

84. *Hesperia tessellata* Scudder (642).

Probably the commonest member of its family in this region. It flies from early spring until late in the fall and may be taken almost anywhere.

RECAPITULATION.

This list includes 84 species scattered through 54 genera. Of these, 61 species in 42 genera are to be found in the immediate vicinity of San Diego city.

Fairly good collecting may be had in and about the city as early as the middle of February and as late as the middle of November. The best months are March to September inclusive, and I judge that the same limits will apply to the mountains as well except at the higher altitudes. Probably the best time for a trip to the mountains would be in May, June, or July, while for desert collecting March or April would be the best months.

NEW NORTH AMERICAN TORTRICIDÆ AND TINEINÆ.

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

***Eucosma dorsisuffusana*, new species.**

Expanse 17.5-24 mm.

Head dark chocolate-brown, face blackish; palpi cream-white inside, dark bronzy-brown outside, apical joint short, obtuse, dark gray; antenna blackish gray, faintly annulated with whitish; thorax dark gray-brown mottled with ochreous brown; abdomen light fuscous; legs cream-white, shaded with ochreous brown and dark brown.

Forewing. — Inner third and upper half transversely strigulated with grayish brown and black, with a shade of bright brown between the black lines before the dorsal spot and on the outer half of costa. The lower half of wing, from inner third to termen is cream-white, the usual dorsal spot running into the white ocellic area, the latter reaches to within a quarter of the costa, and is rounded on top; the brown ground color sharply defines this white area and by an angulation downward at outer third outlines the upper side of the two spots. Before the ocellic space are a few dark brown scales on the white ground. Between middle and apex the costa is marked with five pairs of outwardly oblique cream-white dashes, each ending below costa in a few light blue metallic scales, from the second pair before apex the line of metallic scales continues to termen, a third below apex; between these costal

streaks the ground color is bright ochreous brown, this shade narrowly margining upper half of termen. There is a small white dot on termen immediately below apex. Cilia on upper half light ochreous brown, mottled with darker brown and gray, with a few black scales in apex, the lower half, opposite white ocellic area, is white.

Hindwing.—Light smoky brown, cilia cinereous, preceded by a gray line; underside the same. Underside forewing darker smoky brown, costal spots faintly repeated.

Ten specimens, Cincinnati, Ohio, June 6–23, Miss Braun; Pittsburgh, Pa., July 3, Henry Engel. Cotypes in Merrick Museum, Miss Braun's and my collections.

This species is like *similana* Hbn. (Europe) and has been frequently so named. The wings are narrower and the arrangement of costal spots and dorsal patch different. In shape and general appearance *dorsisuffusana* is more like *otiosana* Clem.

***Eucosma medioviridana*, new species.**

Expanse 16–17 mm.

Head, palpi, antenna and thorax light mouse-gray; apical joint of antenna blackish brown; abdomen light fuscous; legs whitish, shaded with gray in front.

Forewing.—Outer two thirds pale apple green, inner third conspicuously darker. The basal area at middle of wing extends to inner third, its outer edge is a black line, obliquely outward from costa to middle, thence inward to dorsum with an indentation between fold and dorsum; there is an inwardly oblique line in the middle of this space, beginning at costa and ending below fold, this starts as outwardly oblique on the ♂ costal fold, then turns inward. Between costal fold and lower median vein, is overlaid with darker apple green, on a dark gray ground, below it is mottled gray and brown, this is succeeded in the outer half of the basal area by a patch of light ochreous brown, widest on dorsal margin and tapering to a point at upper third. Beyond the basal area the balance of wing is pale gray, more or less heavily overlaid with pale apple green, this color is most pronounced in the middle third of wing. It is traversed by faint irregular darker lines from the costa; two from beyond middle of wing enclose an obscure narrow dark gray fascia to tornus; half way between this and an apex an irregular line circles the outside of ocellic space, the latter is not defined. Cilia dark gray.

Hindwing.—Brownish gray, underside the same; underside forewing dark smoky gray.

Six specimens, Ottawa, August 17–21, C. H. Young; New Brighton, Pa., August 25 to September 11, H. D. Merrick and Henry Engel. Cotypes in Merrick Museum, Young's and my collections.

This species, in the shape of the wings and general markings, is very similar to *pulsatillana* Dyar, it can be separated by the green shading, which is absent from *pulsatillana*; I would place it between the latter and *nisella* Clerck.

Eucosma engelana, new species.

Expanse 14-17 mm.

Head, palpi, antenna, thorax, abdomen, legs and forewings pale terra-cotta brown. The inner sides of palpi are slightly paler, also hindwings are of a lighter shade.

Forewing. — A faintly darker basal shade, its outer edge from inner third of dorsal margin obliquely upward and becoming obsolete near costa. Before tornus is the only conspicuous mark on the wing, a darker brown quadrate spot, resting on dorsal margin and disappearing before middle of wing. The intervening space, between it and basal area, and also the ocellic area is slightly paler than the balance of wing. On the outer half of costa are several faintly darker outwardly oblique dashes, the one before apex is inwardly oblique. The intervening spaces paler.

Four specimens, three ♂ from Pittsburg, Pa., August 20 and September 2, Henry Engel; one ♀ Great Notch, N. J., 800 ft. elevation, May 21, 1899. Cotype in Merrick Museum, and my collection.

This species is very much like *dorsisignatana* Clem., and I have long considered my ♀ specimen as a very pale or bleached form of this species; recently, when at New Brighton, Mr. Engel showed me three ♂ specimens and insisted they were distinct from any of the varieties of *dorsisignatana*, in which opinion I entirely coincide, after additional critical comparison, and take pleasure in naming the species after this most careful worker.

Eucosma galenapunctana, new species.

Expanse 17-24 mm.

Head ochreous cream, darker in front; palpi with small rounded flattened brush on second joint, apical joint short, exposed, color ochreous cream, outer end of brush and apical joint leaden-gray; antenna finely ciliated in male, ochreous cream faintly annulated with gray; thorax same shade as posterior end of head; abdomen grayish white becoming darker at anal end; legs creamy white, dusted with brown.

Forewing. — Male costal fold about one third length of wing, narrow, appressed, costa nearly straight beyond base, apex obtuse, rounded, termen very slightly concave; venation both wings typical, pale ochreous-cream, with horizontal rows of blackish leaden dots, in certain light these dots are black, in others no trace of black but shining gray, when rubbed the dots are more or less obsolete and of a brownish shade; the costa is narrowly dotted on the inner half with light to blackish brown, on outer half the dots become outwardly oblique brownish streaks, separated by whitish lines, the latter in outer third connect below with shining streaks that run into the vertical bars on each side of the ocellus. On the inner third of wing, between costal edge and upper vein of cell, is a streak almost free from these dots; between the clear streak and fold are three rows, below the fold are three or four irregular and broken rows. The ocellus is on a cream ochreous field, with a strong inner bar and a broken outer bar, between which are three fine horizontal black lines, the two upper ones are longest, they all touch the inner bar and in some specimens the inner end of the black lines are enlarged. Costa whitish ochreous, speckled with black at base.

Hindwing. — Pale fuscous, darker around margins, underside paler. Underside forewing creamy ochreous, thickly overlaid with blackish brown, costal dots and dashes repeated; cilia not speckled, outer half whitish.

Twenty-one specimens, Denver and Clear Creek, Colorado, July 17 to August 28, collected by E. J. Oslar, four specimens from Dr. Barnes and two from Mr. Busck's collection.

Cotypes, Cat. No. 11,936 U.S.N.M., in Dr. Barnes and my collection.

This species is close to *graciliana* Krft. and *albiguttana* Zell., the former is similarly dotted on forewings but each dark dot is on a larger white dot; the latter is a very much smaller insect with the dots less in number but proportionately larger in size.

***Eucosma grotiana*, new species.**

Expanse 15–22 mm.

Palpi and head very dark cream or very pale fawn, former shaded with brown externally; it is flattened, upcurved with long scales on underside forming a round tuft extending $1\frac{1}{2}$ times eye-width beyond head, apical joint concealed; antenna dentate, light ochreous, a small dark brown dot on basal joint internally; thorax white with two transverse dark brown bars across patagia, near anterior and posterior ends similar bars across thorax at middle and before posterior end; abdomen and legs dark cream, latter dusted with brown.

Forewing. — White, with brown markings; the basal area is white with a curved line of brown scales from dorsum to costa, beyond is a narrow white area succeeded by a broken brown fascia at inner fourth which outlines the usual basal area, this is sharply angulated outward at middle of wing, and is obsolete on costal third. A prominent brown fascia, starts from middle of wing, curves outward with edges irregular to dorsum before tornus where it is widest. Before the apex is an irregular brown cloud, the upper larger part ovate, with an outer limb running into termen below middle and an inner limb as several black dots passing through center of ocellus; there is a faint line from its upper inner edge connecting with a costal spot at outer third. Above the cloud is a small patch of leaden scales. The costa is marked by a brown apical spot and two others above the cloud, the middle one the largest, each contains fine darker brown lines, and the white interspaces are divided by short brown lines. The male costal fold is smoky brown, with two dark brown spots and a paler one at outer end, between this and main costal spots are similar short brown lines or dashes on costa. There are several dark dots on middle of dorsal margin. The brown fascia and spots are usually outlined with blackish brown on their edges. Cilia, internally, gray speckled with brown, outer ends white.

Hindwing. — Light smoky brown, cilia whitish, with a broadly darker basal shade; underside the same. Underside forewing brassy brown, with light and dark costal and apical marks repeated.

Fifteen specimens, Chicago, July; Ames, Iowa, and Iowa, latter specimens labelled, "Ac. Cat. 118–121–267 C. P. Gillette"; Colorado

Nos. 628 and 2,610; Denver, Colo., June 22, Clear Creek, Colo., July 16-23; Bear Creek, Morrison, Colo., August 23, Osler; Pecos, New Mexico, August 25, at light, Cockerell.

Cotypes, Cat. No. 11,934 U.S.N.M. and my collection.

I have long had this species in my collection under *E. matutina* Grote and have doubtless so named it for correspondents; but a careful reading of Grote's most imperfect description, in which even the expanse is omitted, and examination of his figure, as well as examination of a specimen determined by Dr. Fernald, who was acquainted with Grote's type, before his collection was sold to the British Museum, convinces me that this large, showy species is distinct. The brown of the marking of *matutina* is much paler and more of a fawn shade, but the easiest marks of separation are the brown spots on antennæ bases of *grotiana* which are entirely wanting in *matutina*; in *matutina* on the white space between apex and fascia is a darker lance-like shade that connects with the latter, but this latter may occur on very dark specimens of *grotiana*, hence is hardly a good character. My conception of the expanse of *matutina* is 12-16 mm., much smaller in average size than *grotiana*.

***Eucosma costastrigulana*, new species.**

Expanse ♂ and ♀, 17-18 mm.

Head light ochreous brown; palpi whitish ochreous, rather loosely scaled above and below on second joint, tuft flattened, triangular; apical joint darker, very short, obtuse, almost hidden; antenna ♂ very finely ciliate, gray; thorax light ochreous brown, patagia and posterior end mottled with white; abdomen bleached straw or same shade as palpi and hindwings; legs pale ochreous, anterior pair shaded in front with blackish brown, and all tarsi ringed with same color.

Forewing. — Light ochreous brown or yellowish ochreous, shaded with darker brown on costal edge; this brown edging is interrupted from base to apex by white dashes or strigulations, these also cover the ♂ costal fold; there are four pairs before the middle and four pairs beyond the middle, the latter are more sharply defined than the former, the outer dash of each pair is usually longer than the inner, the first pair beyond middle sends a scattered line of white scales to inner bar of ocellus and a few leaden scales continue from the second and the apical pair. In the apex is a rounded white spot, its outer half resting on the cilia, it contains a few dark brown dots; a similar whitish ciliate spot is just above tornus opposite ocellus. Before the ocellus the wing is more or less speckled with white. Ocellus is well-defined, with two or three rather long horizontal black lines, vertical bars are shining whitish with a small dot of same color below, in tornus; before the inner bar are a few scattered black scales. Cilia, inner half whitish gray, finely atomized with black, and interrupted above tornus and in apex as stated, outer half shining pale ochreous. Underside grayish fuscous, with costal spots repeated.

Venation typical of *Eucosma*.

Described from four specimens, San Diego, Cal., July 8 and 10, collected by G. H. Field and bearing sub-labels "Tallys" and "Julian." I have also before me three other specimens labelled San Diego, Cal., July 27, W. S. Wright, that are very much whiter than the above, which I have no doubt are the same species, but bleached and rubbed from their longer exposure..

Cotypes, Cat. U.S.N.M. No. 11,932, and my collection.

***Eucosma sandiego*, new species.**

Expanse ♂ 25-27 mm., ♀ 27-28 mm.

Head light ochreous brown; palpi short, projecting scarcely half eye-width beyond head, brush compressed, concealing third joint, externally ochreous brown, internally whitish; antenna flattened laterally in male, serrate and finely ciliate, whitish brown; thorax brown, posterior end white; abdomen whitish fawn, the two anterior joints above white; legs whitish fawn, shaded with brown.

Forewing. — Rich chocolate-brown, marked with silvery white spots, which occur as follows: An irregular median streak from base to inner fourth, principally above fold, but sending a short spur, at its outer end along fold; beyond, before middle, is a quadrate spot in middle of wing; beyond this are two spots, one smaller, ovate in shape, is between tornus and lower angle of cell, the upper one elongate, resting beneath costa between middle and outer fourth; above its outer attenuated end is a small dot on costa; just before apex is an inwardly curved streak, sometimes divided by a line of ground color so that a dot forms at its inner end; just below apex is a smaller similar streak, below which three or four dots margin the termen to tornus, all of the spots are more or less distinctly outlined with darker scales. The dorsal edge is narrowly lined with silvery white from base to outer fifth. Cilia light brown, speckled with whitish.

Hindwing. — Pale fuscous, cilia whitish, with a slightly darker basal shade. Underside light ochreous gray; underside forewing ochreous brown, with the spots of upper surface indistinctly repeated in an ochreous shade.

Light form; marked as above but ground color is light ochreous brown or pale fawn; head, thorax and other parts of the same shade. The male costal fold is dark brown in the dark form and dark fawn in the light form, it is short extending only to inner fourth.

Four specimens, two males and two females, one pair of dark form and one pair light form. San Diego, Cal., September 15-29, George W. Field; Walters St., Cal., April, from J. B. Smith. Cotypes ♂ and ♀, Cat. No. 11,930 U.S.N.M. and in my collection.

This species is closer to *ridingsana* Rob. than any other of the silvery spotted *Eucosma*'s; it can be separated by the median line, which in *ridingsana* is continuous from base to beyond middle of wing; the silvery costal streak, on inner half of wing (absent on male fold) of *ridingsana* is entirely absent in *sandiego*; the terminal line of dots of

sandiego is also a distinguishing mark. There is a certain amount of variation in the spots of *sandiego* as in *ridingsana*, in fact in both species, seldom are the two wings replicas of each other. The occurrence of both sexes of both the brown and ochreous form is interesting and if there were not such uniformity in the spots and markings I would be inclined to think there were two races.

***Cydia granulata*na, new species.**

Expanse 15-18 mm.

Head, palpi and forewing greenish-yellowish white, the color can better be understood by saying it is white with a greenish yellow tinge. Thorax same color but a trifle more yellowish, a few brown scales at base of patagia; antenna dark fuscous but this dark shade almost hidden by greenish white pubescence; abdomen shining, whitish fuscous; legs same shade as thorax, tarsi annulated with brown.

Forewing. — Ground color as stated, almost evenly throughout covered with vertical dashes of dark brown, giving a granulated appearance; under a lens these dashes are in four principal horizontal rows, the upper marks the costa evenly from base to apex, in the row below costa the dashes are smaller than in the dorsal row and the one above it, in some specimens in these two lower rows, especially the dorsal, there is a tendency of the dark color to run together on the inner two thirds below the fold. The ocellus is practically free from the dark dashes, containing only a few scattered blackish dots, it is bounded on both sides by shining whitish bars, and there are a few scattered shining scales from outer third of costa to inner bar, and similar shining scales on costa before apex, between the brown dashes. Cilia whitish, speckled, a brownish basal line.

Hindwing. — Gray, cilia whitish, with a darker basal band; underside the same and with a few darker scales in apex and along costa before apex. Underside forewing greenish gray, costa whitish on outer half with dashes repeated.

Thirteen specimens, Platte Cañon, Colorado, August 23; Denver, Colorado, September 4; Boulder, Colorado, all collected by E. J. Oslar; Colorado, No. 2,298, from U. S. N. M.

Cotypes, Cat. No. 11,935 U.S.N.M. and in my collection.

***Steganoptycha bolliana* Slingerland (Pl. II, Fig. 1).**

Steganoptycha bolliana Sling., Rural New-Yorker, p. 401, June 13, 1896.

This species is very closely allied to *diludana* Clem., in fact from the latter part of Clemens' description, Proc. Ent. Soc. Philada., III, 513, 1864, it is likely that he also had the species before him, as he writes: "In another specimen the markings of the forewings were of a more pronounced blackish brown, especially in the middle of the wing and the curved streak near the tip of the wing is somewhat obscured by a blackish brown patch that adjoins it." I am not aware of any breeding record of *diludana*. In the South, where the pecan

grows, *bolliana* lives upon its leaves, but I have undoubtedly the same species from western Pennsylvania, in addition I have certainly seen others from various parts of New Jersey and New York State; as these Northern States' species cannot live on pecan, I have no doubt their larvæ will be found on one of the closely allied hickories.

Bolliana is much darker than *diludana*, the character by which it can be most easily separated is a black streak from middle of base to apex, which by an enlargement in basal third, another beyond middle and another before apex, represents three steps, or three large black spots connected by finer lines. The gray ground color has a greenish tinge, the dark marks have more of a mottled appearance than linear as is the case with *diludana*. The hindwings are dark, smoky brown, while in *diludana* they are light gray. The venation of both species is the same, it is shown by Fig. 1, Pl. III.

I have before me Professor Slingerland's original specimen, from which the cuts and remarks, establishing the specific name, were drawn, and by his courtesy am able to reproduce them below.

Through the courtesy of Professor Chittenden I have examined the following bred material in his possession: No. 2,848, on walnut, issued October, 1898, District of Columbia; on pecan, issued October 22, 1907, Washington, D. C., H. O. Marsh; No. 2,848, on pecan, issued August 12, 1898, Seabrook, So. Car.; pecan, issued April 21, 1906, and June 2, 1905, Waco, Texas. Also the following flown material: Washington, D. C., resting on trunk of pecan, September 30, H. O. Marsh, collector; (Chittenden) Oak Station, Allegheny Co., Pa., June 12-24, September 7, Fred Marlof; Pittsburg, Pa., August 19 to September 29, Henry Engel; New Brighton, Pa., September 5-17, F. A. Merrick.

The type of the species, so labelled, is in the Cornell University Collections, Ithaca, N. Y., and bearing serial label "C. U. Exp. No. 548, sub.—18 April '96"; compared specimens, homotypes, are in my collection.

I am indebted to Professor Chittenden for calling my attention to Professor Slingerland's article, which seems to have been entirely ignored by our catalogue makers.

A NEW DESTRUCTIVE INSECT ON PECANS (Rural New-Yorker, June 13, 1896, p. 401). C. E. P., Ocean Springs, Miss. — "I send some worms found on my pecan trees. The dark brown one spins a cocoon, works into the young buds as soon as the outer covering is

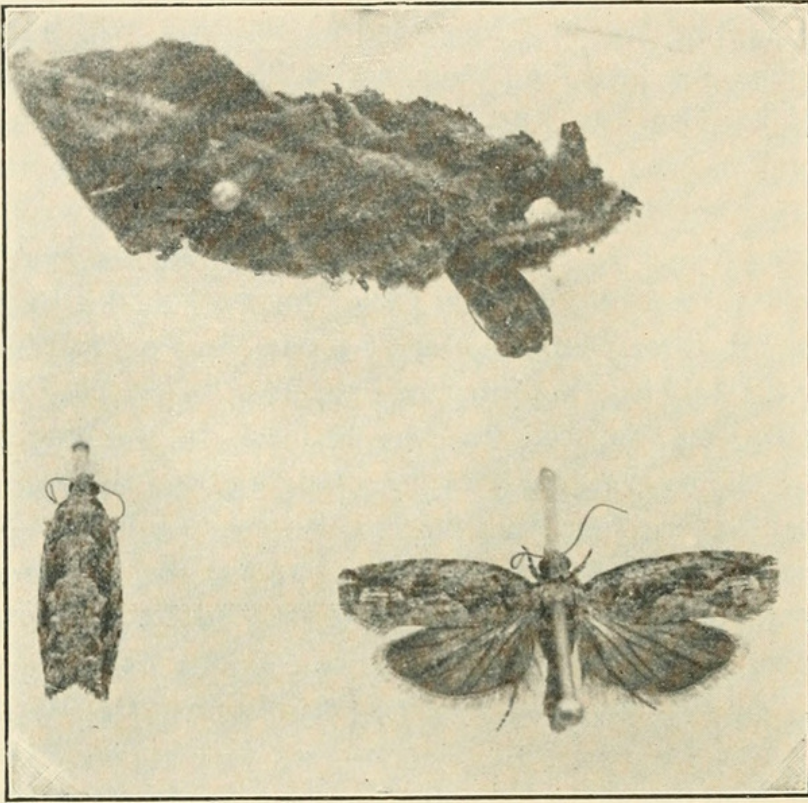
thrown off, and destroys the bud. Does it not belong to the Elater family? It seems to have two broods, one now, and the other in July. Or do they change from the small cocoon around the buds to the partly grown leaves, and form another cocoon? Or does the latter belong to a later brood? In the fall, the undersides of the leaves of some trees are fairly covered with their houses, but then I can kill them by spraying, as they feed on the leaves. What I want, is to get at them in the spring. Can it be done? The second white worm, with a dark head, works into the new growing shoots, and will destroy the fruit if it gets too plentiful. How can I get at it, as it is working inside the young shoots going down? Can you give me the history of both, as they develop into a serious pest?"

ANSWER BY M. V. SLINGERLAND: "The material sent by C. E. P. consisted of several opening pecan buds webbed together; two kinds of small caterpillars, one light green in color with black head and neck, the other dark brown, with similar black head and neck; and several pupæ inclosed in cocoons made by webbing the leaves together, as shown at *a* in Fig. 133. Judging from the appearance of the buds sent, the insects were doing very serious injury. The material was placed in some of my breeding cages at the insectary, and in a few days, there emerged from the pupæ some pretty little gray moths with blackish markings; two of them are shown natural size at *b* in Fig. 133. As we had nothing like them in our university collection here, one was sent to an expert for its name. His reply was that he had labeled the same insect in his collection, *Steganoptycha bollina*. His specimen came to him from Texas several years ago, but the name has never before been published; so C. E. P.'s pecan bud worm proves to be new to science. The moth is, probably, the parent of the green worm.

"I failed to breed the brown caterpillar which seems to work very similarly to the bud moth of our New York apple orchards. The early appearance of the moths, April 18, would indicate a second brood of the worms during the summer. Neither of the worms which I found in the material sent, has anything to do with the elaters or snapping-beetles; all were the caterpillars of small moths.

"Information about this new insect is so scanty that no definite advice can now be given as to the best time and manner to fight it. C. E. P. thinks that he can control it later in the season, and if this be true, it ought very materially to lessen the numbers to appear on the

buds in the spring. It is an extremely difficult matter to poison worms working on the opening buds of trees, for, as the leaves unfold so rapidly, new unpoisoned pastures are being constantly opened for them. I think, however, that two very thorough applications of Paris-green water, as strong as the trees will stand, while the buds are opening, would materially check these pecan bud worms."



Steganoptycha bolliana. (From Rural New Yorker.)

***Epinotia piceafoliana*, new species.**

Expanse 9.5 to 10.5 mm.

Head light gray, tinged with yellowish on top; palpi short, scarcely extending beyond head, tuft small, flattened, the scales at outer end not concealing the short, obtuse outer joint, color gray, shaded with blackish on outside, apical joint dusky black; antenna gray; thorax light cinereous gray, with a bronzy median shade; abdomen bronzy black, anal tuft gray-ochreous; legs gray, heavily dusted in front and tarsi ringed with bronzy black.

Forewing. — Costa nearly straight, slightly curving at base and apex, termen straight and only slightly oblique. Twelve veins, all free, accessory cell large, beginning midway between 10 and 11, outer end opposite 7; internal vein ending opposite 5. Color grayish white, crossed with blackish brown lines and narrow fasciæ. The basal area is defined by a heavier dark dentate line, from inner fourth of costa, curving outwardly to inner third of dorsum; before this are three or four parallel fine dark lines

on a gray-white ground, each starting with a blackish costal dot. From middle of costa to before tornus is a narrow dark fascia, interrupted by a white oblique line on middle of cell, below which an obtuse spur of the dark color on the outer edge of fascia. Between this fascia and basal area is a broad fascia of ground color traversed by broken dark lines, and on costa forming two white spots, each usually divided by a blackish dot. Beyond the dark fascia, the apical third is whitish gray, crossed by parallel dark line, starting as black costal dots and separated by four white costal spots. The apex is black and defined below by a white dash through the black terminal line and extending to outer edge of cilia. Ocellus not defined. Cilia dark leaden-gray.

Hindwing. — Smoky black, cilia dark gray, with a darker basal line. Eight veins, 3 and 4 stalked. Underside both wings dark smoky gray, costal spots repeated on forewing, and the latter grayish white below fold.

Twenty-eight specimens, Montclair, N. J., June 1 to 5, some bred from larvæ feeding on the needles of black spruce, *Picea mariana*; others taken resting on the twigs or flying about the same trees; Cincinnati, Ohio, May, 15, Miss Braun.

The mature larvæ are about 6 mm. long, robust, yellowish green. Head, p. t. shield and thoracic feet black. They mine the needles in the same manner as the larvæ of *Recurvaria picealla* K. When full grown they spin a dense white cocoon between the needles, close to the twig. I have taken the larvæ the first warm days of spring in April and early May, and they have pupated as early as April 28 and as late as May 18. Breeding number K. 510. In size and coloration this species is very much like *Eudemis vacciniana* Pack.¹

***Enarmonia articulata*na, new species.**

Expanse 13.5 mm.

Head and thorax bronzy black, minutely dotted with fuscous; palpi whitish inside, shaded with fuscous outside; posterior ends of patagia white; abdomen fuscous, banded with white beneath; legs whitish, front tibiæ annulated with black.

Forewing. — Velvety blackish brown. The inner fourth is overlaid with shining olivaceous gray, beyond this the lower two thirds and apical fourth are finely and evenly dotted with pale olivaceous-ochreous. On the middle of dorsal margin is a brilliant white spot, slightly wider than high; its upper edge connects with an oblique narrow fascia from inner third of costa, which is shining in the middle of wing, and whitish on costa where it is also germinate. A narrowly, very slightly germinate

¹ Since the above was written, I have received a series of the European species *Steganoptycha nanana* Tr. and careful comparison suggests that the two are identical. Meyrick in Hand Book of British Lepidoptera, p. 474, states that the larvæ of *nanana* are brown, with black head and plate, feeding on *Pinus abies*. It is not impossible that future observation may prove the identity of the European and American forms, especially as the species could be easily introduced, attached, in one of its stages to imported trees.

line starts from costa between middle and outer third, which runs to inner vertical ocellic bar. A short oblique streak is beyond and close to this, on costa and close to apex are two short white streaks, the inner one the longer and outwardly curved. The ocellic space is finely atomized with olivaceous cut by several horizontal black dots and lines, a line below, above it a dot, then another line (at about the middle of wing) above which are three superimposed dots, slightly inwardly oblique, to upper fourth of wing, between two white costal dashes; the ocellic spot is bounded on either side by a vertical shining metallic bar. The only spaces on the wing of the velvety brown-black ground color, free from the olivaceous atoms, are on upper two fifths, in the middle of wing, between the two prominent costal streaks, on the inner edge of the inner costal streak and on both sides of the white dorsal spot. Cilia shining fuscous, preceded by a fine black line.

Hindwing.—Whitish at base shading with dark brown outwardly, cilia whitish; underside the same. Underside forewing plumbeous brown, costal spots lightly repeated.

Two specimens, Cincinnati, Ohio, April 30, Miss Braun; New Brighton, Pa., H. D. Merrick, June 5. Cotype in Merrick Museum, and my collection.

***Enarmonia multilineana*, new species.**

Expanse 13–14 mm.

Head hoary black, mixed with white scales in front; palpi white, outside of median joint and apical joint shaded with light fuscous; antenna white, annulated with grayish fuscous; thorax mottled gray; patagia whitish posteriorly; abdomen cinereous gray; ♂ claspers whitish outside, yellowish inside and narrowly edged with fuscous posteriorly; legs whitish, annulated with dark fuscous.

Forewing.—Dark grayish fuscous, with many whitish, outwardly oblique, lines from costal and dorsal edges. A pair of these lines, from costa before middle, in the middle of wing, meet a pair from inner half of dorsal margin; the apex of this junction is half way between base and outer margin; before these lines the basal space is nearly uniformly of the mottled ground color, but indistinctly dotted with whitish on both costal and dorsal edges. Succeeding these lines is a darker fascia of about their width on upper half of wing but increasing to double the width on dorsum. Beyond this is a broken pair of whitish lines, from costa into ocellic spot. Between the latter and apex are three pairs of white costal dashes, the interspace of each pair is a darker, black shade, sending line of this color into termen. From the inner, of the middle pair of costal dashes, a faintly blue metallic line runs to the termen below apex, where it ends in a white patch in the cilia. A similar white cut occurs in the cilia above the tornus and another one below it; these last two are connected together by a white streak within the narrow black preciliate line. Ocellus gray, with three short horizontal black bars, bounded on either side by vertical bars of faintly blue metallic scales. Cilia, except as noted, shining leaden fuscous.

Hindwing.—White internally, edged with dark fuscous, narrowly at base and broadly at apex; cilia whitish. Underside the same. Underside forewing dark gray, with whitish costal and ciliate lines repeated.

Four specimens, Aweme, Manitoba, May 16, June 26 and 29,

Norman Criddle; Miniota, Minn., Merrick Museum. Cotype in Merrick Museum, and my collection.

This species is close to *garacana* Krft. but can be easily separated by the white hind wings.

***Tortrix triangulana*, new species.**

Expanse 14.5–15.5 mm.

Head whitish gray speckled with light fuscous; palpi externally same as head, internally whitish, apical joint fuscous at base, tipped with whitish; antenna, male ciliated, about 1, light gray annulated with darker fuscous; thorax speckled blackish brown, posterior end and patagia tipped with cream-white; abdomen light gray, anal joint ochreous gray; legs cream-white dusted with brown.

Forewing. — Grayish white with a yellowish tinge, strigulated and marked with blackish brown. The most prominent mark on the wing is a large blackish triangle, with nearly even sides, resting on costa beyond middle, its lower point extends to middle of wing. There is an obscure basal area on inner fourth, blackish along costa and dorsal margins and with two wavy dark transverse lines. On costa between triangular spot and apex are two quadrate spots, the outer one the larger; the apex is gray enclosed with a fine dark line. The balance of wing is gray with vertical darker lines, one between basal area and triangular spot, a waving line connecting lower point of triangle with dorsal edge and two or three irregular lines beyond. In the inner half of wing, especially on and adjoining the fold, the dark lines are outlined with ochreous scales. Cilia concolorous.

Hindwing. — Smoky fuscous, cilia same with a paler basal line; underside whitish gray vertically strigulated with brown. Underside forewing dark smoky fuscous, with whitish geminate costal spots.

Described from three males, one from San Francisco, two from San Diego, California, July 27–31, collected by W. S. Wright, and received through U. S. National Museum.

Cotypes, Cat. No. 11,933 U.S.N.M. and in my collection.

Of the San Diego specimens one is very badly rubbed, the other, in fair condition, is much whiter and the markings blacker than the San Francisco specimen. It is nearest to the very strongly and somewhat similarly marked *T. lomonana* Krft.

***Phalonia punctadiscana*, new species.**

Expanse 12–13 mm.

Head cinereous gray, speckled with fuscous; palpi light gray within, shaded with fuscous externally, apical joint short, blunt, black, tipped with gray; antenna dark fuscous; thorax cinereous gray, broadly mottled with brown-fuscous; abdomen dark gray, tuft cinereous; legs yellowish white, anterior pair shaded with dark brown.

Forewing. — Light olivaceous gray on inner half of wing, heavily speckled with darker gray, especially along basal third of costa; the basal area is not defined, but that part of wing is clouded with darker scales. There is a well defined reniform spot of light brown in middle of wing, the upper end resting on costa, it reaches to

fold, its inner edge is sharply incised above middle, the outer edge is convex, with an obscure spur pointing toward costa from its middle. There is a similar brown shade between end of cell and termen, with a narrow projection touching costa at outer fifth, below costa it is much enlarged and rounded with two obscure spurs touching termen about the middle; both of these brown shades are horizontally streaked with darker brown on the middle of wing, and edged with black on the inner one, forming a conspicuous dark discal streak, the space between them, or upper half of wing is silvery gray, overlaid with pink; costal edge of outer half narrowly yellow, with two fuscous dots between the brown shades and two larger ones between the outer shade and apex. Cilia concolorous, with a darker basal line and a paler spot at end of each vein along the termen.

Hindwing. — Cinereous gray lighter basally, underside light cinereous, with vertical fuscous reticulations on outer half. Underside forewing, smoky fuscous, with a fine light line before cilia and the latter spotted with whitish.

Five specimens, Oak Station, Pittsburg, Pa. (Fred. Marloff), July 29 to August 8. Nearest *P. nonlavana* Krft. most easily distinguished by the dark, horizontal discal streak.

***Commophila? umbrabasana*, new species** (Pl. III, Fig. 2).

Male. — Expanse 14–17 mm., female 20 mm.

Head pale ochreous; palpi darker and shaded externally with brown, extends beyond head nearly twice width of eye, second joint tufted above, flatly triangular, scales rather compressed; apical joint very short, obtuse, light brown, paler at tip and with a few darker scales at its base; antenna, basal joint enlarged with compressed scales, brown on basal half, pale ochreous outer half, beyond basal joint it is ciliated on lower side, ciliations 1, color whitish brown; thorax brown, same shade as basal sixth of forewing; abdomen light grayish ochreous; legs same color, heavily dusted with blackish brown, posterior tibiae tufted below.

Forewing. — Very pale fawn, or light ochreous brown, vertically strigulated with dark brown, these dark scales tend to form a more or less well-defined triangular dorsal spot, beyond middle, sharply defined above by outer end of fold; in some specimens the inner and outer edges of the spot are heavily overlaid with leaden metallic. The basal sixth is brown, with a bluish iridescent hue in certain lights. The costa is lightly marked by the darker strigulation, four spots on outer third are the most distinct. Above the dorsal triangular spot is a conspicuous brown dot, on the lower angle of cell, this is absent on specimens that are slightly rubbed. In some specimens the apical third is heavily strigulated with grayish fuscous, this shade margining both costal and dorsal edges to before middle. Cilia light ochreous yellow.

Hindwing. — Above and beneath light grayish ochreous. Underside forewing shining, light coppery brown.

Described from ten specimens, three from San Diego, Cal., May 6, collected by W. S. Wright; one Colfax, Placer Co., Cal., December, collected by A. H. Vachell; six, Alameda Co., Cal., June 17, collected by G. R. Pilate, for Miss Braun.

Cotypes, Cat. U.S.N.M. No. 11,931, Miss Braun's and in my collection.

This species is placed temporarily under *commophila* as this genus is understood in our North American lists, the venation is practically the same, but there are characters which will later cause its removal to probably a new genus.

Forewing. — Two and one half times as long as broad, costal and dorsal margins nearly parallel; costa strongly arched at base and curved downward at apex; apex rounded, obtuse; termen very slightly convex, angle 30° ; tornus rounding into dorsum without defined angle. Venation; 1^b furcate two fifths; 2 from outer eighth of cell; 3 and 4 approximate, the latter strongly bent down; 5, 6 and 7 about equally spaced, latter to costa before apex; 8 very close to but not connate with 7; 9 from outer angle of cell; 11 half way between 10 and 12. Cell is very broad at outer end, equal to one third width of wing, transverse vein angles outwardly from 9 to 7 then inwardly (paralleling termen) to 4. No secondary cell.

Hindwing. — Slightly broader than forewing, costa gently arched, apex obtuse, termen slightly indented above 5, tornus, dorsum and inner angle evenly rounded. Venation; 1^b furcate $\frac{1}{3}$, two from outer third, 3 and 4 connate from lower angle of cell, 5 remote from 3 + 4, 6 and 7 connate from upper angle. Cell very short, about two fifths, transverse vein strong, obliquely inward from upper angle to middle of cell, thence outward to lower angle. A pencil of long hairs reposes on the costa, arising from a process, at base of costa, this is overlaid with spatulate scales. Vein 1^a is heavily pectinated, at base of wing, on upper surface.

***Choreutis tacubayella*, new species.**

Expanse 10 mm.

Thorax olive-brown, very finely speckled with white, with a white spot on posterior end; abdomen dark fuscous. Each joint whitish posteriorly, anal tuft blackish; legs, underside of thorax and underside first two abdominal segments white, slightly dusted with fuscous. (Head missing.)

Forewing. — Olivaceous brown, with an ochreous tinge at base, outer half overlaid with whitish tipped scales, giving a speckled appearance. There is a conspicuous pure white fascia, arising from dorsum between inner fifth and third, it reaches to upper vein of cell; it is broadest on dorsum, inclines slightly outward and diminishes in width to upper end; the upper part is faintly dotted with pale fuscous. The principal metallic marks are brilliant ruby red and occur as follows: a broken transverse line just beyond the white fascia; two clusters in outer fourth of wing below middle on a large velvety black ovate spot, which is divided vertically by an olivaceous line; above this below costa is a smaller spot and a similar one before and below it, these are both circled with black; bordering termen is a fine line on upper half of wing; in middle of wing, before end of cell is a small ovate blackish spot, in which are scattered metallic scales. The costa is marked by three white dots, one before the middle, one just beyond middle and one at outer fourth; the inner one is at the end of the inner metallic line, below the middle one are a few such scales, while the outer one is above the outer metallic spot. The veins before apex are overlaid with black, there is a median black dash at base and another in middle of wing. The termen is narrowly edged with olivaceous ochreous. In certain lights a few scattered metallic scales can be seen, especially on base of costa, in middle of wing at base, above

dorsum at outer fourth, and evanescently the edges of the ruby red spots are so colored. Cilia olivaceous brown, finely tipped with white.

Hindwing. — Bronzy brown, cilia whitish. Underside both wings brassy brown, the lower wing blotched with white, and the costal spots repeated on the upper.

One ♂, Tacubaya, Mexico, collected by Otis W. Barrett. Type in my collection.

***Argyresthia alternatella*, new species.**

Expanse 10–12 mm.

Head white; palpi golden; antenna golden fuscous, basal joint paler; thorax white, patagia and posterior end golden; abdomen and legs whitish ochreous.

Forewing. — Golden ochreous, reticulated with brown oblique fasciæ, there are five brown spots on costa, about equally spaced between inner sixth and outer fifth, there are three similar spots on dorsal margin, at inner fourth, middle and outer fourth; broken brown fascia join the costal and dorsal spots, somewhat like a double or joined letter **WV**. There is a streak of brown on dorsum at base, and the apex of wing is lightly reticulated with this color. Cilia light brownish ochreous on costa and upper half of termen becoming pale fuscous below middle.

Hindwing. — Light fuscous, cilia with a faint ochreous tinge.

Eight specimens, Essex Co., Caldwell and Watchung Mts., N. J., May 8–21.

Type in my collection.

Mr. Busck, to whom these specimens were shown, thought they might be *A. cupressella* Wlsm. (described from California) which they superficially resemble, but the two species can easily be separated by the venation. *Cupressella* has 11 veins in forewing and 7 in hindwing, while *alternatella* has 12 and 8 respectively with 7–8 of former stalked; the latter species is quite a little larger.

***Argyresthia laricella*, new species (Pl. III, Fig. 5).**

Expanse 10–12 mm.

Head and palpi whitish ochreous, latter shaded with light fuscous externally on median joint, face and antennæ white; thorax shining whitish ochreous; abdomen paler, legs whitish, anterior pair and tarsi of all dusted with brown.

Forewing. — Neary immaculate, very pale shining ochreous, the inner half of costal edge and narrowly in the fold is more or less of a darker shade. Cilia whitish ochreous.

Hindwing. — Same color as cilia of forewing.

Six specimens bred from larvæ living in the terminal twigs of *Larix americana*, at Mer Bleue, Ontario, Canada. In pupa June 19 (when found), issued July 3–6.

Cotypes, Catalogue No. 12,059 U.S.N.M., Dr. Fletcher's and my collection.

The discovery of this species is due to Dr. Jas. Fletcher, with whom I was on a collecting trip to a wonderful sphagnum swamp, about twenty miles south of the Ottawa River, at Carsbad Station, Ontario. He tells me that he had noticed for some years that insects were killing the twigs of the larch and had occurred in sufficient numbers to be of possible economic importance. The larvæ bore through the terminal twigs, for from three to six inches, effectually killing them and stopping further growth. Mr. Busck is responsible for the generic determination.

***Chrysopora versicolorella*, new species** (Pl. III, Fig. 3).

Expanse 9-10 mm.

Head and antenna bronzy black, latter with whitish pubescence; median joint palpi bronzy black, apical joint ochreous gray; thorax iridescent gray; abdomen grayish fuscous, anal tuft and legs ochreous white, latter banded with dark brown.

Forewing. — The white ground color occurs as follows: on the lower three fifths of wing from base nearly to middle; a large triangular spot on middle of costa which sends an attenuated fascia to dorsum, this is largely iridescent; a pure white spot on costa before apex, a smaller one below it on middle of termen and another below this above tornus; in some specimens these spots are so nearly connected together that they form a very angulated terminal fascia. Above the white inner patch is a blackish patch interrupted with pale blue metallic scales, a broad ovate spot of this color divides it beyond its middle, touching the costa and continuing as an iridescent fascia over the white area to dorsum. Between the middle and terminal whitish spots or fasciæ is an irregular patch of olivaceous ochreous, more or less overlaid with metallic pale blue or pink on the lower and outer spurs. There is an oblique blackish brown streak involving the apex and apical cilia, the inner end of this indents the outer white costal spot and the one below it. Cilia fuscous, paler outwardly, broken by white opposite the tornal white spot.

Hindwing. — Pale shining gray, cilia and underside the same. Underside forewing dark iridescent gray.

Six specimens, Carmel, California, April, collected by Arthur H. Vachell.

Type in my collection.

The three species accredited to North America can be separated as follows:

Dorsal margin on inner half of forewing white.....	<i>versicolorella</i> K.
Dorsal margin on inner half of forewing not white.....	I
I. Forewing with transverse silvery fascia before middle.....	<i>hermannella</i> F.*
I. Forewing with fascia interrupted in middle.....	<i>lingulacella</i> Cl.

* I am not convinced that this European species actually occurs in the North American fauna.

As will be noted from Pl. III, Fig. 3, the venation of this species is not identical with that of *C. lingulacella* Clem. as shown on Pl. XXIX, Fig. 9, Proc. U. S. N. M., Vol. XXV, by Busck, veins 3-4 of forewing are distinctly connate in *versicolorella* while in *lingulacella* they are well separated, as shown by Fig. 4.

***Gelechia invariabilis*, new species.**

Expanse 18-22 mm.

Head whitish in front, above suffused with light brown; palpi, second joint white mottled with dark gray, terminal joint black speckled with white; antenna light brownish cream color, basal joint darker; thorax light ochreous brown, shoulders of patagia, shade across middle and posterior end reddish brown — the shade known as terracotta red. Abdomen light ochreous; legs white, shaded with fuscous.

Forewing. — Costal half whitish ochreous, dorsal half reddish terracotta; the division line is dentate and very sharply defined, the red touches costa at base, thence obliquely to fold at inner third, it then bulges out above the fold reaching middle of cell before middle of wing, the upper edge of prominence is rounded from where it curves concavely to middle of wing at end of cell, thence obliquely to tornus. Separated from the dorsal red shade by a narrow line of light ochreous ground color, the red is continued along termen. In apex is a large reddish brown spot, and two others of same size on costa, between veins 8 and 10. The inner two thirds of costa is narrowly edged with black and on the termen is a line of same color broken with white over each vein. The dorsal margin is narrowly edged with black adjoining the red area, and the latter is somewhat dotted and streaked with black; the upper edge of red area is strongly marked with black, except at extreme base. Cilia grayish white, dotted with fuscous.

Hindwing. — Light gray, cilia tinged with cinereous, underside the same. Underside forewing ochreous brown, costal spots repeated, tinged with purplish on dorsal half.

Nine specimens, Stockton, Utah, September 5-9, 1906, collected by Tom Spalding.

Type in my collection.

In venation and structure this species is like *variabilis* Busck, there is also a superficial resemblance, but regardless of the characteristic red dorsal edging of *invariabilis*, the position of the black median streaks is very different, in the latter they are deeply indentate while in the former they are straight lines.

***Gelechia terminimaculella*, new species.**

Expanse 17-18.5 mm.

Scales of head white, tipped with shining fuscous; second joint of palpi grayish white, lightly speckled with blackish brown, and a shade of the latter color at base beneath, apical joint dark brown, dusted with white in the middle and at the tip; antenna fuscous and white annulations; thorax stone gray; abdomen yellowish gray; legs gray, the anterior tarsi dark brown, annulated with whitish gray at the joints.

Forewing. — Stone gray, marked with black. The base of costa is blackish gray, from the inner fifth a short black dash joins an oblique inverted comma-shaped mark that extends to fold. Between this and base there is a small black dash in the middle of wing and a dot on dorsal margin close to base. In the middle of cell are two black dots, the upper one nearer the base; above them the costa is slightly sprinkled with black scales. At the outer third of costa there is a rounded shade of blackish scales, extending down to middle of wing; on the inner edge of this shade, at end of cell, is an oblique, elongated black spot. The terminal line is a row of dots, beginning with the costal cilia and following the termen to tornus, one dot between each two veins; before these dots the venal interspaces are very slightly dusted with black. Cilia concolorous.

Hindwing. — Very light gray, cilia with a faint yellowish tinge; underside the same, with a clouding of fuscous along costa and in apex. Underside forewing dark fuscous, with the terminal dots faintly repeated.

Six specimens, Aweme, Manitoba, June 13-16, Norman Criddle; Rounthwaite, Manitoba, June 15, L. E. Marmont.

Type in my collection.

The shape of wings and venation is exactly like figure of *Gelechia serotinella* Busck, Proc. U. S. N. M., XXV, 1902, the palpi structure agrees with *G. alternatella*. The markings of the species are close to *fondella* Busck; it can easily be separated by its larger size, the separated dots on disc and by the prominent terminal line of black dots.

***Gelechia alternatella*, new species.**

Expanse 14.5-15.5 mm.

Thorax and head mottled brown and bronzy black, darkest posteriorly, face brown mixed with white scales; labial palpi, second joint, white at base both inner and outer surfaces, lower edge mottled with dark brown, this mottling extends over the outer half both inside and out, apical joint very dark brown, sparsely dotted with white; antenna black, annulated with white; abdomen, anterior edge each segment dark bronzy brown, posterior edges broadly white, and segment brown; legs black, annulated with white at joints; tongue long, basal third scaled with whitish gray in front; ocelli present.

Forewing. — There are four dark brown transverse streaks or fasciæ, on a whitish gray ground color, all of nearly equal width dividing the surface into sharply defined alternate streaks of these colors. The brown is as follows: from the costa at base an oblique fascia goes below fold but does not reach dorsum; the base before and below it is whitish gray; before the middle is a transverse fascia slightly broader on costa and denticulate in middle, on inner edge; there is a broad shade of brown on costa from middle to outer fourth, occupying the upper third of wing, from the middle of this a darker brown fascia curves obliquely to tornus; there is a broad subterminal fascia from apex to tornus; terminal line, beyond this is whitish gray. The subterminal fascia makes a small brown spot in the costal cilia before apex, and in the whitish space before it is another brown cilia spot on costa. Cilia gray at apex, shading into whitish below, with three small clusters of darker scales on upper half of termen. The gray-white ground color is somewhat mottled with brown scales.

Hindwing. — Light brassy fuscous, cilia gray, underside whitish gray; underside forewing bronzy brown somewhat overlaid with white.

Five specimens, Aweme, Manitoba, May 12 to 25, collected by Norman Criddle; ten specimens from A. J. Osler, Chimney Gulch, Golden, Colo., April 14.

Type in my collection.

The venation, shape of wings and structure of palpi agree with figure of *Gelechia terrella* Hbn. in Meyrick's Hand Book British Lepidoptera, except that vein 5 of hindwing rises about one third from lower angle of cell and veins 6 and 7 are separate. Mr. Busck regards this species as *G. virgella* Thnbg. (*longicornis* Curt.). I have carefully compared a series of this European species and do not agree with his opinion.

***Coleophora elæagnisella*, new species** (Pl. III, Figs. 7 and 8).

Expanse 15 to 21 mm.

Head, thorax and palpi dull white (or white with the least trace of a grayish shade), palpi shaded with gray externally; antennal brushes white in front, gray behind, twice as long as basal joints; antenna white with broad cinereous annulations; abdomen cinereous; legs dull white, anterior pair dusted with gray in front, all faintly darker between joints.

Forewing. — Dull white, slightly shining, dotted sparsely to heavily with dark brown in horizontal rows, except at extreme base; the dark dots are more closely spaced in apical third of wing. Nowhere do they congregate into larger spots or lines. The white color extends out to the end of the cilia at extreme apex, and is heavily dotted with dark brown; below apex cilia is grayish cinereous.

Hindwing. — Shining grayish fuscous, cilia cinereous. Underside both wings the same.

Winter case about 3 mm. long, the ends and under surface are dark brown, on the upper surface is a large grayish patch: the case is scimeter-shaped, dorsal edge well rounded, radius about 100° , ventral edge with an enlargement in the middle, mouth at an angle of about 45° from the ventral line. It is securely attached by the mouth end only to the bark, sometimes in a fork.

Mature case, 10–12 mm. long, 2.25 mm. wide, 1.75 mm. thick; of the same general shape as the winter case but less rounded on the dorsal edge, and the hump on the ventral edge is depressed in the middle. The appearance of the mature case would indicate that it was not entirely new, but that the winter case had been used and enlarged by splitting along the ventral line and broadening it out with gray silk, then adding to the open end as the larva required more room. The old part is blackish brown, middle cinereous gray, outer end dark brown, the additions are added on the same angle as the mouth opening, giving an oblique direction to the ridges.

Fig. 7 shows maculation of forewing, Fig. 8 the large mature case and the small winter case, all three drawn to same scale.

Described from twelve specimens and many cases all taken in the Central Experiment Farms at Ottawa, Ontario, feeding on *Elæagnus argentea* and the closely allied *Hippophoe rhamnoides* and *Shepherdia argentea*. I am indebted to Dr. James Fletcher for the botanical names and to both him and Mr. Arthur Gibson for collecting the winter cases.

Type in my collection.

In the middle of June, 1907, the mature cases were found most abundantly, in fact so much so, that the shrubs of *Elæagnus* and allied plants very perceptibly showed the effect of the operations of the larvæ. The latter were not sufficiently full fed at this date and only one completed its transformations on July, 24. In 1908 Mr. Gibson sent me about twenty mature cases, which produced eleven specimens between July 4 and 25.

***Nepticula slingerlandella*, new species.**

Expanse 3.5 to 5 mm.

Head and frontal tuft orange, antenna eye-caps and side tufts white; antenna whitish gray; thorax bronzy black; abdomen light gray; legs yellowish white, posterior tarsi finely ringed with black.

Forewing. — Bronzy black with a shining white fascia at outer third. Cilia and hind wings light gray.

Type in my collection, numerous topotypes in Cornell University collection; all bred from blotch mines on leaves of plum in domestic orchards near Rochester, N. Y., by Prof. M. V. Slingerland, in whose honor the species is named. In a forthcoming bulletin Professor Slingerland will give a detailed account of the life history.

***Incurvaria? dietziella*, new species (Pl. III, Fig. 6).**

Expanse 6.5 to 10.5 mm.

Antenna finely serrate, thick, about two thirds as long as forewing, purplish black. Labial palpi short, do not extend beyond face, clothed with long yellow hairs mixed with brown. Max. palpi, if present, probably short, folded, concealed by dense hairs on face. Tongue well developed, scaled above. Eyes round, prominent, wide apart. Ocelli present. Head and face covered with long, light ochreous yellow hairs. Abdomen bronzy black. Legs, anterior and middle pair bronzy black, posterior pair grayish brown, whitish at joints and the tibiæ much thickened with appressed scales, from the upper side of which are emitted a dense pencil or cluster of hair-like scales.

Forewing. — Ovate-lanceolate, obtusely pointed at apex; 12 veins, 2 from lower angle of cell, 7 and 8 stalked both to costa; 1^b furcate at base. Cell widened in outer third by absorption of accessory vein. Between 3 and 9 transverse vein is not tubular. Color bronzy black, finely dotted with metallic blue. The ground color by reflected light is golden and purple bronze; the thorax exhibits the same reflections. Cilia grayish below apex, above concolorous.

Hindwing. — Broadly lanceolate, costa arched at base nearly straight to outer fifth, apex obtusely rounded, termen oblique, straight; dorsal margin nearly parallel to costa. Eight veins, 5 and 6 short stalked, 7 from upper angle of cell; 1^b furcate at base; between 3 and 7 transverse vein is not tubular. Color bronzy brown, slightly shining, but without the brilliant gold reflections of the forewing; grayish white above cell; cilia shining grayish brown. Underside both wings shining golden gray.

Described from about fifty specimens all taken in Essex County Park, New Jersey, flying about or resting on the leaves and flowerets of dogwood, *Cornus candidissimus*, May 30 to June 15.

Cotypes, Cat. No. 12,058 U.S.N.M., in Dr. Dietz's and my collections.

Named in honor of Wm. G. Dietz, M.D., of Hazleton, Pa., who has recently revised the very difficult group to which this species belongs. Dr. Dietz writes me that he believes that this species represents a new and valid genus, but I prefer to leave this for future settlement, which will be aided by the diagnosis and figures. The specimens were all collected on two small clumps of *C. candidissimus*, flying in the bright sunshine, morning and afternoon; I visited these clumps nearly every week during the summer and made exhaustive efforts to find some clue to the life history, but without success.

This species is much like *P. acerifoliella* Fitch but besides the structural differences, the forewings of latter are brilliant metallic blue, the hindwings are grayer and the head tuft is a deeper, brighter orange.

EXPLANATION OF PLATE.

- FIG. 1. Venation *Steganoptycha bolliana* Sling.
- FIG. 2. Venation *Commophila umbrabasana* sp. nov.
- FIG. 3. Venation *Chrysopora versicolorella* sp. nov. .
- FIG. 4. Venation *Chrysopora lingulacella* Clem. .
- FIG. 5. Venation *Argyresthia laricella* sp. nov.
- FIG. 6. Venation *Incurvaria dietziella* sp. nov. .
- FIG. 7. Venation forewing, *Coleophora elæagnisella* sp. nov. .
- FIG. 8. Cases of *Coleophora elæagnisella* sp. nov.

WILLIS GRANT JOHNSON.

The untimely death of Professor Johnson at the age of forty-two years removes from our midst an able student of the broader problems of economic entomology. On March 11, 1908, at his home in New York City he succumbed to spinal meningitis. Mr. Johnson was born in 1866 at New Albany, Ohio, and received his earlier collegiate



Kearfott, William Dunham. 1908. "New North American Tortricidæ and Tineina." *Journal of the New York Entomological Society* 16, 167–188.

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