naked eye as of a dark gray hue, those from Colorado Springs appear whitish. In the one, the dusting almost obscarest he ground color; in the other, it is scarcely apparent to the unaided eye. Indeed, I would describe the Arkansas specimens as having the thorax rather densely dusted above with dark gray-brown, and the wings dark gray-brown, sparsely dusted with white, with a narrow white streak from the base to the middle of the disk, a creamy spot on the fold almost surrounding a dark gray-brown spot, and a row of somewhat confused white spots (eight or nine in number) more or less confluent, and one at the apex; but the two specimens differ somewhat, one of them (♂) having the whole basal part of the wing above the fold creamy-white and only a little dusted with fuscous. Abdomen dark gray-brown, each segment margined behind with silvery-white, except that in the ♂ the anal segment is entirely brown and tuft silvery-white.

Cottonwood Creek (Upper Arkansas, near Mount Howard), altitude about 8,000 feet.

A specimen of *Batrachedra clemensella* and two of the supposed *B.*

prævangusta were sent to Mr. H. T. Stainton, the English authority on the *Tineina*. Unfortunately, they were almost utterly destroyed *in transitu*. One wing, however, Mr. Stainton recognized as that of the European species *B. prævangusta*. But whether it was the species referred by me to *prævangusta* or that which I have called *clemensella* could not be determined. But on comparing my specimens with two of *prævangusta* sent to me by Mr. Stainton, I find that my *clemensella* only differs from this species as follows:—It is a trifle larger; a larger part of the wings is dark-colored, so that in the Colorado specimens there are no blackish spots surrounded by ocherous, as in the European species, and thereby separated as distinct from the other blackish parts of the wing, but the blackish spots have, as it were, become confluent or coalesced with the other blackish parts of the wing. I therefore now refer *clemensella* to *prævangusta*. Then in the very points in which the European specimens of *prævangusta* differ from *clemensella*, they approach the supposed *prævangusta* from Colorado; and wherein they approach *clemensella*, they recede from the supposed *prævangusta* of Colorado. Thus the supposed *prævangusta* from Colorado is smaller than the European species, and while they have the blackish wing-spots as in the European species, those spots can scarcely be said to be surrounded with ocherous but rather with sordid whitish, and the entire wing is sordid white, *comparatively* little dusted with blackish. Thus the European *prævangusta* seems to be almost equally near my supposed *prævangusta* from Colorado and my *clemensella*. I consider all the specimens as variant forms of *prævangusta*.

Laverna? coloradella n. sp.—Guided by the analogies of the palpi, tongue, form and neuration of the wings, I place this species provisionally in *Laverna*, though the smooth wings, ornamentation, basal joint of the antennæ, and perhaps the form of the head might exclude it from that genus, which, however, as now accepted, is not very strictly limited. The vertex in this species is longer than wide, and so is the face; the basal joint of the antennæ is a little enlarged, and has a minute projecting tuft behind the stalk; tongue scaled; palpi overarching the vertex, with the second joint enlarged toward the apex and the third one pointed.

White; apical third of the primaries deeply stained with ocherous, especially along the base of the dorsal cilia, and a pale ocherous patch on the costal margin near the base extends to the fold; hind wings grayish; upper surface of abdomen grayish-ocherous, each segment margined behind with white; legs yellowish. Expanse of wings, 5½ lines. Edgerton, in July.

Neuration of fore wings as in *L. Staintoni*, that of the hind wings as in *L. langiella*, except that this has 5 instead of 4 veins to the hind margin, and the submedian and dorsal veins more distinct, perhaps more like *Chauliodus chærophilellus*.

A larva of a species of *Laverna?* burrows in the stem of *Physalis*

viscosa among the foot-hills about Edgerton. It makes a fusiform swelling in the stalk near the ground. I did not succeed in rearing the species. Four other species (*L. albella*, *L. albapalpella*, *L. guinella*, and *L. grandisella*) have also been described by me from Colorado in Cin. Quar. Jour. Sci. (*loc. cit. sup.*).

Eriphia concolorella, Cham. (Can. Ent., vol. vii, p. 55).—Formerly described from Texas. A single specimen much injured, but which I believe belongs to this species, was taken at Edgerton, Colorado, in July.

Tischeria.—Mines of two species of this genus belonging no doubt to species already well known in the Mississippi Valley were found in scrub-oak leaves near Colorado Springs.

Lithocolletis amorphœella n. sp.? or var.? and *L. amphicarpeœella* sp.? or var.?—These belong to the *robiniella* group, and entomologists will consider them species or varieties according to their ideas of what constitutes species. I have discussed this question elsewhere as to the specimens from *Robinia*, *Amphicarpeœa*, and *Asmodium*, and Dr. Clemens noted some of the differences between the species from *Robinia* and *Amphicarpeœa*, but did not consider the latter distinct from the former, and did not name it. As it seems to be an unsettled question whether they are distinct species or only what Mr. B. D. Walsh called "phytophagic varieties", it is, I think, best, or, at least, most convenient, to give them distinct names. Another allied species has been described, from Texas, by Prof. Zeller, as *L. texana*. It resembles *amorphœella* except that the latter has no white basal streak on the fold, has the first costal streak less oblique, has a minute silvery dorsal spot opposite to the last costal spot, and has a distinct apical blackish spot smaller than it usually is in *robiniella*. It (*amorphœella*) is smaller than *robiniella*, with the ground-color of the wings paler, and the dark color of the dorsal margin ceases abruptly just before the fascia. Its mine, like that of *robiniella* and all the others of the group, is white, but it is much smaller. The difference in width between the wings of *robiniella* and *texana*, as figured by Zeller, seems to me to be greater than that between *robiniella* and *amorphœella*. Indeed, Zeller's figure seems to me to represent the wing of *robiniella* a trifle too wide in proportion to its own length, and the first costal and second dorsal streaks are too distinct. In several specimens of *robiniella* (bred) now before me, the first dorsal is short, passes gradually into a silvery-gray streak, which is very oblique, and which, crossing the fold, unites with the second costal streak, forming a strongly-angulated fascia, which is produced (of the silvery-gray hue) a short distance back along the disk. This silver-gray streak is, it is true, not a clear white, like the streaks which it unites, yet it is of a different color from the surrounding portion of the wing, and in some lights glistens with a silvery-white luster. It is not represented in Zeller's figure, and that figure also represents the apical spot as a little larger and more indistinct than it is in my specimens; but, as I have elsewhere stated, it varies both

in size and form in bred specimens of *robiniella*. That which I have called above the "first dorsal streak" in *robiniella* is the one which is so denominated by Clemens; but, in fact, as I have elsewhere stated, there is on the dorsal margin, much nearer the base, and in the darkest part of the wing, another faint streak or spot which is only faintly indicated by a paler or more silvery portion surrounded by a dark margin, and which, in some lights, has a decided silvery hue. It is more distinct in some specimens than in others, and is well shown in Professor Zeller's figure. This faintly-indicated spot in *robiniella* becomes in *texana*, in *amphicarpeœella*, and in *amorphœella* a very distinct white streak, which Dr. Clemens noticed as one point in which *amphicarpeœella* differed from *robiniella*. Specimens (bred) of *amphicarpeœella* are also before me. This variety is a little larger than *robiniella*, of a richer reddish-golden hue, and the marginal streaks have a brighter silvery luster. The single specimen of *amorphœella* has no trace of a basal streak on the fold, nor has *robiniella* usually, though a few white scales are sometimes sprinkled on it. *L. texana* has a distinct white streak extending along the fold, and in *amphicarpeœella* this streak is still longer and brighter. In addition to what has been written above as to the *true* first dorsal streak (the one faintly indicated in *robiniella*), it is proper to add that I have bred specimens of *amphicarpeœella* in which the dark color of the dorsal margin ceased abruptly at about the basal fourth of the wing-length, and in which the remainder of the dorsal margin to the fold and as far back as the cilia is snowy white, only interrupted by a narrow oblique dark brown dorsal streak, placed about the third of the wing-length, and rep resenting the dark margin of one of the usual dorsal white streaks; and in other specimens the true first dorsal is as faint as in *robiniella*. Usually, however, there is a greater or less proportion of white scales, intermixed with the dark color of the dorsal margins. There is as much variation in the size of the apical spot in *amphicarpeœella* as in *robiniella*, and sometimes it covers the entire apex, and in this respect both, like *amorphœella*, seem to differ from *texana*. The marginal streaks in *amphicarpeœella* are less oblique than in *robiniella*, but more so than in *texana* or *amorphœella*. The last costal spot in *amphicarpeœella* is smaller than in *texana*, and has a small dorsal spot opposite to it, in these respects agreeing with *amorphœella*. In *texana* and *amorphœella*, the first costal and its opposite dorsal streak meet, and form a not very strongly-angulated fascia; in *robiniella*, as before stated, these streaks do not distinctly meet, but are connected by a silvery-gray line, and in *amphicarpeœella* they are still more distinct.

Thus the species or varieties differ in the size of the apical spot; but as specimens of the same variety differ among themselves, this cannot be considered specific, and, besides, *texana* and *amorphœella* are not known by a sufficient number of specimens. They differ also in the *distinctness* of the *true* first dorsal streak, but neither is this specific. They differ in the presence or absence of the basal streak, but its place

is sometimes indicated in *robiniella* by a few white scales on the fold; a single specimen of *amorphœella* does not afford sufficient ground for saying that it is always absent in that variety, nor the few specimens of *texana* that it is always absent in it, while in *amphicarpœella* it is sometimes faint and sometimes spreads over the whole dorsal margin behind the basal fourth. We cannot separate the varieties on this ground. There is a difference in brilliancy of coloring, *amphicarpœella* being the most and *amorphœella* the least brilliant; but this may be only the effect of different food, and this may also cause the difference of size, *amphicarpœella* again being the largest and *amorphœella* the smallest. But the remaining differences are more important; for although if the marginal streaks were equally oblique, the fact that opposite ones sometimes united and sometimes did not might easily be paralleled by other instances, yet when we find streaks so oblique as in *robiniella* and not distinctly confluent, and in *amorphœella* and *texana* streaks so nearly perpendicular to the margin, and so distinctly confluent, and also wings so much narrower in proportion to length as they are in the two latter species, we must admit that we have something more than merely accidental variations. It is at least a case of Mr. Walsh's phytophagous varieties.

L. salicifoliella Clem. & Cham. (Clem., Proc. Ent. Soc. Phila., vol. i, p. 81; Cham., Can. Ent., vol. iii, p. 163; Cin. Quar. Jour., vol. i; Can. Ent., vol. ix).

L. scudderella? Frey.—There is no doubt in my mind that Professor Frey's species is identical with *salicifoliella*. *L. salicifoliella* appears to be more common in high than in low latitudes and altitudes. I have found the larva mining leaves of aspens and willows up to near 11,000 feet.

L. alnivorella Cham. (Cin. Quar. Jour., vol. ii, p. 302).—I have not found it above 8,000 feet. There is another species which mines the leaves of a different species of *Alnus*, but which I did not succeed in rearing, the larva of which belongs to the *flat* group. (There are two larval forms in this genus; one cylindrical, and making a tentiform mine, usually on the under side of the leaf, like that of *L. alnivorella;* the other having a flat or depressed larva, which makes a flat mine, almost always on the upper surface of the leaf.) The mine has a central opaque portion containing the "frass", or excrementitious matter, with clear branches, or streaks radiating from it. I only met with it in a few instances at Manatou; altitude, 6,000 feet.

L. quercitorum Frey = *? L. fitchella* Clem. (*Argyromiges quercifoliella* Fitch).—*L. fitchella* seems to be common in the Eastern States. I have not seen it, and cannot determine certainly as to its identity with *quercitorum* Frey. If it is the same, *fitchella* has priority. I think they are most probably distinct. Frey described *quercitorum* from Texas. I have also bred it from mines in scrub-oak leaves at Edgerton, Colorado; altitude, 6,500 feet.

L. hamadryadella Clem. (Proc. Acad. Nat. Sci. Phila., 1859).—Very common east of Kansas, and not uncommon mining scrub-oaks in Colorado. I did not breed it, but the mine is easily recognized. I did not meet with it at a higher altitude than 6,000 feet.

L. cincinnaticlla Cham. (Can. Ent., vol. iii, p. 149).—The remarks above made as to *L. hamadryadella* apply also to this species. The two, so far as my observation goes, are nearly always found together; frequently in the same leaf. They are, however, very distinct, and so are their mines.

Lithocolletis, next to *Geleehia*, is usually a genus of numerous species; but it is less so in Colorado than I have found it elsewhere.

Lyonetia alniella Cham. (Cin. Quar. Jour. Sci., vol. ii, p. 303).—This species up to 10,000 feet is more numerous in individuals than any other.

Phyllocnistis populiella Cham. (Cin. Quar. Jour., vol. ii, p. 106).—Common mining poplar-leaves in the Mississippi Valley at an altitude of 400 feet, and in Colorado mining aspen-leaves up to about 11,000 feet.

P. ampelopsiella Cham. (Can. Ent., vol. iii, p. 207).—Common in Kentucky, altitude 400 feet, and in Colorado, altitude 6,000 feet.

Eurynome.—In the Cincinnati Journal of Science, I have described a species from Colorado, allied to *Bucculatrix* and to *Phillonome*, as *E. luteella*. The neuration of that species was not examined. In other respects, this species appears to be congeneric with it. The tongue and maxillary palpi are absent, while the labial palpi are moderately developed, with the second joint longest, and thus they differ from *Bucculatrix*. In repose, the antennæ are carried forward, diverging so as to form a wide letter V. They are a little more than half as long as the fore wings, with the stalk simple, and the basal joint, which is a little enlarged, covered with a small eye-cap and partly concealed by the long, loose scales of the roughened vertex, which extend down between the eyes, but do not cover the face. Fore wings lanceolate; hind wings narrowly lanceolate. The neuration of the fore wings in the species described below resembles that of *Bucculatrix cratægi*, as figured in Ins. Brit., vol. iii, p. 8. The subcostal vein gives off two branches to the costal margin before the end of the cell, another just behind it, and is furcate before the tip, one branch going to each margin. The median divides into three nearly equidistant branches; the fold is well indicated, and the submedian distinct; the cell is closed; and the costal vein attains the margin before the middle. In the hind wings, the cell is closed, (or nearly so); the subcostal furcate before the apex, one of the branches going to each margin; the median subdivides into three nearly equidistant branches, and the submedian is indicated.

E. albella n. sp.—Snowy white; the hind wings with a silvery tinge, and three faint, pale, ocherous, minute spots on the fore wings, two of which are on the fold (one of them near the hind margin of the wing), and the third is at the end of the cell. (Sometimes these spots are in-

visible.) Apex of the fore wings sparsely dusted with ocherous, and there is a row of minute ocherous specks forming a hinder marginal line about the middle of the cilia. Scales rather coarse. Expanse of wings, 4½ lines. Near Edgerton; altitude about 6,500 feet.

When the three ocherous spots are not visible on the fore wings, the insect is scarcely distinguishable from the species described below as *Bucculatrix albella* except by the neuration and by the presence of the labial palpi.

Bucculatrix albella n. sp.?—Snowy white; apex of fore wings and dorsal cilia very sparsely dusted with brownish scales. Expanse of wings, 4½ lines. Very near *B. nivella* Chamb. from Texas, and possibly only a variety of that species. Also resembles *B. immaculatella*, Cham. from Texas, but is smaller, and *immaculatella* has no dusting on the wings. Altitude, 6,000 feet; Edgerton.

A similar species (perhaps the same denuded) was taken among wild sage (*Artemisia*), on which it probably feeds, at Twin Lakes, altitude 9,500 feet.

Neptieula.—Both species and individuals of this genus appear to be rare in Colorado. In two years, I have not met with a specimen of it. Mines of three species have, however, been observed. One specimen of a mine of a (new?) species in an aspen-leaf was met with at an altitude of over 10,000 feet; another of another species, in a leaf of *Alnus*, altitude 8,000 feet; and two mines of another species in leaves of cottonwood, altitude 6,000 feet.

Of the seventy-nine species hereinbefore referred to (including those known only by mines, but not including the *Gelechia* larvæ, which I did not succeed in rearing), one (*Batrachedra prænangusta*) (if it is that species), though well known in Europe, is not known in this country except in Colorado; five (*Pronuba yuccasella*, *Plutella cruciferarum*, *Gelechia roscosuffusella*, *G. æquipulsella*, and *Bedellia somnulentella*) are almost universally distributed in the United States; seven (*Anesychia mirusella*, *Harpalyce tortricella*, *Gelechia concinnisella*, *Colcophora argyrestiadbella*, *C. bistrigella*, *Eriphia concolorella*, and *Lithocolletis quercitorum*) have been found only in Colorado and Texas; seven (*Gelechia gallæsolidaginis*, *Lamna griseella*, *Ornix pennivorella*, *Lithocolletis cincinnatiella*, *L. hamadryadella*, *Phyllocnistis populiella*, and *P. ampelopsiella*) have only been found in Colorado and in latitude 35° to 40° in the Mississippi Valley; and four (*Œcophora borealella*, *Argyresthia gœdartella?*, *A. anduegiella?*, and *Lithocolletis salicifoliella*) in Canada, as far south as Kentucky, and in Colorado.

The other fifty-five species have not as yet been found outside of Colorado. Of course, it is not meant that any or all of these species may not hereafter be found in other localities. The seven species common to Colorado and Texas alone have all been found only south of the divide between the waters of the Platte and the Arkansas. One of

those common to Canada and Colorado and the Ohio Valley was only found north of that divide (*Œcophora boreasella*); the other species appear to be generally distributed.

It thus appears that while several species found in Colorado have heretofore been found only in Texas, and others have been found in Texas and the Ohio Valley, or in the latter only, four Colorado species have been found in Canada; and these four have also been found in the Ohio Valley; and none of the described species appear to pertain to Colorado and Canada alone. This appears somewhat anomalous, the more especially as the flora and the birds of Colorado generally are supposed to show northern rather than southern affinities. But it may be explained partly at least by the following considerations:—

1. The number of known Texan species is at least four to one greater than those of Canada, and the proportion of species from the Ohio Valley is even greater still. Therefore it was to be expected that a larger proportion of these would be found in Colorado than of the comparatively little known northern species.

2. The greater number of Coloradan species are from the plains and foot-hills south of the divide between the Platte and the Arkansas, say below altitude 7,000 feet and latitude 39°, just as among birds, *Geococcyx californianus*, common in California, Arizona, New Mexico, Texas, and the foot-hills of Colorado *south* of the "divide", has never been found *north* of it. But this consideration is not so weighty as it might seem to be, because, since the distribution of the *Tineina* is so largely dependent on that of the plants on which they feed, many species thus far found only in the plains and foot-hills may be expected to be found at still greater heights.

3. The greater proportion of Texas species thus far made known are from the region of Dallas—not of a *very* southern character.

Still it remains a little strange that Colorado species from latitude 38° to 40°, and altitude 6,000 to 8,000, should *seem* to show greater affinities with species from the Ohio and Mississippi Valleys and Texas, latitude 34° to 40°, altitude 300 to 1,500 feet, than with species from Canada and New England, at much higher altitudes and latitudes.

Possibly further investigations may throw some light on it. But the *Tineina* are not very numerous in species in Colorado, though some species are very numerous in individuals; seventy-five species have been described. I do not believe twenty-five more remain to be described, and these will be found—or most of them—in the extreme northern, southern, or eastern portions of the State. Additional discoveries will *generally* extend the range in latitude, longitude, and altitude of species already known, rather than make known new species. Nevertheless, of the fifty-five species as yet only known to Colorado, a large proportion may, and probably will, be found in Canada, and thus it will result—as from other reasons might be anticipated—that the *Tineina* of Colorado will show greater affinities with those of Canada than with those of Texas.

ART. VII.—NOTES ON A COLLECTION OF TINEID MOTHS MADE IN COLORADO IN 1875 BY A. S. PACKARD, JR., M. D.

By V. T. Chambers.

Since the foregoing paper was written, another small collection of Coloradan *Tineina* has been submitted to me, concerning which I add the following remarks:

Glyphipteryx montisella Cham.—Specimens from Boulder, Colo. In the original account of this species I referred to a single specimen of a variety having a white spot on the base of the dorsal margin of the fore wings. This variety predominates in the collection from Boulder.

Elachista præmaturella? Clem.—A single specimen, with the head wanting, from "Kelso's" Cabin, foot of Gray's Peak, altitude about 11,200 feet. Not heretofore recorded from Colorado. It possibly may not belong to this species.

Gelechia packardella n. sp.—Closely allied to *G. cerciriselle* Cham. Labial palpi white on the inner surface, prettily spotted with black scales; the external surface of the second joint black to the tip, which is white, with a black spot; third joint black, with the base and an annulus about the middle white; basal portion of the antennæ black (the remainder broken off from the single specimen). Head white, dusted with black scales, especially on the vertex, where the black predominates, irrorate with violaceous. Patagia black, tipped with white; thorax black, with a white spot on each side before the tip. Fore wings black, the dorsal margin to the fold white from the base to the cilia, the black color projecting across the fold into the white, but not far enough to touch the margin. There is a narrow white dorsal streak about the apical fourth of the wing-length pointing a little obliquely backward, and indistinctly connected with a nearly square costal white spot, which is a little farther back than the dorsal streak. The disk is somewhat obscurely streaked with ocherous, and under a lens small white specks and scales appear scattered in the apical part of the wing; cilia pale fuliginous, with a blackish hinder marginal line. (The hind wings and abdomen are wanting in the single specimen before me.) Expanse of wings, 8 lines. "Georgetown"; altitude about 8,000 feet.

G. solaniella Cham.—This species was originally described from specimens taken and bred in Kentucky and Missouri. Afterward, specimens received from Texas were referred, with some little doubt, to the same species. The single injured specimen in this collection, like those from Texas, lacks the grayish or whitish dusting of the original specimen, and may prove to be distinct or a variety.

This collection also contains the following species heretofore described: *Coleophora artemisicolella* Cham., from Kelso's Cabin, Gray's Peak; *Laverna grandisella* Cham., Georgetown; *Laverna albocapitella?* Cham., Georgetown.

I am not absolutely certain of the correctness of this identification. The head and palpi in these two specimens are rather pale-gray than white, and there are other minute differences. One of the two specimens is badly rubbed, and the other is so mounted as to nearly destroy the thorax and prevent any satisfactory view of the wings. But I believe it to be *albocapitella*. That species has heretofore been described only from Texas. Thus another species is added to those common to Texas and Colorado, and this one is found at a considerable elevation in the mountains and north of "the Divide".

Laverna miscecolorella Cham., heretofore described from Texas only, now from Central Colorado.

Plutella cruciferarum auct.

Anesychia discostrigella Cham., Manitou.

Actote bella Cham., heretofore known only from Texas. This specimen is labeled "Denver".

Butalis immaculatella Cham. — Originally described from Texas. While the differences between the species of *Butalis* which have been described in this country by Dr. Clemens and by me are as great as those which separate the recognized European species, I doubt very greatly whether they are all, or perhaps even half of them, really distinct. The differences which separate them are chiefly in ornamentation, and are not great. I have bred specimens of *B. matulella* Clem. (the larva of which mines leaves of the "hogweed" (*Ambrosia trifida*), which presented greater differences than many of those that are recognized as distinct species in this country and in Europe.

Blepharocera gen. nov.—This genus is allied structurally to *Dasycera* perhaps as closely as to any other, but is altogether unlike it in coloration. There are no maxillary palpi; the labial are slender (more so than in *Dasycera*), recurved, overarching the vertex; tongue of moderate length and scaled; antennæ not reaching the tips of the wings by about one-third of the length of the latter, with the basal joint a little thicker than the stalk, which is slender and rather densely clothed in the male with long cilia (longer than in *Dasycera* and more thickly); forehead rounded; face but little retreating; head smooth. Cilia of both pairs of wings rather long. Fore wings broadly lanceolate. (Having but a single specimen, one fore wing of which was ruined in denuding it, and not wishing to injure the other, I can give no satisfactory account of its neuration.) Hind wing narrower than fore wing, lanceolate, more elongate in proportion to width than in *Dasycera*. Costal vein long, near the margin; subcostal attenuated toward the base and reaching the margin

close to the tip; the median subdivides into three branches, the last two of which are close together at the end of the cell; cell closed by a distinct discal vein, which sends two branches to the dorsal margin; submedian *indistinctly furcate at the base.*

B. haydenella n. sp.—Grayish-fuscous. Fore wings rather densely dusted with white, having a tranverse fuscous spot (not dusted) on the fold before the middle; a smaller one at the end of the cell, and the apex fuscous, not dusted with white. Articulations of the tarsi whitish. Expanse of wings, 7½ lines. *Dasycera newmanella* Clem., to which this species is structurally allied, and *Hamadryas newmanella* Clem., which is still more closely allied to *Dasycera* than this species, are found from Texas to New England, but not as yet in Colorado. The separation of *Bassettella* from *Dasycera* as a new genus is perhaps questionable, and the generic name *Hamadryas* has also been given to an Australian genus of butterflies.

Besides the species above mentioned, this little collection also contains a specimen of *Tinea* (sp.?) and two other *Tineina*, all too much injured for recognition or description. Two only of the thirteen recognizable species are new, but four others are new to Colorado, three of the four having been heretofore found in Texas, and the fourth both in Texas and in Kentucky. All of these four were taken north of "the divide" in Colorado, and three of them at an altitude of about 8,000 feet near the Snowy Range, and where frost and snow are not infrequent in August. It is true that both Texas and Colorado are included by Mr. Wallace in one subdivision of the Nearctic Region. But one would scarcely expect such a division to hold good in such a group as the *Tineina*, whose distribution is governed more perhaps than any other insects by that of particular plant-species. On the contrary, I had expected to find the species of the high plains and cold mountain-regions in latitude 38° to 40° approximating those of British America and the Northern United States in latitude 44°, rather than those of even the Ohio Valley, latitude 39°, or those of the Texas prairies, latitude 32°. Possibly this may yet prove to be the case when we are better acquainted with the species of Canada and New England. But so far as we can now determine, the *Tineina* of Colorado are to a much greater extent allied to those of Texas than to those of Canada or even of the Ohio Valley. Mr. Wallace suggests that so little is known of the distribution of the *Noctuidæ* and *Tineidæ* that any study of the subject as to their general distribution over the earth must lead to erroneous conclusions, which is no doubt true. Yet enough is known to establish the fact that the families and many if not most of the leading genera are of very general if not of universal distribution; such genera, for instance, as *Depressaria*, *Gelechia*, *Plutella*, *Elachista*, *Laverna*, *Cosmopteryx*, *Glyphipteryx*, *Coleophora*, *Lithocolletis*, *Bucculatrix*, and others, each of which is represented in all or the greater number of Mr. Wallace's "regions".

ART. VIII.—ON THE DISTRIBUTION OF TINEINA IN COLORADO.

By V. T. Chambers.

Dr. Packard mentions, in Hayden's Report for 1873 (p. 548), that Lieutenant Carpenter found a *Tortrix* larva somewhere in the mountains of Colorado, at an altitude of above 12,000 feet, and this seems to have been the only Microlepidopteron seen above timber-line by Lieutenant Carpenter. I do not find that any other species has been recorded from high altitudes in the Rocky Mountains. At an elevation of nearly 14,000 feet, I saw a specimen of a *Tortrix* and two specimens of a *Pterophorus*, but unfortunately was not able to capture either. This was near the top of Mount Elbert. *Argyresthia altissimella* Cham. was captured on the same mountain at an altitude of about 11,000 feet, and a specimen of *A. gœdartella?* Auct. was taken at the same place. *Plutella cruciferarum* was taken, and a specimen of a *Coleophora* observed but not captured, at about the same elevation, near Berthoud's Pass; and *Phyllocnistis populiella* Cham. was found in the larval state up to the extreme limit of the growth of the aspen, 11,000 feet or more. Larvæ of two species of *Gelechia* were found as high up, sewing together aspen-leaves; and the larva of another species was found at a higher altitude than any other larva of *Tineina*, fairly above timber-line as it is generally understood; that is, the limit of the growth of pines; for it sews together the leaves of the stunted willows which creep along the margins of little rivulets for a short distance higher up the mountain-side than the limit of the pines, up in fact to a height of nearly 12,000 feet. But the distribution of the *Tineina* is governed by that of the vegetation on which they feed. Of butterflies and the larger moths, each species feeds usually on a variety of plants, and their distribution is not determined by that of a single plant. But the species of *Tineina*, and especially the leaf-mining *Tineina*, are *usually* confined to a single food-plant. Comparatively few of them feed on more than a single plant-species; and when a species does feed on more than one species of plant, those on which it feeds are *usually* closely allied. Of course, there are numerous exceptions, but this is the rule, and when the rule prevails the geographical range of the moth is generally determined by that of its food-plant, so that when the plant is not found, of course the moth cannot be; and where the plant is indigenous, there the moth will *usually* be found with it. To a much greater extent, therefore, than in other *Lepidoptera*, the distribution of a species

of *Tineina* is dependent upon that of a single plant-species, and consequently in passing above timber-line *Tineina* might be expected to become exceedingly rare. In point of fact, I found none except the *Gelechia* larva on willows before mentioned, and in all probability that species will be found also far below timber-line. Hayden, if I remember aright, gives 11,776 feet as the height of timber-line on Mount Elbert.

The *Pterophorus* observed by me as above stated was probably *P. cinereidactylus*, which has been taken in the mountains of New England; and it is to be regretted that I did not succeed in taking it, so that this fact might have been determined; and that it might also be determined whether it differs in size, in relative length of peripheral parts, or in depth or intensity of color, from the New England specimens. Dr. Packard's observations (*loc. cit.*) tend to establish the rule that the western species are larger, with greater relative development of peripheral parts, and greater depth and intensity of color than their eastern congeners; and in view of his observations, and those of Mr. Wollaston and others, on insects of other orders and of other countries, and in consideration of the bright sunlight and prevailing high winds in Colorado, I had expected to find the rule confirmed among the *Tineina*, or else to have found a much larger proportion than usual of apterous species, since the bright light would tend to develop color; and either the absence of the power of flight, or its greatly-increased development, would tend to the protection of species against atmospheric influences. But I found nothing to confirm these views. On the contrary, so far as color is concerned, the *Tineina* of Colorado, and, so far as I have had an opportunity of observing them, those of California likewise, are plainer and more obscurely colored than those of the Mississippi Valley; and, so far as size and extent of peripheral parts is concerned, the individuals, when they belong to species found also in the Mississippi Valley, differ usually in no respect from those found in the latter region; and when species are allied to eastern species, they do not differ from them more than eastern species differ from each other. Thus the ♀ *Tinea* and allied genera are frequently apterous in the States and in Europe; but I saw only a single *Tinea* (damaged beyond recognition) in Colorado, and that was not apterous, nor was there any unusual development of the wings or other peripheral parts. *Tinea* appears to be but poorly represented there. The average size of *Pronuba yuccasella* Riley, in Colorado, is less than that given for it by Mr. Riley in Missouri; and it differs from Missouri and Kentucky specimens only in the fact that a large number of specimens have small black spots on the fore wings. *Hyponomeutidæ* are represented by numerous specimens of two species of *Anesychia*, one of which (*A. mirusella* Cham.) is common in Texas; they give no support to the theory. *Plutella cruciferarum* is, in Mr. Staintons's language, "found wherever man eats cabbage", and it appears to be the

same everywhere, or, if it varies, varies in the same way everywhere *Gelechia*, usually so numerous, both in species and individuals—more so than any other genus of the family—is but poorly represented in the mountains, more numerous in the foot-hills and plains than in the mountains, and *seems* to be more numerous in southern latitudes, as well as in lower altitudes. The species are usually of plain grayish or brownish colors, and present no contrast with their congeners from the East, either in ornament or structure. *Glyphipterygidæ* are represented by *G. montisella* Cham. and *Lithariapteryx abroniwella* Cham., the latter perhaps more brilliantly ornamented than any other species of the family, but neither showing any greater extent of peripheral parts. *Holcocera (Blastobasis) gigantella* Cham., however, on the other hand, has certainly a greater expanse of wings—15½ lines—than any other species of the genus, or perhaps I might say greater than any other species of the *Tineina;* but the wings are rather narrow for their length, and unlike all other species of the genus known to me (instead of having a deeper or more brilliant or intense color) it is white. Indeed, it seems to me that if the *Tineina* of Colorado have any characteristic colorational peculiarity, it is that there is perhaps a larger proportion of uncolored species. *Argyresthia* and *Gracilaria* are more numerously represented in Colorado, both by species and individuals, than any other genus, except *Gelechia*, and their species are decidedly less brilliant, and are plainer than the species of the Mississippi Valley, and where the species are the same they present no peculiarity of either form or color. *Coleophora* is well represented by characteristic species: *Laverna* by a few plain species; *Batrachedra* by a species which I believe to be the European *præangusta*, and by another new species (?) which certainly has a decidedly greater wing-expanse than any of the known species, besides being more *deeply* colored, not more brilliantly. *Eriphia concolorella* Cham., found as yet only in Colorado and Texas, is the same in both, so far as we can judge from the scanty material. *Tischeria* is represented by two species found in the Eastern States. *Lithocolletis* is less numerous, both in species and individuals, than in the States, where, next to *Gelechia*, it is perhaps the most abundant both in species and individuals. Three out of seven species are identical with those found in the East, and perhaps the fourth and fifth will also be found there, and the sixth is found in Texas, while the seventh, a variety of *robiniella* Clem., is smaller and of duller colors. The others show no departure from the common forms. The two species of *Phyllocnistis* have already been found in the East; they present no variation. *P. populiella* Cham., from an altitude of over 11,000 feet in the Snowy Range, is indistinguishable from the same species in the foot-hills at 6,000 feet, or from Kentucky at 500 feet. The single species of *Lyonetia*, more abundant in individuals than any other species, is unknown in the East as yet; and while not supporting the theory as to color, is, on the other hand, certainly larger than the other species of the genus. *Bucculatrix* has two species, both

paler in color than any of their eastern congeners and not larger. *Eurynome*, a genus founded on two species, found as yet only in Colorado, does not differ from the allied *Bucculatrix* in size or coloration. And the two or three species of *Nepticula* (or *Trifurcula ?*) are rare and known only by their mines.

These are the only genera which are known to be represented among the *Tineina* of Colorado, and notwithstanding the cases of *H. gigantella*, *Batrachedra* sp. ?, and *Lyonetia alniella*, the weight of evidence, such as it is, does not support the theory suggested, and if these three species seem to lend it any support, it would yet require the accumulation of a very much greater number of instances of increased size or peripheral development, or depth, or intensity of color, to demonstrate that these things have any necessary connection with the western habitat of species.

The *Tineina*, however, are generally not well adapted either to the proof or disproof of such a theory, so far as size and increase of peripheral development are concerned, since their minute size would make it difficult to detect any such small increase as would be likely to occur from such a cause, and if detected it might be considered to be within the range of variation of the species. As to color, however, they afford as good an opportunity of testing the theory as any other group, and here their testimony is decidedly against it.

Some of the species above mentioned are not yet known by published descriptions.

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NORTH AMERICAN MICRO-LEPIDOPTERA.

BY BRACKENRIDGE CLEMENS, M. D.

(*Communicated Aug.* 14, 1865.)

TORTRICIDÆ.

STIGMONOTA, Guenée.

Proc. Acad. Nat. Sci., Aug. 1860, p. 351.

Fore-wings with a curved blotch or lunule on the dorsal margin.

The blotch bearing three lines or streaks.....**tristrigana.**

The blotch bearing one streak.....**interstinctana.**

Stigmonota tristrigana. n.s.—Fore-wings blackish-brown, costa pale-yellow from near the base of the wing to the tip, with eight blackish, oblique streaks and four bluish metallic spots adjoining the yellowish costal stripe. On the middle of the dorsal margin is a large pale-yellow blotch containing three blackish lines, with a bluish metallic spot above it in the middle of the wing, and a semi-band between it and the hinder margin. Hind wings dark brown.

Coll. Ent. Soc. Philadelphia.—Virginia.

SERICORIS, Treit.

Exartema, Proc. Acad. Nat. Sci., Aug. 1860, p. 356.

The want of a good systematic work and European generic types renders classification in this family a work of much labor. I was not, however, convinced when I described the group Exartema, that it would be tenable as a new one; for it was the peculiar outline of the inner margin of the hinder wings, and the appendage attached to them, that chiefly induced me to describe the imagines included under this name as forming a new genus.

Upon a review of the subject, I think there is no doubt of the correctness of the present location of the insects included in this group. I have not enough specimens to determine whether the appendage referred to, is common to all the specimens described, or whether it is sexual or accidental.

It is difficult to tabulate the described species. Individuals not only vary considerably in hue, but species apparently distinct approach each other closely in general color.

Fore wings with a small white spot in the central fascia on the end of the disk.....**mutabilana.**

Fore wings yellowish, or ferruginous with black dashes and brown markings.

Fore wings without a small white spot in the central fascia.

Fore wings reddish-brown; markings pure brown.....**nitidana.**

Fore wings ochreous-brown or dark-brown; central fascia distinct.

With lustrous metallic dots along the markings.....coruscana.
With whitish spaces succeeding the basal patch and central fascia.....fasciatana.
With ochreous spaees sueceeding the pateh and fascia.
Patch and fascia entire, spaces ochreous white.....instrutana.
Patch and faseia triparted, spaees luteous.....fœdana.
With costa at base oehreous-white, without distinet pale spaces succeeding fascal patch and central fascia.....permundana.
Fore wings russet-brown: central fascia not distinct.
Varied with dull leaden stripes towards apex.....concinnana.
Fore wings testaceous or brownish testaceous.
Costa white at base and along hinder border, or nearly uniform testaceous with dull leaden hue.....versicolorana
Wings nearly coneolorous: thorax, costa and spot at basal angle ferruginous.....inornatana.
Fore wings testaeeous white.
Coneolorous: thorax, costa, spot at basal angle, ferruginous....inornatana.
With large basal patch and square patch near the tip, ferruginous.....gratiosana.

Sericoris coruscana. Clem.

Antithesia? coruscana, Proc. Acad. Nat. Sci., Aug. 1860, p. 346.

Sericoris gratiosana, n. s.—Fore wings testaceous-white, with a ferruginous basal patch, having a nearly straight margin, and a large square patch of the same hue, reaching from the middle of the eosta nearly to the tip of the wing and extended into the middle of the wing, with the outer edge extended as a stripe to the middle of the hinder margin. The basal patch is slightly dusted with blackish and the square patch is blackish on its inner edge. At the tip of the wing is a ferruginous dot and between it and the square pateh a few geminations.

The testaceous portion of the wing is slightly striated. Thorax and head ferruginous. Hind wings fuseous.

Coll. Ent. Soc. Philadelphia.—Virginia.

Sericoris concinnana, n. s.—Fore wings russet or ochreous-brown, much varied with brown dots and markings. The basal patch is dark brown and is well indicated only beneath the middle of the wing and a small spot on the base of the costa, the middle being of the general hue sprinkled with dark brown. The central fascia is indicated on the middle of the costa by a dark testaceous-brown patch and by another of the same hue on the inner margin and is interrupted in the middle of the wing by the general hue. In the apical portion of the wing is an oblique ochreous-brown stripe, extended from the dark patch on the costa to the middle of the inner margin and bordered on eaeh side by a non-lustrous leaden stripe. The space between this oblique stripe and the central fascia is sprinkled with brown and somewhat varied dull leaden streaks. At the tip of the wing is a dark brown spot and the costa is geminated with pale ochreous and dotted with dark brown. Cilia russet, dark brown at tip with three brownish spots in the cilia beneath the tip. Hind wings dark fuscous; cilia pale ochreous.

Coll. Ent. Soc. Philadelphia.—Virginia.

Sericoris mutabilana, n. s.—Fore wings reddish-brown, yellowish or pale-ochreous, with reddish-brown or testaceous-brown markings. The basal patch is angulated and at the base of the wing, shows the general hue. The central fascia is well marked and on its outer edge in the middle of the wing is a *whitish discal dot*. There is a subterminal fascia extending from the costa near the tip to the hinder margin above the anal angle. On the basal patch and central fascia are short black striæ. On each side of the central fascia are spaces, or bands of the general hue, each having a dark brownish line running its middle. The costa is spotted with blackish and geminated with yellowish or pale ochreous.

In the reddish-brown specimen or variety, the pale interspaces are ochreous on the costa and beneath it, are discolored with reddish.

It is scarcely possible, with the specimens before me to distinguish the species from the variety, and I therefore forbear to make a conjecture. The description has been written so as to include all the variations of hue.

Coll. Ent. Soc. Philadelphia.—Virginia.

Sericoris instrutana, n. s.

This specimen may be a mere variation of fasciatana. The ornamentation of the wings is very similar, as well as the color, but the size of the specimen is much less.

The whitish spaces on each side of the central fascia is more tinted with ochreous than in *fasciatana*. The outer margin of the basal patch shows two indentations and a central tooth or projection, while in *fasciatana* the outer margin is nearly straight or slightly curved. The central fascia is very narrow on the costa, dilating in the middle of the wing, its exterior margin bulging outwards and is somewhat interrupted near the inner margin of the wing; in *fasciatana* it is broad and diffuse on the costa. In *instrutana* the markings of the wings are pure dark brown, in *fasciatana* they are testaceous brown.

Coll. Ent. Soc. Philadelphia.—Virginia.

Sericoris fœdana, n. s.

This specimen, although of much smaller size, recalls *permundana;* but the pale spaces on each side of the central fascia are much broader in *fœdana* than in *permundana*.

Fore wings luteous with brown markings. The basal patch is deeply divided and forms three patches, the smallest of which is near the costa and is separated from the other parts. The central fascia is brown and is likewise divided into three parts, each of which is narrowly margined with dull bluish edging. The oblique streak from the hinder margin is brown and edged on both sides with dull-bluish.

It may be that *fœdana*, *concinnana* and *permundana* really constitute but one species. This must be determined in the future.

Coll. Ent. Soc. Philadelphia.—Virginia.

Sericoris versicolorana, Clem. Proc. Acad. Nat. Sci., Aug. 1860, p. 357.

This species, which is ordinarily distinguished by the white or yellowish-white costa at the base of the wing and the white space towards the hinder margin of the wing, is represented by a specimen in the Society's Collection, in which all the white is replaced by pale testaceous having in certain lights a dull bluish lustre. I think it is not necessary to describe it as a distinct species, as to my mind it is evidently a variation.

Doubtless too many species have been created out of the material that has been before me, but I have been governed entirely by a wish to notice clearly all the differences in individuals belonging to this group, and not by a desire to multiply descriptions

LOZOTÆNIA, Stephens.

Proc. Acad. Nat. Sci., Aug. 1860, p. 346.

The species described heretofore and in the present paper, may be tabulated as follows:

Fore wings purplish-brown.
  Hind wings pale-brownish.....**purpurana.**
Fore wings cinnamon or reddish-brown.
  Hind wings ochreous near the apex.....**Rosaceana.**
  Hind wings fuscous.....**fervidana.**
Fore wings ochreous.
  Hind wings dark-fuscous.....**fractivittana.**
  Hind wings pale-ochreous.....**vesperana.**
Fore wings gray.....**fuscolineana.**

Lozotænia vesperana. n. s.—Fore wings ochreous, with three ochreous brown spots, two along the costa near the middle and one on the inner margin of the wing beneath the costal spots. The wings are striated with numerous, short ochreous-brown lines. Hind wings pale-ochreous.

Thorax, head and labial palpi ochreous-brown.

Col. Ent. Soc. Philadelphia.—Virginia.

Lozotænia purpurana. n. s.—Fore wings dull purplish-brown, with the costa at the excised portion behind the tip, touched narrowly with pure bright brown. The hinder portion of the wing ochreous-brown, containing two slender dark brown lines which are parallel to the hinder margin. The basal patch is not distinct. The central fascia, oblique and dark purplish-brown. Hind wings pale-brownish, touched externally with fuscous.

Author's Collection.

Lozotænia fractivittana. n. s.—Fore wings ochreous, discolored towards the base, with brownish. On the costa are two dark brown spots, one about the middle of the costa, obliquely opposite to which on the inner margin near the

anal angle is a large spot of the same hue. The other costal spot is elongated and placed on the costa near the tip of the wing. Hind wings dark fuscous.

Col. Ent. Soc. Philadelphia.—Virginia.

Lozotænia fuscolineana, n. s.—Fore wings gray, slightly clouded with dark fuscous towards the tip and at the base, and marbled with blackish brown lines especially towards the tip. The basal patch is well marked by two parallel, blackish-brown, angulated lines. The central fascia, which is nearly transverse is dark-brown, and margined on each side by a blackish-brown line. The gray space on the basal side of the central fascia, has a slender, central blackish-brown line. The space exterior to the central fascia is clouded with fuscous, except a gray space above the anal angle and varied with delicate blackish-brown lines. Hind wings grayish-fuscous.

I think this imago can scarcely belong to this genus, but there is no other known to me in which it can be placed with more propriety. The costa is regularly arched from the base to the tip of the wing, with the costal fold not appressed. The apex of the wing is not produced upwards and the hinder margin is obliquely rounded. Independent of other considerations, the costal fold is not broad enough, to suggest the probability of its belonging to *Ptycholoma*, and this and the present one are the only genera amongst the *Plicatæ*, known to me, in which it can be placed.

Coll. Ent. Soc. Philadelphia.—Virginia.

XANTHOSETIA, Steph.

Xanthosetia albicomana, n. s.—Fore wings bright lemon-yellow, tinted especially towards the tip of the wing with reddish. From the base of the wing a reddish band set with lustrous scales, curves along the costa to the middle of the wing, leaving a lemon-yellow space at the base beneath the costa. Beyond the middle of the costa is an oblique band of the same hue likewise sprinkled with lustrous scales, and along the margin of the wing is a deep reddish stripe bearing lustrous points. Cilia lemon-yellow. Hind wings whitish. Head, thorax and labial palpi white.

Coll. Ent. Soc. Philadelphia.—Virginia.

STEGANOPTYCHA, Steph.

Proc. Ent. Soc. Philad., Dec. 1864, p. 519.

Fore wings pale-yellowish.....**Ochreana.**
Fore wings white, varied with blackish-brown.....**variana.**
Fore wings dark-brown or copperish-brown.
  Ocelloid spot silvery, with three black dashes.....**crispana.**
  Ocelloid spot ochreous, with one black dash.....**flavocellana.**

Steganoptycha crispana, n. s.—Fore wings dark-brown, varied with blackish-brown striations. The costa from the base of the wing to the tip, is striated with blackish-brown and beyond the middle is geminated with pale ochreous, the last gemination at the tip being large, white and with a silvery streak, edged on each side with brassy lines beneath it. Ocelloid spot silvery with a pale ochreous center, bearing three black dashes. Hind wings dark, fuscous.

Author's Collection.

Steganoptycha flavocellana, n. s.—Fore wings copperish-brown. The costa is striated from the middle to the tip with dark brown, the geminations faint and dull ochreous, those near the tip forming a dull ochreous spot. One of the costal striæ, which is dark-brown or luteous-brown, is extended very obliquely from the apical third of the wing to the hinder margin and curves behind the ocelloid spot. The ocelloid spot is pale ochreous, with a dull silvery spot along its inner margin and a small one on its upper, outer margin, with a black, central dash, and one on its costal edge. Hind wings dark fuscous.

Author's Collection.

Other specimens from Virginia, in Col. Ent. Soc. Philad., and one in my own, are not more than half the size of the imago described. Their general hue is paler than the specimen I have chosen for the typical one.

TORTRIX, Treit.

Tortrix lutosana, n. s.—Fore wings ochreous, or pale-ochreous. The basal patch is scarcely indicated, but the wing at the base is more or less speckled with dark brownish. The central fascia is well indicated and is dark-brown from the costa to the middle of the wing, and thence to the dorsal margin reddish-brown. Between the central fascia and the tip of the wing, is a dark brown costal spot. The terminal portion of the wing is of the general hue. Hind wings pale-fuscous.

In the dark specimens the general color of the wing is whitish, particularly towards the terminal margin and the basal patch is indicated and more or less defined by dark brownish lines.

Col. Ent. Soc. Philadelphia.—Virginia, and Author's Collection.

Tortrix incertana, n. s.—Fore wings cinnamon-brown; along the hinder margin pale ochreous. The basal patch is not indicated. The central fascia is broad, reddish-brown and on the dorsal margin interior to the central fascia, is a small, semi-oval dark ochreous spot, and the dorsal margin thence to the base is discolored with dark-brownish. The subapical patch on the costa is dark brown and beneath it, in the ochreous portion of the wing is a testaceous-brown spot. Hind wings dark fuscous.

Author's Collection.

These species are of small size, and were it not for the fact that the costal fold is absent, they might with propriety be included in *Lozotænia*.

The following species, I acknowledge frankly, I am unable to locate. It belongs to the family or group, *Tortricidæ*, but I cannot satisfy myself that it is a member of any genus in this group. The only work I have that treats of the *Tortricina*, is Mr. Wilkinson's British Tortrices, and his generic diagnoses are so peculiarly written, his tables of genera founded upon a fanciful comparison of the length of the middle joint of the labial palpi with the apical joint, that the location of a specimen is very troublesome and difficult. At some subsequent day, I will review what I have done in this group, as soon as I can obtain types of European

genera and thus correct the numerous errors I have doubtless committed, by describing new generic groups, when genera have already been created into which they could have been received and of which I have no knowledge.

Therefore, rather than describe the following insect under a new generic name, I prefer to place it here provisionally.

Tortrix? fumiferana.—Fore wings brown, varied with dark brown, short striæ. The basal patch is indicated by dark brown striæ, but the central fascia is not indicated. Following the basal patch is a grayish-brown space having a shining lustre; its exterior edge is irregular and it widens towards the dorsal margin, where it bears short, dark-brown striæ. About the middle of the costa is a round spot of the same hue and lustre, and along the terminal margin is a stripe with irregular margins, of the same hue and lustre bordered on each side with dark brown.

Sometimes the grayish-lustre is absent on the markings, which are then simply of a paler brown than the general hue. Hind wings dark fuscous.

Col. Ent. Soc. Philadelphia.—Virginia.

HALONOTA, Steph.

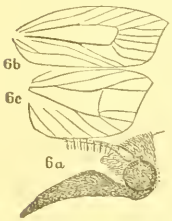
Proc. Acad. Nat. Sci., Aug. 1860, p. 357.

Halonota tautana, n. s.—Fore wings dark brown, having a coppery hue. The basal patch is large and well defined, and of the general hue. It is limited exteriorly by the dorsal blotch which is grayish with a violet hue, and is connected with the first geminated costal streak, containing a short, brownish line. Thence to the apex, the costa is streaked alternately with brownish and geminated with lustrous gray. Exterior to the dorsal blotch are two lustrous gray, transverse streaks. The hinder margin is spotted with black. Hind wings fuscous, with a coppery hue.

Coll. Ent. Soc. Philadelphia.—Virginia.

LEPTORIS.* n. gen.

Hind wings rather broader than fore wings, costa slightly arched in the middle, apex somewhat acute, apical margin slightly concave.



6 a, Head of *L. brevivittatana*.
6 b, Fore wing.
6 c, Hind wing.

The costal and subcostal veins have a common base. The branches of the subcostal are divergent from the origin of the discal, which is regularly curved. Median vein 4-branched, three of which are rather aggregated, the posterior remote.

Fore wings, costa not dilated at the base, regularly arched; apex acute; apical margin slightly excavated and oblique; anal angle rounded. The branches of the subcostal are equidistant, the apical, furcate.

The antennæ are doubly ciliated, with rather long hairs. The labial palpi are smooth, exceed the face by nearly twice

* Λεπτος tenuis, and ρις nasus.

the length of the head, rather slender, porrected, thickest opposite the face, thence suddenly convex and tapering to the tip, with the margin beneath slightly concave.

Leptoris breviornatana.—Fore wings tawny-yellow, with the veins and nervules brown, and with brown striæ beneath the nervules. An oblique brown band arises on the basal third of the costa, and runs to the middle of the dorsal margin, but does not reach it. On the costa, over the subcostal nervules, is a brown patch, striated with darker brown. Extreme apical margin brown, cilia tawny. Hind wings pale yellowish-white. Head and labial palpi dark brownish.

Coll. Ent. Soc. Philadelphia.—Virginia.

SMICROTES.

Costa with a slight fold at the base in the ♂.

Smicrotes virescana.—Fore wings greenish-yellow. Costa at the base touched with brown, with two testaceous spots on the costa, one about the middle and the other midway between it and the tip of the wing. The first costal spot is faintly extended across the wing as a yellowish band and the space between the spots is of a somewhat lighter hue than the rest of the wing. Hind wings grayish fuscous.

Author's Collection.

MIXODIA ?

Mixodia ? intermistana.—Fore wings blackish-brown varied with whitish that is much clouded and speckled with blackish-brown. The basal patch is indicated with tolerable distinctness, is blackish-brown, and angulated over the base of the disk. The central fascia, blackish-brown, of irregular form, contracted in the middle, expanded on the dorsal margin, and contains, about the end of the disk, *a rather conspicuous white spot.* The space between the basal patch and central fascia is grayish, much clouded with dark brown. Exterior to the central fascia the wing is sprinkled with white and at the anal angle is a white patch, speckled with dark brownish. The costa is geminated with white: the geminations are rather large from the middle to the tip. The white geminations are separated by blackish-brown spots. Cilia dark-brown, speckled with white especially beneath the tip. Hind wings grayish fuscous.

Author's Collection.

SIDEREA ?

Siderea ? nubilana.—Fore wings brown, with dark brown markings. The basal patch is indicated by a dark brown angulated line and the central fascia, by an irregular dark brown band which becomes ochreous-brown in the middle of the wing and seems to be separated from a conspicuous dark brown triangular patch near the dorsal margin, which is edged narrowly with ochreous. In the space between the basal patch and central fascia in the fold of the wing, is a dark brown spot. Near the anal angle is a dark brown, obliquely placed stripe, and one of the same hue above it. The costal space above these stripes is ochreous.

EURYPTYCHIA,* n. gen.

Hind wings broader than fore wings. Costal and subcostal veins with a common origin; branches of subcostal connivent. Median vein 4-branched, three of which aggregated, the two central ones from a common base.

* εὐρυς latus, πτυχη plicatura.

Fore wings *with a broad fold*, extending to the middle of the costa, closely appressed; at least three times longer than broad; costa straight, tip moderately acute, apical margin rounded. The nervules given off from the posterior end of the cell are bent towards each other, or are somewhat aggregated.

Head smooth, with ocelli at base of antennæ. Antennæ filiform, simple. Labial palpi *do not exceed the face*, are curved, smooth, rather slender, expanded towards the tip, the apical joint scarcely perceptible, except in front.

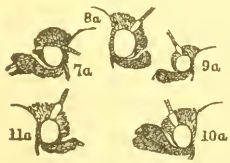
Euryptychia saligneana.—Fore wings white tinted with yellowish. The basal patch is dark brown. The wing beyond the basal patch is nearly white varied with leaden-colored speckles and striped over the nervules with dull, leaden-gray, transverse stripes, two of which near the anal angle form a white ocelloid patch. Immediately interior to the ocelloid patch is a small black spot, having a line of black atoms running into it, from above and beneath. Below the apex, on the hind margin, is a triangular brown patch which is varied with grayish and dotted with black in the middle and along the inner edge. The costa is geminated with white and striped with brown. Hind wings dark fuscous.

I have before me a single specimen of the above insect, received from my esteemed friend Benj. D. Walsh of Rock Island. It was bred by Mr. Walsh from a willow gall, a year or two ago. I have unfortunately mislaid the letter in which his account of it is written.

The imago appears to me to differ from all the genera of Plicatæ to a degree that warrants me to describe it as a new genera.

CALLIMOSEMA,* n. gen.

Fore wings narrow, with a very large ocelloid spot, nearly three times longer than broad across the anal angle; costa nearly straight; apex rather acute, apical margin obliquely rounded. Hind wings broader than the fore wings. Neuration, as in *Ioplocama*.



7 a, Head of *Siderca? nubilana.*
8 a, Head of *Euryptychia saligneana.*
9 a, Head of *Callimosema scintillana.*
10 a, Head of *Ioplocama formosana.*
11 a, Head of *Carpocapsa pomonella.*

Head small, smooth. Antennæ filiform simple. Labial palpi, porrected, exceeding the face by one-half their length, nearly cylindrical, but expanded towards the tip and clothed with rather long scales beneath; apical joint scarcely perceptible.

In *Ioplocama* the wings are broader; the costa of the fore wings dilated at the base. The labial palpi are broad, porrected, exceed the face by at least one-half of their length, are much excised opposite the face, nearly

* χαλλιμος pulcherrimus, σημα signum.

straight beneath, broad and much expanded beyond the face and clothed *above and beneath* with long scales.

In *Carpocapsa* the wings are broader than in *Callimosema;* the labial palpi are cylindrical, exceed the face but little, closely scaled, curved and ascending, the apical joint very distinct.

It is probable that *Callisnosema* or *Iaplocama* may be identical or nearly so with the European genus *Grapholita*, but both differ from it in having the apical branch of the subcostal vein of the fore wings simple and in the furcate medio-central nervule of the hind wings.

Callimosema scintillana.—Fore wings pale yellowish, abundantly dusted along the costa and inner margin with dark fuscous. From the base nearly to the middle of the wing, proceeds a pale yellow basal stripe along the disk, which terminates in a silvery spot. On the costa from the middle of the wing to the tip are four equidistant pale yellow costal streaks, the first of which is transverse and ends in the middle of the wing in a silvery spot, the last near the tip is extended into a silvery line. From the silvery spot of the basal streak proceeds a broad ochreous stripe which widens as it proceeds to the hinder margin, and contains between the first and last costal streaks, a very large ocelloid spot; the costal half of this is pale-yellow, margined with silvery and striated with dark fuscous lines: the dorsal half consists of three large raised silvery spots, the center one having three black spots on each side, the one nearest the hinder margin of the wing, three on its basal side, and that nearest the base of the wing, three externally and two internally. Cilia pale-yellow, dusted with fuscous. Hind wings dark fuscous, cilia pale yellowish.

Author's Collection.

A pair of *scintillana* was taken several years ago on a grass plat, beneath a pear tree. One of them was unfortunately destroyed, by an accident. I have searched in every successive year for other specimens, and up to the present time have not found them.

TINEINA.

BATRACHEDRA. Stainton.

Hind wings very narrow, pointed; costa rather concave from the tip to near the base, *where there is a projecting tuft*, inner margin concave. The subcostal vein is simple, runs very near the costa and reaches it beyond the middle of the wing. The median vein is simple and runs nearly parallel to the inner margin and enters it nearly opposite the costal termination of the subcostal vein; between these, in the middle of the wing, originates an independent discal branch, which is obscurely furcate, its longest branch being lost before it reaches the apex of the wing. There are two folds on the wing which resemble

veins, one above and parallel to the median vein, the other, above and parallel to the discal branch.

Fore wings elongate-lanceolate. *The discoidal cell is obliquely placed in the wing*, its lower angle approaching very near the dorsal margin of the wing. The subcostal vein is arched, and gives off a long, oblique, marginal branch from behind the middle of the wing, one at the superior angle of the cell and one intermediate. A very short and indistinct vein closes the cell posteriorly, and two indistinct apical veins succeed the third subcosto-marginal branch, one of which is delivered to the tip and the other to the costa behind the tip.

The median vein is 3-branched, the two superior branches sometimes from a common base and the posterior branch *extremely short* and indistinct; thence the median, runs obliquely and direct to the base. The submedian is indistinctly forked at its base.

Head smooth, without ocelli. Antennæ rather more than one-half as long as fore wings, setaceous, joints thickly set, without hairs; the basal joint, *short*. Labial palpi moderately long, recurved, acute; second joint compressed, subclavate. Tongue moderate, clothed with scales.

Batrachedra salicipomonella.—Fore wings fuscous, with a rather broad whitish stripe, freely dusted with fuscous, running through the middle of the wing, from the base and along the apical margin to the tip. Near the basal third of the wing on the dorsal edge of the whitish stripe is an elongate, blackish-brown spot, and from the middle of the wing towards the tip, it is edged on its costal side by a *blackish-brown line* which contains sometimes a spot of the same hue. The apical portion of the stripe is more freely dusted with fuscous than the other portions. Cilia fuscous. Hind wings fuscous, cilia paler.

Antennæ dark fuscous, without white annulations, except near the tip. Head fuscous above, face white. Labial palpi dark fuscous; second joint, with a white ring at the extreme tip, sometimes white at the base, with a broad fuscous ring near the tip; terminal joint fuscous, with a more or less distinct whitish central ring and the extreme tip whitish.

This is a very interesting "micro," not only in consequence of the specific resemblance it bears to the European *Batrachedra præangusta*, but of the discovery of its larva by one of our most gifted and promising entomologists, Mr. Benj. D. Walsh of Rock Island, Ill.

In the note which accompanied the perfect insects, Mr. Walsh writes: "I enclose herewith several specimens of a moth, bred from the Tenthredinidous gall *Salicis pomum* Walsh MS., and a single one from the Cecidomyiadous gall *S. rhodoïdes* Walsh. This is the insect that I think I mentioned to you as being very prettily marked in the larva state, each segment having a broad, black band and the ground color being whitish. I had a single one come out last summer, but

the great bulk of them hybernated either in larva or pupa state and came out May 8th—20th. They vary but little. I have beaten larvæ of very similar appearance off oak trees."

So far as I am informed, the larvæ is unknown to European lepidopterists, although it is recorded that the perfect insect, *præangusta*, is very common among willows and poplars in July, and may frequently be observed sitting on the trunks of those trees with the anterior feet put back, like *Bedellia*, and the head raised a little.

Mr. Walsh has the honor of having made an interesting discovery, that puts an end to all uncertainty respecting the larva and its food plants.

In a subsequent letter Mr. Walsh kindly supplied me with the following description of the larva:

"Length .20 inch. Body tapering at each end, opaque, milky-whitish, with a few short, whitish hairs. The first segment behind the head, with an obsemicircular, shining, glabrous, brown, dorsal shield; second segment with an interrupted, opaque brown, dorsal band on its anterior edge, the interruption occupying about one-third of the band; segments 3–12 with an uninterrupted opaque brown, dorsal band on the anterior edge, and segment eleventh with a similar band at its tip also. Head yellowish. Legs and venter immaculate, whitish. Legs six, prelegs ten, normally arranged. Spins a thread, wriggles much when disturbed and runs backwards with great agility.

"This larva occurred in abundance Aug. 23rd, and subsequently in the Tenthredinidous gall, *S. pomum* Walsh MS., which grows on the leaves of Salix cordata. Each gall contained but a single larva, unaccompanied by the larva of the *Nematus* which makes the gall, which it must consequently have destroyed or starved out, either in the egg or in the larva state.

"A single imago came out in the autumn of the same year, but the great bulk of them came out next spring, May 8—20, from galls kept through the winter. There can be no doubt of the correlation of larva and imago, because no other lepidopterous larva or imago occurred in the gall *S. pomum*, though I had three or four hundred of them in my breeding vase. The insect must hybernate normally in the larva state, for I noticed numbers of them in the spring crawling about among the galls. In a state of confinement, it generally retires to the inside of the gall to assume the pupa state, though I noticed one or two cocoons spun among the galls. Probably in a state of nature it hybernates in the gall, comes out of it in the spring and spins its cocoon amongst dry leaves and rubbish.

"I also bred a single imago of this same species, May 11th, from the Cecidomyidous gall *S. rhodoides* Walsh, from galls kept through the winter, and I found in the spring a denuded imago of what was apparently the same species, dead and dry amongst a lot of Tenthredinidous galls, *S. desmodioides* Walsh MS., which is closely allied to *S. pomum*, but occurs on the leaves of a very distinct species of willow. Thus we have three different willow-galls inhabited by the same moth, two of them made by saw-flies and one by a gall-gnat.

"I have several times beaten off black-oak trees larvæ apparently very similar to this *Batrachedra*, and with the same harlequin-like markings, but whether the two are specifically identical, I cannot say."

GRACILARIA, Zell.

Proc. Ac. Nat. Sci., Jan. 1860, p. 6. Proc. Ent. Soc. Philad. Id. March, 1863, Id. Dec. 1864, p. 505.

I wish to redescribe and change the name of a species, whose history I have ascertained, and which I have recently bred. The first description was drawn from a rather worn specimen, but in the main, is correct. In order that the species heretofore described may be more readily distinguished, I have tabulated them as follows:

Legs with white tibiæ.
F. w. costal half-yellow; dorsal, purple, with central black dot.....**Desmodifoliella.**
Legs without white tibiæ.
F. w. with a yellow, trigonal, costal mark.
Mark large, extended to tip of wing.
F. w. reddish-violet; mark distinct, single; base of inner margin yellow.....**superbifrontella.**
F. w. dark purple; mark indistinctly double; base of inner margin dark purple.....**Blandella.**
Mark small: f. w. purplish, with costal spots.....**coroniella.**
F. w. with fasciaform, white markings.
Markings broad; with exterior costal spots.....**fulgidella.**
Markings narrow, without costal spots.
With four equidistant streaks.....**venustella.**
With one long costal and dorsal streak near the tip of wing.....**strigifinitella.**

Gracilaria Desmodifoliella.—*G. violacella*, Proc. Ac. Nat. Sci., Jan. 1860, p. 7.—The costal half of the fore wings, limited by the fold, is yellow; the dorsal half, purple and the edge of the latter curves to the costa a little interior to the tip of the wing. In the middle of the wing, on the edge of the purplish portion, is a black dot, and the costa along the middle has a few dots of the same hue, but not so conspicuous. Cilia purplish. Hind wings dark fuscous; cilia the same.

Head and antennæ purplish. Face white. Labial palpi white, with the ends of the middle and terminal joints touched with brown. Hinder pair of legs yellowish; middle and anterior purplish-brown, with *white tarsi*.

NEPTICULA, Zell.

Proc. Acad. Nat. Sci Philad., June, 1860, p. 214. Proc. Ent. Soc. Philad., March 1862, p. 149. Id. Nov. 1861, p. 82. Id. Jan. 1862, p. 133.

Since the foregoing pages were written, I have been successful in rearing *N. saginella* from leaves of oaks, collected during the latter part of July; and I am therefore able to say definitely, that while the nepticuliform mines in the leaves of the chestnut *may* be produced by the larva of *Bucculatrix trifasciella*, those in the leaves of oaks are certainly the work of a Nepticula miner.

The mines in chestnut leaves are shorther than those on oak leaves, although very similar in appearance. The following is a table of the species described to the present time.

Fore wings without spots or fasciæ.
Pale ochreous, dusted with blackish-brown.....**saginella.**
F. w. with a white spot and a costal streak.
Dark brown .....**Platanella.**
F. w. with pale or silvery fasciæ.
Blackish-brown; fascia median, curved.....**Rubifoliella.**
Purplish-fuscous; fascia oblique, rather broad.....**fuscotibiella.**
Bronzy-green; with two fasciæ.....**bifasciella.**

Nepticula saginella.—Proc. Ent. Soc. Philad., Nov. 1861, p. 85.—Fore wings pale ochreous, sprinkled or dusted freely, with blackish-brown, over the entire surface. Cilia ochreous, slightly clothed with blackish-brown. Head and face blackish-brown. Eye-caps ochreous.

The larvæ were taken nearly half fed in leaves of black oak, on the 29th of July, and at this date most of the mines are abandoned. The larva is bright-green with a central dark-green line of ingesta. Head slightly touched with brownish.

The mine is a serpentine, rather short tract, which, when occupied or recent, is white and nearly transparent, with a narrow, very black central frass line. It is frequently bent or curved as the larva approaches maturity. The cocoonet is yellowish-white. Both the imago and larva are very small.

Upon the authority of Mr. H. T. Stainton, for which I feel the highest respect, "the six anterior legs so universally present in Lepidopterous larvæ are wanting in Nepticula larvæ, and are replaced by membranous processes or prolegs;" each of the remaining segments are furnished with a pair of prolegs making eighteen in all. I find after a careful examination, that counting the head as the first segment, in *N. saginella*, the third and fourth have a pair of legs, the fifth segment is without any, and the six following segments are each supplied with a pair of prolegs. So that the formula for the legs of *N. saginella* would stand thus, making sixteen in all:

$$\frac{2}{2}\cdot\frac{6}{6}$$

I have not yet examined the neuration of *N. saginella* and it may be that it is a Trifurcula. An examination necessitates the destruction of the minute specimen, and I wish to defer it until I have secured others. It appears to me, however, that the eyecaps are too large to permit *saginella* to remain amongst the Nepticulæ. The larvæ of Trifurcula are entirely unknown, so that one can receive no assistance in classification from a knowledge of their habits.

BUCCULATRIX, Zeller.

Proc. Acad. Nat. Sci., Jan. 1860, p. 13; June, 1860, p. 211.

Bucculatrix trifasciella.—Fore wings ochreous, with three silvery, equidistant, costal streaks, the first near the base, the last at the beginning of the apical cilia, with the spaces between them somewhat darker than the general hue. On the middle of the dorsal margin is a spot of blackish-brown, with a patch of dispersed scales of the same hue, exterior to it, limited externally by a silvery dorsal streak. At the extreme tip is a small blackish-brown spot, with an intercilial line of the same hue exterior to it. Cilia ochreous. Hind wings fuscous: cilia the same.

Antennæ fuscous. Head ochreous; eye-caps somewhat silvery-white.

The cocoonet of this species was found on the leaf of a chestnut tree early in July. The cocoon is elongated, ribbed externally and dark gray. The imago appeared in the latter part of July.

The leaves of chestnut is mined early in the season by a larva that I have regarded as a *Nepticula* from the characters of the mine, but I am now disposed to think that the mine is made by the larva of *trifasciella* during its early life. This mine is noticed in the Proceedings for November, 1861, p. 85, under *Nepticula saginella*.

INCURVARIA, Haw.

Proc. Acad. Nat. Sci., Jan. 1860, p. 5.

Fore and hind wings lanceolate, pointed. Fore wings, subcostal vein with three branches near the end of the disk; apical branch furcate near its base; discal nervules, two. Hind wings, subcostal vein furcate; discal nervule, one.

Incurvaria mediostriatella.—Fore wings, irridescent bluish-purple, with a broad golden stripe from the base to the middle of the dorsal margin, leaving a stripe of the general hue on the base of the dorsal margin, and with a rather broad, obliquely placed costal streak, of the same hue, at the beginning of the apical cilia. The cilia are intermixed with golden scales. Hind wings reddish-purple, cilia fuscous. Antennæ and head pale-yellowish.

Taken on wing, in damp woods, the latter part of July.

This species differs in some respects from both *russatella* and *Acerifoliella* and from the European typical species. The antennæ are nearly if not quite as long as the fore wings, and perhaps in the future it may be necessary to create a new group for its reception. I have not deemed this advisable at present, as its oral parts are quite identical with those of the genus.

Easton, Pennsylvania.

DESCRIPTION OF A NEW SPECIES OF LIMENITIS.

BY WM. H. EDWARDS, NEWBURGH, N. Y.

(*Communicated Aug.* 14, 1865.)

LIMENITIS PROSERPINA.

Male.—Expands $2\frac{1}{10}$ inches.

Upper side dull black, secondaries only having a slight bluish tinge on the disk; hind margins bordered by a double row of blue crescents, which are wanting on primaries except at inner angle; the marginal row of secondaries is indistinct; beyond the crescents, on secondaries, is a row of russet spots almost obsolete; primaries have a white streak on costa a little more than half-way from the base, a white sub-apical spot divided by the costal nervure, and a curved row of indistinct whitish spots across the wing from the costal streak to the inner margin near the angle; emarginations of both wings white.

Under side light reddish-brown, with a dark shade over the basal half of primaries; both wings have a double row of pale blue crescents on a black ground, the apical, on primaries, whitish; preceeding these is a row of russet spots, before which, on secondaries, is a blue white streak; primaries have a large sub-apical white spot, and a white band, angular without, curved within, corresponding to the row of spots on upper side; base of wings marked by russet and blue spots, primaries having one of the former on the arc and another within the cell, both edged with black; between these is a small blue spot and a second next base; secondaries have a russet spot on the arc, another within the cell and a third at base of sub-costal nervure; costa of both wings russet at base.

Body black above; thorax black, abdomen white; palpi and fore legs white edged with black; antennæ and club black.

Female unknown; Catskill Mountains.

The specimen above described was taken by me in 1863, near the Mountain House. On the 2nd of August of this year (1865), I took a second male of same characters in the Stony Clove, a few miles west of the Mountain House. The upper surface agrees in all respects with the other, except that the band of white spots of primaries is indicated by a few scales only. On the under side the band extends from inner margin two-thirds across the wing only. This species differs from *Ursula* in color of both surfaces, in the white band, in the russet spots on upper side of secondaries, and the whitish streak on same wings below. The lower surface more resembles *Arthemis*, and the shape of secondaries is that of *Arthemis*, being more rounded than *Ursula*.

Dr T A. Chapman
With the author's Compliments.

DESCRIPTION OF A NEW PLUME-MOTH FROM CEYLON, WITH SOME REMARKS UPON ITS LIFE-HISTORY.

By T. BAINBRIGGE FLETCHER, R.N., F.E.S.

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By T. Bainbrigge Fletcher, R.N., F.E.S.

With Figures in the text.

Trichoptilus paludicola, n.s.

Male 12—13 mm. Head and thorax brownish-ochreous with a few white scales intermixed. Palpi grayish; terminal joint white, fuscous at base; second joint reaching middle of face, about two-thirds of third. Antennæ ciliated (1), whitish, narrowly annulated with dark fuscous, with a black line above. Abdomen ochreous-brown, longitudinally striated with numerous black and white scales, the latter more developed towards base of abdomen and tending to form obscure transverse bands at distal extremities of segments; apex of abdomen with two obliquely ascending divergent hair-pencils and with long hairs concealing genitalia. Tibiæ white, longitudinally streaked with black; posterior tibiæ dilated with dark fuscous scales and slightly tufted at points of emission of spurs; spurs long (proximal about 1·4 mm., distal about ·8 mm.); tarsi banded with black.

Forewings cleft from before middle, segments linear; brownish-ochreous with scattered dark fuscous scales; usually a few white scales mixed with black along basal half of costa; a black spot followed by a white one on inner margin near base; sometimes a suffused white central streak reaching from base nearly to cleft; a patch of dark fuscous scales on lower inner edge of cleft: first segment slightly suffused with darker fuscous, with a white bar before its middle and another midway between the first bar and apex, extreme apex usually with some white scales; second segment with corresponding but less distinct white markings: cilia dark gray on costa barred with white opposite white fasciæ and usually white at apex, on lower margin of first segment mixed with white below fasciæ and with some black scales in middle, on upper margin of second segment with a row of black scales between two patches of white scales opposite fasciæ and a few black scales nearer apex, on lower margin of second segment with a white patch of scales before cleft, another (obsolescent) below proximal fascia, and a third before apex, with four tufts of black scales, first at one-third of segment, last apical.

Hindwings cleft firstly from before one-third, secondly from base; segments linear; dark fuscous; cilia gray; third segment without any scale-tooth on inner margin.

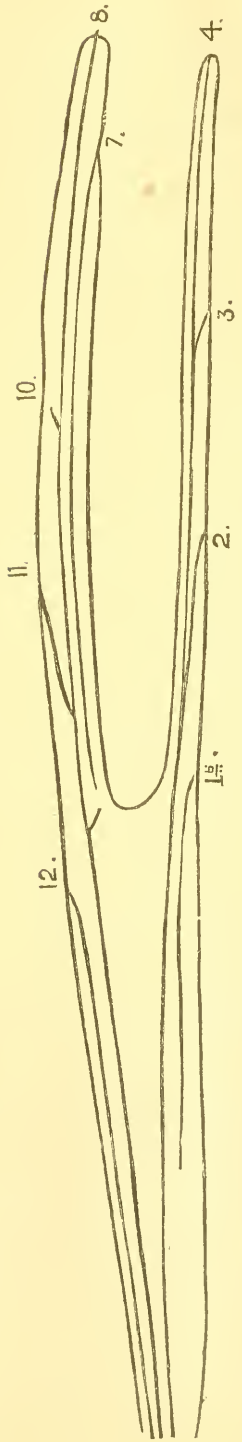

Fig. 1.—Neuration of forewing of T. paludicola. Much magnified.

♀. 11—12 mm. Without hair-pencil at apex of abdomen. Antennæ ciliated (¾).

Otherwise as in male, but usually about 1 mm. less in expanse. Markings similar, but duller.

Neuration.—Forewings. 2 out of 4, 3 very short, not reaching dorsal margin, 4 to apex of second segment, 5 and 6 absent, 7 parallel to 8 running into hind margin of first segment before apex, 8 to apex, 9 absent, 10 very short (sometimes rudimentary or absent), 11 out of 8, 12 reaching costa before cleft. (See Fig. 1.)

Hindwings. 2 out of 4, 3 rudimentary or absent, 4 to apex of second segment, 5 and 6 apparently absent, 7 to apex of first segment, 8 into costa at about one-third.

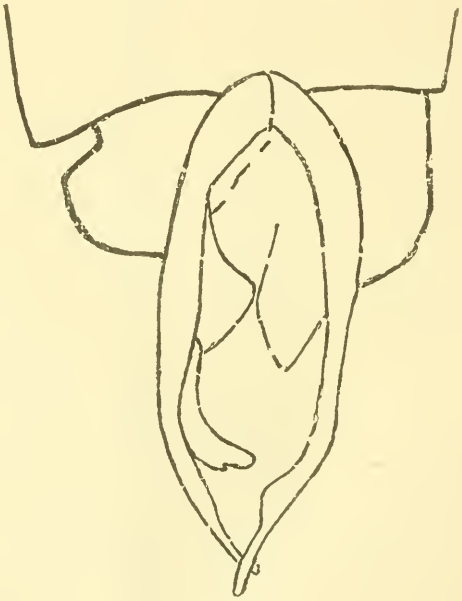

Fig. 2.—Male genitalia of T. paludicola. Magnified.

Comparison of T. Paludicola with its Allies.—This species is extremely similar superficially to *T. scythrodes*, Meyr., from Australia, but Mr. Meyrick informs me (in litt.) that "there is a good and reliable distinguishing character in the different arrangement of the dark scale-teeth in the dorsal cilia of forewings; in *scythrodes* there is a scale-tooth at each end of the dark median band of the second segment, whereas in *paludicola* there is one in the middle of the band, but not at either end."

The Life-History of Trichoptilus paludicola.

Preliminary Remarks.—In the early part of October, 1906, whilst encamped in the Royal Naval Camp at Diyatalawa, I found

a species of "Plume Moth," which was quite new to me. Numerous specimens were taken at sunset on the edge of a boggy piece of swamp, and from its habitat and from the appearance of the moth I suspected at the time that it might prove to be a *Drosera* feeder, in the same way as had been recently proved to occur in the case of *Trichoptilus paludum* in Europe. (*Note.*—"Observations on the Life-History of *Trichoptilus paludum*," by Dr. T. A. Chapman; Trans. Entom. Soc. Lond., 1906, p. 133.) At that time, however, I was unable to find any *Drosera* plants in the vicinity.

In the following year on my arrival at Diyatalawa I determined to devote my first energies to a search for the larva of this species, and at last, on the 31st July, 1907, in a marshy place which had been cleared at some former time and had not been grown over to any great extent by the ordinary rank paludicolous vegetation, I came across numerous plants of *Drosera burmanni*, Vahl. *T. paludicola* was quite common here, so it seemed a likely place to look for the larva, which was soon revealed by a close search.

It is unnecessary to refer here to the great interest which was excited so recently by the original discovery that *Drosera* is the food plant of *T. paludum*. As is well known, *Drosera* is an insectivorous plant, deriving almost the whole of its nourishment from the insects which it captures and digests, and there was therefore the less reason to suspect it to be the pabulum of a caterpillar which has apparently no means to protect it from being devoured. Dr. Chapman and Mr. Bankes have, however, already shown the fallacy of this reasoning, and in the present instance I have found that *Drosera burmanni* is eaten with impunity by the larvæ of *T. paludicola* and of a Noctuid Moth, whilst the flower stems are attacked by a species of Aphid.

The *Drosera* plants themselves average about 25 mm. in expanse. In appearance the colour varies from light pink to bright red (occasionally pale green, usually in very shady places); in reality the leaves and stems themselves are a very pale green looking almost white from the minute silvery glands covering the surface; the apparent red or pink colour is given by the long red or pink glandular petioles which cover the upper surface of the leaves; those situated along the external margin of the leaves appear to be clavate at the end, but the other petioles exude a drop of clear gummy matter which forms a round drop at the tip of the petiole, and these gummy drops, as they glisten in the sun, give the plant its rather appropriate popular name of "Sundew." The flowers, which are of a pale pink colour, are borne on a long stem (not gummy), which rises from alongside the centre of the plant and attains a height of 8 or 9 inches. The roots are very small and barely serve to take a grip of the ground, but the plants seem to obtain a liberal supply of insect

food, for nearly every plant examined will be found to have at least one undigested insect caught on its leaves. A small black ant seems to be the most frequent victim, but a small red ant, minute grasshoppers, small moths, &c., are also to be seen.

Egg-laying.—A female moth confined over plants of *Drosera burmanni* laid several ova, most of which were deposited on the seed capsules and unexpanded flower buds. One ovum was laid midway on a petiole on the edge of a young leaf.

Ovum.—When first deposited the egg is of a pale shining green colour, showing prismatic tints. There seems to be a system of rather coarse reticulation disposed regularly over the surface, but the enclosed depressions are very shallow. It is oval in longitudinal, circular in transverse, section. Its length is about ·45 mm., and its diameter about ·18 mm.

Larva.—There are apparently four instars :—

First Instar.—The newly hatched larva is about 1 mm. long. In colour it is a pale transparent yellow which takes a reflected tint from the *Drosera* leaves, thus making the young larva very difficult to see ; the prothoracic segment is a little darker, and the head is brown and comparatively very large. Scattered over the body are short white hairs, but they are neither conspicuous nor plentiful. No warts are visible.

The larva crawls about without hesitation amongst the glandular hairs of the *Drosera* leaf, the gummy tips of the petioles standing up above it, so that it can walk about among their bases with impunity. In this stage it seems to feed entirely on the petioles and gum.

Before undergoing its first ecdysis the larva grows to about 1·5 mm. in length, and the segmental interstices are more plainly marked in a lighter yellowish colour, whereas the segments themselves have become of a darker greenish-yellow.

Second Instar.—About 2 mm. long and rather stout. Colour a greenish-yellow, paler below and on the sides on which the spiracles stand out darkly ; there are apparently small latero-dorsal tubercles which bear rather long white clubbed hairs.

It feeds on the glandular petioles, biting through the base and drawing the stalk into its mouth by a series of movements and finishing by devouring the drop of gum. It seems fairly voracious, but is evidently rather fastidious in its selection of the glandular hairs.

Third (? *antepenultimate*) *Instar.*—About 3 mm. long and fairly stout. Colour a pale green with interrupted pinkish latero-dorsal lateral, and supraspiracular stripes. Tubercles green at base, brownish at points of emission of the white hairs. The disposition of the tubercles is shown in the figure (fig 3).

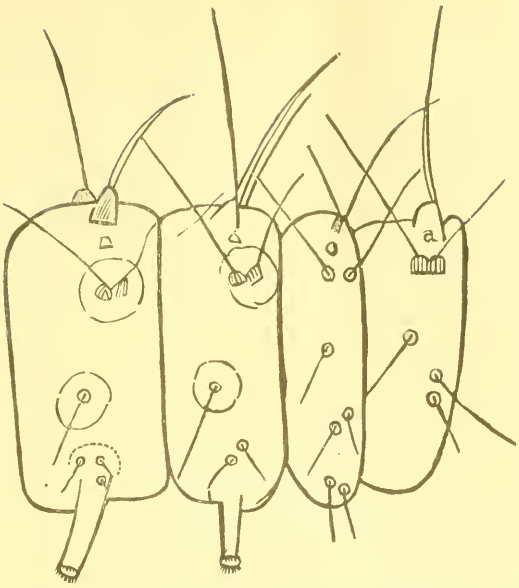

Fig. 3.—5th, 6th, 7th, and 8th Somites of larva of T. paludicola (penultimate instar.). Much magnified.

At this stage the larva feeds indifferently on the leaves and the gummy glands of the *Drosera*.

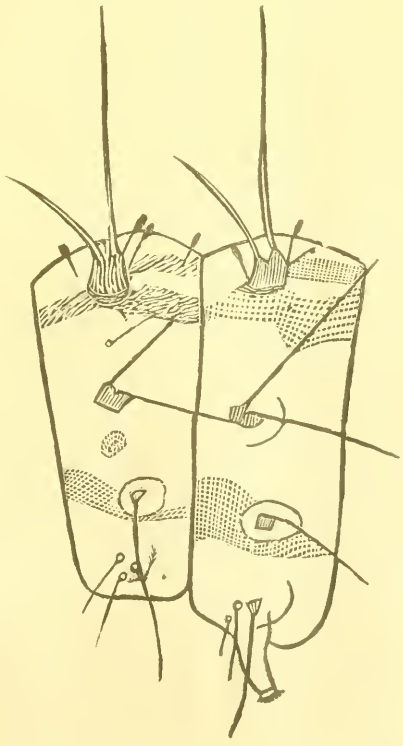

Fig. 4.—6th and 7th Somites of larva of T. paludicola (ultimate instar.).

Fourth (ultimate) Instar.—A fully fed larva on the point of pupation is just over 7 mm. long, moderately stout, stoutest about middle of body, tapering rather more rapidly towards the head. Colour pale green, a dark rather reddish narrow medio-dorsal stripe; latero-dorsal tubercles red and surrounded with dark red dashes, which assume rather a longitudinal direction, so that the larva seems to have an interrupted rather broad latero-dorsal stripe. Head pale green with dark ocellar marks on either side. Jaws and mouth parts reddish. Long palps on either side of jaws (fig. 4).

The larvæ, however, vary much, but seem divisible into three types:—

(1) Pale green with a distinctly reddish tinge; a narrow darker green dorsal stripe bordered on either side by a pale yellowish longitudinal line; head pale green with dark reddish ocellar patches; tubercles reddish-brown; hairs white, as long as diameter of segmental interstices, slightly and regularly dilated towards apex; prolegs pale green, almost transparent.

(2) Paler green, on which the tubercles show up conspicuously as a bright dark red.

(3) Very much suffused with red, so as to appear of almost as red a colour as the *Drosera* itself.

The intensity of the dorsal stripe is very variable; in some specimens it is very distinct, in others quite obsolete.

In its final instar the larva shows a decided preference for the buds and seeds of the *Drosera*, eating a hole in the side of the seed capsule and devouring the contents, but it also eats the leaves (fig. 6).

General Remarks on the Larval State.—In all its stages the larva is extremely similar to the *Drosera* and difficult to distinguish. Even a full-grown larva may easily be passed over as a glandular leaf seen edgewise, and *vice versâ*.

Ordinarily the larva seems sluggish, but can move along fairly fast when it likes. It has, indeed, little incentive to move from the food plant. When resting across the centre of the plant, with plenty of food within reach, it seems to remain there for days, until a large pile of flaccid dark-yellowish-green frass accumulates.

In some cases the frass is jerked away by a rapid movement of the anal extremity. In one instance which I noted it went about an inch up into the air and fell on to the *Drosera* plant about half an inch away from the larva; but usually, I should imagine, it falls clear of the food plant, or there would be no object in flicking it away in this manner. However, as noted above, the frass often does accumulate on the foodplant, so evidently this process of removal is not an invariable habit, but is a peculiarity confined to certain individuals.

When crawling on to a *Drosera* plant the larva seems very careful to keep clear of the gummy petioles, and is assisted to do so by its long hairs, more especially those situated upon the head, for these hairs are seen to have enlarged basal attachments, which are evidently correlated with hypertrophied tactile nerves. (See fig. 5).

When crawling over the leaves the gum is often seen to adhere to the legs of the larva, which then stops, bends down its head, and cleans them by passing the gummy legs through its mouth. The whole process rather reminds one of a cat licking itself clean.

Fig. 5.—Head and Prothorax of larva of T. paludicola showing tactile hairs.

(Note the enlarged basal attachments of these hairs, evidently correlated with a hypertrophied tactile nerve.)

Pupation.—When searching for the larvæ I must have examined several scores of *Drosera* plants, which either contained full-fed larvæ or showed signs of having recently done so, but only in one case have I as yet found the pupa in a natural position, and, judging by the restless behaviour of larvæ in confinement just prior to pupation, I am constrained to believe that the larva wanders away from the plant and fixes itself up for pupation on some grass stem or other similar object, where its discovery would be rendered exceedingly difficult by its resemblance to a pendulous grass seed.

This pupa, which was found *in situ* in its natural position (on 27th August), was on a medium-sized *Drosera* plant, which was growing

under the shade of a tuft of grass. The plant had evidently been badly eaten by the larva, and there was no flower stalk. The pupa was attached by its cremastral hooks to a silken pad spun on the base of a leaf just below the central bud and was lying, dorsal surface uppermost, across some leaves whose gummy petioles had been eaten away by the larva. This pupa was of a greenish-yellow-brown colour, just the tint of the faded sundew leaves, and it looked rather like a grass seed which had fallen on to the plant and stuck to the gum; it may be added that ripe grass seeds are often so found.

In confinement the larva exhibits a certain preference for suspension from the flower stalk of its food plant, whose colour is of a reddish green. Even when the stem is growing at an angle, its double set

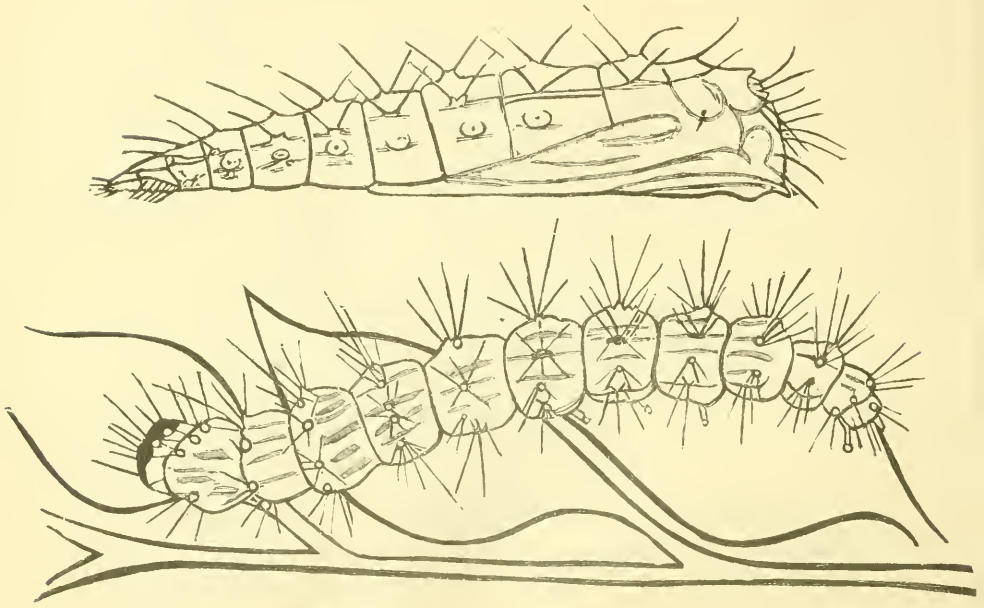

Fig. 6.—(Upper figure) Pupa from the side.
Fig. 7.—(Lower figure) Full-grown larva eating into a seed-capsule.
(From drawings by E. E. Green.)

of cremastral hooks enables the pupa to keep its ventral surface closely appressed to the lower side of the stem, so that it is not suspended freely. It seems possible that this pupa possesses a certain amount of colour adaptability, those pupæ attached to the reddish flower stems having usually an increased red suffusion in comparison with those attached to glass or white paper.

When on an approximately horizontal surface, the pupa is usually found dorsum uppermost; otherwise it invariably suspends itself head downwards and with the ventral surface appressed to its support.

In the case of a pupa in a horizontal position the cast larval skin is sometimes seen lying near it, but quite free and shrivelled up. The

suspended pupa always gets rid of the larval skin entirely. This habit is the exact opposite of that found in *Trichoptilus oxydactylus*, Wlk., whose discarded larval skin is not shrivelled up, but is stretched out along the stem just above the pupa.

When first formed the pupa is of a light apple-green colour, the wing-covers and appendages of a darker green, and a narrow darker medio-dorsal stripe. On either side of this last is a series of eight red tubercles, each bearing two black spines, both pointing longitudinally in opposite directions; on about the eighth somite, however, the foremost of these two spines becomes obsolescent and quite disappears before the anal extremity is reached. (See fig. 7.) The cremaster consists of two portions approximately equal to one another, one in the centre of the ventral surface of the twelfth somite, the other at the anal extremity.

In some cases the newly formed pupa is wholly suffused with a delicate pink flush, which almost becomes a dull red in some specimens.

After a couple of days the bright green begins to fade and ultimately becomes a dull uniform pale yellowish-brown, by which time the eyes and antennæ are clearly marked in black.

The pupa is formed about thirty hours after the larva has suspended itself, and the moth emerges after about nine or ten days in the pupal state.

Emergence of Imago.—The moth always emerges in the morning, usually at about 8 a.m.

The following notes refer to one particular case of eclosion, which was watched throughout :—

"10th September, 1907, 7.30 a.m.—Pupa of *paludicola* bent away from the supporting stem. Wing covers very dark, the wings showing through; abdomen dark yellowish-brown ; capital extremity lighter.

"8 a.m.—A dark mark along base of wing covers, which seem quite separated from segments. Pupa quiescent.

"8.20 a.m.—A reddish suffusion along dorsal segments (about fifth to eighth).

"8.40 a.m.—A tremulous motion, and the pupa hangs down a little more freely.

"8.45 a.m.—Segments opposite tips of wing covers look very loosely separated, and there is a constant slight motion in the ventro-dorsal plane.

"8.48 a.m.—Antenna-case separate ; a distinct split in lower surface near eye. Head emerging. Emergence of thorax quickly follows in rapid gliding jerks.

"8.50 a.m.—Abdomen is half emerged ; tips of wings still retained ; legs and antennæ free. There is now a distinct pause.

"8.54 a.m.—A sudden jerk and the abdomen is wholly withdrawn from the pupa case, which is grasped by the first and second pairs of legs. The abdomen now hangs down, the hind legs crossed over it.

whilst the wings are raised over the back. The forewings are now about as long as the abdomen ; they seem comparatively very large on emergence. The anal tufts are erect and separate, but the hairs look a little matted together.

" 9 A.M.—The wings are almost fully expanded, but the cilia are rather matted together.

" 9.07 A.M.—The wings are separated and held in a plane parallel with the abdomen, the costal margins of the forewings being at about a right angle with one another. The third segment of the hind wing is kept separate between the other segments and the abdomen. The cilia still look matted. The antennæ are laid along the costa. The hind legs are now at an angle with the abdomen underneath the wings, which seem rather to be stretched over the spurs. Can these spurs be for the purpose of stretching and drying the wings, a thing which must be somewhat of a difficulty in the case of these long slender segments ? Anyway, it certainly is the case that amongst the Plume Moths there is a correlation between long spurs and extreme fission of the wings. Normally, too, when the moth has flown, the long spurred hind legs are stuck straight out when at rest, well away from the wings.

" 9.24 A.M.—The legs have now been slipped down a little, and each outer distal spur is now pressing on the costa of the second segment of the forewings, separating it out from the first segment, whilst the outer proximal spur similarly opens out the second segment of the hind wings from the first segment.

" 9.29 A.M.—The legs have now been slipped down nearer the body, and are directly beneath the third segment of the hind wings. The outer distal spur is just touching the cilia of the inner margin of the second segment of the forewings, and probably acts as a sort of comb to separate the hairs.

" 9.34 A.M.—The third segment of the hind wings is now resting with its apex on the outer distal spur, which spreads out the long cilia very well. The outer proximal spur combs out the inner marginal cilia of the third segment.

" 9.40 A.M—The hind legs are now laid along the abdomen quite clear of the wings, which are still deflexed.

9.45-9.50 A.M.—The wings are being brought forward very slowly until the costal margins are at about right angles with the abdomen. Meanwhile the antennæ are laid beneath the wings and comb out the basal cilia as the wings are drawn forward."

I would call particular attention to the light now thrown on the *use* of the long spurs which occur on the hind legs of so many Plume Moths. The facts exhibited in the above notes, together with the constant correlation of long spurs with extreme fission of the wings, seem to point out that these spurs have been developed expressly to stretch the wings, to separate the segments, and to comb out the long cilia.

Habits of Imago.—The moth seems to fly naturally from about half an hour before to just after sunset, and again in the morning until about half an hour after sunrise: the flight is fairly swift, but gentle and floating, and not sustained. If flying naturally they rarely seem to fly more than a yard or so at a time, and not more than four or five yards if disturbed. They stop with a jerk and pitch on a grass stem, flower head, leaf, &c., with the wings rolled up and stuck out at right angles on either side, and the long spurred hind legs projecting upwards between the wings and abdomen.

I have never yet seen two *in copula*. Perhaps they pair after sunset, remain coupled all night, and separate at sunrise, the female ovipositing next evening.

Even in localities where it is abundant, *T. paludicola* is a very inconspicuous little insect, and there are so many small Rhynchota and Diptera extremely similar to it when on the wing and abundant in the same habitats that it is at first by no means easy to distinguish it even when one is on the look out for this particular "Plume." Its jerky floating flight will, however, soon become familiar to any one who is searching for it.

The moth is never to be found away from the immediate vicinity of the *Drosera*.

Time of Appearance.—The moth was first found by me in the beginning of October, 1906. On my return to Diyatalawa at the end of July, 1907, it was quite common, and has remained on the wing quite abundantly up to the time of writing, and during the whole of this period the larva has been found in all stages, so that it appears probable that this species is continuous-brooded throughout the year.

Habitat.—Ceylon, Province of Uva, Diyatalawa (4,000 feet). July to October, and probably throughout the year.

Mr. Meyrick informs me (in litt.) that he has also received this species from the Khasi Hills, Assam.

Enemies.—Amongst the agencies destructive to this species must be reckoned the human inhabitants of the districts in which it occurs; these burn off the grass, &c., of the patanas regularly, and these constant fires must destroy vast numbers of *T. paludicola* in all its stages. Luckily, however, for the moth, it is never likely to be wholly exterminated by this means, since the vegetation of the boggy valleys, which form its headquarters, is usually too lush to burn.

The adult moth is preyed on by a small crab spider (*Thomisidæ*) which lives on the seed heads of grasses, with whose colour it agrees exactly.

The larva falls a victim to a small blackish Ichneumonid, which emerges from the larva when it is full grown, and spins a small oval pale yellow silken cocoon on the *Drosera* flower stalk or on a neighbouring piece of grass or occasionally on a *Drosera* leaf. Mr. E. Ernest Green, to whom I had sent some *paludicola* larvæ, was lucky

enough to observe the actual emergence of this Ichneumonid grub from the parasitized larva, and writes as follows :—

"My first attempt was interrupted by the sudden emergence of an Ichneumon grub. Whilst endeavouring to draw this caterpillar a lump appeared between the 7th and 8th somites, inside which vigorous movements were seen. Presently a yellowish grub forced its way through the skin at this point. The grub has a row of rounded tubercles on each side, which it alternately protrudes and retracts during its efforts to free itself from the body of the larva. While its hinder extremity was still attached to the side of the caterpillar, the grub commenced to spin its cocoon. Bulk for bulk, the grub is little smaller than the larva from which it has emerged. Within an hour the grub has completely enclosed itself in a pale yellow silken cocoon. Meanwhile, the caterpillar had completely collapsed."

Roughly, about one-third of the larvæ collected seem to be attacked by this parasite, which emerges from its cocoon after about eight days.

I am indebted to Mr. E. Ernest Green for the drawings of figures 6 and 7.

THE PLUME-MOTHS OF CEYLON.

By T. BAINBRIGGE FLETCHER, R.N., F.E.S.

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Dr T. A. Chapman,
With the author's compliments.
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SPOLIA ZEYLANICA.

THE PLUME-MOTHS OF CEYLON.

Part I.—The Pterophoridæ.

By T. Bainbrigge Fletcher, R.N., F.E.S.

(With 5 Plates and a Map.)

Introductory.

In popular language the term "Plume Moths" generally includes the members of two families, the Pterophoridæ or true plumes and the Orneodidæ or 24-plumes, whose common peculiarity lies in the fact that their wings are more or less split into segments resembling feathers or plumes. Both these families are doubtless very ancient forms, as is shown by their universal distribution and the absence of any other nearly allied groups. Nor must it be imagined that the Pterophoridæ and Orneodidæ are at all closely related, merely because they are both included under the popular term of "Plume Moths"; as a matter of fact, they seem as little related to one another as either is to any other group of the Micro-lepidoptera.

Fission of the wings, indeed, occurs sporadically in many other groups of the Lepidoptera: for example, the Syntomidæ (which have been held to be the most specialized of all moths) include the curious *Trichæta pterophorina*, Mab., from Natal and Mashonaland, in which the fore wing is deeply cleft; the Arctiadæ include *Rhagophanes tortriciformis*, Z., from Java, in which the hind wing is cleft to its middle; whilst amongst the Oxychirotidæ we find *Cenoloba obliteralis*, Wlk. (specimens of which I possess from Trincomalee)[X], in which both wings are cleft into two segments.

As regards any advantages conferred by this fission of the wings nothing is known, but it seems probable that some advantage will be found in considering the mechanics of flight amongst these species. Where rapidity of flight is not a desideratum it appears reasonable to suppose that a light framework of wing (so to speak), supplemented by a large surface of long cilia, will be of advantage as compared with the ordinary type of lepidopterous wing by giving an equal measure of aërial support for less weight, and consequently less expenditure of muscular energy; the same device is seen in

X These specimens from Trincomali were identified as obliteralis by Meyrick. Sir G. Hampson, however, has recently described me as C. taprobana n.s.

many of the minute species of *Tineina*, in which the cilia are enormously developed. As regards the origin of the clefts, it has been suggested that these have been developed along lines of weakness caused originally by the folding of the wings when at rest.

The Pterophoridæ may be described roughly as small, slim moths with long legs; the fore wings usually cleft into two segments, the hindwings into three; maxillary palpi obsolete; the rows of specialized scales near the dorsal margin on the basal half of the second segment of the hind wings are also characteristic. They are often attracted to light at night, or may be disturbed from low-growing herbage in the day time, when they usually fly only a short distance and alight on a stem or the upper surface of a leaf, where they rest with their wings nearly horizontal and held out at right angles with the body, the hind wings being folded up under the fore wings. But they are best obtained by breeding the larvæ, which are readily found once the food plant is known.

Bibliography.

Until within the last three or four years the Plume-moths of Ceylon have suffered neglect at the hands of collectors and systematists alike. In 1864, in his "List of Insects in the British Museum," Francis Walker enumerated four species (*argyriodactylus*, *anisodactylus*, *oxydactylus*, and *leucadactylus*), collected by Dr. Templeton and Mr. Nietner, all of which were described as new; in 1875 Felder figured and named *taprobanes*, which had been brought back by the Austrian Scientific Expedition in the frigate "Novara;" in 1887, in his "Lepidoptera of Ceylon," F. Moore quoted Walker's descriptions and Felder's figure and described as new one species (*serindibanus*) which has since proved identical with a well-known European species; and in 1891 Lord Walsingham described and figured *concursa*.

During a period of forty years, then, only seven species had been found to occur in Ceylon; in 1905 Mr. E. Meyrick commenced his descriptions of Indian Micro-Lepidoptera in the "Journal of the Bombay Natural History Society," and in the three years, 1905–1907, the former number has represented about the average annual additions to the list, thanks to the energies of our local lepidopterists, and to this number again I now add another eight species or "forms." Although there is no reason to believe that no further additions will be made to our list—indeed, I venture to suppose that our local Pterophorid fauna will eventually be found to include at least fifty species or forms—yet it has seemed to me that a useful end will be served by collecting together the various items that have been published or discovered regarding the Plume-moths of Ceylon. A review of what is already known will at least clear the ground for further work.

Identification.

One of the great difficulties of all local workers at zoology in the tropics lies in the identification of their specimens. "Si nomina nescis, perit et cognitio rerum," and nowhere is this truer than in entomology. Considerations of space have prevented my giving a detailed description of all the species, but the tables will facilitate determination, which may then be confirmed by reference to the descriptions and figures cited under each species.

There should be little difficulty in identification by means of the analytical keys to the genera and species, but a few words of explanation may be advisable. Each key is dichotomous throughout, that is to say, each heading is subdivided into two until the final results are reached. Each head is numbered consecutively, and each subdivision of a head is made to refer either to a final result or to a following head. There are two stages in the identification of any species, the finding first of its genus and secondly of its specific name.

To take an actual example. Firstly, we have to note whether the wings are fissured or not; we find they are fissured, and are referred to the number 3 on the right of the page. Now, turning to the number 3 lower down on the left of the page, we see that the fore wings have two lobes and are referred to the number 4, which we follow down in the same way. The cilia contain distinct scale-tufts, which brings us to number 5. The dorsal cilia of third segment of the hind wing contain a distinct scale-tuft, which refers us to number 9. The second segment of the fore wing is distinctly broad, so that the specimen must fall under number 10 and, as the segments of the hind wing are differently shaped, it must be a *Platyptilia*.

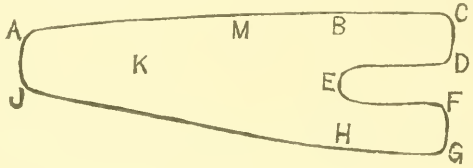
The second stage is to find the specific name. We turn to the Synopsis of the Species of *Platyptilia* and note that our specimen has the abdomen shorter than the dorsum of the fore wing, its pectus is not yellow, and the large scale-tooth on dorsum of third segment of the hind wing touches the apex, so that the moth must be *P. pusillidactyla*, an identification whose accuracy is strengthened on turning to that species by the fact that we bred it from a boxful of flower and seed heads picked off a *Lantana* bush.

In drawing up the key to the genera some difficulties have presented themselves, due to the fact that I have endeavoured to make use only of characters easily made out by means of a simple lens at most, without the aid of the microscopic manipulation necessary to determine details of neuration, &c.; however, it is hoped that local collectors will find the table quite workable. Should examination of the neuration be necessary the following method may be adopted: take a glass slide and smear on its centre a thin layer of clove oil with a fine brush, remove the wings and place them in

position on the slide, lightly smearing them over with clove oil, carefully cover them with a drop or two of Canada balsam, and apply over them a cover-glass, which may be held down by a clip or small weight for a few days until the balsam is hard. By adjusting the mirror of the microscope. so that the rays fall a little obliquely, the nervures show up fairly well. Descaling by means of a very fine brush or by immersion in "Eau de Javelle" is not, as a rule, satisfactory, except in the case of large specimens.

Structure.

For the convenience of local collectors I give a diagram showing the terms used in descriptions of the parts of a wing:—



AJ	..	Base.
ABC	..	Costa.
C	..	Apex.
BCDE	..	First segment or lobe.
CD	..	Termen or outer margin.
D	..	Posterior or anal angle.
DE	..	Posterior margin of first segment.
DEF	..	Cleft or fissure.
E	..	Base of cleft.
EF	..	Anterior margin of second segment.
F	..	Anterior angle of second segment.
EFGH	..	Second segment or lobe.
FG	..	Termen or outer margin.
G	..	Tornus, tornal or anal angle.
JHG	..	Dorsum, dorsal or inner margin.

Positions in the wing are reckoned from the base outwards; for example, a marking at position B in the figure would be described as a marking on costa at $\frac{2}{3}$; one at position K would be in disc at $\frac{1}{3}$; one at M would be a subcostal marking at $\frac{1}{2}$.

Apical	..	Touching the apex.
Anterior	..	Nearer to the head.
Posterior	..	Further from the head.
Cilia	..	The fine hairs composing the fringes of the wings.
Falcate	..	Hooked or bent like a sickle.
Ferruginous	..	Rust-coloured.
Fissured	..	Cleft, divided into lobes.
Fuscous	..	Grey-brown.
Linear	..	Having no apparent breadth nor any outer angles.
Sub-	..	Nearly or rather.
Pectus	..	The lower surface of the thorax.

Synonyms and Citations.

The more important of these will be found quoted under the various species, but I regret to say that many of these papers are inaccessible to the ordinary student in Ceylon, *i.e.*, no copies are to be found in any public or scientific library in the Island. The most generally useful papers are those on the family by Mr. Meyrick in Trans. Entom. Soc., London, for 1886 and 1907, and in the Bombay Society's Journal, vol. XVI., part 4, *et seq.* The descriptions in Walker's Catalogue are hopeless without reference to the type-specimens, and Moore's "Lepidoptera of Ceylon" and Cotes' and Swinhoe's "Catalogue of the Moths of India" may safely be ignored by workers in this group.

Contractions.

The following contractions are employed :—

B. J.	..	Journal of the Bombay Natural History Society.
E. M. M.	..	Entomologists' Monthly Magazine.
Entom.	..	The Entomologist.
f.w.	..	fore wing.
h.w.	..	hind wing.
Linn. Ent. VI.	..	Linnæa Entomologica, Vol. VI. (1852).
Meyr.	..	E. Meyrick.
Pag.	..	A. Pagenstecher.
P. Z. S.	..	Proc. Zoological Society of London.
T. E. S.	..	Trans. Entomological Society of London.
Wlk., Cat. XXX.		F. Walker, List of the Lepidopterous Insects in the British Museum, Part XXX. (London, 1864).
Wlsm.	..	Lord Walsingham.
Zell.	..	P. C. Zeller.

Localities. (See Map.)

Parts of the Island have been fairly well worked, *e.g.*, the districts around Kandy, Maskeliya, Maḍulsíma, and Diyataláwa ; of other parts we know a little, *e.g.*, Puttalam, Trincomalee, and the coast line between Colombo and Hambantota ; the rest of Ceylon is as yet practically a *terra incognita*. As places likely to yield novelties I would especially indicate the Ratnapura District, the Kelani Valley, and that part of the Island lying north of a line drawn from Puttalam to Trincomalee.

Times of Appearance.

As a rule, I have thought it unnecessary to enumerate exact dates of capture, as my experience has led me to conclude that nearly all our Ceylon plumes are continuously-brooded, and that some individuals may be found at almost any time of the year. I would impress upon collectors, however, the desirability of recording exact dates of capture on the labels of all their specimens.

Faunal Resemblances.

As the geographical distribution is given under each species, I do not propose to enter into the subject here. Of the thirty-seven species enumerated, however, twelve (or 32 per cent.) are at present only known from Ceylon; seventeen (or 46 per cent.) are wide-ranging forms which occur in at least two other localities; four (or 11 per cent.) have only been found hitherto in the Khasi Hills (Assam); and Java, India, the South Indian Hills, and Australia each produces one species which is only known otherwise from Ceylon.

At present we know too little of the distribution of the Pterophoridæ in general to permit of any useful deductions being drawn, but a point which has especially struck me is the great resemblance shown by the plume fauna of Ceylon to those of the Khasi Hills (Assam) and Java. The fact of finding such forms as *P. citropleura* and *A. melanopoda* in localities so widely separated as the Khasi Hills and the central districts of Ceylon seems to me either to argue the immense antiquity of a specific existence which reaches back to a time when Ceylon and Assam were connected (if ever they were) or else to point to the wonderful powers of dispersal (? by the monsoon winds) possessed by these little moths. The latter supposition appears the more probable.

Acknowledgments.

One of the most pleasing duties in writing a paper like the present lies in the fact that some acknowledgment can be made for the many instances of help freely rendered by friends and correspondents. To Mr. E. Meyrick my thanks are due for the ready and courteous way in which he has replied to the innumerable queries which have arisen in working at this subject away from type-collections and libraries; his published papers must also form the basis of all work on the plume moths of India and Ceylon. Messrs. E. E. Green, W. Vaughan, J. Pole, F. M. Mackwood, W. Ormiston, and O. S. Wickwar have most generously helped with specimens collected by themselves, and I am also indebted to Mr. G. B. de Mowbray, who kindly sent me his collection for inspection. Dr. J. C. Willis has assisted most substantially by the identification of the various plants on which larvæ have been found.

Synoptic Table of Genera of the Pterophoridæ of Ceylon.

1	Wings not fissured ..	.. 2
	Wings fissured ..	.. 3
2	Outer margin of f.w. not falcate	.. Agdistis
	Outer margin of f.w. strongly falcate	.. Steganodactyla

3	Fore wing four-lobed	Heptaloba
	Fore wing three-lobed	Deuterocopus
	Fore wing two-lobed	4
4	Cilia with scale-tufts or specially modified scales, or either segment of f.w. banded transversely, or second segment of f.w. with distinct tornal angle ; any or all of these characters may co-exist ..	5
	Cilia with no scale-tufts or specially modified scales, neither segment of f.w. banded transversely, second segment of f.w. without any tornal angle ; all these characters must co-exist ..	12
5	Third segment of h.w. with no scale-tuft in dorsal cilia	6
	Third segment of h.w. with a scale-tuft in dorsal cilia	9
6	Cleft of f.w. less than half wing-length ..	7
	Cleft of f.w. at least half wing-length ..	8
7	Dorsal cilia of f.w. with scattered large black scales	Exelastis
	Dorsal cilia of f.w. without scattered large black scales	Stenoptilia
8	Only one nervure in first segment of f.w. ;* abdomen usually very large and stout, often strikingly ornamented dorsally ; resting position in life with wings spread out and closely appressed to the resting-surface	Diacrotricha
	More than one nervure in first segment of f.w. ;* abdomen usually rather small, slender, and dull-coloured, and, if ornamented, the pattern is generally lateral ; resting position in life with wings folded up and held well clear of the resting-surface	Trichoptilus (part)
9	Second segment of f.w. linear ..	Trichoptilus (part)
	Second segment of f.w. not linear ..	10
10	Segments of h.w. differently shaped ..	Platyptilia
	Segments of h.w. similarly shaped ..	11
11	Ground-colour of wings pale ochreous ..	Sphenarches
	Ground-colour of wings not pale ochreous	Oxyptilus
12	F.w. with dark blotch before cleft ..	Pterophorus
	F.w. without dark blotch before cleft ..	Alucita

* Compare figures D and E in Plate C.

Family.—PTEROPHORIDÆ.

Sub-family.—*AGDISTINÆ.*

AGDISTIS, *Hb.*

Synopsis of the Species.

Expanse 24 mm.	F.w. with an oblique apical white streak	sinhala
Expanse 15–16 mm.	No apical white streak ..	nanodes

Agdistis nanodes, *Meyr.*

B. J., XVII., 136.

Locality.—Puttalam. The four specimens, on which the species is founded, were taken between August and November.

This species is unknown to me, except from the description quoted above.

Agdistis sinhala, *n.s.*

♂. Expanse 24 mm. Antennæ ciliated (1), gray. Palpi densely scaled, gray, faintly irrorated with fuscous; projecting nearly length of head beyond it. Fore legs gray irrorated above with fuscous and with a conspicuous dilation at end of tibia. (Second pair of legs wanting.) Hind legs very long light, gray, spurs minute, first pair at about two-thirds, second pair apical. Head gray, with a faint fuscous median line. Thorax pale fuscous, with a sub-dorsal grayish longitudinal line. Abdomen very long and slender, pale gray, darkening apically; a pale fuscous dorsal line on first three abdominal segments; anal tuft pale gray. Fore wing elongate, narrow, widening exteriorly, with a slightly falcate apex and distinct tornal angle; grayish fuscous; a dark fuscous bar along dorsum from base to about $\frac{1}{3}$; outer third of wing (except costa) irrorated with dark fuscous and traversed by an oblique white streak most conspicuous in apex. Cilia grayish-fuscous. Hind wing triangular, apex acute, outer margin undulate with two very shallow excavations in normal positions of clefts; fuscous. Cilia fuscous, rather long in vicinity of anal angle.

Type ♂ (No. 6,900) in Coll. Bainbrigge Fletcher.

Locality.—A single specimen was taken at Kandy on December 22, 1907, by Mr. E. Ernest Green, to whose kind assistance in working at the Pterophoridæ of Ceylon I am much indebted.

Observation.—Unfortunately this specimen is in poor condition, but I have carefully compared it with examples of eight Agdistid species in my collection and with the descriptions of all the other species described in this genus, and have no doubt of its distinctness.

STEGANODACTYLA, *Wlsm.*

STEGANODACTYLA CONCURSA, *Wlsm.*

Wlsm.) E. M. M., 1891, 241; Novitates Lepidopt., t. xii., f. 3.
Hering, Stett. Ent. Zeit. 1903 96.

Distribution.—Colombo, Galle, Weligama, Kandy, Pundalu-oya, Maḍulsíma, Diyataláwa, Haputalé. Outside of Ceylon it has been recorded from Sumatra.

Early Stages.—The larva feeds between the young unexpanded leaves of a common climbing *Argyreia* and also of *Ipomœa populifolia*, eating the upper cuticular surface of the leaf into tell-tale patches.

The full-grown larva may be described as stout, rather flattened. Head pale yellow. Other segments a pale grayish-green, interstices of segments (only visible when expanded) darker green. Dorsal surface pale; warts with a little orange-yellow about their bases, often forming a distinct orange-yellow or reddish median stripe. An ill-defined broad dark lateral shade appears to be caused by the contents of the alimentary canal, as it disappears towards the anal extremity when frass is voided. Hairs white, usually very conspicuous. (Plate E, figure 1.)

In confinement the larva generally wanders off the food plant to pupate, but occasionally attaches itself to the upper surface of the midrib of a leaf. I have never found the pupa in nature.

The pupa is usually suspended horizontally to a vertical support, being closely appressed ventrally to the resting-surface by the double set of cremastral hooks. Its colour, which is variable, is some shade of pale green, but it always has a broad reddish mediodorsal stripe. These colours fade into a greenish-brown shortly before emergence, which takes place after about six days, the moth generally appearing in the late evening, quite contrary to the ordinary habits of plume moths. The pupa is comparatively extremely small, and it seems marvellous how such a large moth can emerge from a pupa-case which does not seem sufficiently large to contain its abdomen alone. (Plate E, figure 2.)

Habits.—Although the larvæ are common and easy to find and rear up, the moth itself appears to be of a very retiring nature and is rarely seen in a wild state, although it occasionally comes into light. It is very difficult to beat from the food plant and, when it is disturbed, the flight is rapid and the moth easily overlooked.

Observation.—It is noteworthy that up-country specimens—*i.e.*, from Kandy and above—are distinctly larger than those from the coast districts, the former having an average expanse of about 16–17 mm. as against about 12–13 mm. in the case of the latter. It may be permissible to conjecture that this difference is due directly to climate, the up-country specimens having had longer-feeding larvæ which, as a rule, produce larger imagines than larvæ which feed for a shorter period of time; but, of course, this is one of the innumerable problems in Siṇhalese entomology in which we require

actual experiments instead of theoretic deductions, which can at best be only guesses at the truth.

SUB-FAMILY.—*PLATYPTILINÆ.*

STENOPTILIA, *Hb.*

Synopsis of the Species.

First segment of f.w. with anal angle .. zophodactyla
First segment of f.w. without anal angle .. petræa

STENOPTILIA ZOPHODACTYLA, *Dup.*

This species, when first found by me in Ceylon, was described as orientalis, n.s. (inedd) Meyrick identified it as zophodactyla with which it appears to agree, but a study of ♂ genitalia would be interesting and might reveal some distinction. T.B.F. 30.XII.09

Duponchel, Hist. Nat. Lep., XI., 668, t. 314, 4; Leech, Brit. Pyral. 60; Meyr., Handbk, 440; Tutt, Brit. Lep., V., 319; Meyr., E. M. M., 1907, 146; Meyr., T. E. S., 1907, 504.

Distribution.—Diyataláwa, Hakgala, Maḍulsíma.

In Ceylon this is decidedly a hill species, being found on dry patana hillsides at a height of about 4,000 feet and over.

Its recorded distribution outside Ceylon includes Argentina, Eastern Australia, India, Central and Southern Europe, Asia Minor, and Armenia.

Early Stages.—The egg is quite of the Platyptilid type, being oval, with both ends equal and rounded off. In colour it is of a uniform pale green, the surface delicately reticulated.

The early stages of the larva have not yet been observed in Ceylon, but the following is a description of a full-fed larva found at Diyataláwa on September 17, 1907 :—

" The larva, at rest and apparently about full-fed, is about 10 mm. long, stout, stoutest about third segment and tapering thence gradually. Head pale yellow with black ocelli. Colour a pale green, the spiracles narrowly ringed with black ; they are situated about half way up the segments but do not seem raised above the skin-surface at all. There is a broad medio-dorsal stripe, purple at the edges, but very dark internally. This is narrowly and obscurely edged by a narrow whitish-green longitudinal stripe, of a tint slightly paler than the ground-colour. Half way between the lower edge of this stripe and the spiracle is a second similar whitish-green stripe, and a third similar stripe occurs on the latero-ventral surface at a distance below the spiracle, equal to that of the second stripe above it. The two latero-dorsal setigerous tubercles are situated at a horizontal distance apart, equal to about one-third of the width of the segment ; the foremost one bears a short black hair, the aftermost a similar white hair ; the tubercles themselves are very small and inconspicuous. Just above the spiracle occurs a short white hair, directed outwards. Just below the spiracle are (i.) a very short white hair directed forward, (ii.) a short white hair directed backward. The whole body, particularly on the dorsal and ventral regions, is thickly covered with minute short, black, bristly hairs. The legs are fairly large and are yellowish in colour ;

prolegs rather small, greenish-yellow. The larva feeds on the flowers and seeds of *Sopubia trifida*."

In the case of another larva, the 6th and 11th segments had a round pale spot in the purple dorsal stripe on each side of its central darker line. (Plate E, figure 3.)

The pupa is long and narrow, of a pale yellowish-green colour with a broad purplish-red dorsal stripe; the usual white hairs are so short that they are only just perceptible under a lens. The larval skin is discarded entirely and is shrunk up into a minute pellet. The pupa is capable of rapid and violent motions in the ventro-dorsal plane, the head being bent backwards dorsally until it touches the anal extremity. The pupa is suspended head downwards, ventral surface against support.

Stenoptilia petræa, *Meyr.*

T. E. S., 1907, 504.

Distribution.—Diyataláwa. The only specimen that I have seen was beaten from a clump of bushes in a marshy valley near the Rifle Range on August 19, 1907.

Originally described from the Palni and Nilgiri Hills in Southern India.

Observation.—Superficially very similar to *zophodactyla*, but structurally distinct by the shape of the first segment of the fore wings, which is narrower and with lower margin straight to apex, so that there is no lower angle. This peculiarity is very distinct and striking, once attention is directed to it.

PLATYPTILIA, *Hb.*

Synopsis of the Species.

1	Abdomen as long as dorsum of fore wing	brachymorpha
	Abdomen shorter than dorsum of fore wing	2
2	Pectus and ventral surface of abdomen canary-yellow	3
	Pectus and ventral surface of abdomen not canary-yellow	4
3	Base of cleft of f.w. is outside of a line drawn to costa from outer scale-tuft on dorsum	citropleura
	Base of cleft of f.w. is directly over outer dorsal scale-tuft	taprobanes
4	Large scale-tooth on dorsum of third segment of h.w. is apical or nearly so	pusillidactyla
	Large scale-tooth on dorsum of third segment of h.w. does not reach beyond $\frac{3}{4}$	molopias

I have twice received examples of another Platyptilia, apparently undescribed.

Note.—I have seen no specimens of *P. direptalis*, Wlk., and from the descriptions only I am unable to separate it from *P. molopias*, which latter is a most variable species.

Platyptilia brachymorpha, *Meyr.*

(Plate A., figure 3.)

Brachymorpha.—Meyr., T. E. S., 1888, 240; B. J., XVII., 135; T. E. S., 1907, 483.

Seeboldi.—Hofmann, Iris, XI., 33.

Distribution.—Puttalam, Galle, Trincomalee, Dambulla, Maḍulsíma, Aráwa, Alutnuwara, Mánkuḷam, Anurádhapura, Kégalla, Haldummulla, Yala.

Apparently confined to the low-country. Outside of Ceylon, it has been recorded from Syria, India, South Africa, and Hawaii.

Early Stages.—The life-history is quite unknown. The larva may be looked for on the flowers of some composite plant growing in dry, sandy places.

Platyptilia direptalis, *Wlk.*

Wlk., Cat. XXX., 934; Meyr., T. E. S., 1907, 485.

Distribution.—Paṭṭipola. I have not seen this species. It occurs also in India, and has been recorded from Cape Colony and the Congo. In India and Ceylon it seems to be essentially a hill species, all the records being from localities with an elevation of 6,000 feet or over.

Platyptilia molopias, *Meyr.*

(Plate A., figure 1.)

Molopias.—Meyr., B. J., XVII., 135.

Mesopterna.—Meyr., M. S. S. (*ined.*).

Distribution.—Maskeliya, Kandy, Pérádeniya, Nuwara Eliya, Hakgala, Paṭṭipola, Diyataláwa, Maḍulsíma.

Not yet recorded, except from Ceylon, where it is fairly common in the hill districts.

Early Stages.—Ovum.—The egg is about ·47 mm. long by about ·3 mm. broad, the micropylar end distinctly the larger and flattened; in colour it is of a very pale green, the surface reticulated with large but shallow rounded depressions.

Larva.—Larvæ were found on May 18, 1908, at Maḍulsíma, feeding on the flowers and unripe seeds of *Teucrium tomentosum*, Hey. The larva is of a very pale green colour, and is very difficult to discern when *in situ* on the food plant. Half-grown examples often seem to have a narrow reddish medio-dorsal stripe, lacking in adults, which latter have sometimes some lateral reddish markings on the thoracic segments. Like all "plume" larvæ, however, this one is very variable in colour, and some examples might be described as reddish with a greenish latero-dorsal suffusion on the abdominal segments. The head is yellowish or pale green, the ocelli very distinctly marked in black. The segmental divisions are sharply distinct. All primary hairs are white; the longest hairs

are a little longer than the diameter of the segments on which they arise. The legs are yellowish-green, extremities of claws reddish. Prolegs very transparent pale green, hooks reddish. Spiracles very inconspicuous. Secondary hairs short, black. (Plate E, figure 4.)

Parasites.—Of some fifty or sixty larvæ collected, about 75 per cent. were found to be attacked by a small black ichneumonid fly.

Pupa.—The pupa is suspended freely by the tail from an empty flower-sheath of the food plant. It is rather short, the appendage sheaths very long and well separated. Colour a pale flesh-pink, mottled longitudinally with brown; head and wing-sheaths pale greenish, the latter with longitudinal brown shading. Dorsal prominences small, distinct, subequal, directed forward, except the first, which is extremely large, directed backwards, blunt, but tipped anteriorly with a sharp spine whose point is bent forward. This large prominence is sharply outlined by a deep brown shading which reaches obliquely anteriorly half way across the wing-cover. A second brown shade, parallel to the first but less intense and narrower, occurs on the 6th segment, but barely reaches on to the wing-sheath.

Imago.—The moth emerges from the pupa after about a week.

Platyptilia pusillidactyla, *Wlk.*

(Plate A., figure 2.)

Pusillidactyla.—Wlk., Cat. XXX., 933; Wlsm., P. Z. S., 1891, 495; l. c., 1897, 57; Meyr., T. E. S., 1907, 483.

Tecnidion.—Zeller, Hor. Soc. Ent. Ross., XIII., 468 (1877).

Hemimetra.—Meyr., T. E. S., 1886, 18; B. J., XVII., 135.

Distribution.—Anurádhapura, Kurunégala, Kégalla, Galle, Weligama, Trincomalee, Puttalam, Colombo, Mátalé, Maturaṭa, Kandy, Pérádeniya, Maskeliya, Diyataláwa, Bandárawela, Passara, Maḍulsíma, Badulla, Haldummulla.

Abundant throughout Ceylon in every district that has been invaded by *Lantana*.

Early Stages.—Ovum.—The egg is about ·4 mm. long by about ·22 mm. broad, and is of a very pale greenish-yellow colour (almost colourless); one end seems larger than the other and this larger end is studded with little prominences, especially noticeable in the micropylar area.

Oviposition.—On the evening of January 4, 1908, I watched a female ovipositing on *Lantana* at Galle. She flew about slowly and pitched on a terminal shoot enclosing a small green unexpanded flower bud. This she seemed to examine by bending down her head and antennæ and then, apparently satisfied, she bent her abdomen downwards and right forward (until the ovipositor must have extended at least as far forward as her head) and deposited a single, small, oval, greenish-white ovum. She then flew to another bud

and repeated the operation. The process of selecting the bud and depositing the egg took perhaps thirty seconds.

Larva.—The larva itself is stout, pale yellow, and naked—at least, no hairs are visible to the unaided eye. The larva is usually found coiled round at the base of the flower-tubes in the interior of a *Lantana* flower. (Plate E, figure 5.)

Pupa.—The pale yellow pupa is to be found in a sort of chamber gnawed into the side of the fruit receptacle, a regular cocoon being formed of bits of vegetable matter spun together with silk. The emerged pupæ are usually found projecting half way out of the cocoon amongst the ripening fruit, such bunches of fruit being far less productive than unattacked ones. This little plume, then, must form a factor of some importance in considering the increase of *Lantana* in the Island. (Plate E., figure 6.)

Observation.—I understand that *Lantana* was originally a South American plant and was introduced into Ceylon about eighty years ago, and it appears probable that *P. pusillidactyla* is also an introduced species, as its distribution is very wide. Originally described from the West Indies, it has been recorded from Réunion, India, and Ceylon, and I possess a specimen taken by myself in Mahé (Seychelles Islands), and have lately received an example from Honolulu. I have also one which I took at Hongkong.

Platyptilia taprobanes, *Felder.*

Taprobanes.—Felder, Reise "Novara," t. cxl., f. 54; Moore, Lep. Ceylon, III., 527; Meyr., T. E. S., 1907, 482.

Sythoffi.—Snellen, Tijd. Ent., XLVI., 54, t. v., ff. 15, 16.

Tranota.—Meyr., M. S. S. (*ined.*).

Distribution.—Maskeliya, Paṭṭipola, Nuwara Eliya, Maḍulsima, (?) Pérádeniya.

Confined to the higher hill districts above 4,000 feet. Mr. Meyrick has recorded a specimen from Pérádeniya, but this is possibly an error in labelling on the part of the captor, or more probably an importation with its food plant into the Botanic Gardens.

P. taprobanes seems to be always a hill species, its distribution outside Ceylon being South India (Palni Hills), Assam (Khasi Hills), and West Java (Preanger, 1500–1600 met.).

Early Stages.—The early stages and food plant are quite unknown.

Observation.—Snellen's figure of *sythoffi* is very good, and is unmistakably this species. The same cannot be said for Felder's figure, which is very poor and doubtful; in my copy of his Plate 140, figure 54 appears to be engraved after *sythoffi* and coloured with a longitudinal ochreous streak near the apex of the fore wing in a manner only characteristic of *H. argyriodactyla* amongst our Siṅhalese species. The scale-tufts in the figure might apply to either of these species. Under these circumstances I have thought it best to follow Mr. Meyrick's identification.

Platyptilia citropleura, *Meyr.*

T. E. S. 1907, 482.

Distribution.—Maskeliya. Also found in Assam (Khasi Hills).

Early Stages.—Early stages and food plant ~~unknown~~. Larva in seedpods of Begonia.

Observation.—Quite distinct from *taprobanes*, being smaller and blacker; moreover, the cleft in the forewing is so shallow that it does not reach to a position immediately over the outer scale-tuft on the hinder margin of the wing; in *taprobanes* the base of the cleft is directly over this tuft.

I have examined a specimen, taken at Maskeliya in June, in the collection of Mr. J. Pole, and two examples (both Maskeliya, January, 1908), in that of Mr. G. B. de Mowbray, and am further indebted to Mr. Pole for a specimen taken at Maskeliya in November, 1908, and which he has kindly added to my collection.

HEPTALOBA, *Wlsm.*

On its inception this genus was considered by Lord Walsingham as most nearly allied to *Amblyptilia* (*Platyptilia*), but the linear, similarly-shaped segments of the hind wing seem to me to place it much nearer to *Oxyptilus*.

Plate B., figure B., shows the neuration of the only known species. It will be noted that vein 3 of the fore wing has apparently been rendered obsolete by the development of the cleft between veins 2 and 4; at least, I have been unable to observe its presence after a careful examination of four specimens specially prepared for the microscope.

The neuration of the hind wing (not shown in the figure) is as follows:—1*b* to apex of third segment; 2 short, running into hinder margin of second segment near base; 3 out of 4 at angle of cell, long, parallel, running into hinder margin of second segment at $\frac{1}{2}$; 4 to apex of second segment; 5 and 6 apparently absent; 7 to apex of first segment; 8 parallel to 7, running into costa at half.

Heptaloba argyriodactyla, *Wlk.*

Wlk., Cat. XXX., 929; Wlsm., E. M. M., 1885, 175 (fig.); Moore, Lep. Ceylon, III., 527, t. 209, f. 13 (unrecognizable).

Distribution.—Kandy. Both species and genus are peculiar to Ceylon.

Early Stages.—The life-history is quite unknown.

Observation.—Easily distinguished from all other Ceylon plumes by the fissure of the fore wing into *four* segments.

It was originally described by Francis Walker from specimens given to the British Museum by Dr. Templeton, but no exact locality is stated. I have seen examples from nowhere except Kandy, but in the immediate vicinity of that town it seems to be fairly common.

DEUTEROCOPUS, *Zeller.*

This interesting little genus, which was founded by Zeller in 1852 (Linn. Ent. VI., 402) for the reception of *tengstrœmi*, may at once be recognized by the fact that the fore wing is split into three segments, the normal second segment being itself subdivided to about half its length. (See Plate B., figure C.)

Six ~~Five~~ "species" have been described: *tengstrœmi*, Z.; *ritsemæ*, Socotranus, Rebel Wlsm.; *rubrodactylus*, Pag.; *planeta*, Meyr.; *famulus*, Meyr.; but as a rule these little moths seem scarce in collections, and the specific characters have therefore been taken from short series or even from single specimens. Working in this way, it is easy enough to divide up the available specimens into species or forms or races, but the extraordinary amount of individual variation renders this grouping useless when larger series of examples of this genus are being dealt with. A few months ago I possessed seven specimens of *Deuterocopus* from Ceylon, and these were clearly separable into four "species"; in June, 1908, I caught or bred 19 other examples from Galle, and I have lately been able to see a specimen in the collection of Mr. G. B. de Mowbray; an examination of these 27 specimens has convinced me that we have only one real "species" of this genus in Ceylon. It is true that this species is divisible into four forms, each with its distinct facies; these I have shown in the table and synopsis, but the differences shown in the table must be taken as typical of the extremes of the various forms, and must certainly not be considered as invariable. Indeed, there appear to be no characters which do not vary from an appearance typical of one form into that characteristic of any of the others; perhaps the colour of the pectus and ventral surface of the abdomen may be taken as a character as constant as any.

My opinion of these forms is that all the Ceylon specimens belong to one highly variable species which has already broken up into several well-marked subspecific forms, still fused by syngamy into a single species, and that these forms may be regarded as species in the making, ready to break away from the parent stock by the development of asyngamy through the effects of isolation or pronounced preferential mating. Meanwhile, it is convenient to treat the different forms as distinct for the purpose of identification of their specimens by local collectors.

Since writing the above I have found *D. tengstrœmi* Socotranus abundantly at Hambantota, and an examination of some sixty specimens of this form shows that it is on the whole more constant within certain limits of variation than appears to be the case in the other three. In this case isolation, by the larval habit of feeding on a plant typical of the very dry districts, seems to have separated off this form from the other three characteristic of the wetter parts of the Island, and I am now inclined to consider it a true species

although I am unable to perceive any distinguishing characters between the male genital armatures of ~~*longstroemi*~~ *sochanis* and *rubrodactylus* ~~*planetx*~~, in both of which forms this latter structure is highly complex and characteristic. In spite of the similarity in the genitalia, however, the difference in habitat appears sufficient to secure asyngamy.

Observation.—Zeller named this genus *Deuterocopus*, giving the derivation of the name, and this is obviously not a misprint as the same spelling is seen on pages 319 and 415 of Volume VI. of "Linnæa Entomologica." Some later authors however (*e.g.*, Hofmann, Deutsche Ent. Zeit., 1898, p. 329; Pagenstecher, Zoologica, XXIX., p. 241) have altered Zeller's name to *Deuteroscopus*. This latter spelling is quite inadmissible, since a generic name, once published, is inviolable, except where it is a mere printer's error, for which there is evidence.

Subsequent study of this group has modified some of my previous ideas. A paper on Deuterocopus was read at Ent. Soc. meeting on 1st Dec. 09 + will, I hope, appear shortly.

T. B. F.
30-XII-09.

Tabular Comparison of some points in the Ceylon forms of *Deuterocopus*.

Name.	Pectus and Ventral Surface of Abdomen.	Abdomen.	Whorls of Scales on posterior Tibiæ.	Spurs on posterior Tibiæ.	Posterior Tibiæ.
Atrapex ..	Whitish ..	Ferruginous: basal segment slightly irrorated with whitish; third segment with a longitudinal narrow black stripe, edged posteriorly with a bar of intermixed yellowish-white and ferruginous scales; or Uniform blackish ferruginous, the second segment with a whitish subdorsal spot	Strong	Distinctly thickened with scales	Uniformly ferruginous or blackish ferruginous
Tengstrœmi ..	Whitish ..	Ferruginous brown: first and second segments mottled with white; third segment with a darker median line and a sub-dorsal spot on basal margin, posterior margin edged with a narrow bar of light ferruginous scales; fourth, sixth, and seventh segments with two narrow longitudinal white dorsal lines	Strong	Smooth	Ferruginous brown, obscurely and incompletely banded with white
Rubrodactylus ..	Sulphur-yellow..	Basal and second segments dorsally sulphur-yellow, other segments ferruginous; third segment edged posteriorly with a narrow bar of glistening yellowish-white scales; sixth segment suffused with whitish; fourth segment with a lateral white spot	Weak	Smooth	Ferruginous, more or less banded with pale yellow
Ritsemæ ..	Sulphur-yellow..	Ferruginous: first and second segments dorsally sulphur-yellow; third segment posteriorly with a raised flap of glistening white scales; sixth segment with a conspicuous square yellow dorsal spot	Weak	Smooth	Bright ferruginous, conspicuously banded with white or pale yellow

Synopsis of the named Forms of Deuterocopus.

1	Pectus and ventral surface of abdomen whitish	2
	Pectus and ventral surface of abdomen yellow	3
2	Apical third of fore wing black ..	atrapex
	Apical third of fore wing not black ..	tengstrœmi
3	Abdomen with a broad transverse pure white band	ritsemæ
	Band on abdomen (if present) not pure white	rubrodactylus

DEUTEROCOPUS ATRAPEX, *forma nova.*

This includes atrapex and lophopteryx (the latter from Kandy Maskeliya and Yala.)

Distribution.—Galle, Kandy, ~~Maskeliya~~.

Size and shape of wings, cilial scale-tufts, antennæ, palpi, and abdomen the same as in the other three forms (*tengstrœmi*, *ritsemæ*, and *rubrodactylus*). Thorax ferruginous, often suffused with black; pectus and ventral surface of abdomen whitish. Abdomen: (see column 3 in Table of Species). Legs ferruginous, often suffused with black; large whorls of ferruginous or black scales on posterior tibiæ at origin of spurs and smaller whorls on base of tibiæ and apices of tarsal joints, the last decreasing posteriorly; spurs distinctly thickened with scales, sometimes broadly banded with white in centre and towards apex.

Wings bright ferruginous, sometimes almost wholly suffused with blackish or dark fuscous, but the *exterior third of the fore wing* (from just beyond the base of the first segment and including the whole of the second and third segments) *deep black*, with two inconspicuous preapical costal suffusions of ferruginous scales.

SOCOTRANUS, Rebel (nec tengstroemi, Z.)

DEUTEROCOPUS ~~TENGSTRŒMI, Zell.~~

~~Zeller, Linn. Entom., VI., 402~~; Meyr., T. E. S., 1907, 474.

Distribution.—Madulsima, Hambantota.

Originally described from Java; ~~this species has also been recorded from Assam and the Kei Islands~~.

Early Stages.—The larva feeds on the flowers of the square-stemmed jungle vine (*Vitis quadrangularis*) so characteristic of the dry districts, and the pupa is attached to a flower, flower-stalk, or stem of the food plant, or more rarely to a leaf of the same. A description of the early stages is reserved to another occasion.

The moth is readily disturbed by day from bushes over which the vine is climbing, but its flight is then swift, and it is difficult to secure, as it often retreats within thorny bushes. In the evening it may be taken plentifully around the flowers of its food plant and also on those of *Capparis*, &c.

Observation.—Examples from Ceylon seem to agree fairly well with Zeller's description of *tengstrœmi* and are, I think, identical. The fore-tibia is thickened apically with scales, and carries two small points which seem to be composed of acuminate scale-tufts; I should scarcely describe these as "long whitish spines"* which, by Zeller's description, should project from this scale-thickening.

Deuterocopus rubrodactylus, *Pag.*

Rubrodactylus.—Pag., Zoologica, XXIX., 241; Meyr., T. E. S., 1907, 473.

Socotranus, Rbl. ....*Tengstrœmi.*—Meyr. (nec Zell.), B. J., XVII., 134.

Distribution.—Puttalam, Galle.

Recorded also from South Africa, India, New Guinea, and the Bismarck Archipelago.

Early Stages.—Ovum.—The egg is about ·44 mm. long by about ·20 mm. broad; in shape it is ovo-cylindrical, the ends rounded and subequal, the micropylar area distinctly depressed; the surface is very smooth and shining, of a very pale orange colour, suffused with red at either pole.

Larva.—A larva found at Galle on June 18, 1908, feeding on the flowers of *Leea sambucina* (Sinh. "Bóuroula") was described as—"Pale green without any markings, except red suffusion at either extremity. The skin is roughened into minute knobs (like shark skin) everywhere, but especially on the ventral region. A distinct subsegment is formed on the posterior ventral region of abdominal segments. The hairs, except (i.), are very short and inconspicuous; (i.) is short, less than breadth of segments. The hairs are transparent whitish (glassy) and the tubercles very indistinct. The hairs are longest on thoracic and anal regions. The legs are extremely short and inconspicuous. There are no secondary hairs, these seeming to be reduced to skin-points or rather rugosities of the skin." (Plate E., figure 7.)

These descriptions are really of Early Stages of planeta, Meyr.

Pupa.—A pupa found on the same occasion was brown with a broad lighter ochreous-fuscous central band; very few hairs or projections. It was suspended anally to a flower stalk within a slight attempt at a cocoon—a few silken threads spun around it to form a spacious but flimsy enclosure, in which the pupa was fully visible. The cast larval skin remained at the anal extremity of the pupa. Another pupa was green.

Observation.—This seems to be the commonest form in Ceylon, and gradually runs into the more brightly-coloured *ritsemæ*, Wlsm. In spite of Pagenstecher's observation, "Die Art dürfte .... leicht zu erkennen sein," his description is very brief and poor.

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* "..... aus dem Knoten ragen die langen, weisslichen, auf einer Seite schwärzlichen Dornen hervor"..... (Zeller, Linn. Entom., VI., p. 403.)

DEUTEROCOPUS RITSEMÆ, *Wlsm.*

Notes Leyden Mus., VI., 243.

Distribution.—Galle, Pérádeniya.

Outside of Ceylon, it has hitherto only been recorded from Java.

Early Stages.—Examples were bred from pupæ found suspended anally from the upper surface of leaves of *Leea sambucina*, which is evidently the food plant. On the same bush I found a larva feeding inside an unopened flower bud; it appeared exactly similar to that of *rubrodactylus*, except in wanting the terminal red suffusion; unfortunately I failed to rear it.

Observation.—The most brightly coloured Ceylon specimens agree exactly with Lord Walsingham's description of *D. ritsemæ*, except that the bands on the posterior tibiæ are pale yellow instead of being white as there described.

SPHENARCHES, *Meyr.*

SPHENARCHES CAFFER, *Zell.*

Caffer.—Zeller, Linn. Ent., VI., 348; Zell., Lep. Micropt. Caffr., p. 118; Wlk., Cat. XXX., 934; Wlsm., T. E. S., 1881, 279; Meyr., T. E. S., 1887, 268; Wlsm., Indian Mus. Notes, II., 20 (figures); Cotes, l. c. 163; Wlsm., P. Z. S., 1897, 56; Meyr. Fauna Geogr. Maldives, I., ii., 125; Lefroy, Mem. Agric. India Entom., I., 220.

Anisodactylus.—Wlk., Cat. XXX., 934; Moore, Lep. Ceylon, III., 528; Swinh., Cat. Moths India, p. 668.

Diffusalis.—Wlk., Cat. XXX., 945.

Walkeri.—Wlsm., T. E. S., 1881, 279.

Synophrys.—Meyr., T. E. S., 1886, 17.

Distribution.—Colombo, Jaffna, Kégalla, Galle, Weligama, Hambantota, Trincomalee, Pérádeniya, Maskeliya, Diyataláwa, Maḍulsíma, Alutnuwara.

Widely distributed in the low-country, but only moderately common as a rule. Mr. W. Vaughan, however, reports it as extremely abundant at Alutnuwara in January, 1908. In India it sometimes attains the status of a pest on cultivated Cucurbitaceæ. and it has also been recorded as damaging *Dolichos lablab*.

Its distribution extends from Africa through India to Burma, Australia, and Japan. It is the only plume moth as yet recorded from the Maldives.

Early Stages.—A short description of a larva, about half-grown, reads—"Head yellow. Other segments pale brownish yellow. A narrow dorsal, latero-dorsal, and spiracular reddish stripe. Legs pale yellow, prolegs and claspers dark. Hairs white, except the short clubbed hairs which are black."

I have found the larva on *Averrhoa bilimbi* ("Bilimbi") at Galle, and on the flowers of *Biophytum sensitivum* at Maḍulsíma, so that

it seems to be decidedly polyphagous. The following description was made from a full-grown larva found at Maḍulsíma on August 24, 1908 :—

" It is about 7 mm. long, cylindrical, rather stout, the segmental interstices well marked. Legs and prolegs long and slender ; pale greenish-yellow. Head unicolorous, very pale, transparent, greenish-yellow ; mouth parts darker. Other segments pale greenish-yellow ; a narrow darker green dorsal line ; each segment with a large but ill-defined, pinkish-red, latero-dorsal spot, the series of these spots forming an interrupted longitudinal line. Two conjoined latero-dorsal tubercles emit a very long white hair directed upwards and a shorter white palmate hair directed upwards and forwards ; a supraspiracular tubercle emits a brown palmate hair directed upwards and forwards ; two conjoined subspiracular tubercles emit a short white hair directed forward and a long white hair directed downwards ; there are also one or two latero-ventral tubercles emitting white hairs. The whole surface of the segments is also closely studded with short white clubbed secondary hairs." Figure 10 on Plate E was drawn from this living larva under the microscope, and figure 8 on the same Plate gives a rather more detailed view of one of the peculiar palmate hairs.

The following description was made from the pupa produced by the larva described above :—" The pupa is about 7 mm. long and is attached to the under-surface of the midrib of a leaf of the food plant. The appendage sheaths and anal portion are of a yellowish-green colour, the remainder of a very pale pinkish-red. The dorsal surface bears a system of highly specialized tubercles, the nature of which will be best understood by a reference to the figure." (Plate F., figure 11.)

OXYPTILUS, *Zell.*

Synopsis of the Species.

I have since received O. belecyntes, Meyr., from Haldummulla. T.B.F.

1	Abdomen with a transverse white band ..	vaughani
	Abdomen without a transverse white band	2
2	Scale-tooth or tuft on dorsum of h.w. touches apex of third segment ..	regulus
	Scale-tooth or tuft on dorsum of h.w. does not touch apex of third segment ..	3
3	First segment of f.w. with a distinct anal angle	causodes
	First segment of f.w. with no anal angle ..	4
4	Dorsum of h.w. with a small scale-tooth not extending beyond $\frac{2}{3}$	epidectes
	Dorsum of h.w. with a large scale-tooth beyond $\frac{2}{3}$	regalis

Oxyptilus Vaughani, *n. s.*

♂. Expanse 10·5 mm. Palpi long, slender, curved, sickle-shaped, smooth; white, irregularly mottled with fuscous ferruginous; terminal joint acute, longer than second. (Antennæ wanting.) Head dark ferruginous fuscous, vertex covered with a loose tuft of elongated erected scales which do not form a regular cone. Thorax dark ferruginous fuscous; pectus pale sulphur-yellow. Abdomen; first segment and base of second segment pale sulphur-yellow, second, third, and fourth segments deep chestnut-bronze-brown, apical margin of fourth segment edged with a narrow transverse band of brilliant white scales, fifth segment thickly irrorated with white scales so as to form a distinct broad transverse bar across the abdomen, terminal segments deep reddish-purple; anal tuft long, apex yellowish-white. Legs dark ferruginous-fuscous, narrowly banded transversely with white; spurs long, equal; posterior tibiæ with small clusters of short dark fuscous spines near base and on origin of spurs. Fore wing cleft from $\frac{3}{5}$; elongated, narrow at base, broadly expanded outwardly; first segment rather narrow, apex acute, termen concave, oblique, anal angle distinct; second segment posteriorly dilated, apex produced (not extending beyond anal angle of first segment), termen concave, oblique; deep chestnut-brown, thickly irrorated with ferruginous and thinly sprinkled throughout with minute patches of lilacine-whitish scales; costal edge dark fuscous; a small whitish dot on costa at $\frac{1}{2}$, a small whitish transverse costal spot at $\frac{1}{2}$ of first segment, and a small white subapical spot; second segment with a small whitish dot on anterior margin at $\frac{3}{4}$; cilia ochreous-white, with blackish patches at angles of both segments suffused with blackish within cleft, with black bars on dorsum at $\frac{3}{4}$ and $\frac{7}{8}$ and a black dorsal scale-tooth at $\frac{1}{2}$. Hind wing cleft firstly from $\frac{2}{5}$, secondly from near base, segments very narrow and linear; dark ferruginous fuscous, third segment with a white bar at $\frac{1}{2}$ and a minute apical dorsal scale-tooth just beyond it; cilia ochreous-white, fuscous on first segment and towards apex of second, those of third segment very long and delicate.

Type ♂ (No. 6,459) in Coll. Bainbrigge Fletcher.

Locality.—Ceylon, Province of Uva, Maḍulsíma, Cocogalla estate (4,000 feet); February, 1907, at light (W. Vaughan).

I have much pleasure in naming this species after Mr. Wm. Vaughan, to whom I am indebted for this and many other "plumes."

Oxyptilus vaughani seems closely related to *O. peltastes*, Meyr. (T. E. S., 1907, 479), but differs in the distinct band on the abdomen and in the white-banded legs. Both these species seem to approach very nearly to the members of the lately-described genus *Xyroptila*, Meyr., and will probably have to be removed from the genus *Oxyptilus*; but until the exotic Oxyptilids are better known it seems to me that no good purpose will be served by separating up the group.

I now possess O. peltastes, Meyr., it is nearly allied to Vaughani, but quite distinct. T.B.F.

Since writing the above I have examined a specimen collected by Dr. A. Willey at Trincomalee on October 4, 1908, and have also received an example taken by Mr. W. Ormiston at Haldummulla in November.

On September 10 Mr. W. Vaughan obtained a second specimen at Aráwa, and a few days later bred a third from a pupa found suspended from the upper surface of a leaf of *Dimorphocalyx glabellus* in the same locality. Furnished with this information, and thanks to Mr. Vaughan's kind assistance, I was able to visit Aráwa on several occasions during December and found the moths quite common. They were at first obtained rather sparingly by beating *D. glabellus*, but later on I found them in abundance flying in the bright morning sunshine (about 10 to 11 A.M.) around the flowers of *Leea sambucina* (Sinh. "Bouroula"). In several cases I noted that the moths were actually feeding on the flowers, their tongues unrolled and thrust violently into the flower in search of food. In other cases they were settled on the leaves, when they hung down freely suspended by the first two pairs of legs, the wings folded and held out at right angles, the tip of the abdomen strongly curved upwards, and the posterior legs with the tibiæ extended at an angle between the wings and the abdomen, and the tarsi curved inwards until the distal tarsal joint nearly touched the apex of the abdomen.

An examination of a long series shows that *O. vaughani* may differ from the type, as described above, in the following points:— (1) The white spots on the first segment of the fore wing are sometimes developed into distinct, though narrow, transverse bands. (2) The white bands on the hind legs are sometimes very indistinct. (3) The fifth abdominal segment is usually less suffused with white scales. The narrow white bar on the fourth abdominal segment, however, is always very distinct and characteristic.

The larva will probably be found to feed inside the fruit of *Dimorphocalyx glabellus* (Sinh. "Weliwenna"), from which I also beat an example of *O. vaughani* at Alutnuwara on December 16, 1908.

Oxyptilus causodes, *Meyr.*

(Plate A., figure 4.)

B. J., XVI., 582.

Distribution.—Pérádeniya. Not known outside of Ceylon, and at present only recorded from a single tree of *Dillenia retusa* in the Royal Botanic Gardens.

Early Stages.—The egg and young larva are unknown.

Larva.—The larva feeds inside the fleshy fruits of *Dillenia retusa* (Sinh. "Goḍapara"), emerging from the fallen fruit when full-fed to suspend itself for pupation on any neighbouring object.

The full-grown larva (suspended for pupation) is about 13 mm. long by about 1·2 mm. broad, being cylindrical, slender, shining, and appearing quite smooth and naked. There are two principal colour varieties :—(i.) Wholly pale green without any noticeable markings except a narrow darker medio-dorsal stripe, and this is perhaps due to the vessels beneath showing through the skin rather than to any dermal pigmented area. Towards the anal extremity a pinkish suffusion is seen along the segmental interstices. (ii.) Very pale, semi-transparent, pinkish flesh-colour ; interstices of segments very pale, semi-transparent green, as are also some patches along the sub-median area of most of the segments, but the pale green and pink so merge into one another that no definite areas can be described. Head very pale green. A pale red medio-dorsal line. But some larvæ have no green markings, being wholly pink. The prolegs are very small and stumpy ; hooks dark reddish. The hooks on the fourth pair of prolegs are attached into the silken pupation-pad. The arrangement of the tubercles is shown in the figure. (Plate E., figure 9.)

Pupation.—The larva pupates very rapidly ; twelve hours is sufficient for it to emerge from the fruit, select a suitable place for pupation, suspend itself, and complete its metamorphosis.

Pupa.—The newly-formed pupa is of a bright light green colour, the capital extremity tinged with yellowish-brown about the base of the antenna-sheath ; but it soon becomes of an almost uniform reddish gray-brown.

Imago.—The moth, which usually seems to emerge early in the morning, appears after six days.

Oxyptilus regulus, *Meyr.*

B. J., XVII., 135.

Distribution.—Maskeliya. Only recorded from Ceylon.

Early Stages.—The life-history is unknown.

Observation.—This is apparently a very rare species. I have seen no specimens.

I have a specimen fr Assam, Kha T.

Oxyptilus regalis, *n. s.*

♂ Exp. 14–16 mm. Head and thorax fuscous with a few intermixed whitish scales, vertex with a loose tuft of erected elongate scales which do not form a regular cone. Palpi whitish, mixed with blackish, second joint reaching middle of face, terminal joint slightly shorter than second. Antennæ anteriorly whitish striated with blackish, posteriorly pale fuscous. Abdomen fuscous with a

dorsal series of light-edged blackish /\-shaped markings. Legs very pale fuscous, longitudinally striated with blackish.

Fore wing cleft from before $\frac{1}{2}$, first segment parallel-sided, subfalcate, without anal angle, second narrow, posteriorly slightly dilated, apex abruptly produced; fuscous, irrorated with dark fuscous and blackish; an undefined spot of dark suffusion towards dorsum at about $\frac{1}{5}$, and another at base of cleft, the two sometimes tending to be connected by a longitudinal area of dark suffusion; first segment with a small triangular costal patch of pale suffusion a little before $\frac{1}{2}$, a whitish transverse line at about $\frac{3}{4}$ and a minute pale sub-apical patch on costa; second segment with an inwardly oblique whitish line opposite that on first segment; cilia light fuscous, within cleft ochreous-white mixed with black scales especially evident posteriorly and near base, on termen with a small black scale-tuft near apex, on dorsum with a black scale-tuft opposite base of cleft and three scale tufts beyond this, last at tornal angle, the third tuft preceded and the fourth followed by a narrow patch of ochreous-white. Hind wing cleft firstly from $\frac{1}{3}$, secondly from near base, segments linear; dark fuscous: cilia fuscous; third segment on upper margin with a moderate ante-apical patch of black scales and a few scattered black scales between this and base, on dorsum with a fairly large triangular black scale-tooth at $\frac{3}{4}$ (opposite patch on upper margin but not reaching apex), a small apical scale-tuft, and a few scattered black scales between scale-tooth and base.

Five specimens, Colombo (July to September, 1908), collected by Mr. F. M. Mackwood.

I now possess O. regulus, Meyr., which is distinct. T.B.F.

This species seems very close to *O. regulus*, Meyr., by the description of the latter, but the black triangular scale-tooth on dorsum of hind wing does not reach the apex, nor are the two almost basal scale-teeth present in *O. regalis*.

In certain lights the "black" scale-tooth of the hind wing shows a most beautiful purplish-red iridescence.

Oxyptilus epidectes, *Meyr.*

(Plate A., figure 5.)

T. E. S., 1907, 476.

Distribution.—Kandy, Maskeliya, Maḍulsíma.

Probably widely distributed in the Island, but very inconspicuous and easily overlooked.

Outside of Ceylon it has been recorded from Burma, Coorg, the Nilgiri Hills, and Mauritius.

Early Stages.—Unknown at present, but I have bred the moths from *Biophytum sensitivum*, which is evidently the food plant.

TRICHOPTILUS, *Wlsm.*

Synopsis of the Species.

1	Dorsum of third segment of h.w. with a scale-tooth at about $\frac{2}{3}$.. ..	2
	Dorsum of third segment of h.w. with no scale-tooth	4
2	Dorsum of third segment of h.w. with an additional minute subapical scale-tooth	pelias
	Dorsum of third segment of h.w. without such	3
3	Ground-colour of f.w. pale ochreous ..	congrualis
	Ground-colour of f.w. warm ferruginous-brown..	wahlbergi
4	Hinder part of thorax white; ♂ with single anal tuft	xerodes
	Hinder part of thorax not white; ♂ with double anal tuft	paludicola

Lord Walsingham informs me that his T. pygmaeus does not appear to be congeneric with these tropical species and therefore, for the sake of uniformity, I have used the name Buckleria, Tutt, in my latest work, although I do not consider that this name is at all appropriate or that, strictly speaking, it is even valid, since, though duly published, it was never defined by Tutt. (Merton Rule II). T.B.T. 30.XII.09.

TRICHOPTILUS PELIAS, *Meyr.*

T. E. S., 1907, 472.

Distribution.—Originally described from Coorg and Assam.

Not previously recorded from Ceylon, but my collection contains four examples which agree with the diagnosis of the type. They were taken :—

There is also one specimen in B.M. from Colombo (Nietner coll.)

(*a*) Nalanda; October 30, 1906. Amongst grass, &c., by the roadside.

(*b*) Trincomalee; November 11, 1906. Oopah estate (*E. E. Green*), at light.

(*c*) Trincomalee; November 15, 1906. Powder Island.

(*d*) Colombo; December 17, 1906. Mutwal.

It is noteworthy that all the above specimens were taken in the low-country, whilst Mr. Meyrick's Indian examples were found at a considerable elevation.

Early Stages.—Unknown.

TRICHOPTILUS WAHLBERGI, *Zell.*

(Plate A., figure 10.)

Wahlbergi.—Zell., Linn. Ent., VI., 346; Z., Mic. Caff., 117; Wlsm., T. E. S., 1881, 280; Meyr., B. J., XVII., 134.

Rutilalis.—Wlk., Cat. XXX., 943.

Rutilans.—Wlk. (*sic !*).—Wollaston, A. M. N. H. (5), III., 441.

Pyrrhodes.—Meyr., Proc. Linn. Soc., N. S. Wales (2), IV., 1113.

Distribution.—Pérádeniya, Kandy, Mátalé, Maskeliya, Bandárawela, Badulla, Maḍulsíma.

Common in the hill districts between about 1,000 and 4,000 feet elevation. At Madulsima I found it common about half an hour before sunset on a bank covered with rough herbage. This moth seems especially attached to *Ageratum conyzoides* (" White Weed ") from which I have often disturbed it, but a search on this plant has failed to reveal the larva.

Outside of Ceylon, *T. wahlbergi* has been recorded from South Africa, St. Helena (? introduced), and Queensland.

Early Stages.—The early stages and food plant are as yet unknown (unless the larva described under *T. xerodes* belongs to this species).

Eggs laid by captured moths, however, are of a smooth elongate-oval shape and of a very pale shining greenish-white colour. In size they are about ·47 mm. long by about ·32 mm. broad and ·28 mm. high, a transverse section thus being oval. The newly-hatched larva is whitish, with a black head and long black dorsal hairs.

Trichoptilus ~~congrualis, Wlk~~ defectalis, Wlk.

(Plate A., figure 8.)

Congrualis.—Wlk., Cat. XXX., 943; Wlsm., P. Z. S., 1885, 885; Swinhoe, Cat. Moths, India, No. 4,545; Meyr., T. E. S., 1907, 473.

Oxydactylus.—Wlk., Cat. XXX., 944; Wlsm., P. Z. S., 1885, 885; Swinhoe, Cat. Moths, India, No. 4,549; Moore, Lep. Ceylon, III., 529, t. 209, f. 16.

Ochrodactylus.—Fish, Canad. Entom., XIII., 142; Fernald, Pter. North America, 1898, 2nd edit., p. 15.

Centetes.—Meyr., T. E. S., 1886, 16; l c., 1887, 266; Wlsm., P. Z. S., 1891, 494; l c., 1897, 56.

Compsochares.—Meyr., T. E. S., 1886, 16.

Ralumensis.—Pag., Zoolog., XXIX., 239.

Distribution.—Jaffna, Mánkuḷam, Anurádhapura, Kégalla, Colombo, Barberyn Island, Ambalangoḍa, Galle, Hambantota, Batticaloa, Trincomalee, Habarane, Undugoḍa, Maskeliya.*

Abundant in all the sandy waste places of the low-country where the food plant grows.

Outside of Ceylon this species has been recorded from Florida and the West Indies, from South and East Africa, from India to New Guinea and N. E. Australia, and from China, and I have found it abundantly in the Chagos Islands, Farquhar Island, the Amirantes, and Coëtivy. It probably occurs in the Maldives also, though not yet recorded thence.

* A single specimen taken by Mr. J. Pole on December 5, 1908, at Deeside Trigonometrical Station (4,900 feet); doubtless a straggler or casual immigrant in the Maskeliya district, as I have never seen its food plant (*Boerhavia repens*) at any height greater than about 1,300 feet, and at this elevation only along the road between Taldena and Badulla, whither it seemed to have been carried from the low-country by cart traffic. Mr. Pole, however, has since informed me that he has met with this plant "once or twice on the cart road side near a factory in Maskeliya."

Early Stages.—Larva.—The earlier larval stadia are as yet unknown, but the older larvæ and pupæ are to be found commonly on *Boerhavia repens*.

The following description was made from a larva found at Galle on May 10, 1907 :—" The larva has just cast its skin (which remains alongside it, uneaten), and is probably just commencing its final instar. Length 5·5 mm. Breadth in thickest part (about middle) 1·5 mm. Hairs about 1 mm. long. In shape it is cylindrical, moderately stout, tapering at either extremity. When crawling the thoracic segments, especially the prothoracic, are greatly extended and appear very slender and flattened. The head appears to be uniformly jetty-black, but under a high-power lens the central portion and jaws are seen to be yellowish with a few short yellowish hairs. The ground-colour along the side is a pale yellowish shade of dirty gray with a tinge of red (this last colour is more pronounced in some specimens). There is a narrow medio-dorsal stripe of a shade rather darker than the ground-colour and a little redder. On the metathoracic segment the two warts edging the medio-dorsal line are faintly marked with dark reddish-fuscous ; the four succeeding segments have these warts distinctly marked with the same dark reddish-fuscous, and therefore show up like spots. (In other larvæ all these dorsal warts are more or less marked with dark fuscous, shading off at either extremity of the larva.) A broad but indistinct fuscous subspiracular line. A rather broad ventral pale-greenish stripe. The prolegs are very long and slender and are of a pale grayish greenish-yellow, the hooks dark ; the legs are similarly coloured. The long hairs appear dark, but there are numerous minute white knobbed glandular secondary hairs scattered over the segments, and these appear to secrete a viscous fluid."

The following is a description of two full-fed larvæ found at Colombo on October 18. 1907 :—" Stout, stoutest about fourth somite, decreasing thence rapidly towards the head, anally gradually. Colour a pale yellow with a faint tinge of fuscous green. There is a broad dull reddish longitudinal spiracular stripe, on which the spiracles stand out as pale longitudinal blotches. The medio-dorsal stripe has a faint tinge of red in it, making it a little darker than the ground-colour. On either side of this, bordering the darker brown latero-dorsal tubercles, is a series of whitish longitudinal dashes, forming two interrupted dorsal lines—these markings absent in one larva. Head dark brown. The long hairs are black and obviously sticky.

" A younger larva, about half-grown, is dark brown without any obvious markings, the hairs very distinctly clubbed at the apex."

The figure (Plate F, figure 2) will show the disposition of the setigerous tubercles better than any verbal description.

The larva is generally rather sluggish but can be quite active, *e.g.*, if searching for food. If it loses its foothold, it drops by a silken

thread. It feeds on the unripe seeds of *Boerhavia repens*, commencing by eating the viscid exudation on the outside of the perianth tube, through which it then gnaws a hole and excavates the contents. Small insects, especially ants, are often seen to be caught by this gummy secretion, but the gum does not seem to incommode the larvæ at all; probably their extremely long prolegs are specially modified to carry them over it without touching it as they walk, and the long larval hairs prevent contact of the body with neighbouring drops of gum.

Pupation.—The larva seems to pupate almost invariably on the slender stem just below a seed-head, although I have once found an empty pupa-case attached to the midrib on the under-surface of a small leaf. The pupa hangs freely suspended, the discarded larval skin not being shrivelled up but stretched out at full length along the stem just above it. The rain soon destroys the empty pupa cases and one finds only the anal portion with the discarded larval skin. The colour of the pupa is very variable; sometimes it is a light apple-green, sometimes a brownish-gray. (Plate F., figure 3.)

Trichoptilus xerodes, *Meyr.*

(Plate A., figure 9.)

Meyr., T. E. S., 1886, 14; 1. c., 1885, 422; 1. c., 1887, 267; B. J., XVII., 134.

Distribution.—Colombo, Trincomalee, Pérádeniya, Maḍulsíma.

Widely distributed, but by no means a common species in Ceylon.

This species is widely distributed throughout Australia, but does not seem to have been recorded from elsewhere outside of Ceylon.

Early Stages.—Unknown.*

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* A larva (*supposed* to be that of *T. xerodes*) was found at Pérádeniya on *Gynandropsis sp.* (Capparid) on December 26, 1907. A description of this larva reads as follows:—"About 12 mm. long, cylindrical, moderately stout. Head yellowish with an orange tinge. Colour of other segments a uniform pale yellow. A large brown latero-dorsal wart emits a long white hair and about five short ones. Below this is a small black supra-spiracular tubercle emitting a single short white hair and bearing a short secondary hair. Spiracle small, black. A small black subspiracular tubercle emits (i.) a short white hair directed forwards and downwards, (ii.) a longer white hair directed backwards and downwards. Below this and a little behind it is a small black wart emitting a single hair. Towards the ventral surface are two (? three) small black-warts emitting white hairs. There are numerous small knobbed white secondary hairs. All warts are well raised above the surface of the skin, and the divisions of the segments are well marked." (Plate F., figure 4.)

Although the exact identity of this larva is doubtful, its general appearance led me to consider it that of a *Trichoptilus*, and in this connection it is noteworthy that the *Gynandropsis* has well-developed sticky glands, as in the case of the other known food plants (*Drosera*, *Boerhavia*) of the plumes of this genus. It is possible that the larva may have been that of *T. wahlbergi*, or even that of an *Oxyptilus*, but an examination of plants of *Gynandropsis* and of *Cleome viscosa* will probably settle this question.

TRICHOPTILUS PALUDICOLA, *Fletcher*.

I shall not be surprised to find ultimately that this is a race of *paludum* Z. Certainly it seems very close. T.B.F.

(Plate A., figure 7.)

Spol. Zeylan., V., 20 (figs.).

Distribution.—Diyataláwa, Maḍulsíma, Assam.

Since my original description of this species I have found it commonly in three distinct localities along the Maḍulsíma range of hills; larvæ, pupæ, and imagines being found together during May and August. It will probably be found to be widely distributed at an elevation of about 4,000 feet, but is of course confined to damp places where *Drosera* grows.

Early Stages.—These are described in the reference quoted.

DIACROTRICHA, *Zell*.

(COSMOCLOSTIS, *Meyr*.)

These little moths seem to approach the *Alucitina* very closely in some respects; the single nervure in third segment of hind wing and the single spina of the ♀ frenulum, however, will serve to show their real affinities with the *Platyptilina*. It appears to me doubtful whether *D. fasciola* is really congeneric with *aglaodesma* and its allies (*auxileuca*, *pesseuta*, and *quadriquadra*), for which latter group the name *Cosmoclostis* may be retained, but in considering a small local fauna it seems inexpedient to multiply genera more than absolutely necessary.

I am keeping Diacrotricha and Cosmoclostis distinct in my own collection.

Synopsis of the Species.

1	Abdomen uniformly coloured; a strong scale-tooth on dorsal margin of f.w. just beyond cleft	fasciola
	Abdomen variegated; no scale-teeth on margins of f.w.	2
2	Expanse 15–18 mm; f.w. white with ferruginous markings	aglaodesma
	Expanse 10–13 mm; f.w. white with fuscous markings	pesseuta

DIACROTRICHA FASCIOLA, *Zell*.

(Plate A., figure 6.)

Fasciola.—Zeller, Linn. Ent., VI., 399; Meyr., T. E. S., 1907, 471.

Callimeres.—Meyr., M. S. (*ined*.).

Distribution.—Galle, Kandy, Badulla, Aráwa.

Probably widely distributed in the wetter districts where bilimbi trees are cultivated.

Outside of Ceylon this species has been recorded from India, Java, and the Kei Islands.

Early Stages.—Larva.—The short, stout, uniformly-coloured larva feeds on the flowers of the "bilimbi" tree (*Averrhoa bilimbi*). The larvæ vary much in colour, hardly two being alike. Uniform yellowish-gray, pale yellow, pale greenish-yellow, pale green, pale pink, and red are all common colours. (Plate F., figures 5 and 6.)

Pupa.—The pupa is a very pretty object, being usually a bright light green (sometimes with black markings) with numerous fasciculated tufts of yellow spiny hairs. The sketch (Plate F., figure 8), for which I am indebted to Mr. E. Ernest Green, gives a good idea of its general appearance. It is generally attached to a flower-stalk, but sometimes to a flower-petal or fruit, or more rarely a leaf, of the food plant. I noticed that those pupæ which were formed in my paper-lined boxes were all of a light-gray colour, sometimes with indications of rosy-red markings; it is possible therefore that this species possesses some degree of colour-adaptability in its pupa.

Imago.—The transformations of this species are unusually rapid, the larva suspending itself and pupating in a few hours, the imago emerging after a pupal period of only four or five days.

Habits of Imago.—Contrary to the usual habit of plume moths, this species appresses itself closely to the surface on which it is resting; also it frequently settles on the *under* surface of leaves. It may readily be beaten in the day time from bilimbi trees or from bushes in their vicinity.

Diacrotricha aglaodesma, *Meyr.*

T. E. S., 1886, 12; B. J., XVII., 134.

Distribution.—Puttalam, Anurádhapura, Kurunégala, Kégalla, Colombo, Trincomalee, Mátalé, Aráwa.

Rather scarce; may be looked for in dry low-country districts. My ~~specimens~~ captures were ~~taken~~ not at light at Trincomalee in November, 1906, and on June 8, 1907.

Occurs also in Eastern Australia and in some of the South Pacific and Malayan Islands.

Diacrotricha pesseuta, *Meyr.*

B. J., XVII., 134.

Distribution.—Puttalam (in February and April—*Pole*); Hambantota (January 12, 1908).

This species has not yet been recorded from any locality outside of Ceylon and is evidently an inhabitant of the very dry low-country districts. My single specimen was beaten from a tangled growth of *Euphorbia*, *Capparis*, and *Vitis quadrangularis*.

EXELASTIS, *Meyr.*

This genus has lately been founded (B. J., XVII., 730) to include *atomosa* and *liophanes*. I give a figure of the neuration (Plate C., figure F), but would call attention to an apparent dis-

‡ On further consideration I am inclined to consider that Vein 11 is present and Veins 9 + 10 coincident; in any case, the figure shows what is actually present. T.B.F.

crepancy between my figure and Mr. Meyrick's diagnosis.‡ The original description reads, "Forewings .... 8 and 10 stalked, 9 absent, 11 from near angle," but I have considered the formula better expressed by taking 11 as the missing vein and numbering the others accordingly. In the hind wings also 5 and 6 are stated to be absent, but are sometimes faintly traceable.

Synopsis of the Species.

Expanse usually under 13 mm.; metathorax usually pale yellow; colour of f.w. a reddish-gray, black scales on subapical portion of dorsum of f.w. form four compact equidistant groups	liophanes
Expanse usually over 15 mm.; metathorax usually grayish; colour of f.w. pale yellowish-gray; black scales on dorsum of f.w. are often absent and, when present, are scattered and irregularly grouped ..	atomosa

Note.—Both these species seem to be very variable in size, coloration, and development of the cilial scales.

Exelastis atomosa, *Wlsm.*

(Plate A., figure 11.)

Atomosa.—Wlsm., P. Z. S., 1885, 885; Meyr., B. J., XVII., 730; Lefroy, Mem. Agric. Ind., Ent. I., 219, (figs.).

Parasita.—Meyr.; Lefroy, Ind. Ins. Pests, p. 140 (figs.).

Distribution.—Anurádhapura, Galle, Weligama, Trincomalee, Undugoda, Madulsima.

The Ceylon form of this moth is smaller and lighter-coloured than the Indian type, from which it may ultimately prove to be specifically distinct, and seems to be decidedly scarce and mostly confined to the low-country. The case is very different, however, in India, where *E. atomosa* is generally distributed throughout the plains and often becomes a serious local pest on crops of *Cajanus indicus* and *Dolichos lablab.*

Early Stages.—The early stages have not yet been found in Ceylon, but I rather expect that the larva may be found on the flowers of *Anacardium occidentale* (kádju-nut).

Exelastis liophanes, *Meyr.*

(Plate A., figure 12.)

T. E. S., 1886, 19; B. J., XVII, 136.

Distribution.—Jaffna, Mánkulam, Anurádhapura, Kurunégala, Kégalla, Puttalam, Colombo, Labugama, Ambalangoda, Galle, Weligama, Hambantota, Trincomalee, Mátalé, Kandy, Pérádeniya,

Maskeliya, Diyataláwa, Bandárawela, Madulsíma, Lunugala, Badulla, Alutnuwara, Aráwa.

Abundant in grassy places throughout the low-country and in the hills up to an elevation of about 2,000 feet, above which height it becomes decidedly scarce.

E. liophanes was originally described from Réunion, and I found it abundantly in Mahé (Seychelles). It is probably widely distributed.

Early Stages.—In spite of the abundance of the imago, I have never yet been able to find the larva. At Weligama the moths were very common around plants of *Sida humilis*, but a search on these yielded nothing.

It is a curious fact that in the original drawings* by W. de Alvis for Moore's "Lepidoptera of Ceylon," an unpublished plate apparently represents this little moth together with its larva and pupa. They are drawn of the natural size; the larva is coloured yellowish-brown, lighter below, with three small black spots on each segment, and moderately hairy; the pupa very slender, nearly black.

The moths are often to be found paired during the forenoon, so that local entomologists who reside on shore should have little difficulty in working out the life-history.

Sub-family.—*ALUCITINÆ.*

Pterophorus, *Geoffroy.*

Synopsis of the Species.

Ground-colour of f.w. whitish or gray ..	lienigianus
Ground-colour of f.w. ochreous-white ..	sematias

Pterophorus lienigianus, *Zell.*

Lienigianus.—Zeller, Linn. Ent., VI., 380; South, Entom., XV., 105, t. 2, f. 3; Leech, Brit. Pyral., p. 63., t. 17, f. 10; Hofmann, Deutscher Pteroph., p. 171; Meyr., Handbook, p. 439; Meyr., T. E. S., 1907, 497.

Serindibanus.—Moore, Lep. Ceylon, III., 527, t. 209, f. 14.

Distribution.—Anurádhapura, Galle, Trincomalee, Maskeliya, Pundalu-oya, Patțipola, Nuwara Eliya, Madulsíma.

Widely distributed in the island, but appears to be more common in the hill districts. Outside Ceylon it is found in Central Europe and extends to the South of England; it has also been recorded from India.

Early Stages.—The early stages have not yet been found in Ceylon. In Europe the larva feeds on the terminal leaves of *Artemisia*

* These original drawings are now preserved in the Colombo Museum Library.

vulgaris, and is described as "pale bluish-green; dorsal line broad, darker; subdorsal yellow-whitish; head brown, blackish-marked."

Observation 1.—There is a great deal of variation in this species:—

(1) *In Colour.*—A specimen from Galle in my collection is almost pure white and another from Trincomalee has the ground-colour almost white; examples from Maḍulsíma and Maskeliya are coloured a pale yellowish-gray of a tint identical with that seen in a specimen from Silesia; whilst two individuals from Paṭṭipola and Nuwara Eliya are decidedly a dark gray, the second segment of the fore wing much suffused with fuscous.

(2) *In Size.*—Also similar differences exist. The specimens from Galle and Trincomalee expand only 13 and 15 mm. respectively; Maḍulsíma examples range from 15 to 17 mm.; five from Maskeliya are 16, 17, 17, 18, and 22 mm.; two from Paṭṭipola are 18 and 21 mm.; and one from Nuwara Eliya attains 22 mm.: Meyrick and Zeller give 18–19 mm. as the expanse of European examples, and my Silesian specimen expands 21 mm.

It will be noted that there is a marked increase in the depth of colour and in the size of the specimens as their localities vary from the coast region to the montane district. As regards the latter point it is paralleled in other species, and I have especially drawn attention to it in the case of *Steganodactyla concursa*.

Observation 2.—Some authors have lately identified this species with Treitschke's *Septodactyla*, which name they then give priority; but, as this moth has been known all over Europe for the last fifty years under the name of *Lienigianus*, I fail to see the utility of altering Zeller's name for another, whose accuracy is at least doubtful.

Pterophorus sematias. *Meyr.*

T. E. S., 1907, 496.

Distribution.—Maskeliya. The unique type-specimen was taken in October.

Observation.—Except for the ochreous-white ground-colour of the fore wings, the description of the type of this species seems to apply exactly to up-country specimens of *P. lienigianus*, of which I am inclined to think that *sematias* will prove to be only a form.

ALUCITA, *Linn.*

Synopsis of the Species.

1	Hind wing with a conspicuous black dot in centre of second segment ..	melanopoda
	Hind wing unspotted ..	2
2	Ground-colour pure white ..	triveodactyla
	Ground-colour pale yellowish-white ..	candidalis

ALUCITA CANDIDALIS, *Wlk.*

Candidalis.—Wlk., Cat. XXX., 948 ; Meyr., T. E. S., 1907, 490 ; Wlsm., T. E. S., 1881. 282 ; l. c., 1897, 36.

Leucadactyla.—Wlk., Cat. XXX., 949 ; Moore, Lep. Ceylon, III., 528, t. 209, f. 15.

Distribution.—Kégalla, Labugama, Weligama, Kandy, Maskeliya, Haldummulla, Lunugala.

In Ceylon this is apparently rather a low-country species and is not common. Outside of Ceylon its distribution extends from Sierra Leone and South Africa through India to the Philippines, New Guinea, and Queensland.

The larva is unknown, but may be looked for on some species of *Ipomœa.*

ALUCITA NIVEODACTYLA, *Pag.*

Niveodactyla.—Pag., Zoologica, XXIX. 240 ; Meyr., T. E. S., 1907, 490.

Nivea.—Snellen, Tijd. Ent. XLVI., 56, t. 5, f. 17.

Distribution.—Maskeliya (Coll. de Mowbray), Madulsima, Lunugala, Diyataláwa, Haputalé.

In Ceylon it is a scarce species, principally confined to the hill districts of Úva.

Outside of Ceylon it has been recorded from Java, the Philippines, and the Bismarck Archipelago.

Early Stages—Larva.—The larva feeds on the young leaves of an *Ipomœa*, eating the leaves from the outside and not entering within the unexpanded leaf in the manner of *Steganodactyla concursa.* In colour it is of a uniform pale yellowish-green thickly studded with long fasciculated tufts of whitish hairs, of which those of the dorsal row are the longest and sometimes tipped with brown. These hair-tufts are extremely complicated, and their appearance will be best understood from the rough sketch of a larval segment (Plate F., figure 9) ; under the microscope these tufts of long hairs recall the armature of spines exhibited by an Echinid, which is very common on rocks along the coast.

Parasites.—An extremely large proportion of the larvæ appears to be infested by a parasitic ichneumonid fly.

Pupa.—The pupa is green, thickly covered with pale green spinous hairs and with an interrupted dorsal and sub-dorsal row of black spots. The moth emerges after about a week.

ALUCITA MELANOPODA, *Fletcher.*

(Plate A., figure 13.)

Entom., 1907, 284.

Distribution.—Kandy, Háragama, Madulsima

Apparently a scarce species in Ceylon ; it has also been found in Assam.

Early Stages.—Unknown.

Explanation of Plates A, B, C, E, and F.*

All the figures in plate A have been drawn by Messrs. West, Newman direct from specimens of the various species (all previously unfigured), and the artist certainly deserves a word of praise for the manner in which he has carried out his work. I am indebted to Mr. E. Ernest Green for the pencil sketch, of which figure 8 in Plate F. is a reproduction. The remaining figures are from sketches by the author.

It must be borne in mind that all the figures in Plates E and F are diagrammatic, only being intended to give a general idea of the objects represented, so that, for example, in the case of larvæ, the secondary hairs have as a rule been omitted.

It is hardly necessary to add that the figures in all the Plates are considerably magnified; in the case of Plate A the natural size is shown by the scale against each principal figure.

Plate A.

(In all cases the figures lettered 1*a*, 2*a*, &c., represent a profile view of the head of the species figured under the corresponding number.)

Fig. 1.—*Platyptilia molopias*, Meyr.

Fig. 2.—*Platyptilia pusillidactyla*, Wlk.
The abdomen usually shows a characteristic broad chocolate-coloured band a little beyond its middle, not sufficiently represented in the figure.

Fig. 3.—*Platyptilia brachymorpha*, Meyr.

Fig. 4.—*Oxyptilus causodes*, Meyr.

Fig. 5.—*Oxyptilus epidectes*, Meyr.
The first segment of the fore wing is represented as much too blunt at the apex, which really tapers to a fine point as in figure 6.

Fig. 6.—*Diacrotricha fasciola*, Z.
This figure is tinted a little too dark.

Fig. 7.—*Trichoptilus paludicola*, Fletcher.
This figure scarcely shows the white markings on the fore wing.

Fig. 8.—*Trichoptilus congruatis*, Wlk.

Fig. 9.—*Trichoptilus xerodes*, Meyr.

Fig. 10.—*Trichoptilus wahlbergi*, Z.

Fig. 11.—*Exelastis atomosa*, Wlsm.

Fig. 12.—*Exelastis liophanes*, Meyr.

Fig. 13.—*Alucita melanopoda*, Fletcher.

Fig 10 ♀ does not show the characteristic tuft on second palpal joint; I have made a rough sketch. T.B.F.

Plate B.

(Neurational Details.)

Fig. A.—*Platyptilia pusillidactyla*, Wlk.
Fore and hind wing.

Fig. B.—*Heptaloba argyriodactyla*, Wlk.
Fore wing only; for neuration of hind wing see text.

* There is no Plate D, the letter D having been passed over by mistake.

Fig. C.—*Deutcrocopus rubrodactylus*, Pag.
Fore and hind wing of ♀. It will be noted that the spina of the frenulum, which is very long and strong, is single, but is divided by a deep groove running from the base nearly to the apex so that it is practically composed of two spinulæ soldered together.

PLATE C.

(Neurational Details.)

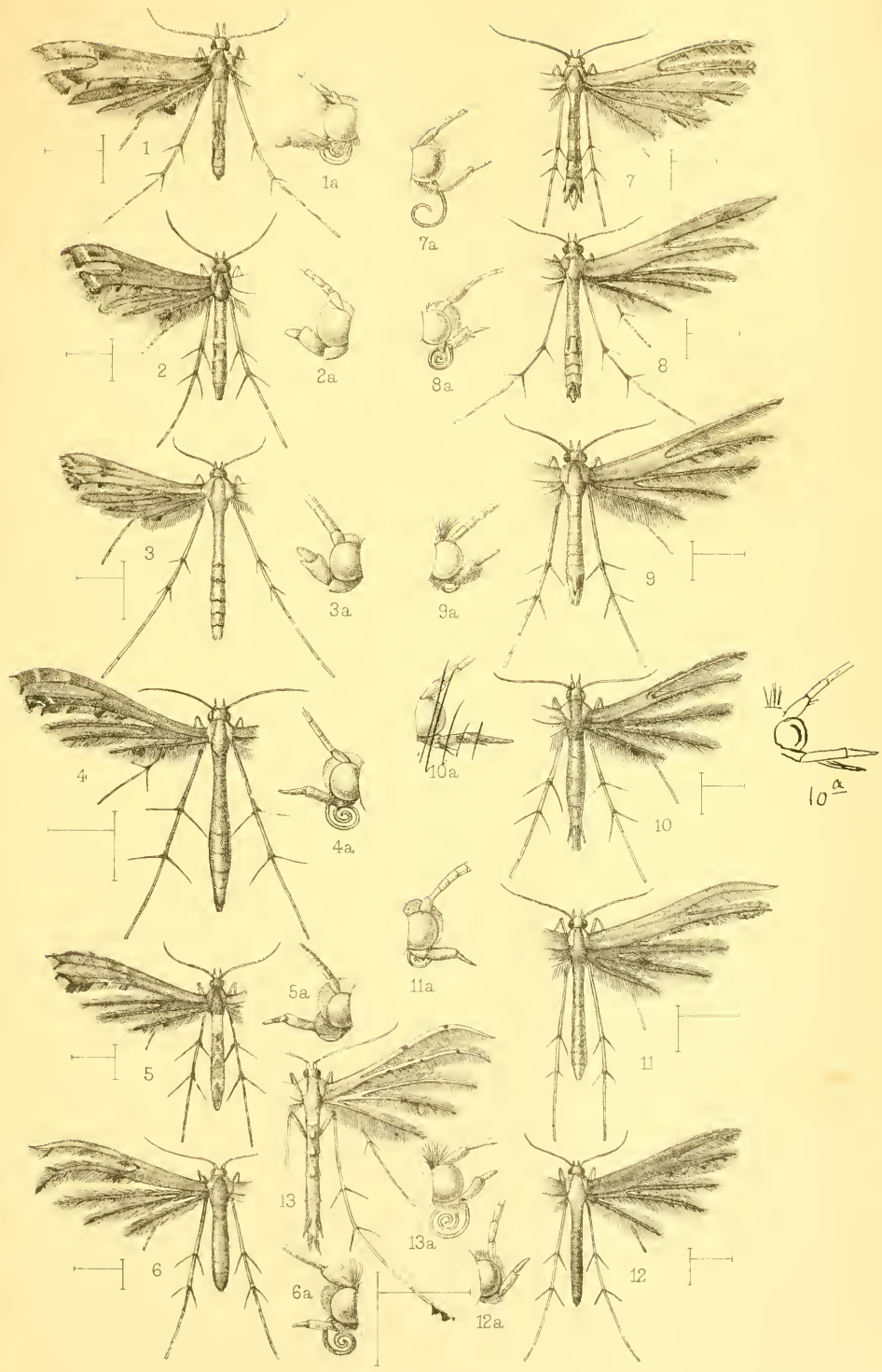
Fig. D.—*Trichoptilus congrualis*, Wlk.
Fig. E.—*Diacrotricha fasciola*, Z.
Fig. F.—*Exelastis atomosa*, Wlsm.
The neuration of *E. liophanes*, Meyr., is similar.

PLATE E.

Fig. 1.—Three segments of larva of *Steganodactyla concursa*, Wlsm., showing arrangement of tubercles and primary hairs.
Fig. 2.—Outline sketch of pupa of *Steganodactyla concursa*, Wlsm.
Fig. 3.—Sixth and seventh segments of larva of *Stenoptilia zophodactyla*, Dup., showing arrangements of tubercles.
Fig. 4.—Sixth and seventh segments of larva of *Platyptilia molopias*, Meyr., showing arrangement of tubercles and primary hairs.
Fig. 5.—Two segments of larva of *Platyptilia pusillidactyla*, Wlk.
Fig. 6.—Outline sketch (latero-ventral aspect) of pupa of *Platyptilia pusillidactyla*, Wlk.
Fig. 7.—Three segments of larva of *Deuterocopus rubrodactylus*, Pag.
Fig. 8.—The two conjoined latero-dorsal tubercles of larva of *Sphenarches caffer*, Z., showing a more detailed view of the peculiar palmate hairs seen in figure 10.
Fig. 9.—Abdominal segment (rather a latero-ventral view) of larva of *Oxyptilus causodes*, Meyr. The crescentic object at the bottom of the figure represents the proleg with its semi-circle of darker hooks.
Fig. 10.—Sixth and seventh segments of larva of *Sphenarches caffer*, Z.

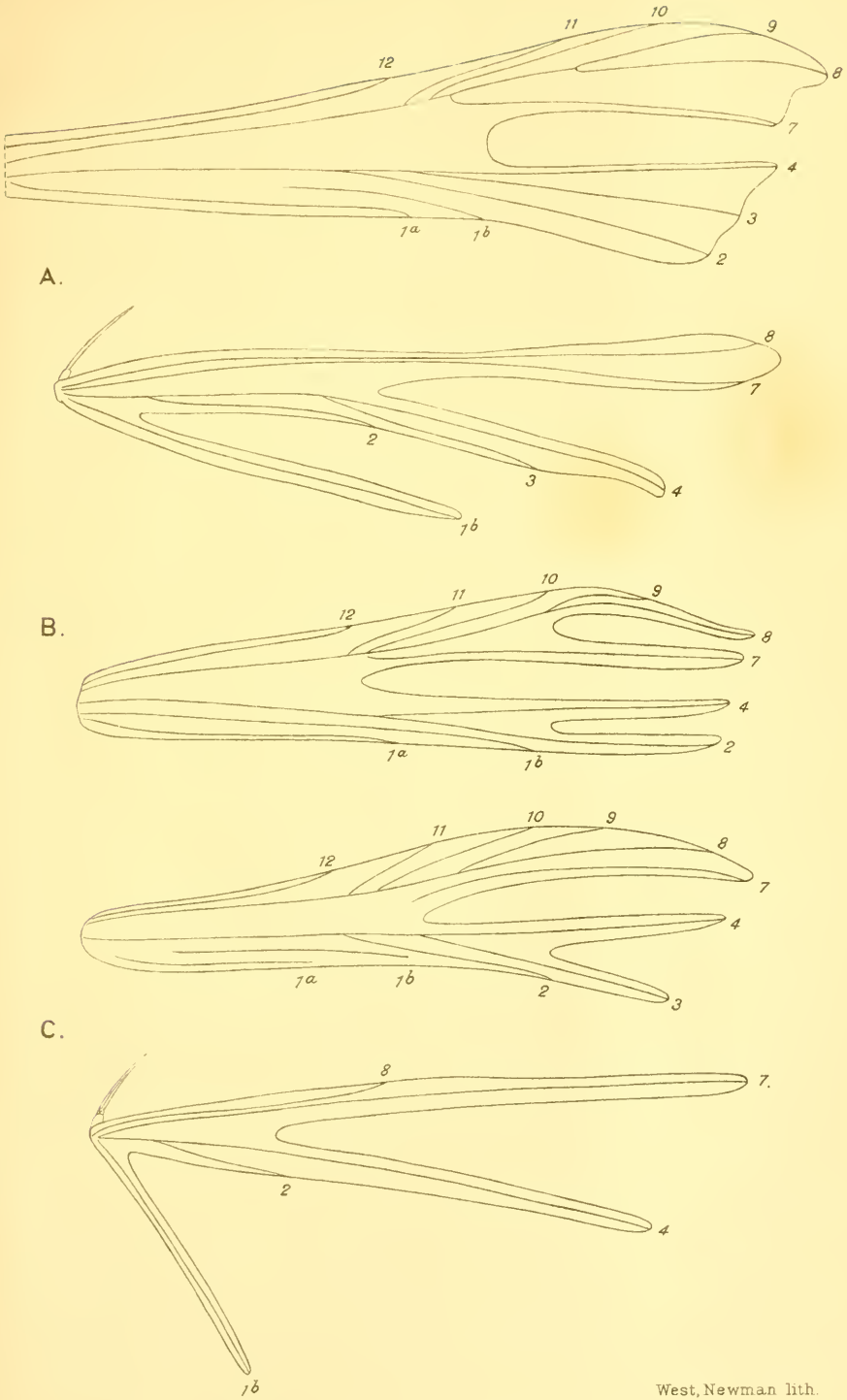
PLATE F.

Fig. 1.—Outline sketch (lateral view) of pupa of *Sphenarches caffer*, Z.
Fig. 2.—Sixth and seventh segments of larva of *Trichoptilus congrualis*, Wlk. A few of the club-shaped secondary hairs are indicated.
Fig. 3.—Terminal portion of pupa of *Trichoptilus congrualis*, Wlk., showing armature of spines and double cremaster.
Fig. 4.—Sixth and seventh segments of larva of *Trichoptilus* sp. (? *xerodes*, Meyr).
Fig. 5.—Sixth and seventh segments of larva of *Diacrotricha fasciola*, Z.
Fig. 6.—Profile sketch of a tubercle of larva of *Diacrotricha fasciola*, Z.
Fig. 8.—Diagrammatic sketch of pupa of *Diacrotricha fasciola*, Z. From a pencil drawing kindly made by Mr. E. Ernest Green: this drawing does not purport to be accurate as regards exact details, but gives a capital idea of the general appearance of this pupa.
Fig. 9.—Segment of larva of *Alucita nivodactyla*, Pag.



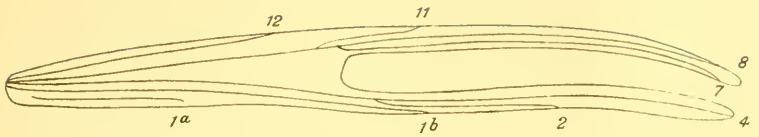
West, Newman del. et lith.

PTEROPHORIDÆ.



West, Newman lith.

A. Platyptilia pusillidactyla, *Wlk.*
B. Heptaloba argyriodactyla, *Wlk.*
C. Deuteroccpus rubrodactylus, *Pag.* (= xitsemæ, Wlsm.)



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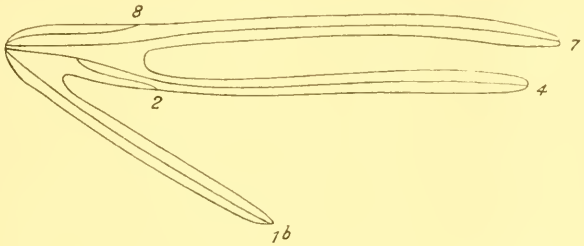

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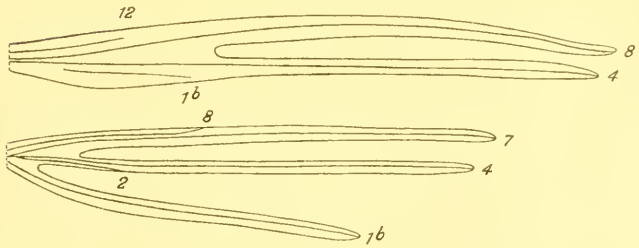

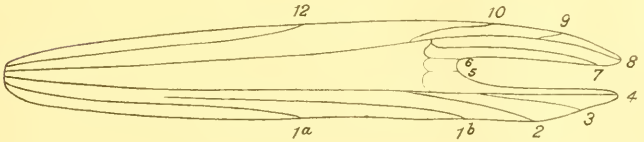

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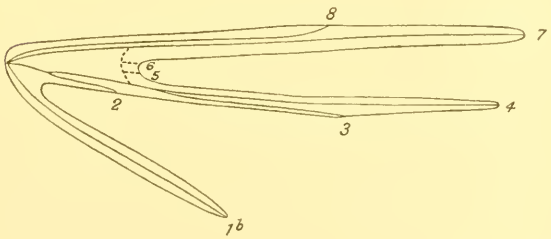
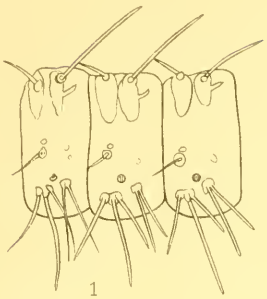


West, Newman lith.

D. Trichoptilus congrualis, *Wlk.*
E. Diacrotricha fasciola, *Zell.*
F. Exelastis atomosa, *Wlsm.*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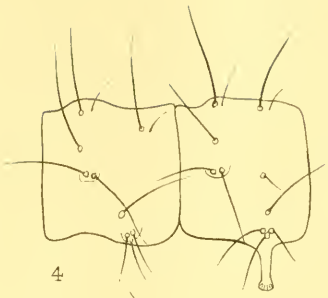
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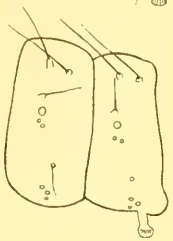
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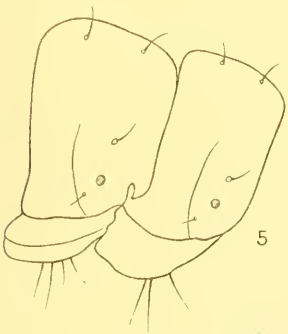
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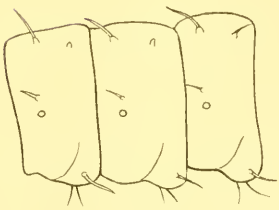
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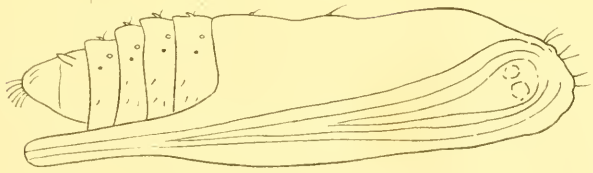
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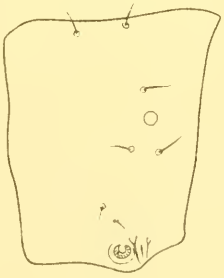
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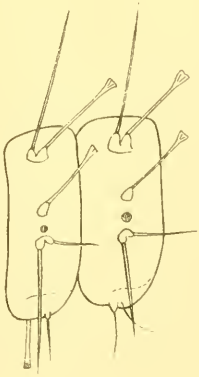
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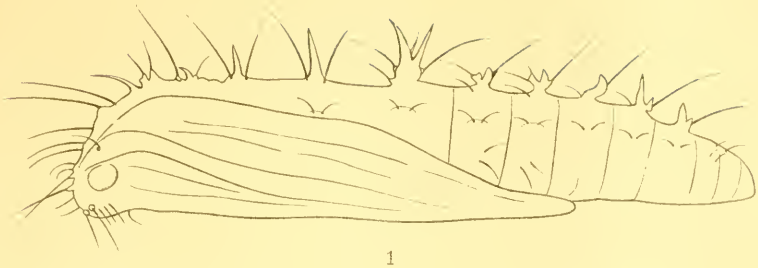
T.B.F. del. ad nat. West, Newman lith

PLUME MOTHS OF CEYLON.



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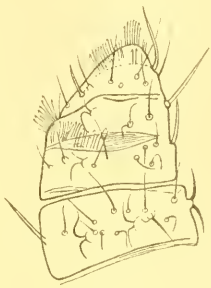

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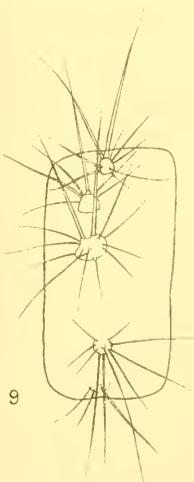

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T.B.F. del. ad. nat. West, Newman lith.

PLUME MOTHS OF CEYLON

Explanation of the Map.

Number of Place on Map.	Name of Place.	Approximate Height above Sea. Ft.
1 ..	Puttalam ..	Sea-level
2 ..	Labugama ..	200
3 ..	Colombo ..	Sea-level
4 ..	Barberyn Island ..	Sea-level
5 ..	Ambalangoḍa ..	Sea-level
6 ..	Galle	Sea-level
7 ..	Weligama ..	Sea-level
8 ..	Hambantota ..	Sea-level
9 ..	Batticaloa ..	Sea-level
10 ..	Trincomalee ..	Sea-level
11 ..	Habarane ..	100
12 ..	Dambulla ..	200
13 ..	Nálanda ..	600
14 ..	Mátalé ..	1,200
15 ..	Undugoḍa ..	1,000
16 ..	Pérádeniya ..	1,700
17 ..	Kandy ..	1,700
18 ..	Háragama ..	1,250
19 ..	Maskeliya ..	4,000
20 ..	Pundalu-oya ..	4,200
21 ..	Maturaṭa ..	4,000
22 ..	Nuwara Eliya ..	6,200
23 ..	Hakgala ..	5,700
24 ..	Paṭṭipola ..	6,200
25 ..	Ohiya ..	6,000
26 ..	Horton Plains ..	7,000
27 ..	Diyataláwa ..	4,000
28 ..	Baṇḍárawela ..	4,000
29 ..	Badulla ..	2,200
30 ..	Passara ..	2,000
31 ..	Lunugala ..	2,500
32 ..	Maḍulsíma ..	3,500–4,000
33 ..	Alutnuwara ..	600

Speaking very roughly, Nos. 1, 8–12, 33 are dry low-country ; Nos. 2–7, 13–15 are wet low-country ; Nos. 16–18 wet, 29–31 rather dry, intermediate zone ; Nos. 19–26 are wet hill-country ; Nos. 27, 28, 32 are dry hill-country.

THE PLUME-MOTHS OF CEYLON.

By T. B. FLETCHER, R.N., F.E.S., F.Z.S.

[*Reprinted from "Spolia Zeylanica," Vol. VI., Part XXIV., May, 1910.*]

THE PLUME-MOTHS OF CEYLON.

Part II.—The Orneodidæ.

THE PLUME-MOTHS OF CEYLON.

Part II.—The Orneodidæ.

By T. Bainbrigge Fletcher, R.N., F.E.S.. F.Z.S.

(With 2 Plates and 8 Figures.)

Introductory.

THE Orneodidæ, easily recognized and sufficiently characterized by the fact that both wings are cleft into six or more segments, each ciliated on both sides, form an isolated group of Lepidoptera, few in numbers and usually small in size, which may be considered as nearly allied to the Pyralidæ with some affinities to the Tineidæ. The point to be borne in mind is that the Orneodidæ and Pterophoridæ, although both popularly included under the name of "Plume-moths," do not appear to be at all closely allied to one another.

The normal state of affairs in this group is a fission of each wing into six segments, but in Ceylon we find the endemic genus *Triscædecia* with seven segments in the hindwing and six in the forewing, this unusual amount of fission forming a parallel to the analogous case of *Heptaloba* amongst the Pterophoridæ. It is worthy of note, however, that the fissures in *Triscædecia* do not extend more than half way into the wing, whilst in *Orneodes* they reach practically to the base itself; this appears to indicate a very early divergence from the primitive form, which we may imagine as having had shallow clefts, or more anciently mere scallopings, in the margin of each wing between the terminations of the nervures.

The Orneodid larva and pupa are extraordinarily different from those of the Pterophoridæ, and very closely resemble the forms found in the Tineidæ. The larvæ of some, but not all, of the species are peculiar in their habit of burrowing within the flower-stalks, stems, or young shoots of the food plants, in which their presence gives rise to gall-like excrescences.

Classification.

Hitherto four genera have been recognized in this group—*Orneodes* *Pœlia*, *Microschismus*, and *Triscædecia*—of which the first and last only have been found in Ceylon, *Pœlia* being peculiar to South America and *Microschismus* to South Africa. *Microschismus* includes two species, *Pœlia* and *Triscædecia* are monotypical, but *Orneodes* at present consists of some forty species, which have been recorded from every part of the world. The constituent species of this

last genus exhibit remarkable differences *inter se*, especially in the structure of the palpi, but the group is small, compact, and well characterized, so that it appears undesirable to split it up in the light of our present knowledge. In the presence of the peculiar costal scale-tufts and in the well-developed maxillary palpi, *O. trachyptera* amongst our species in Ceylon seems remote in structural characters from the other members of the genus, but, as stated above, it does not appear necessary at present to separate it generically. *O. microscopica* is also very distinct from the remaining species by the shallowness of the first cleft in the forewing and the very stout sixth segment in the hindwing.

Distribution in Space and Time.

It is especially noteworthy that nearly all the species of Orneodidæ hitherto discovered in Ceylon are peculiar to the Island, the monotypical genus *Triscædecia* being indeed unknown outside of Ceylon. With an increase of our knowledge of the Asiatic forms of this group, it is possible that our views regarding their geographical distribution may require considerable modification, but in the light of what we know at present it is perhaps permissible to deduce a very high antiquity for this little family, such deduction being based logically on the one hand upon the extremely similar but highly peculiar facies of the members of this group, and on the other hand upon their extremely wide distribution throughout all the zoögeographical regions,* whilst the occurrence of the individual species within very circumscribed areas appears to indicate very limited powers of distribution. Except in the case of *O. hexadactyla*, which occurs throughout the Holarctic realm (*i.e.*, Europe, N. Asia, and N. America), we know no single instance of an Orneodid species whose distribution extends outside of a very small portion of one of the zoögeographical regions, a state of affairs which appears to point to the fact that these localized species have been evolved within very circumscribed areas of space, although the universal distribution of the family forbids us to add the qualification " and of time also." Nothing is known of any Orneodidæ in a fossil state.

Habits and Life-Histories.

So far as Ceylon is concerned it is a matter for regret that, up to the present at least, the information under this heading is almost a perfect blank. The few specimens of imagines collected have almost invariably been attracted by light, a method of capture which gives us very little information about their habits in a natural state. I once, however, beat a specimen of *O. montigena* at Ohiya, and this was disturbed from a mossy roadside bank, on which it settled again.

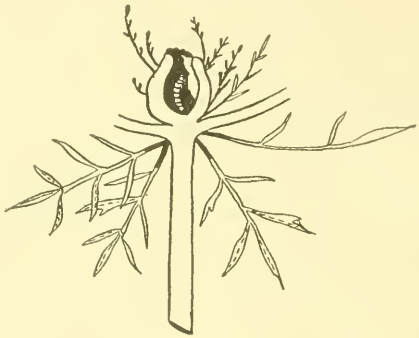
* No Orneodid has been recorded as yet from New Zealand, although it is reasonable to expect that some species will be found there. The members of this group are, however, rather inhabitants of warm climates.

Three examples of *O. pygmæa* were also beaten at Hambantota from jungle scrub; two of these pitched on the upper surface of *Capparis* leaves, and I noticed that they settled on the leaf with outspread wings, then gave a rapid upward jerk with the forewings and settled down again quite quietly with wings outspread and closely appressed to the surface of the leaf.

In Europe, however, their habits are rather better known, and the following summary is translated from Dr. Hofmann's account of the Orneodidæ of the Palæarctic region ("Iris," vol. XI., pp. 342–343) in the hope that it may assist local collectors in elucidating the life-histories of some of these little moths in Ceylon :—

"The larvæ of all the species, so far as they are known, live in the inside of parts of plants, either in the flowers whose filaments and

Figure 1.



Orneodid gall in Scabiosa columbaria.
(after Hovard—"Marcellia" IV. 33.)

styles they consume, or in flower-stalks, branches, and young shoots, in which their presence forms gall-like swellings.

"Hitherto only the plant-genera *Lonicera*, *Scabiosa*, and *Stachys* are known to be food plants of Orneodid larvæ.

"The eggs, as has been directly observed in the case of *O. hexadactyla*, and highly probably in the case of other species also, are laid ..... on the particular parts of the plants, an introduction of the egg into the interior of the plant not being possible owing to the soft condition of the short and thick female ovipositor. The young larvæ must therefore first penetrate into their food plant from the outside.

"The larvæ living in flowers change their dwelling several times. In general the larvæ are slow and sluggish, and move around more smartly only before pupation. Notwithstanding their concealed mode of life, they are frequented not rarely by small Ichneumon flies and Tachinids.

"For the purpose of pupating, the larvæ forsake the portions of the plant enclosing them and prepare for themselves on the upper surface of the ground an oval cocoon, which is usually covered with grains of earth or sand, or is composed solely of a wide-meshed web.

"On emergence the empty pupa case remains behind in the cocoon .....

"The moths fly voluntarily only towards evening, shortly before and after sunset, around their food plants. In repose the hindwings are spread out as in flight, but the segments of the forewings, which cover the first two segments of the hindwings, are so approximated to one another that they occupy only about half the breadth usual in flight, whereby their pattern appears very distinct. The fore part of the body is raised up a little, the palpi are stretched out horizontally and project widely; the recurved terminal joint is erected at an acute angle. The antennal flagellum forms with the basal joint, which lies on the fore part of the eye, an obtuse angle and rests under the wing."

Ovum.

The egg of *O. hexadactyla* is described by Chapman (Trans. Ent. Soc., London, 1896, p. 138) as about ·48 mm. long and ·28 mm. wide, somewhat cylindrical and truncate, or like a short thick brick with the angles and corners rounded off; the surface is sculptured with irregular raised lines and pits. In colour it is at first white, then yellow, and finally orange. It is laid on the flower heads of honeysuckle.

Larva.

Hofmann ("Iris," vol. XI., pp. 339–341) gives the following general description of the larvæ of the European species of *Orneodes* :—

"The larvæ present nothing very characteristic, and seem very similar to many Tineid and Tortricid larvæ; they are sometimes short and thick, sometimes more elongated, usually tapering anteriorly or anteriorly and posteriorly, more or less convex dorsally, with a very small head; the interstices between the segments are well marked, less so in the short thick larvæ, more so in the elongated ones, but are always fairly distinct; an indented transverse line behind their middle shows that the segments are made up of two subsegments; above the spiracles runs longitudinally a linear mark, below the spiracles a longitudinal swelling (lateral ledge). The skin is covered with fine, pointed, scattered spicules, which arise from globular chitinous appendages. (Only visible under a magnification of about 350.)

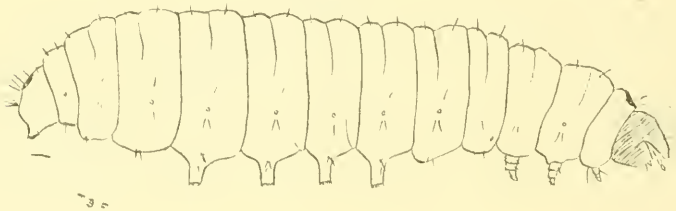
"The warts are mostly very small, inconspicuous, single-haired; their position on abdominal segments 1–8 is the same as in the Tineids. I. stands on the back of the anterior, II. on that of the posterior subsegment, III. again on the anterior over the spiracle,

IV. and V. very near together below the same, and VI. with two hairs directly under these. On the base of the prolegs stand also two warts, one exterior (VII.) and one interior (VIII.).

"On the ninth abdominal segment I could only make out four warts on each side: two dorsal ones one behind the other, and two lateral ones one above the other. On the second and third thoracic segments warts I. and II. stand one above the other, each composed of two small single-haired tubercles on a *single* somewhat large flat chitinous shield (I.*a* and I.*b*, II.*a* and II.*b*, according to Dyar); then follow more distantly below and anteriorly (in the case of *grammodactyla*), III. and IV. likewise one above the other, and still further down comes VI. Wart V. seems to be absent ..... In *Orn. hexadactyla* III. and IV. stand horizontally near one another, V. is wanting or is extremely rudimentary.

"The first thoracic and the tenth abdominal segments are provided with weak circular chitinous plates (thoracic shield and anal shield), and are furnished with numerous small-haired warts.

Figure 2.



Orneodid larva.

"The thoracic legs are of the usual pattern, generally weakly chitinized. The prolegs are completely developed circle-feet; on the anal claspers the hooks form a semicircle open posteriorly. It is very noteworthy that in very young larvæ the prolegs and anal legs are wholly without hooks.

"The larvæ are unicolorous, yellowish or reddish-white, without markings; before pupation they often assume a reddish coloration."

The accompanying sketch (Fig. 2), which must be taken to give a general idea of an Orneodid larva rather than that of any particular species, has been drawn partly from descriptions, partly from preserved larvæ received from Herr A. Bang-Haas, and partly from microscopic preparations of larvæ of *O. hexadactyla* kindly lent by Dr. T. A. Chapman.

Pupa.

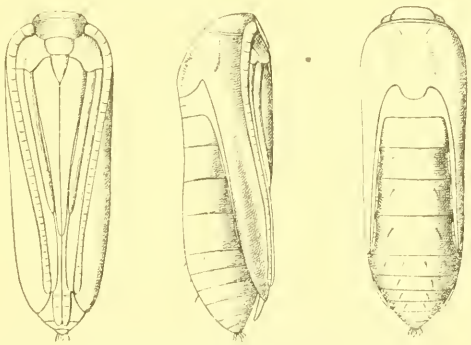
In their pupal state especially the Orneodidæ are seen to be strikingly distinct from the Pterophoridæ, with which group, as

previously pointed out, the Orneodidæ have no real relationship, although both groups are popularly included under the same trivial name of "Plume-moths."

The pupa of *O. hexadactyla* is brown, and resembles in its external appearance the pupæ of the true Noctuids, Pyralids, and Tineids; it is short and squat, and (without regard to minute single hairs, only visible under high magnification) is smooth and glossy. In this respect alone it is strikingly different from the Pterophorid pupa.

"The head-plate (Cephalotheca) is strikingly large (as in many Pyralids and Tineids, whilst in the Pterophorids it is very small). On the lower side of the head-plate upper groove ('Oberlippe') and upper jaw ('Oberkiefer') are clearly marked, the labial palpi on the contrary only small and indistinct between the roots of the long maxillæ; no traces of maxillary palpi are present. The very slender prothorax, as well as the mesothorax and metathorax, correspond in their proportions to those of the imago.

Figure 3.



Pupa of *Orneodes hexadactyla* (after Chapman).

"The forewing-covers are broad with stumpy tips forming almost a right angle, and reach as far as the posterior margin of the fifth abdominal segment; they are free at their outermost extremity; through the covers are clearly seen the six segments of the wing as so many dark streaks, segments 1 and 2 connected at their bases, as are also 3, 4, and 5, but 6 quite free.

"The hindwings are long and slender, and first disappear under the forewing-covers at the posterior margin of the fourth abdominal segment.

"The antenna-sheaths are as long as the forewing-covers; the sheaths of the first and second pairs of legs on the contrary are shorter; of the first, the sheaths of the trochanters and femora ('Hüften') occupy a comparatively broad space between the maxillæ and second pair of legs. The third pair of legs lies under the second, and projects *freely* a little above the wings up to the posterior margin of the sixth abdominal segment.

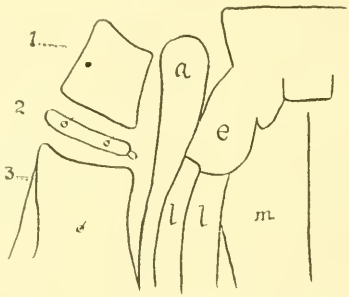
"The first four abdominal segments are very broad, and are almost concealed by the thorax on the one side and the wing- and leg-sheaths on the other.

"The much more slender segments 5 and 6 (in the male 7 also, according to Chapman) are freely movable. The likewise very slender segments 7, 8, 9, and 10 (in the male only 8, 9, and 10—Chapman) are again firmly ankylosed, and together form the blunt-rounded end of the pupa, which in many species is provided at the tip with a number of hooked unbent hairs.

"In the emerged pupa the abdominal segments 7, 8, 9, and 10 are somewhat pushed in under the free edge of the sixth abdominal segment." (Hofmann, *l.c.*, pp. 341–342.)

Chapman notes (T. E. S., 1896, pp. 137–139) that "the dehiscence is of very nearly the macro type, the antennæ separating from the head, the eye-covers remaining attached to the face-piece. It retains one, and only one, very marked micro character, viz., the

Figure 4.



Dehiscence of Orneodid pupa.
(after Chapman)
1,2,3 refer to segments ; e = eye ;
a = antenna ; l = leg ; m = maxilla.

possession of a dorsal head-plate ; not only so, but this plate is of immense size, whilst the prothorax is correspondingly reduced. Contrarily the pupa of *Pterophorus* retains most of the characters of a micro, the one that it has almost lost is this head-plate, which is nearly evanescent, although it retains the function of carrying the eye-cover on dehiscence.

"Both have then been derived from the micro stirps, as we know, indeed, that all pupæ have been ; but the routes have obviously been divided for so long a period that it is justifiable to describe them as in nowise related, less probably than any two families of macros .....

"The dehiscence (of the Orneodid pupa) is quite macro in character, the antennæ separating from the face head parts, which remain attached to the eye-covers ; the lower parts of the appendage covers remain *in situ*, and are only separated at the head. There is a femur

case shown, and the second leg reaches the head. The maxilla and first leg fall short, and expose a portion of the third leg, between and beyond the second. The appendages project freely over the fifth and sixth segments.

"The anal armature consists of ten or twelve fine spines, little more than hairs, curved and crossing one another in lyre shape, and having a fine recurved flattened extremity. There is also a small bristle above and below each (exposed) abdominal spiracle."

Key to Genera of Sinhalese Orneodidæ.

Hindwing with six segments ..	.. Orneodes
Hindwing with seven segments ..	.. Triscædecia

ORNEODES, *Latr.*

Antennæ in male minutely ciliated. Labial palpi 3-jointed: first joint very short, second joint much longer and usually straight, third sometimes nearly as long as second, sometimes much shorter. Maxillary palpi usually quite rudimentary, concealed under the scaling (in *pygmæa* minute, acuminate; in *trachyptera* well developed). Haustellum moderate. Legs moderately long, rather stout, closely scaled; fore-tibia in male usually with (? androconial) tuft of scales; posterior tibial spurs moderately developed. Abdomen short and thick set. Fore- and hind-wing each cleft into six segments; neuration completely developed, but in forewing veins 5, 6, 9, 10 are often weakly developed or absent; no true discal cell in either wing. The sixth segment of hindwing usually provided in the male with a characteristic scent-apparatus composed of an elongated deep fold or pocket, open above, projecting below, in which lie long yellowish erectile sensory hairs, very regularly striped longitudinally, rounded at the tip, arranged distally; in the female the fold is present, but without the scent-scales. Cilia without the ramified hair-scales so characteristic of the Pterophoridæ.

Artificial Key to Species of Orneodes.

1	Expanse under 10 mm. ..	.. 2
	Expanse 10 mm. or over ..	.. 3
2	Sixth segment h.w. much stouter than other segments	.. *miscroscopica*
	Sixth segment h.w. not stouter than other segments	.. *pygmæa*
3	Costa of f.w. with large patches of rough scales	*trachyptera*
	Costa of f.w. without such ..	.. 4
4	General colour bright ochreous-orange	.. *thapsina*
	General colour not bright ochreous-orange	.. 5
5	Expanse over 20 mm. ..	.. *niphostrota*
	Expanse under 20 mm. ..	.. 6

	Ground-colour of f.w. dark-brown or blackish	7
6	Ground-colour of f.w. not dark-brown or blackish	8
7	Dorsal surface of 3rd abdominal segment wholly ochreous-white	*mesolychna*
	Dorsal surface of 3rd abdominal segment not wholly ochreous-white	*montigena*
8	Abdomen brownish-ochreous with two large white dorsal spots	*ischalea*
	Abdomen not so marked	9
9*	Third palpal joint short, clothed with rough scales, expanded at apex	*pinalea*
	Third palpal joint long, slender, without rough scales, apex not expanded	10
10	Ground-colour of wings pale ochreous-buff ..	*toxophila*
	Ground-colour of wing white	11
11	First segment of f.w. fuscous on basal half ..	*sycophanta*
	First segment of f.w. not fuscous on basal half	*postfasciata*

* See text figure 5.

Figure 5.

Second and third palpal joints of 1. O. sycophanta ; 2. O. pinalea.

ORNEODES PYGMÆA, *Meyr.*

(Plate G, figure 1.)

Alucita pygmæa, Meyrick, Proc. Linn. Soc., N. S. Wales, 1889, pp. 1112–1113.

As the original brief description of this species, made from Queensland examples, is not very accessible to workers in Ceylon, I have thought it best to draw up the following redescription from Sinhalese specimens :—

Male and female. Expanse 8–9 mm. Labial palpi white ; second joint expanded with scales apically, and suffused with fuscous beneath apex ; third joint cylindrical, rather rough-scaled, about half length of second. Maxillary palpi minute, acuminate. Antennæ whitish, faintly dotted beneath with pale ochreous-brown, finely ciliated. Head white, sprinkled with dark fuscous on vertex.

Thorax white, with patches of thick dark-fuscous irroration especially evident as a transverse line on prothorax and on and above patagia. Abdomen white, suffused with ochreous-fuscous, second segment with a large conspicuous dark-fuscous blotch on each side. Legs white, fore-tibia and fore-tarsus dark-fuscous, hind-tarsus banded with dark-fuscous at bases of joints.

Forewing cleft firstly from about $\frac{1}{4}$, secondly from near base, thirdly from about $\frac{1}{3}$, fourthly from within $\frac{1}{3}$, fifthly from near base, segments 2–6 perlinear, first segment very narrow, scarcely twice breadth of second : white : first segment with two small blackish costal blotches, first subbasal, second at about $\frac{1}{3}$, followed by three outwardly-oblique broad transverse ochreous-brown bars, blackish-fuscous on costa, outer edge of third bar very oblique, and continued along hinder margin of segment into apex to form an ill-defined ochreous-brown apical blotch, an ochreous-brown longitudinal blotch on hinder margin of segments 1 + 2 near base ; segments 2 — 6 with about seven broad ochreous-brown transverse bars sprinkled with blackish narrowly preceded and followed by blackish, seventh bar terminal, first two bars ill-defined and sometimes confluent ; on the third segment the fifth bar is much broader than the sixth or seventh bars, so that the penultimate and antepenultimate white patches of ground-colour are here distinctly displaced outwards as compared with the position of similar patches on segments 2 and 4. Cilia white, ochreous-brown opposite transverse bars.

Hindwing white, crossed transversely by seven broad ochreous-brown black-sprinkled bars narrowly preceded and followed by blackish, seventh bar very narrow, terminal. Cilia white, ochreous-brown opposite transverse bars.

In Ceylon this species appears to occur in scrubby jungle in the dry parts of the low-country. I took it at Hambantota on October 18 and November 8, 1908, when it appeared to be associated with a *Capparis*, which is possibly its food plant. Although not previously recorded from Ceylon, my collection also contains specimens from Matale (August 15, 1906 ; *Pole*) and from Madulsima in April, 1907 (*Vaughan*).

Outside of Ceylon *O. pygmæa* occurs in Queensland at Brisbane and Duaringa, where it is said to swarm sometimes by thousands in the scrub. Mr. Meyrick kindly informs me also that he has received it from Cuddapah, 4,000 feet, in South India (*Campbell*).

Orneodes montigena, *n.s.*

(Plate G, figure 2.)

Expanse 10 mm. Labial palpi rather short, whitish : second joint light fuscous at apex, which is expanded exteriorly by an acuminate scale-tuft ; third joint about $\frac{3}{4}$ length of second, rather rough-scaled, expanded apically with long hair-scales. Antennæ finely ciliated, beneath whitish, above pale brownish, on basal half clearly annulated.

with white. Head whitish, on back of crown fuscous, on vertex rough-scaled. Thorax ochreous-brown irrorated with white. Abdomen ochreous-brown finely irrorated with blackish, posterior margins of segments narrowly edged with white. Legs whitish: fore-tibia dilated beneath with a small scale-tuft, fore-tibia and fore-tarsus suffused above with fuscous, hind-tarsus with bases of joints banded with very pale fuscous.

Forewing cleft firstly from about $\frac{1}{4}$, secondly from near base, thirdly from about $\frac{1}{4}$, fourthly from within $\frac{1}{5}$, fifthly from near base, first segment narrow, others perlinear, first segment at base twice breadth of second: pale ochreous-brown finely striated transversely with blackish: first segment with a white costal dot at about $\frac{1}{6}$ and outwardly-oblique transverse white bars at $\frac{1}{4}$, $\frac{2}{5}$, $\frac{1}{2}$, and $\frac{3}{4}$; segments 2–6 cut transversely by six narrow white bars, preceded and followed by fine black lines; on the third segment the third and fourth white bars are displaced outwards relatively to the positions of those on segments 2 and 4. Cilia very pale ochreous-brown, white opposite white bars.

Hindwing cleft into six perlinear segments, firstly from about $\frac{1}{6}$, secondly from base, thirdly from about $\frac{1}{6}$, fourthly and fifthly from near base: pale ochreous-brown finely striated transversely with blackish, crossed by about six narrow white bars, preceded and followed by blackish. Cilia very pale ochreous-brown, white opposite white bars.

Described from a single specimen taken by myself at Ohiya (6,000 feet), on the borders of Uva and the Central Province, Ceylon, on August 25, 1906.

Observation.—This is possibly a montane form of *O. pygmæa*, Meyr., from which species it appears to me, however, to be separated by the following characters: (i.) Its larger size; (ii.) the distinctly annulated antennæ, only very faintly marked in *pygmæa*; (iii.) the darker colour of the abdomen, and especially the absence on segment 2 of the white dorsal patch and lateral blackish blotches so conspicuous in *pygmæa*; (iv.) the greater breadth of the first segment of the forewing in comparison with the second segment; (v.) the much narrower white bars on the first segment of forewing. A larger series will doubtless settle in the future the question of the specific distinctness of *pygmæa* and the present form.

Orneodes ischalea, *Meyr.*

(Plate G, figure 3.)

Orneodes ischalea, Meyrick, B. J., XVI., 583.

The original description reads:—"Male 13 mm. Head white, back of crown mixed with fuscous. Palpi white, externally fuscous-tinged. Antennæ whitish. Thorax whitish, mixed with fuscous. Abdomen whitish, irrorated with fuscous, with a clear white trapezoidal dorsal patch before middle, and a spot beyond middle. Legs

white, anterior femora and the tibiæ infuscated above. Forewings and hindwings whitish-ochreous, crossed by six white irregular lines edged with fuscous irroration, sixth terminal; base of forewing mixed with dark fuscous, costa spotted alternately with white and dark fuscous; cilia alternately whitish-ochreous and whitish."

This species was originally described from a single specimen taken at Pundaluoya in February by Green. I have examples from Madulsima in November, 1906 (*Vaughan*), and from Haldummulla in October–November, 1908 (*Ormiston*), and Mr. Meyrick writes that he has it also from Maskeliya.

Orneodes mesolychna, *Meyr.*

(Plate G, figure 4.)

Orneodes mesolychna, Meyrick, T. E. S., 1907, 508.

"Male and female. 9–11 mm. Head ochreous-whitish, crown suffusedly mixed with blackish-gray. Palpi moderate, curved, ascending, transverse-flattened, terminal joint somewhat shorter than second; whitish, with apical band of second joint and median band of terminal joint blackish-gray. Antennæ ochreous-white. Abdomen rather dark fuscous, third segment ochreous-white, segments 4–6 edged posteriorly towards middle with white, towards sides with black, ventral surface ochreous-white. Legs whitish, anterior femora and tibiæ suffused with dark gray externally, apex of middle femora with a dark gray dot. Forewings ochreous-yellow; basal area irrorated with blackish; a moderate fascia of blackish irroration edged with white before $\frac{1}{2}$; first segment with three, other segments crossed by two rather broad fasciæ of blackish irroration edged by white lines margined with two rows of black scales; a slender blackish subapical fascia, and tips of segments also blackish: cilia dark gray, barred with whitish on white markings. Hindwings whitish, with about ten irregular transverse bars of blackish irroration, alternate interspaces ochreous-yellowish: cilia as in forewings, but whitish bars wider."

In Ceylon this species has as yet been taken only at Maskeliya; outside of Ceylon it is known from the Khasi Hills in Assam.

I have seen no examples from Ceylon, and am indebted to Mr. Meyrick for the loan of a Khasi specimen for figuring.

Orneodes pinalea, *Meyr.*

(Plate G, figure 5.)

Orneodes pinalea, Meyrick, T. E. S., 1907, 506.

"Male and female. 13–18 mm. Head white, crown more or less mixed with dark fuscous. Palpi moderately long, ascending, loosely scaled anteriorly, terminal joint half second; white, second joint externally more or less sprinkled with gray, terminal joint with a dark gray median band. Antennæ pale whitish-ochreous. Thorax

white. Abdomen white, second segment with small blackish subdorsal spots, anal tuft of male whitish-ochreous. Legs white, anterior tibiæ suffused with dark gray. Forewings white; first segment with about ten pale yellowish spots partially edged with dark fuscous irroration, alternate ones more strongly suffused with dark fuscous; other segments crossed by six moderately broad pale yellowish fasciæ edged with blackish irroration, fourth broadest, represented on sixth segment by a blackish spot: cilia white, on fasciæ pale yellowish. Hindwings white; fasciæ mostly reduced to single dots of blackish irroration, but postmedian fascia faintly yellowish; sixth segment with three posterior dots only."

This species, which is not as yet known from any locality outside of Ceylon, was originally described from specimens collected at Madulsima and Wellawaya in November. I have a single example taken at Mankulam in November, 1908 (*De Mowbray*).

Orneodes postfasciata, *n. s.*

(Plate G, figure 6.)

Male. Expanse 15 mm. Labial palpi long, cylindrical, white, slightly suffused beneath with yellowish-brown; third joint about $\frac{3}{4}$ length of second. Antennæ whitish, minutely ciliated. Head and thorax white. Legs white: fore-femur suffused above on terminal half with blackish; fore-tibia suffused with blackish, and provided with a scale-tuft beneath. Abdomen white, third segment suffused with blackish-fuscous. Spina of frenulum very long and strong.

Forewing cleft from about $\frac{2}{5}$, near base, about $\frac{2}{3}$, $\frac{1}{3}$, and from near base; first segment narrow, others linear; white: a faint subbasal blackish-fuscous costal spot; first segment with outer third faintly suffused with pale brown, posterior margin of segment indistinctly edged with blackish-fuscous at about $\frac{1}{3}$ and beyond $\frac{2}{3}$ length of segment; second segment with a longitudinal blackish-fuscous spot on anterior margin at base, cut at $\frac{2}{5}$ by a broad blackish-fuscous bar and by narrow pale brown bars at $\frac{4}{5}$ and before termen; third segment with a blackish-fuscous dot on anterior margin at $\frac{2}{5}$ on a narrow indistinct anteterminal pale-brown bar; fourth segment cut by a dark-fuscous line near base, and an indistinct pale-brown bar before termen; fifth segment with pale anteterminal bar; sixth segment with a strong patch of blackish scales (? androconia) at $\frac{1}{3}$, cut at $\frac{2}{3}$ by a narrow blackish-fuscous bar and before termen by an indistinct pale-brown bar. Cilia white: on posterior margin of first segment mixed with blackish at about $\frac{1}{3}$ and beyond $\frac{2}{3}$, on fore-margin of second segment dark-fuscous at $\frac{1}{3}$ and $\frac{2}{3}$.

Hindwing cleft from about $\frac{1}{3}$, base, $\frac{1}{6}$, base, and base; segments linear: white: all segments narrowly and irregularly suffused with blackish-fuscous at base, crossed slightly before $\frac{1}{2}$ by a broad blackish bar forming a conspicuous fascia across the whole wing, beyond this

bar crossed on segments 1–4 by three, on segments 5 and 6 by only two, narrower blackish-brown bars. Cilia white, pale brownish opposite dark bars.

A distinct little species, easily recognized by its pure-white colour and the conspicuous dark fascia across the centre of the hindwing.

Described from two examples (of which the former is the type) taken by myself at light on Sober Island, in Trincomalee Harbour, on November 4 and December 8, 1906. Mr. Meyrick, who has kindly examined the type, remarks that he has an apparently similar specimen collected in the Central Province by Mr. G. B. de Mowbray.

Orneodes sycophanta, *Meyr.*

(Plate H, figure 7.)

Orneodes sycophanta, Meyrick, B. J., XVII., 133.

"Male and female. 15–18 mm. Head and thorax white. Palpi smooth-scaled, white, apex of basal and second joints and subapical ring of terminal joint dark fuscous. Antennæ stout, serrate, whitish-ochreous, basal joint white. Abdomen white, segments 2–4 partially or wholly dark fuscous above (number of dark segments variable). Forewings white; first segment fuscous, with four blackish white-edged spots, fourth apical; second segment fuscous, with three dark fuscous bands, limited by white spots edged with blackish-fuscous; segments 3–6 crossed by two anterior series of undefined dark fuscous dots, and four posterior pale grayish-ochreous fasciæ, edged with dark fuscous, but these vary much in distinctness, and are often partially obsolete; usually a distinct blackish-fuscous spot on middle of sixth segment. Hindwings white, with six transverse series of pale ochreous spots, speckled with black."

To the above I would add that the third palpal joint is about $\frac{2}{3}$ the length of the second; that the head is white, the crown with large ill-defined blackish spots above and between bases of antennæ; that the legs are whitish, the fore-femur exteriorly blackish on terminal half, the fore-tibia blackish with a long scale-tuft on inner side; and that the first segment of the forewing is about twice the breadth of the second segment.

This species only appears to be known from Maskeliya, where it has been taken by Mr. Pole in January, April, May, and July.

I am indebted to Mr. Meyrick for the loan of the specimen from which the figure has been drawn.

Orneodes toxophila, *Meyr.*

(Plate H, figure 8.)

Orneodes toxophila, Meyrick, B. J., XVII., 133.

"Male. 15–16 mm. Head and thorax white. Palpi with appressed scales, white, towards base sprinkled with fuscous.

Antennæ ochreous-whitish, basal joint white. Abdomen whitish-ochreous. Forewings ochreous-whitish, crossed by ill-defined light yellow-ochreous bands before and beyond middle, and a narrow curved darker central fascia, sometimes partially speckled with dark fuscous, not reaching sixth segment, separated from them by fine lines of ground colour; sometimes a few fine blackish specks on segments; sometimes a faint yellowish subterminal line. Hindwings as forewings, but central fascia fuscous, sprinkled with blackish, entire, dark specks on segments rather more numerous, subterminal line sometimes grayish towards dorsum."

This appears to be one of the most widely-distributed of our species of *Orneodes*. It was originally described from Maskeliya specimens taken by De Mowbray in April and June, and my collection contains examples from this locality in January and March (*De Mowbray*). I also have it from Madulsima in October (*Vaughan*), from Bibile in November, 1907 (*Mackwood*), and from Kegalla in October–November, 1908 (*Ormiston*), and at lamp in bungalow at Kegalla (1,000 ft.) on October 11, 1909 (*Ormiston*).

Outside of Ceylon *O. toxophila* occurs in South India. Mr. Meyrick informs me that he has received this species from N. Coorg, 3,500 feet (*Newcombe*). The British Museum collection also contains two specimens from the Nilgiri Hills (*Hampson*); Sir George Hampson kindly informs me that these were collected by him in September at Nadgani (3,000 feet), on the western slopes of the Nilgiris.

Orneodes thapsina, *Meyr.*

(Plate H, figure 9.)

Orneodes thapsina, Meyrick, B. J., XVI., 583.

"Male. 21 mm. Head whitish-ochreous, crown ochreous-yellow. Palpi and antennæ ochreous-whitish. Thorax ochreous-orange, partially sprinkled with fuscous. Abdomen ochreous-orange, segmental margins white. Legs whitish, anterior femora and tibiæ dark fuscous above. Forewings orange-ochreous, towards base partially suffused with fuscous, posterior $\frac{2}{3}$ crossed by four irregular whitish lines, partially obscurely edged with a fuscous tinge; tips of segments pale or whitish, with a minute dark fuscous terminal dot: cilia alternately whitish-ochreous and whitish. Hindwings whitish; segments 1–5 with six, segment 6 with three ochreous bars irregularly edged with dark fuscous irroration; cilia as in forewings..... Only comparable in general colouring with the Australian *O. xanthodes*, from which, however, it is quite distinct."

This is another species which, so far as we know at present, is quite peculiar to the Maskeliya district, where the original specimens were taken in February. My own examples were collected in September, 1905 (*ex* Coll. Green), and in October and December (*Pole.*)

Orneodes niphostrota, *Meyr.*

(Plate H, figure 10.)

Orneodes niphostrota, Meyrick, T. E. S., 1907, 507.

"Male and female. 21–22 mm. Head and thorax white tinged or sprinkled with pale ochreous. Palpi moderate, ascending, loosely scaled, terminal joint $\frac{3}{4}$ of second; gray, terminal joint white towards apex. Antennæ pale whitish ochreous. Abdomen whitish, with subbasal and subapical bands and lateral stripes of fuscous irroration. Legs whitish, anterior femora and tibiæ suffused with dark fuscous externally. Forewings white; basal half tinged with ochreous and partially sprinkled with dark fuscous, especially on base of costa and towards base of lowest cleft; segments crossed by four fuscous fasciæ sprinkled with blackish, and an additional blotch on first two segments between third and fourth fasciæ, the blotch and upper half of second fascia darker than the rest, first three fasciæ moderate, angulated on fourth segment, first obsolete towards costa, third narrow on fourth and fifth segments, fourth narrow throughout, subapical, all widely separated on sixth segment: cilia ochreous-whitish, slightly tinged with fuscous on fasciæ. Hindwings white; basal third irrorated with dark fuscous, except at base; segments crossed by four rather narrow curved or angulated fuscous fasciæ sprinkled with blackish: cilia as in forewings."

This is another species which is so far known only from the Maskeliya district, where the type-specimens were taken in October and January. My two examples, for which I am indebted to Messrs. Pole and De Mowbray, were both collected at light in September.

Orneodes microscopica, *n. s.*

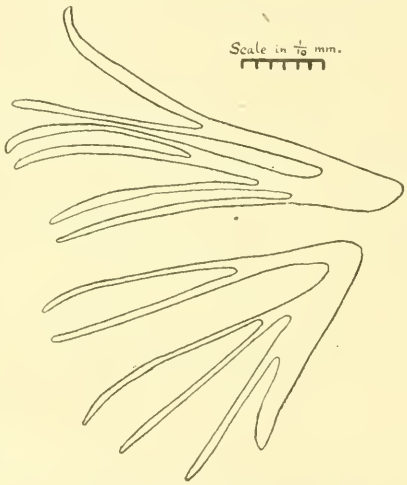
Male. Expanse 7 mm. Labial palpi moderately long, porrect, third joint about half length of second; pale fuscous-gray, banded with dark fuscous at apices of joints. Antennæ fuscous, roughened with scales above. Head fuscous, a white spot on vertex between the prominent black eyes. Thorax fuscous, grayish anteriorly and laterally. Abdomen fuscous, paler on first two segments. Legs pale grayish; spurs on posterior tibia long and strong, the inner proximal spur much the longest.

Forewing cleft firstly from slightly beyond $\frac{1}{2}$, secondly from about $\frac{1}{3}$, thirdly from slightly beyond $\frac{1}{2}$, fourthly from rather beyond $\frac{1}{4}$, fifthly from slightly within $\frac{1}{4}$: first segment narrow, segments 2–6 linear: pale gray: first segment with six fuscous-brown costal spots, fourth at $\frac{1}{2}$, very broad and bar-like, nearly reaching fifth (at $\frac{3}{4}$), which is also broad but narrower than the fourth; other segments apparently crossed by several narrow transverse fuscous-brown bands only distinct towards termen; all segments with a minute blackish-fuscous terminal dot, that in first segment largest

and most distinct. Cilia whitish-gray, intermixed with thick dark-fuscous hair-scales opposite darker spots and bands.

Hindwing cleft firstly from about $\frac{2}{5}$, secondly from near base, thirdly from about $\frac{2}{5}$, fourthly from about $\frac{1}{3}$, fifthly from slightly within $\frac{1}{2}$; segments 1–5 linear, sixth segment stout, apparently forming extremity of a large glandular sac contained within and along dorsal margin of wing: whitish-gray, irregularly irrorated and crossed by about six ill-defined fuscous-brown transverse bands, of which a terminal and subterminal are the darkest and most distinct; ground-colour of whole of sixth segment, to base of wing, conspicuously darker. Cilia whitish-gray irregularly intermixed with dark-fuscous hair-scales, which are well developed opposite darker markings on segments.

Figure 6.



Orneodes microscopica.

Type (No. 7,684) in Coll. Bainbrigge Fletcher.

Habitat.—Ceylon, North-Central Province, Anuradhapura. November, 1908 (*G. B. de Mowbray*).

Observation.—The unique type-specimen is unfortunately in poor condition, and I should have hesitated to describe it as a novelty, were its specific distinctness dependent on mere colour-markings. Its minute size, however, combined with the proportionate fission of the wings, and especially the extraordinarily thickened sixth segment of the hindwing, sufficiently characterize *O. microscopica* as distinct from every other species hitherto described in this family. It is still smaller than *O. pygmæa*, which has been described as "much the smallest species of the genus." *O. nannodactyla*, Rebel, also expanding only 7 mm. and described from Sokotra, is apparently very near *O. pygmæa*, Meyr., but has the third palpal joint very short and almost hidden in the scaling of the second joint.

Orneodes trachyptera, *Meyr.*

(Plate H, figure 11.)

Orneodes trachyptera, Meyrick, B. J., XVII., 134.

"Male and female. 10–13 mm. Head, palpi, antennæ, thorax, and abdomen dark-fuscous, mixed with whitish; palpi with second joint dilated with rough scales towards apex above and beneath, terminal joint thickened with loose scales towards apex anteriorly. Forewings with costa roughened with projecting dark fuscous scales, except on the white markings; whitish, densely irrorated with dark fuscous, so as to appear dark gray; costa with six or seven small semioval ochreous-white spots, not reaching more than half across first segment; other segments crossed by about six series of ochreous-white dots, united by outwardly oblique whitish dashes in the cilia to form zigzag lines. Hindwings with ground-colour and zigzag lines as in forewings.

"Six specimens, Puttalam and Maskeliya, in March, May, November, and December (*Pole, De Mowbray*)."

This blackish little species, easily recognized by its roughened costa, is further remarkable in having the maxillary palpi well developed and clearly visible beyond the scaling of the head. It should probably be separated generically from *Orneodes*.

In Ceylon *O. trachyptera* usually occurs in the dry jungly districts of the low-country, where it sometimes comes into light freely. My own specimens are from Wellawaya in November, 1905 (*Green*), from Mankulam and Anuradhapura in November, 1908 (*De Mowbray*), and from Nikaweratiya (between Puttalam and Kurunegala) at light on November 11, 1909 (*Ormiston*). Mr. Meyrick tells me that he has it from Eppawela and Rambukkana.

Outside of Ceylon it is as yet known only from N. Coorg, 3,500 ft. (Meyrick Coll.).

Triscædecia, *Hmpsn.*

"Proboscis fully developed; [labial] palpi with the second joint porrect, about twice length of head and broadly fringed with hair below, the third oblique, moderate; antennæ of male ciliated; tibiæ with projecting tufts of hair at the spurs. Forewing divided into six plumes to rather more than one-third length (from within two-thirds); the costa with six tufts of scales; the scaling rough; vein 3 from well before angle of cell; 4–5 from angle; 6 from below upper angle; 7–8 stalked; 9, 10, 11 from cell. Hindwing divided into seven plumes to half length; veins 3–4 from angle of cell; 5 absent; 6–7 from upper angle; 8 free, from base."

This genus is remarkable amongst the Orneodidæ, not only in the six-cleft hindwing, but in possessing well-developed maxillary palpi—a feature which is unaccountably omitted from the original description reproduced above.

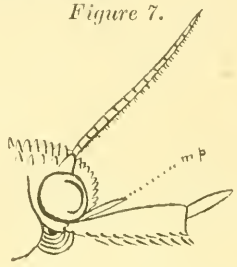
TRISCÆDECIA DACTYLOPTERA, *Hmpsn.*

Triscædecia dactyloptera, Hampson, T. E. S., 1905, 247–248 (fig.).

"Male. Head, thorax, and abdomen clothed with whitish, pale brown, and black scales; antennæ and legs mixed with whitish; abdomen with diffused blackish bands.

Forewing clothed with grayish, pale brown, and black scales; the costa with whitish spots between the [six] black tufts of scales; the cell with small black lunules followed by whitish spots at middle and extremity; traces of a diffused oblique whitish band from lower angle of cell to inner margin; an indistinct slightly waved whitish postmedial line; the plumes with white spots at base and subterminal and terminal series of white lunules.

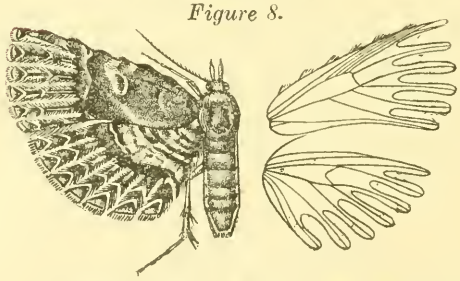
Figure 7.



Triscædecia dactyloptera.

m. p. Maxillary palp.

Figure 8.



Triscædecia dactyloptera, Hmpsn.

Hindwing with the basal half white with diffused irregular black antemedial and two medial lines on it, the first of the medial lines arising from a discoidal bar; a slightly waved whitish postmedial line; the plumes with white spots at base and subterminal and terminal series of white lunules.

Habitat.—Ceylon, Maskeliya (J. Pole), Ohiya (Gossage). Expanse 26 mm. Type in B. M."

Reference to the specimens in the National Collection shows that the type of this species is the Maskeliya specimen referred to above.

My own examples are from Maskeliya (*De Mowbray*, *Pole*) and Madulsima (*Vaughan*). The only other example which I have seen is a very old one, without definite locality, which I found in the Colombo Museum figuring under the name of *Tinea* (!) *alucitana*.

Explanation of Plates G and H.

All the figures in these plates have been drawn by Messrs. West, Newman, direct from specimens of the various species (all previously unfigured). They are all considerably magnified, the natural size being shown by the scale against each principal figure. In all cases the figures lettered 1*a*, 2*a*, &c., represent a profile view of the head of the species figured under the corresponding number.

Plate G.

Fig. 1.—*Orneodes pygmæa*, Meyr.

Fig. 2.—*Orneodes montigena*, n. s.

Fig. 3.—*Orneodes ischalea*, Meyr.

Fig. 4.—*Orneodes mesolychna*, Meyr.

Fig. 5.—*Orneodes pinalea*, Meyr.

Fig. 6.—*Orneodes postfasciata*, n. s.

Plate H.

Fig. 7.—*Orneodes sycophanta*, Meyr.

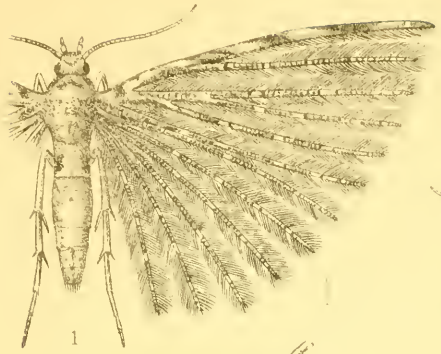
Fig. 8.—*Orneodes toxophila*, Meyr.

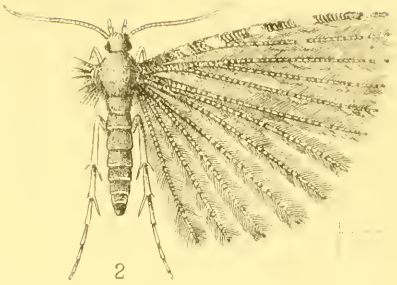
Fig. 9.—*Orneodes thapsina*, Meyr.

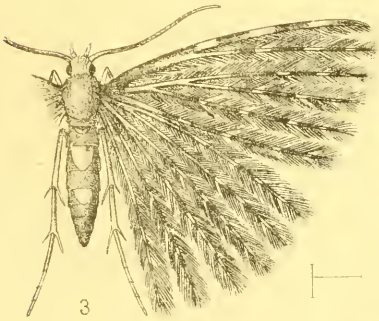
Fig. 10.—*Orneodes niphostrota*, Meyr.

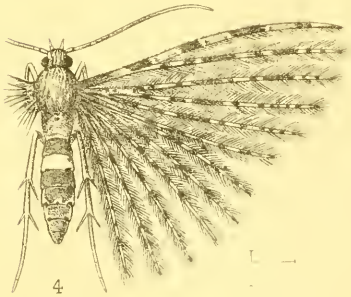
Fig. 11.—*Orneodes trachyptera*, Meyr.

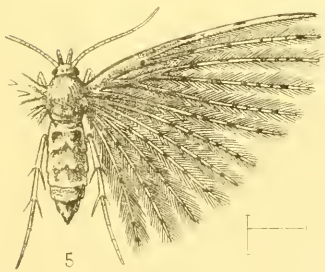
Fig. 11*b*.—Portion of first segment of forewing of *O. trachyptera*, more highly magnified, to show costal tufts.

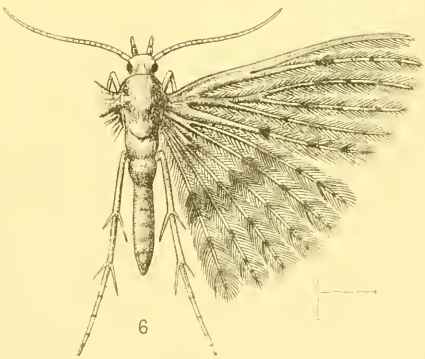












West, Newman del. et lith.

7

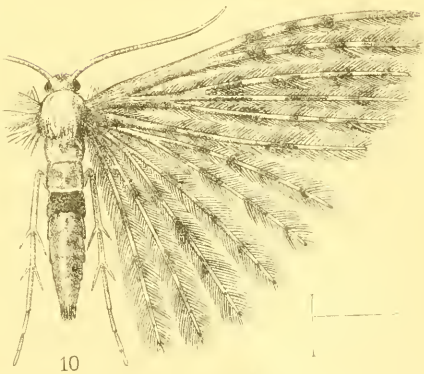
8

7a.

8a.

9a.

9



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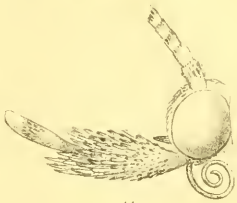
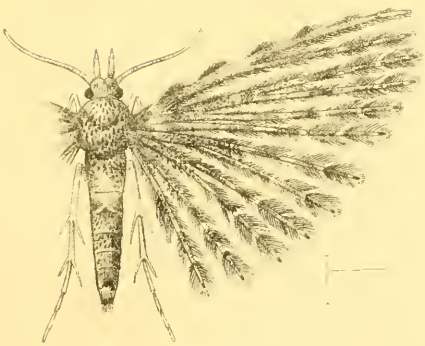
10a.



11a.



11

11b.

West, Newman del et lith

ORNEODIDÆ.

From the author.

(*From the American Naturalist, August, 1884.*)

ENTOMOLOGY.

Habits of an aquatic Pyralid caterpillar.—The habits of the caterpillars of the Hydrocampinæ, a group of Pyralid moths, are unusually interesting, and deserve special attention in this country. We quote from Guenée the following account of them: "The principal title of the family of Hydrocampidæ to the notice of observers, resides in the habits of their caterpillars. Our three most popular entomologists, Réaumur, De Geer and Lyonnet, have observed and described them with all the details fitted for a subject so curious, and have not, so to speak, left anything for their successors to do; I will then give here a hasty analysis of their works. These caterpillars live on the leaves of several aquatic plants, Nymphæa, Potamogeton, Lemna, Stratiotes, Callitiche, etc., and as most of these plants are, in part, submerged or floating, or at least surrounded with water, it is necessary for our larvæ to have exceptional means of passing through the water, and even of living in almost constant contact with it. It is this which nature has provided, not in a uniform manner, but by varying its means with its ordinary fecundity."

The larva of Cataclysta, he says, feeds on leaves too small to enable it to be contained between them, it therefore constructs a cylindrical tube of silk, and strengthens it with leaves placed on the upper side. The case differs from that of Hydrocampa in that the tube it constructs is not like a sheath and formed of two bits of leaves, but is broadly cylindrical or oval, and strengthened all around by small leaves of Lemna. Moreover the caterpillar

lives submerged in the water and attached to the under surface of floating leaves. Its case serves as a cocoon within which to pupate, and it is attached to some aquatic plant. The chrysalis is soft, with the ventral sheath prolonged to the end of the abdomen.

The most curious caterpillar is that of Paraponyx, living on plants wholly submerged; it is provided with gills which allow them to decompose the air contained in the water; and they are, as De Geer showed, truly amphibious, because they are provided at the same time with stigmata to respire ordinary air, like other caterpillars.

The caterpillar appears, at first sight, as if furnished with respiratory filaments of different lengths, three or four arising from a common tubercle. It is the only lepidopterous larva known to be provided with tracheary gills.

The chrysalis lives also wholly submerged, constructing between the submerged leaves of the plant which nourishes it, a cocoon composed of a double lining of silk, wherein it changes into a chrysalis. The imago has to pass through the water on leaving its cocoon, so that it is at the beginning of its existence also amphibious.

The last genus, Hydrocampa, has caterpillars which are rather thick, attenuated at each end, flattened beneath, with a small retractile head. They live under the leaves of pond lilies in a pod-like sac formed of two bits of leaves stuck together at their edges.

The accompanying drawings, made by Dr. C. F. Gissler, undoubtedly represent a Hydrocampa larva. I found it in great abundance May 20, 1882, in its case, made from the leaves of *Menyanthes trifoliata*, in a swamp at Providence, R. I. I failed to prepare a full description either of the larva or pupa, but think that the figures on Plate XXIV, prepared by Dr. Gissler, will enable it to be recognized. I have introduced a figure of the moth, which was observed in great numbers flying over the surface of the water, many being drowned. The larvæ (Fig. 1) were observed living between two pieces of Menyanthes leaves, fastened together on the sides. The pod-like sac was oblong, but quite irregular in shape. The caterpillar was dull in color and active in its habits, thrusting its head and three following segments in and out of its case. Fig. 1 represents the worm in its case of natural size; 1*a*, the caterpillar enlarged about six times; 1*b*, an antenna; 1*c*, 1*d*, the mandibles; 1*e*, the labrum, much magnified; 1*f*, the maxilla; 1*g*, the labium, and *p*, the palpus; 1*h*, the end of the body, dorsal view, showing at *o* a large cleft which can be closed by two lateral fleshy lobes and a posterior fleshy bead; on the succeeding segment is a smaller cleft; the spiracles are seen on the sides of the same segments.

The few caterpillars which I carried home began to spin a

cocoon within the case from June 4–10th; the moths being noticed June 12–13th.

The pupa (Fig. 2–2*c*), 2, natural size, bulges out considerably on the 4th and 5th abdominal segments. There are only three pairs of spiracles, *i. e.*, on the 2d, 3d and 4th abdominal segments. One of these spiracles (highly magnified) is represented at 2*c*; their relations to the body at 2*b*.

The moth was not directly raised from the pupa, but the former were so thick that I have little doubt but that the Hydrocampæ captured at the same spot a few days after the larvæ were found, were the imagines of the larvæ under consideration. Seeking for them the next year, none were to be found, though very prolonged search was not made for them for want of time.

The moth found so abundantly, and seen on the following summer at the same date as above recorded, was *Hydrocampa formosalis* of Clemens (Fig. 3. The drawing is a very poor one).

We have in this country four species of Hydrocampa, five of Cataclysta and five of Paraponyx, and it is to be hoped that many years will not elapse before the larvæ, at least those of the latter-named genus, will be discovered. It is hoped that this note will serve to draw attention to these very curious insects.—*A. S. Packard, Jr.*

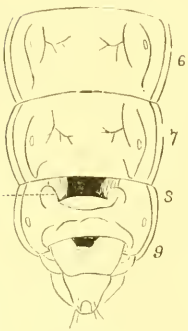

1e


1f


1b


1


1a

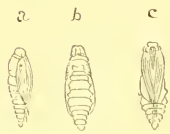

1h

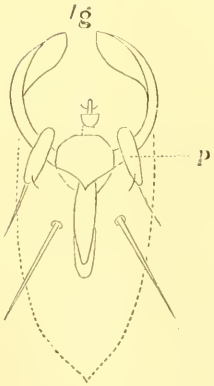

1c


1d

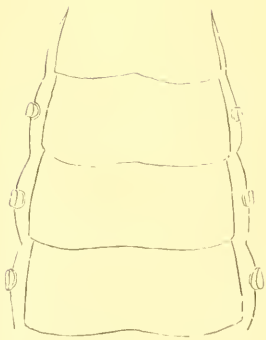

2c


3


2


1g


2a


2b

Transformations of *Hydrocampa formosalis*.

Tortrix penziana, Hüb.

Mittheilungen über die ersten Stände.

Von

J. Wullschlegel in Lenzburg.

Auf meinen Exkursionen im Jura fing ich seit Jahren theils auf frischem Kuhmist, theils auf Hollunderblüthen, in der Nähe von sonnigen, felsigen Stellen, die mit Hippocrepis commosa bewachsen sind. *Sesia ichneumoniformis.* Dies brachte mich auf die Vermuthung, die, meines Wissens, noch unbekannte Raupe dieser Art dürfte in den Wurzeln jener Pflanze zu finden sein. Halbe Tage lang untersuchte ich desshalb, auf dem Steingeröll knieend, dieselbe, doch bis jetzt ohne Erfolg; dagegen fand ich die Raupe der im Jura nicht häufigen *Noctua platinea* und *Tortrix penziana.*

Die Raupe dieses Wicklers ist einer Sesien-Raupe ähnlich, gelblich weiss und mit einzelnen Häärchen versehen. Sie lebt in einem weisslichen, schlauchförmigen Gespinnst, welches sie zwischen den obern Theilen von wenig mit Erde bedeckten Wurzeln, oder den liegenden Stengeln verfertigt, und sich auch meist darin verpuppt; selten geschieht dies ausserhalb in einem besondern Gewebe. Schon nach 2—3 Wochen erscheint der hübsche Wickler, welcher Tags vorzugsweise an Felsen sitzt. Ich fand ihn nicht selten am Engelberg bei Olten, auf der Wartburg, auf dem Born, Belchen, im Kanton Solothurn, auf den Ruinen von Besserstein und auf der Lägern bei Baden.

Ueber die Artrechte von Saturnia cynthia Daubenton und cynthia Drury, nebst Bemerkungen über die aus der Kreuzung derselben hervorgegangenen Hybriden.

Von **J. Wullschlegel,** Lenzburg.

Der Umstand, dass die Artrechte dieser, seit längerer Zeit in Europa bereits eingebürgerten Spinner häufig in Zweifel gezogen werie ganz besonders die Thatsache, dass die Hybriden von die-

sen Arten fortpflanzungsfähig sind, und einen Beitrag zur Unterstützung der Ansichten Darwins liefern, veranlassten nachstehende Mittheilungen.

Zuerst einige der wesentlichsten Unterschiede.

Die Eier von *Saturnia cynthia* Daubenton sind immer gelblich weiss, ohne die schwarzen Zeichnungen, welche bei denen von *Saturnia cynthia* Drury stets vorhanden sind.

Bis nach der zweiten Häutung ist die Raupe des ersteren Spinners gelblich, nachher schön bläulichgrün, mit einer weissen, mehlartigen Substanz bedeckt, ohne Zeichnung und hat auf jedem Ringe in gleicher Entfernung von einander abstehende, dornenähnliche Warzen. Der Kopf ist bis nach der dritten Häutung schwarz.

Die Raupe des zweiten, in Frage stehenden Spinners, ist Anfangs ebenfalls gelblich, hat aber hinter dem Kopfe, welcher die Farbe des Körpers trägt, einen schwarzen Querfleck und auf jedem Körperringe zehn kolonartig stehende schwarze Punkte, welche ihr in der Jugend ein schwärzliches Aussehen geben. Nach der dritten und vierten Häutung ist diese Raupe gelblichgrün, vor dem Einspinnen citronengelb, welche Farbe jedoch wegen der weissen Bestäubung, wie bei der ersteren Art, nur am Kopfe, unten an den Seiten und an den Füssen deutlich hervor tritt. Die Warzen sind weit manigfaltiger gebildet und mit schönen, borstenartigen Haaren geschmückt. Ihre Lebensweise ist unruhiger; bei mangelnder Nahrung wird sie wanderlustig und läuft nach allen Seiten davon, was bei jener weniger der Fall ist. Bei derselben Temperatur dauert das Puppenstadium ungleich länger.

In der Form stimmen die Cocons überein, unterscheiden sich dagegen durch die Farbe und die Art der Befestigung. Während erstere Art ihr gelbes Gespinnst einfach in einem zusammengesponnenen Blatt oder an einem andern Gegenstand verfertigt, umspinnt letztere zuerst einen Zweig, bildet ein festes Futteral und spinnt erst, nachdem für gehörige Sicherheit gegen Stürme gesorgt ist, den Cocon, welcher bei rein erhaltener Race stets eine röthlichgraue Farbe hat. Noch viel bestimmter als die Färbung und Zeichnung des Eies, der Raupe und des Cocons spricht das Puppenleben für die besondern Artrechte jedes dieser Spinner.

Bei *Saturnia cynthia* Daubenton wird in Europa während der wärmern Jahreszeit so wenig als in seiner ursprünglichen Heimath ein Stillstand in der Aufeinanderfolge der Generationen beobachtet. Ein solcher kann nur auf künstliche Weise bewirkt werden. In entsprechend warmen Lokalitäten und bei angemessener Nahrung kann dieser Spinner sogar auch während des Winters gezüchtet werden. *Saturnia cynthia* Drury pflanzt sich dagegen jährlich nur in zwei Generationen fort, ja es bleiben schon von den Puppen der ersten Zucht mehrere Prozente zurück, d. h. sie entwickeln sich in demselben Jahre nicht zum Schmetterling, sondern verharren in diesem Zustande und können, bevor des Frühlings warme Lüfte wehen und der Götterbaum seinen Blätterschmuck entfaltet, auch in hohen Temperaturen nicht zum Auskriechen gebracht werden; wenigstens ist mir dies bei wiederholten Versuchen mit solchen Puppen, wie auch mit denjenigen der zweiten Generation nicht gelungen und zwar nicht etwa bloss im ersten Stadium der Akklimationsbestrebungen, sondern auch dann nicht, als dieser Schmetterling sich bereits an unser Klima gewöhnt hatte.

Während Raupe und Schmetterling des erstern Spinners eine träge Lebensweise haben, zeigt letzterer, namentlich als vollkommenes Insekt, ein unruhiges und scheues Wesen, und es unterscheidet sich dieser hiedurch, wie durch seine hellere, mehr in's Grünliche gehende Grundfarbe, die zum Theil abweichende, schärfere Zeichnung wesentlich von jenem. Wo solche Verschiedenheiten für besondere Artrechte sprechen, werden dieselben schwerlich mit stichhaltigen Gründen bestritten werden können.

Nicht ohne einiges Interesse scheinen mir die aus der Kreuzung beider Arten hervorgegangenen Hybriden zu sein. Je nach dem die Raupen derselben durch Kreuzung eines Weibchens von *cynthia* Daubenton mit einem Männchen von *cynthia* Drury, oder umgekehrt, stammen, zeigen sie bald mehr, bald weniger die Merkmale beider Arten gemischt; in der Regel jedoch mehr diejenigen der Mutter. Bemerkenswerth ist die Lebensdauer dieser Hybriden, namentlich im Puppenstadium. Während erstere Art sich in ihrer Entwicklung nur auf künstliche Weise zurük halten lässt, und letztere, wie gesagt, vor dem Mai und Juni auch in hoher Temperatur nicht

zum Auskriechen vermocht werden kann, verlassen die Hybriden, wenn sie zeitig in entsprechende Wärme gebracht werden, schon Ende März und im April die Puppe und pflanzen sich während des Jahres bei zweckmässiger Behandlung in zwei bis drei Generationen fort. Ich habe aus Kreuzungen, die auf oben erwähnte Art vorgenommen wurden, die Hybriden bis zur dreizehnten Generation in ursprünglicher Kraft und Grösse sich fortpflanzen sehen; leider war ich dann genöthigt, aus Mangel an Platz und Zeit die Nachkommen der letzten fremder Pflege zu übergeben und kann über das Schicksal derselben augenblicklich keinen Bericht erstatten.

Da ich gegenwärtig wieder Gelegenheit habe, derartige Beobachtungen anzustellen, so habe ich mir vorgenommen, Noctuen mit Noctuen und einige Spinnerarten zu kreuzen und werde seinerzeit darüber berichten.

Sollten Lepidopterologen durch obige Mittheilungen zu ähnlichen Versuchen veranlasst werden, so würde mich dies sehr freuen.

Dianthoecia magnolii Bd.

Von **J. Wullschlegel** in Lenzburg.

Als ich vor einigen Jahren meine Beobachtungen über die ersten Stände dieser schönen, seltenen Eule in der stettiner entomologischen Zeitung und in dieser Zeitschrift veröffentlichte, unterliess ich es, eine genaue Beschreibung der Raupe zu geben, weil ich dieselbe noch mehr zu beobachten mir vorgenommen hatte. Jetzt, nachdem ich dieselbe wiederholt vom Ei an erzogen und letzten Herbst im Freien zum ersten Mal in Mehrzahl zu sammeln Gelegenheit hatte, will ich eine Beschreibung nicht länger aufschieben, zumal meines Wissens noch in keinem Werke über Lepidopteren eine solche sich findet.

Die Raupe dieser Eule ist ausgewachsen einen Zoll lang, hat ein plumpes Aussehen und ist mit einzeln feinen Häärchen, die auf Punktwärzchen stehen, besetzt. Ihre Farbe ist schmutzig grau-

braun, häufig mit zartem, kupferrothem Anflug, namentlich in den Gelenken. Der Kopf ist gelbbraun, mit zwei aus braunen Pünktchen gebildeten Längsstreifen; Nackenschild grünlich braun, an den Seiten von einer röthlichweissen Linie begränzt. Ueber den Rücken und auf beiden Seiten des Körpers ziehen Längsstreifen, die aus schwarzbraunen Pünktchen gebildet sind, der Rückenstreifen ist am Anfang und Ende jedes Körperringes stärker, als die übrigen, indem die Pünktchen da am meisten gehäuft erscheinen, und die Form eines gegen den Kopf der Raupe offenen Dreiecks zeigen. Auf jedem Ringe stehen überdies vier deutliche schwarze Punkte, je zwei beisammen, von welchen die zwei vordern einander etwas näher stehen, als die zwei hintern. Tracheen weisslich; Unterseite des Körpers und Füsse grau; bisweilen schwach kupferroth, ohne Zeichnung.

Ueber die Lebensweise dieser Raupe habe ich im zweiten Bande dieser Zeitschrift, Seite 133—135, Mittheilungen gemacht, und trage desshalb hier bloss meine seitherigen Beobachtungen nach.

Seit Jahren fiel mir auf, dass selbst unter gleich günstigen Witterungsverhältnissen Schmetterling und Raupe an denselben Lokalitäten im einen Sommer fast gar nicht, im andern wieder, wenn auch nie häufig, doch in gewisser Zahl zu finden waren. Im Herbst 1870 sollte ich die Ursache dieser Erscheinung kennen lernen. Noch in der zweiten Hälfte Oktobers fand ich im Schutt eines Steinbruchs im hiesigen Stadtbezirk unter der Futterpflanze ausgewachsene Raupen, und weil das Aufsuchen derselben in der Erde zeitraubend ist, so nahm ich mir vor, zu versuchen, ob ich Nachts leichter eine grössere Zahl zusammenbringen könnte. Wiederholt weilte ich von 8—11 Uhr mit der Laterne an der mit lichtem Wald umgebenen Fundstelle, wodurch die Bewohner der zunächst liegenden Höfe in nicht geringe Aufregung versetzt wurden und die abenteuerlichsten Vermuthungen über die geheimnissvolle Erscheinung laut werden liessen. Dies genirte mich aber wenig und ich untersuchte eifrig die Blätter von Silene nutans, denn bis jetzt fand ich *Magnolii* ausschliesslich nur auf dieser Pflanze; sie verschmähte in der Gefangenschaft alle andern Gewächse, welche ihren Geschlechtsverwandten zur Nahrung dienen. Auch bei diesem Suchen machte ich nur geringe Beute; da bemerkte ich zufällig an einem dürren Stengel genannter Pflanze eine Raupe und widmete nun meine ganze Aufmerksamkeit diesem

Pflanzentheile. Dadurch gelang es mir, eine recht befriedigende Ausbeute zu machen und die Zucht dieser Raupe zeigte mir, dass trotzdem dieselben Tags in der Erde, oder zwischen Stengeln und Wurzeln sich verborgen halten, sie dennoch schrecklich von Ichneumonen verfolgt werden, und dadurch der Schmetterling stets auf eine geringe Zahl reduzirt wird.

Wann hält das sonderbare Thier denn seine Mahlzeit, wenn es nicht, wie seine Familiengenossen gleich nach eingebrochener Nacht seinen Hunger stillt? dachte ich; es wird doch nicht die dürren, leeren Kapseln dieser Stengel benagen. Darüber sollte ich Aufschluss haben. Also vor Tagesanbruch wieder zu neuen Beobachtungen geschritten und siehe, jetzt sass dasselbe auf den Blättern und diese zeigten sichtbare Spuren seines nicht geringen Appetits. Die ersten Strahlen des aufgehenden Tagesgestirns finden dasselbe aber stets schon in seiner verborgenen Wohnung.

Ueber die Ichneumonen, die, wie ihr Wirth, im Puppenstadium den Winter zubringen, später einige Nachrichten. Nach meinem Dafürhalten sollten die Lepidopterologen mehr, als es in der Regel geschieht, diesen höchst interessanten Thieren ihre Aufmerksamkeit zuwenden.

Die Puppe von *Magnolii* ruht oberflächlich in der Erde, oder zwischen Wurzeln ihrer Nahrungspflanze, in einem dünnen, mit Erde untermischten Gespinnste. Sie ist von der Grösse der Puppe von *Dianthoecia perplexa*, röthlich braun, hinten spitzkegelig, mit kolbig verlängerter Saugrüsselscheide und zwei Dornen am Kremaster.

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