

CONTRIBUTIONS TOWARD A MONOGRAPH OF THE NOCTUIDÆ
OF TEMPERATE NORTH AMERICA—REVISION OF SOME TÆNIO-
CAMPID GENERA.

BY

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(With plates XXII-XXIII.)

Of a somewhat distinctive habitus is a series of genera grouped about the genus *Teniocampa*. Without any isolating characters, they form an intermediate series allied to *Mamestra* on the one hand, and to the *xyliniform* genera on the other, with little spurs in all directions—even to the *Heliothinæ* through *Trichoclea*. All of them have hairy eyes, and they constitute a large part of the hairy-eyed genera in our fauna. As a whole the forms treated in this paper are easily separable from all the other hairy-eyed genera by the habitus—that peculiar feature which is appreciated at sight, but which often defies description. As a rule the species are hairy, or, if the vestiture is scaly, it forms no distinct tuftings. The sole exception of the genera treated here is *Barathra* Hbn., which distinctly belongs to the earlier series, and is included here simply from motives of convenience. From like motives *Nephelodes* is omitted, though it belongs more nearly here than where it stands in Mr. Grote's list. It is an important link in the series connecting *Teniocampa* with *Mamestra*. From *Anarta*, the round eyes distinguish this series; from *Leucania* the color and maculation, which is never pale, strigose. The other hairy-eyed genera are distinguished in my synopsis of genera (Bull. Bkln. Ent. Soc., Aug. 1882, vol. v.). The possession of round hairy eyes and a habitual resemblance to *Teniocampa* determines the reference here. It is not intended to convey the idea that there is any such association between the genera treated here as to authorize any definite terms expressing family or tribal relation.

Barathra Hbn. has already been said to resemble habitally the genus *Mamestra*. It is our only hairy-eyed genus with a distinct claw terminating the anterior tibia. The front is not modified. There are two American species occurring at opposite sides of the continent.

Trichoclea is peculiar by the rough, full clypeus, and the peculiar armature of the fore tarsi which have the outer side furnished with a series of claw-like spines. The habitus is like *Teniocampa*, and yet is not unlike some of the *Heliothid* genera.

Scotogramma contains large species with powdery squamation, dark-gray colors, and a strong resemblance to *Mamestra* in habitus. It has none of the tuftings, however, and the characters are negative rather than positive. Mr. Grote has referred two of the species to

Anarta despite the round eyes, while Moeschler referred his *phoca* to *Dianthœcia*.

Ulolonche contains small species with trigonate primaries and weak characters, save as to the genitalia, which are alike in all the species. The genus contains a *Mamestra*, a *Taniocampa*, and a species described as new, but which I shall not be much surprised to recognize eventually as a described species of *Orthosia*.

Himella is a typical *Taniocampid* genus with reddish, luteous, or dusky colors, close, smooth, glistening vestiture, and rather wide, large wings, compared with the body.

The composition of the genus is quite different from that proposed by Mr. Grote, *intractata* being assumed as the type, since *furfurata* is a *Taniocampa*.

Crocigrapha is recognizable by the retracted anal angle of primaries, the wings being also rather elongate.

Orthodes contains species with rather small, broad or obtuse winged primaries and generally more or less glistening vestiture. The under side of primaries in the male has the cell rather densely clothed with fine, long, silky hair.

Taniocampa contains species varying quite considerably in wing form, vestiture, and general habitus, several types of genital structure being apparent. Six groups are recognizable, mainly held together by their distinction from *Orthodes*, viz, the cell not clothed with silky hair.

Perigrapha is distinctive. The fore wings have the apices marked, acute, the thorax has an anterior divided crest, and a larger, truncate, basal tuft, while in most of the species the ordinary spots are confluent, or at least contiguous.

In order to bring out somewhat more comprehensively the relationships or differences in the genera, and the groups of *Taniocampa*, the following table is added:

Fore tibiæ with a claw at tip ; thorax tufted ; habitus of a <i>Mamestra</i> ; front smooth.	BARATHRA.
Fore tarsi with a series of long spines or claws outwardly ; habitus of a <i>Taniocampa</i> ; front rough, bulging	TRICHOOLEA.
Fore legs entirely unarmed, save the ordinary spines of tarsi.	
Antennæ of male simple or slightly serrate ; not bristled.	
Primaries trigonate with well-marked apices and oblique outer margin.	
Moderate or rather large-sized species with ample wings, usually dark-gray colors and powdery squamation	SCOTOGRAMMA.
Small species, shorter winged, the harpes of ♂ long, slender, subequal, with irregular long spinules at tip ; clasper long, curved, slender	ULOLONCHE.
Moderate-sized species with large primaries, rather frail bodies ; close, smooth, glistening vestiture ; harpes of ♂ narrow, not spinulose at tip, clasper long and stout	HIMELLA.
Primaries elongate, subequal, hind angle retracted	CROCIGRAPHA.
Primaries obtuse, apices and outer margin rounded.	
Cell of ♂ primaries beneath clothed with long, fine, silky hair	ORTHODES.
Cell of ♂ primaries beneath not so clothed	TANIOCAMPA.
Harpes of ♂ truncate at tip ; color white	Group <i>palilis</i> .

Harpes of ♂ bent near tip; colors dark.....	Group <i>furfurata</i> .
Antennæ of ♂ serrate and bristled.....	TENIOCAMPA.
Primaries obtuse, outer margins rounded.....	Group <i>rufula</i> .
Primaries with marked apices and oblique outer margin.....	Group <i>alia</i> .
Antennæ of ♂ bipectinate.	
Primaries obtuse; outer margin rounded.....	Group <i>oviduca</i> .
Primaries with oblique or angulated outer margin, rectangular apices, abdomen untufted.....	Group <i>incincta</i> .
Primaries with apices extended, subfalcate, outer margin rounded; abdomen with a large, truncate basal tuft; thorax with an anterior divided crest.	
	PERIGRAPHA.

The slides of genitalia made during the progress of my studies on this group are all in the U. S. National Museum, as are also the types of most of my species, together with good series of most of the specimens. The material in this collection has served as the base upon which this work has been built.

The species not noticed here in any way do not belong to the genera to which they are referred in the lists. Mr. Morrison's species *Teniocampa vegeta* and *T. earina* are samples of such

I believe that I know all the species save *orobia* Harvey and *agrotiformis* Grt., which I have never identified in collections.

BARATHRA HBN.

Verzeichniss, 218.

Copimamestra GRT., Ann. and Mag. N. II. [London], 1883, 54. Tr. Kans. Ac. VIII, 55.

Eyes hairy, tibiæ not spinose, anterior with a single long curved claw at tip. The front is smooth, the vestiture rather coarse, scaly; head somewhat retracted, palpi not attaining the vertex. Thoracic vestiture dense, scaly, giving the thorax a square outline; a divided anterior, and somewhat truncate posterior tuft. Dorsum of the abdomen tufted, and in the male there are small lateral tufts. Antennæ of male simple, or slightly ciliate. Primaries elongate, widening outwardly; apices distinct; outer margin oblique. The genitalia of the male are peculiar. The harpes are suddenly constricted toward tip, and then modified into a deeply excavated shell with irregular outlines. Toward the outer margin this shell is densely clothed with spinules. The clasper is a very short beak-like projection at the point of constriction of the harpes.

This genus is very like *Mamestra*; so like, indeed, that the European entomologists do not recognize in their species *brassicae*, a distinct generic type. The character—armed tibia, combined with hairy eyes, is, however, so unusual, that it obtains considerable value and, added to the very peculiar genitalia of the male, seems to authorize the genus.

Hübner first proposed the generic term *Barathra* in the verzeichniss, and Mr. Grote afterward described the genus *Copimamestra* with the same type.

There are two species thus far discovered, which may ultimately

prove races of the one. The male of one is unknown to us, and an examination of the genitalia is required to make certain. Both species are closely related to the European *brassicae*, but are distinct in genital structure, though, maculation alone considered, they would be correctly classed as varieties of one species. The male specimens of *brassicae* have on the under side of the abdomen, near the base, two long, thin, brushes of yellow hair, which are wanting in the American forms. *Occidenta* Grt. comes from New Mexico; *curialis* Smith from Maine, strikingly illustrating the remarkable character of the fauna of the latter State.

Occidenta has the ordinary spots well marked, whitish, the s. t. line preceded by a white shade; there is a greenish patch near base. The male I have not seen.

Curialis has the ordinary spots less defined; the reniform white marked; orbicular concolorous, almost obsolete. The green patch is wanting. The male only is known.

Brassicae of Europe differs from both the American forms by the paler ground, and the more evident transverse maculation. The genitalia and the yellow tuftings of the male, however, furnish the important characters.

***Barathra occidenta* GRt.**

Ann. and Mag. N. H. [London], 1883, 54. Trans. Kans. Ac. VIII, 55, *Copimamestra*.

Sordid fuscous brown, with black, scaly irroration. Transverse lines indistinct, but traceable; geminate. Basal line distinct, geminate, black; the included space pale. T. a. line upright, scarcely irregular. In the inferior portion of sub-basal space is a mossy-green patch. T. p. line outwardly bent over reniform, strongly incurved below. S. t. line white, irregular, with strongly marked **W** on veins 3 and 4, preceded by a broad greenish shade which extends to and includes the apex. S. t. space else concolorous. Terminal space narrow, powdery. A row of black terminal lunules. Claviform, narrow, rather short. Orbicular, moderate in size, with pale filling. Reniform, rather large; white. Head and thorax concolorous with primaries. Secondaries at base pearly whitish, outwardly blackish. Beneath pale, powdery, with incomplete common line and faint discal spot. Expands 1.60 inches (40^{mm}).

HABITAT.—New Mexico.

The species has at first sight a casual resemblance to *M. adjuncta*, from which, however, it is readily distinguished by the generic characters.

***Barathra curialis* Smith.**

Proc. U. S. Nat. Mus., 1887, x, 470, *Copimamestra*.

Blackish fuscous, with a reddish tinge through basal and s. t. space, slightly marked also through centre of median space. Basal line geminate, indistinct, interrupted. T. a. line upright, hardly traceable.

T. p. line single, black, strongly dentate, its course as a whole nearly parallel with outer margin. S. t. line whitish, interrupted, its course somewhat irregular; a prominent **W** mark on veins 3 and 4. A row of distinct terminal lunules. In the sub-basal space inferiorly is a faint greenish tint, resembling that of *B. occidenta*, but much less marked. Claviform outlined, concolorous. Orbicular barely outlined, concolorous, its outer margin touching the t. a. line. Reniform moderate in size, white, with a central dark lunule which has the margins irregular, interrupting the white in every direction. S. t. space paler than balance of wing, strigate and irrorate with ground color; darkest at costa. Terminal space outwardly pale powdered. Head and thorax concolorous with primaries. Secondaries smoky, fuscous, outwardly darker. Beneath dark-gray, powdery with incomplete extra discal line and distinct discal spot. The genitalia are described; the differences between those of this species and of *brassicae* are shown in the figures. Expands 1.70 inches (43^{mm}).

HABITAT.—Kittery Point, Me.

The type is a perfect male in Mr. Thaxter's collection. It is barely possible that this is a variety or race of *occidentia*, but the probabilities are that it is a good species and it is so described.

I have since seen a specimen of this species, taken at Franconia, N. H., by Mrs. Slosson.

TRICHOOLEA GRt.

Papilio, 3, 30, 1883.

Eyes hairy; front full, subglobose, rough, scarcely tuberculate. The head is not retracted, the vestiture rather close, not divergent; mixed scales and hair. Body robust, the vestiture mixed or hairy, forming none or but an indistinct tuft at base. Legs moderate, the tibiae not spinose, anterior usually armed at outer side of tip with a stout curved spine; sometimes there are two spines, one above the other. The first joint of anterior tarsi has a series of three or four stout curved spines, of which the terminal is largest; the second joint has a similar series, which are shorter and straight. Primaries moderately elongate, outwardly widening, the apices rectangular, outer margin obliquely rounded. Abdomen untufted. The male genitalia resemble those of the *liquida* group of *Mamestra*, the harpes being suddenly and nearly rectangularly bent toward tip. In detail they are distinct, and will be separately described for each species. The colors in the species thus far known are luteous or gray. The armature of the anterior tibia and tarsi is peculiar and somewhat variable; the permanent feature is the terminal long curved spine on first and second tarsal joint, and two longer spines near base of first joint. They are easily broken, and the apparent discrepancy in my material may be accounted for in this way. Mr. Grote in his description fails to mention this armature, and erroneously says the eyes are lashed.

Two species are thus far known—*decepta* Grt. which has the front very full and bulging, the vestiture scaly and ordinary spots distinct, and *edwardsii*, which has the front scarcely full, the vestiture hairy, and the ordinary spots indefinite. The latter is a more robust species and has the abdomen indistinctly tufted. The male antennæ in both are simple. This peculiar genus resembles in armature *Mycteroplus* of Europe, which, however, has naked eyes. Its affinities are with *Mamestra* rather than *Teniocampa*, and the species are not unlike some of the pale *agrotids* in habitus.

Tricholea decepta Grt.

Papilio 3, 30, 1883.

Luteous gray, more or less irrorate with black. Median lines indistinctly geminate; t. a. upright, waved, included space somewhat paler; t. p. crenulate, its course nearly parallel with the outer margin. Basal line distinct, geminate, blackish. A distinct, rather narrow, dusky shade through outer portion of median space, darkening the reniform. S. t. space darker than ground color, defining the rather evenly dentate s. t. line. A terminal row of black lunules. Claviform variable in size, but usually distinct, narrowly black lined. Orbicular round, small, concolorous, black ringed. Reniform moderate, black ringed, inferiorly dusky. Secondaries pearly white with broad dusky outer margin, and sometimes a transverse row of venular points. Beneath white, outwardly powdery; a distinct, dotted, common line, rather large discal dot on both wings. The genitalia are distinctive. The harpes are abruptly bent toward the tip, which is rounded, and inwardly spinulose. There is a short, stout, acute corneous basal process; near to the bend of the harpes is a rather long, curved, corneous hook, and between the two a broad, flat, somewhat spatulate, semi-membraneous process. Expands 1.12 to 1.28 inches (28 to 32^{mm}).

HABITAT.—Arizona.

Several specimens are before me. A single rubbed female from California indicates a new species. The front is much as in *decepta*, but with an added small tubercle. It is rather larger, paler in ground color, but more densely powdered with black. Pending the discovery of the male I leave it undescribed.

Tricholea edwardsii Smith.

Proc. U. S. Nat. Mus., 1887, x, p. 478.

Powdery ash gray; terminal space distinctly paler. Basal line indicated by a geminate black spot on median vein. T. a. line marked on costa only, and by a small brownish dot in place of claviform. T. p. line marked by a series of dark venular points, and an incomplete line of white scales. Median shade marked on costa. S. t. line marked by the pale terminal space, and a row of dusky spots. A row of small

black terminal lunules. Orbicular very large, obsolete, marked only by two curved dusky spots (), indicating the outer margins. Reniform faintly outlined, inferiorly dusky. Head and thorax concolorous. Secondaries white, with broad blackish outer margin, fringes white. Beneath, primaries white with darker powderings, reproducing very faintly the maculation of upper side. Secondaries immaculate, white. The genitalia are of the same type as *decepta*, but the basal projection is wanting; the slender hook is replaced by a short beak-like clasp, and the spatulate projection is much larger and more prominent. Expands 1.40 inches (35^{mm}).

HABITAT.—California.

A single perfect male in Mr. Edwards's collection. This species differs very evidently from *decepta* as well in structure as in maculation, but is perfectly congeneric. The front is not so full; the body is shorter, more robust; the vestiture hairy, long, and the primaries are somewhat more pointed. The pale terminal space well distinguishes it at a glance. Many additional specimens have been since seen, and several are in the collection of the Museum, taken by Mr. Koebele.

SCOTOGRAMMA Smith.

Proc. U. S. Nat. Mus. 1887, x, 469.

Eyes hairy, tibiæ unarmed, vestiture either hairy or scaly. Antennæ of male simple. Form moderate, wings ample; primaries trigonate, with marked apices and oblique outer margin. The head is retracted, the palpi well developed, always exceeding front. Thorax with usually more or less obvious anterior and posterior tufts.

This genus has no strong characters and is almost entirely a negative one. Two well-marked groups are formed in it, of which the first is the more typical, *submarina* being typical of the group and genus. It is the only species of which the male is known to me.

This first group is characterized by hairy vestiture and rather smoothly clothed front.

Submarina is luteous gray, without s. t. line, but distinct, single median lines, the s. t. crenulate. The orbicular is wanting, the reniform indistinct. The male genitalia are hereafter described.

Phoca, of which *promulsa* is a synonym, is nearly allied to the preceding, but the s. t. line is distinct. In the Labrador form (*phoca*) the color is paler, more whitish; in the Colorado form (*promulsa*) there is a fuscous suffusion.

Perplexa is an evenly powdered gray form with all the maculation present, but obscured; the presence of the claviform distinguishes it from either of the preceding.

The remaining species belong to the second section, which is characterized by scaly vestiture, quadrate thorax and front with superimposed scaly tufts.

Inconcinna is a dark fuscous species, in which the last ventral segment is foveate on each side, and the edges form an incurved margin to the dorsal surface of the abdomen.

Umbrosa is a smaller species, dark, blackish-gray in color, and with the last segment of abdomen simple. In both the species the normal noctuid markings are present, and essentially alike, so that it is difficult to find any difference in ornamentation. The ground color seems constant, however, as does also the difference in size, and the peculiar difference in the terminal segment of female abdomen.

In tabular form the species are as follows:

Vestiture hairy.

Luteous gray, s. t. line wanting SUBMARINA

S. t. line present.

Fuscous; paler or darker, claviform wanting PHOCA

Ash gray; claviform present; lines geminate PERPLEXA

Vestiture scaly; front with superimposed tufts.

Fuscous brown; abdomen of ♀ with last ventral segment foveate at sides, and incurved on dorsal margin. INCONCINNA

Dark ash gray; smaller; abdomen of ♀ normal UMBROSA

These species are nearly all represented in the Museum collection.

Scotogramma submarina Grt.

Can. Ent. 15, 4 (*Anarta*); Smith, Proc. U. S. Nat. Mus., x, 1837, p. 469, *Scotogramma*.

Pale luteous gray, with black powderings. Median lines distinct, single, black. Basal line marked. T. a. line upright, or somewhat outwardly oblique; outwardly curved in submedian space, and dentate on vein one. T. p. line strongly creuulate, its course about parallel with the oblique outer margin, the median space thus considerably narrowed inferiorly; s. t. line wanting; a row of small, lunate, terminal spots. A variably distinct, somewhat diffuse shade line crosses outer portion of median space, obscuring the reniform, which is hardly defined; orbicular obsolete; secondaries smoky fuscous, whitish toward base. Beneath pale, powdery, with more or less complete, somewhat punctiform outer line, and small discal spot. Head and thorax concolorous, vestiture, with flattened hair intermixed, forming indistinct fore and aft tufts. The genitalia of male have the harpes and clasper equally curved, and nearly equal in length, *i. e.*, the clasper reaches to the tip of the harpe, though arising hardly one-fourth from that point. Both are obtusely terminated, the clasper corneous, the harpes membranous, and set with fine hair. The last segment of the female is also somewhat peculiar. On the under side it is carinate, at the middle deeply foveate, each side broader than the dorsal portion of same segment and forming an incurved margin. The segment is broader than those immediately preceding it. It is furnished with a tuft of hair, giving additional prominence. Viewed from above, when clothed with vestiture, it has the appearance of a deep fovea at each side. This

structure is not peculiar to this species, but has not been previously described. Expands 1.10 to 1.24 inches (28 to 31^{mm}).

HABITAT.—Arizona, Montana, Oregon.

A very distinct species, recognizable by the pale color and distinct black lines. How Mr. Grote ever persuaded himself that this species could be referred to *Anarta* is one of those mysteries that will probably never find a solution.

Scotogramma phoca Moeschl.

W. E. M. 8, 197, pl. 5, f. 15 (*Dianthæcia*); Grt., Can. Ent. 13, 130 (*Mamestra*.)

promulsa Morr. Ann. Lyc. 1875, 97 (*Mamestra*); Grt. C. E. 1875, 7, 223 (*Anarta*)
id., 1881, 13, 127 (*Anarta*); Stett. Ent. Zeit. 1876, 37, p. 135 (*Anarta*); Smith,
Bull. Bkln. Ent. Soc. 1882, 5, 68, *Mamestra*.

Sordid, pale luteous gray, with fine powderings. Median lines, fine black, sometimes indistinct, single. T. a. line upright, outwardly angulate in s. m. space; t. p. line parallel with outer margin, irregularly dentate. S. t. line marked by a series of preceding fuscous spots, more or less connected, and sometimes forming a dark shade. An indistinct median shade. Stigmata obsolete or but very faintly outlined. Secondaries even pale luteo fuscous. Beneath powdery, with faint discal lunule. Expands 1.20 to 1.40 inches (30 to 35^{mm}).

HABITAT.—Labrador, Colorado.

A comparison of types leaves no doubt of the identity of *phoca* and *promulsa*. The former is paler, more whitish, the latter with a fuscous tinge throughout. The maculation and habitus is, however, the same. Unfortunately no males have been seen, so that the matter could have been settled finally.

Scotogramma perplexa Smith.

Proc. U. S. Nat. Mus., 1887, x, 469.

Dull, fuscous gray, with blackish powderings, all the maculation indistinct. Median lines barely traceable; t. a. angulated; t. p. dentate. S. t. line marked by faint pale powderings, not defined. Orbicular large, oval, with pale powderings. Reniform scarcely traceable, marked by a few scales. The claviform is faintly indicated. Secondaries evenly fuscous. Beneath dark, powdery, without line or spot. Head and thorax concolorous with primaries, abdomen with secondaries. Expands 1.50 inches (37^{mm}.)

HABITAT.—Colorado.

The type is a unique female in the collection of Mr. F. Tepper. The thorax is rather slight, the vestiture divergent, loose. The uniform dark powdery gray primaries sufficiently characterize this species.

Scotogramma inconcinna Smith.

Proc. U. S. Nat. Mus., 1887, x, 469.

Dark fuscous, with black powderings, all the lines and spots distinct. Basal line geminate, black. T. a. line obsoletely germinate,

inner portion faint. Slightly arcuate, outwardly curved in the interspaces. T. p. line geminate, parallel with outer margin, with dents on the veins, followed by pale points. S. t. line irregular, pale, punctiform, accompanied by blackish shades. A row of black terminal lunules. Secondaries blackish fuscous, with pale fringes. Beneath dark, powdery, with indistinct discal lunule. Head and thorax concolorous with primaries; the thorax with indistinct fore and aft tufts. Abdomen with a distinct, truncate tuft at the first segment. The terminal segment of female is as in *submarina*. Expands 1.40 inches (35^{mm}).

HABITAT.—Colorado.

The type is a female in fair condition. Ultimately it may prove referable elsewhere, when the male is studied, but its habitus and general structure seem rather to place it with *submarina*, and the structure of the last segment of the female abdomen confirms the reference. The vestiture is a mixture of scales and flattened, hair, and the thorax in form is quadrate. The frontal vestiture forms two superimposed tufts. The species seems thus more nearly allied to *Mamestra*, while differing obviously from any species known to me.

Scotogramma umbrosa Smith.

Proc. U. S. Nat. Mus., 1887, x, 470.

Dark, blackish gray, powdered with white scales. All the maculation present, though not prominent. Median and basal lines geminate, the defining lines faintly marked, the included space powdered with white. T. a. line outwardly oblique, with inward dentations on veins. T. p. line about parallel with outer margin tolerably even. S. t. line irregular, pale, punctiform, somewhat obscured by the pale powderings which are most numerous in the s. t. space. An interrupted dark terminal line. Claviform distinctly outlined; concolorous. Orbicular moderate, round, with white powderings. Reniform large, upright, pale powdered, well defined. Secondaries blackish, paler toward base. Beneath variably dark, powdery, with outer dark line and small discal spots. Head and thorax concolorous, with primaries. Expands 1.20 to 1.30 inches (30 to 32^{mm}).

HABITAT.—Arizona, Colorado.

Three female specimens are before me. The vestiture is scaly, and the tufts of thorax, abdomen, and front are like those of *inconcinna*. There is no special modification of the last segment of the abdomen.

Scotogramma stretchii Edw.

Hy. Edw., Can. Ent., 1887, xix, 146.

“With much of the general appearance of *Perigea falsa*, Gr., but said by Mr. J. B. Smith to belong to his new genus *Scotogramma*. Dark stone drab, the lines blackish, all much confused, and the ground color of the wing covered with brownish irrorations. Basal half line

indistinct. T. a. line nearly straight, with a deep tooth anteriorly pointing toward the base. T. p. line dentated, outwardly joining the reniform in a darker cloud. Marginal line lost in a row of dark clouds. Intronervule spaces, pointed with black lunules. The basal, median, and submarginal spaces are pale by contrast with the dark lines. Lower wings a dull stone drab, a little paler toward the base. Under-side uniform stone drab, with very distinct darker discal spots and a median band common to both wings. Margins also dark. Thorax and abdomen concolorous. Exp. wings 32^{mm}. One female, two males. Colorado Desert. R. H. Stretch."

This species is a distinct one, but having no specimens at hand, I can not place it exactly. I give, therefore, Mr. Edwards's original description, which will be sufficient to enable the species to be recognized.

ULOLONCHE SMITH.

Proc. U. S. Nat. Mus., 1887, x, 471.

Eyes hairy, tibiae not spinose or in any way armed. The body is plump, stout, rather densely clothed with hairy or mixed vestiture on thorax, forming a more or less obvious divided anterior crest and distinct posterior tuft. Abdomen rather elongate, slender, untufted. Head somewhat, or considerably retracted, the palpi well developed, reaching the middle of front. Primaries rather small, short, trigonate, with marked apices and oblique outer margin. The genitalia are practically alike, differing only in minor details. The harpes are narrow, slender, elongate, subequal, terminating in an obliquely rounded tip, which is inwardly furnished with long spinules. The clasper is long, slender and curved, subequal throughout, and obtuse at tip. The male antennae are simple.

Three species are referred to this genus. *Niveiguttata*, which differs from others by the more retracted head, plump form and small wings, is also easily distinguished by the distinct geminate white spot on disc of primaries just beyond and touching the inferior portion of reniform. There is no possibility of mistaking this species.

Modesta and *fasciata* are closely allied, less robust, and with somewhat more ample primaries. They agree also in the type of maculation: in both, the outer portion of median space being darker, somewhat V-shaped. In *fasciata*, however, the contrast is great, glaring, the large yellow reniform adding to the definition and distinguishing the species, while *modesta* is a quiet mouse-gray form, with no strong contrasts of color, and concolorous or slightly darker reniform.

Like most of the surrounding genera, this has no prominent distinguishing feature, unless the genital structure is so regarded. The habitus, wing form, and proportions of body combine to form the necessary generic characters.

To again present the differences between the species, we add the following table:

Stouter, shorter winged; primaries with a geminate white spot below and beyond reniform	NIVEIGUTTATA
Less stout; primaries somewhat more ample, outer portion of median space darker.	
Very pale gray, dark portions blackish, reniform contrasting, yellow....	FASCIATA
Mouse gray, dark portions umber brown, reniform concolorous or slightly darker,	MODESTA

Ulolonche niveiguttata Grt.

Buf. Bul. 1, 140, pl. 4, f. 16, *Mamestra*.

Sordid fuscous brown, powdery, the median lines irregular, interrupted, indistinct. S. t. line prominent, pale, outwardly diffuse, marked with yellow and white scales. A row of pale terminal dots. An indistinct dark basal streak. Claviform small, black marked. Orbicular large, irregular, concolorous, imperfectly defined in black. Reniform large, upright, concolorous, outwardly marked with yellow; inferiorly the outer angle is invaded by a large geminate white spot, characterizing the species. Secondaries dark blackish brown. Beneath dusky, powdery, without lines or spots. Head and thorax concolorous. Expands .90 to 1 inch (23 to 25^{mm}).

HABITAT.—California, Arizona.

An easily recognizable form; the distinct geminate white spot on primaries, and diffuse pale s. t. line are characteristic. A specimen from Arizona differs in having a rosy shade through primaries. The underside is paler, with distinct outer line and discal spot.

Ulolonche fasciata Smith.

Proc. U. S. Nat. Mus., 1887, x, 471.

Gray in basal and s. t. space, with fuscous powderings; in median space even, with a bluish tint; terminal space darker. Basal line evident, geminate. T. a. line geminate, brown, straight from costa to submedian interspace, then with a long inward, followed by an equally long outward tooth. T. p. line geminate, even, outwardly bent over reniform, then evenly oblique to hind margin. S. t. line marked at inception by a dark preceding costal shade, thence indefinite, and traceable only by the faint contrast between s. t. and terminal space. A black shade fills the outer portion of median space, making a somewhat V-shaped blackish shade in wing. Orbicular obsolete. Reniform large, contrasting, yellow, oblong. Secondaries blackish, paler at base. Beneath pale, with black irrorations, an incomplete outer line and a broad powdery median fascia. Head and thorax concolorous, bluish gray. Expands 1 inch (25^{mm}).

HABITAT.—New Mexico. (Prof. F. H. Snow, No. 51.)

A very bright and distinctly marked species. The dark V-shaped outer portion of median space, with the large, yellowish reniform, is characteristic and distinctive.

Ulolonche modesta Morr.

Pr. B. S. N. H., 1874, 144 (*Dianthæcia*); Grt., C. E., 1879, XI, 27 (*Graphiphora*), *id.*, 1881, XIII, 126 (*Taniocampa*).

Mouse gray, rarely more reddish, more often with a blue-gray powdering; outer portion of median space darker, umber brown; terminal space usually somewhat paler, more bluish gray. Median lines generally distinct, umber brown. Basal line angulated. T. a. line geminate, the inner part of line often wanting; its course outwardly oblique, strongly angulated. T. p. line geminate, usually rather faintly marked, its course parallel with the outer margin. S. t. line marked by an irregular preceding shade, which is sometimes broken into spots. The orbicular is obsolete; reniform absorbed in the outer dark shade, usually traceable, the inferior portion blackish. Secondaries fuscous, even, fringes paler. Beneath dark fuscous, powdery, with a more or less incomplete outer line and variably distinct discal spot. Head and thorax concolorous. Expands 1.10 to 1.20 inches (28 to 30^{mm}).

HABITAT.—New England, Middle States, Canada.

A quietly marked species, distinguished by the darker brown coloring of the exterior portion of median space. Two female specimens from Arizona are referred here, but may ultimately prove specifically distinct. The gray is more luteous, powdery. There is little or no contrast between the inner and outer portions of median space, and the primaries seem more elongate. Pending the discovery of the male, it would be unsafe to describe it as distinct.

HIMELLA GRt.

Pr. Ac. N. Sc. Ph. 5, 200.

Eyes hairy, tibiæ unarmed; vestiture of flattened hair with intermingled scales. Frontal vestiture rather smooth, even. Palpi well developed, reaching to or exceeding middle of front. The antennæ of male have the joints bead like, furnished with lateral tufts of bristles. The body parts are slight, smoothly scaled, without tufts, the abdomen elongate, especially in the male. The primaries are large, trigonate, with rectangular apices and roundedly oblique outer margin. The harpes of the male in *intractata* are narrow, elongate, with a rounded tip. Clasper long, stout, corneous, reaching nearly to the end of the harpe and resting in a groove.

Two species are known which are referable to this genus, and separable from *Taniocampa* by the frail form, large wings, and smooth, somewhat glistening vestiture. They are easily distinguished.

Intractata is fawn colored, with large, pale-ringed, ordinary spots, faint median and distinct s. t. lines.

Thecata is dark, blackish-gray, with obsolete ordinary spots, distinct median lines and without s. t. line. The genitalia of the male of this species will probably be found much like those of *intractata*.

Himella thecata Morr.

Pr. Ac., 1875, 59 (*Mamestra*); Grt., C. E., 1880, 12, 186 (*Graphiphora*), *ibid.*, 1881, 13, 126 (*Taniocampa*).

contrahens Grt., Bul. Surv. 4, 180; C. E., 1880, 12, 186 (*pr. syn.*).

Dark fuscous gray, with blackish powderings. The ground color is luteus, and is variably distinct, so that sometimes a specimen is evenly dark gray, while another is irregularly blotchy. Median lines always distinct, geminate, the defining lines concolorous, the included space discoloured, pale luteous. S. t. line obsolete. Apex usually pale, and sometimes this pale shade invades the s. t. space. A diffuse, darker shade through outer portion of median space, darkening the reniform, which is outwardly defined by a few pale scales. Orbicular obsolete. Secondaries pale luteous, glistening; outwardly smoky; a black terminal line, and a faint dusky median line and discal spot. Beneath white, with black powderings, broad black outer lines and distinct discal dots. Head and thorax concolorous. Expands 1.10 to 1.30 inches (28 to 33^{mm}).

HABITAT.—New York, New Hampshire, Nebraska, Colorado.

Easily recognized by the dark glistening primaries and the pale median lines. The species is widely distributed, but is nowhere common. Oddly enough, the females only seem to be captured. I have seen but a single male and that lacked the abdomen.

Himella intractata Morr.

Pr. B. S. N. H., 1874, 160 (*Taniocampa*).

fidelis Grt., Pr. Ac., 1874, 201 (*Himella*), C. E., 11, 27 (*Graphiphora*).

Grayish fawn color, somewhat powdery. Basal line interrupted, marked by black scales on costa and in s. m. space. Median lines geminate, very faintly marked; t. a. upright, somewhat sinuate, outwardly marked opposite orbicular, and in s. m. interspace by black spots. T. p. line parallel with outer margin, inwardly marked on s. m. interspace with black. S. t. line distinct, pale, sinuate inwardly, black marked. Ordinary spots large, concolorous, distinctly pale ringed. Secondaries pale fuscous gray, outwardly darker. Beneath pale, powdery, with incomplete, interrupted dusky line and a distinct discal spot on secondaries. Head and thorax concolorous, with primaries. Expands 1.20 to 1.40 inches (30 to 35^{mm}).

HABITAT.—New York, Massachusetts, Missouri.

A very distinct species, not readily confused with anything else known to me. The bright fawn color, clearly pale ringed ordinary spots, and the black spots on the transverse lines in s. m. interspace, are all peculiar features.

CROCIGRAPHA GRT.

Can. Ent., 7, 57, 1875.

Eyes hairy, tibiæ unarmed. Vestiture hairy, with few scales intermixed. Thorax with an inconspicuous divided crest. Abdomen untufted. Primaries elongate, subequal, the hind angle strongly retracted. Habitus of *Taniocampa* genuina, from which it differs principally by the retracted hind angle of primaries and the more or less evident divided thoracic crest. The male antennæ are simple.

The single species belonging to this genus can be immediately recognized by the wing shape and the pale median lines. The harpes of the male are subequal, the tip oblique and fringed with spines. The clasper is rather short curved, hook like, tapering to an acute point. This genus is very unsatisfactorily separated from the typical genus *Taniocampa*, but where the characters for generic separation are so scarce, even those which elsewhere would not be recognized must be used to prevent unwieldy assemblages of species. Especially is that necessary in this group of hairy-eyed genera.

Crocigrapha normani Grt.

C. E., 1874, 6, 115 (*Perigrapha*); Morr., C. E., 1874, 6, 251 (*Taniocampa*); Grt., *id.*, 1875, 7, 57 (*Crocigrapha*); *id.*, 1875, 7, 227, pl. 1, f. 13.

Varies from reddish luteous to rather deep red brown, always more or less powdery; the superior portion of median space often darker, especially between the ordinary spots. Median lines geminate, even, the included space pale, bluish gray; the defining lines not much darker than ground color. T. a. line evenly and slightly outwardly oblique. T. p. line curved over reniform, then strongly incurved, nearly parallel with the outer margin. S. t. line obsolete, or defined only by the slightly darker terminal space. In dark specimens the apex is pale and the line is marked at that point. Stigmata large, concolorous, reniform inferiorly black marked; outlined by pale scales; orbicular often obsolete. Secondaries soiled, whitish, outwardly darker. Beneath pale, with more or less evident punctiform outer line and a discal dot on secondaries. Head and thorax concolorous, with primaries. Expands 1.30 to 1.60 inches (33 to 40^{mm}).

HABITAT.—New England and Middle States.

The genitalia are described in the description of the genus, and there is nothing to add to the remarks there made.

ORTHODES Gn.

Noct. I, 371. Morr. Can. Ent., 6, 251 (list and char.).

Eyes hairy, tibiæ unarmed. Thorax without tufts, or with only an indefinite anterior crest and posterior bunch of loose hair. Abdomen untufted. Primaries short, broad, with rectangular or obtuse apices, and rounded or nearly straight outer margin. Frontal vestiture rather

coarse, mixed. Palpi well developed, reaching to middle of front. Second joint, club shaped; third distinct, cylindrical. On the under side of primaries the cell is clothed with long silky hair, somewhat more dense in the males, and in some species forming brushes or tufts in that sex. The antennæ are simple in both sexes.

From *Taniocampa* this genus is distinct by the wing shape, which is characteristic, by the silky hair on cell beneath, and by the longer, better developed palpi. Some of the species have been heretofore classed as *Taniocampa*, and the genera are very closely related.

Infirma and *cynica* differ from all others by having the clasper of the male genitalia double, and superficially by the pale ringed ordinary spots, the orbicular being large and oblique. *Infirma* is easily distinguished by a triangular black spot at the middle of the collar, the two lobes of which are inferiorly separated. The median lines, too, are narrow and pale, while the ground color is rather a dark mouse gray. *Cynica* is more reddish, and the median lines are irregular and black; the males have a very distinct tuft of appressed hair beneath.

The remaining species never have the ordinary spots pale ringed; the orbicular is often obsolete, and the reniform rarely distinctly defined. The median lines are often more or less obsolete, while the s. t. line is always marked.

Vecors, or *enervis* (why Gueneé changed the name I do not know), is usually red brown, with fairly evident median lines, obsolete orbicular and usually white marked reniform. The s. t. line is usually marked only by an irregular dusky shade, which is often interrupted. The species is decidedly variable, and yet not easily confounded with any other.

Virgula is similar, but is a more slender species. The median lines when visible are dark, and very strongly and irregularly dentate. The s. t. line is characteristic, and is marked only by a series of sagittate dashes, one of which usually crosses the s. t. space. It is a sordid dark, blackish-brown species, in which the ordinary spots are rarely traceable and never clearly defined.

Irrorata is a brown-red species, sprinkled with coarse black atoms, the median lines distinct, accompanied by broad luteous shades. S. t. line pale, diffuse, preceded by a dark shade.

The three preceding forms agree in essential genital structure. The harpes are more or less obliquely terminated, and the clasper is hollowed out or somewhat spoon-shaped; in *virgula* and *irrorata* moderate in size, in *enervis* curiously exaggerated.

Puerilis differs from all others by the pale luteous color, the clean white reniform, and distinct white s. t. line. The male genitalia are also peculiar, the harpes being very peculiarly terminated, while the clasper is single, hook-like, acute. The genitalia of all the species are hereafter more particularly described.

In tabular form, the differences are shown as follows:

Ordinary spots, large, pale ringed; orbicular oblique.

Lobes of collar inferiorly separated, leaving a triangular black patch; median lines narrow, pale INFIRMA

Lobes of collar not separated; median lines black CYNICA

Ordinary spots more or less indefinite, never pale ringed.

S. t. line marked by a dark preceding shade, median lines when visible, fairly even; reniform usually clean, white marked; color usually brown red,

ENERVIS

S. t. line preceded by long, sagittate dashes; median lines when visible very irregular, dentate; reniform obsolete or dirty white marked; sordid dark brown VIRGULA

S. t. line distinct, pale, somewhat diffuse outwardly; red brown, black powdered; median lines distinct, accompanied by broad pale shades IRRORATA

Luteous, pale; median lines never accompanied by paler shades PUERILIS

Orthodes infirma Gn.

Gn., Noct. I, 1852, 375; Walk. C. B. Mus., Het. x, 446, *Orthodes*; Morr. C. E., 1874, 6, 252; Harv. Buff. Bul., III, 9.

Even mouse gray, with a more or less obvious reddish tinge. All the lines distinct, narrow, pale, even. Ordinary spots pale ringed, sometimes connected. Basal half-line rigid, upright. T. a. line evenly oblique, with a narrow, dark outer shading. T. p. line angulate over reniform, then evenly inwardly oblique to hind margin, preceded by a row of black venular dots. S. t. line very distinct, even, rarely with accompanying darker shade. A row of dark terminal lunules, margined by a zigzag terminal line. Orbicular large, oblique; reniform broad, kidney shaped. Secondaries even, fuscous, variable in shade from yellowish to blackish. Beneath dull smoky. Secondaries with outer line and discal spot. Head and thorax concolorous. Lobes of collar inferiorly separated, leaving a triangular space, filled by a black patch. There is a faint thoracic crest, and loose, indistinct abdominal tufts. The genitalia of the male are peculiar by the tuft of long silky hair on the harpes; the latter are broad, narrowing to an irregular, obtusely pointed tip. The clasper is double, consisting of a curved, beak-like process, behind which is a straight corneous process, squarely truncate at tip. Expands 1.20 to 1.40 inches (30 to 35^{mm}).

HABITAT.—New England and Middle States, Missouri, Texas.

An easily distinguished form, common in the Middle States. The triangular black patch at base of collar and the lengthily tufted harpes of the male are distinctive.

Orthodes cynica Gn.

Gn. Noct. 1852, I, 375; Wlk. C. B. Mus., Het. x, 443, *Orthodes*; Morr. C. E., 1874, 6, 252, *nimia* Gn., 1852, I, 376; Wlk. C. B. Mus. Het. x, 443, an sp. dist.; Morr. C. E., 1874, 6, 252 (pr. syn.).

candens Gn., 1852, I, 376; Wlk. C. B. Mus. Het. x, 444, an sp. dist. præc.; Morr. C. E., 1874, 6, 252 (pr. syn.).

Mouse gray to bright brownish red; the vestiture somewhat "squammose." Median lines darker, usually black; t. a. line pre-

ceded, t. p. line followed by a pale shade. Both lines are slightly arcuate and more or less dentate or angulate on veins, but in this respect the variation is so great that it is useless to attempt description. Usually the lines are rather close together, but even this is not constant. The t. p. line is followed by a row of distinct venular points. S. t. line pale, hardly sinuate, preceded by a somewhat darker shade. A row of dark terminal lunules, often faint or obsolete. Ordinary spots concolorous or slightly darker, narrowly pale ringed, orbicular very oblique. Secondaries yellowish, fuscous. Beneath, powdery. Secondaries with indefinite outer line and discal spot. Head and thorax concolorous. Harpes of male broad, slightly narrowing to the obtusely rounded tip. Clasper double, a curved, somewhat beak-like hook, and behind is a much longer corneous process, slightly bent only at tip and nearly attaining the tip of harpes. Expands 1.16 to 1.28 inches (29 to 32^{mm}).

HABITAT.—Northern United States, Nova Scotia, and Canada.

The broad primaries, with usually approximated and distinct black lines, distinguish this species. In the male there is also a dense patch of fine hair on the underside of primaries, just beyond and below the middle. This is in addition to the silky hair clothing the discal cell.

Orthodes enervis Gn.

Gn., Noct. III, 420; *id.* I, 376 (*vecors*); Wlk. C. B. Mus. Lep. Het. x, 444; Morr. C. E., 1874, 6, 253 (*Pseudorthodes*).

Var griseocincta Harv., Buff. Bull., 1873, 2, 120; Morr., C. E., 1874, 6, 253 (*pr. var.*); *nitens* Grt. Papilio 1883, III, 31.

Red brown, varying greatly in shade, often powdered with white scales. Median lines rarely distinct, often obsolete; blackish. T. a. line outwardly oblique, lunate. T. p. line crenulate, parallel with and rather close to outer margin; often accompanied by a pale shading. A dusky shade through outer portion of median space, angulate below reniform. S. t. line marked by a preceding black shade, often emphasized by pale scales, never distinct. Orbicular wanting. Reniform usually marked by white scales, rarely paler red. Secondaries smoky fuscous, fringes pale. Beneath, powdery, with common outer line, usually incomplete on primaries, and a distinct discal lunule on secondaries. Head and thorax concolorous. Harpes of male subequal, somewhat curved, obtusely rounded at tip. The clasper is a long, broad, curved, somewhat spoon-like process, unlike any other form known to me. Expands .90 to 1.25 inches (23 to 32^{mm}).

HABITAT.—Atlantic States to District of Columbia.

A remarkably variable form, easily known by the obsolete orbicular white-marked reniform, and the dark shade preceding s. t. line. *Griseocincta* I have not seen, and am not certain it is properly referred as a variety. Both Mr. Grote and Mr. Morrison so place it, and they are probably right.

Orthodes virgula Grt.Papilio 3, 76 (*Taniocampa*).

Sordid smoky or blackish brown, median lines variably distinct, broad, blackish, sometimes obsolete. T. a. line outwardly oblique, with a long, inward tooth on vein 1. T. p. line geminate, crenulate, not quite parallel with outer margin; more upright. S. t. line interrupted, marked by pale scales, preceded by black sagittate dashes, one of which usually crosses the s. t. space opposite the cell. A faint median shade line. Orbicular rarely defined. Reniform obsoletely marked by a few dirty white scales. Secondaries smoky fuscous. Beneath powdery, with variably distinct outer line and discal spot. Head and thorax concolorous. The harpes of the male are broader toward tip, oblique, inwardly fringed with stiff hair. The clasper is a small, spoon-shaped process, with a small, curved tip. Expands 1 to 1.10 inches (26 to 28^{mm}).

HABITAT.—Arizona, Colorado.

An obscure, sordid species, defined by the sagittate black marks preceding s. t. line. The thoracic vestiture is rather loose and long, the abdomen of male long and slender. The primaries have the costal margin somewhat concave at middle, the apices rectangular, outer margin straight to below middle, then very obliquely rounded to hind margin.

Orthodes irrorata Smith.

Proc. U. S. Nat. Mus., 1887, x, 478.

Red brown, powdery; median lines distinct, accompanied by broad, luteous shades. T. a. line waved, with a wide outward bend at middle. T. p. line crenulate, nearly parallel with outer margin. S. t. line broad, diffuse, pale, preceded by a dusky shade. An interrupted terminal line; fringes pale, dotted at base. A more or less indistinct shade line through outer portion of median space. Orbicular small, indefinite, luteous. Reniform narrow, upright, indefinite, luteous. Secondaries blackish, paler in some specimens. Beneath, powdery, with a broad, diffuse outer shade, black. A distinct discal spot on secondaries. The harpes of male gradually narrow to an obtuse tip, inwardly fringed with hair. The clasper is concave, somewhat curved, the tip corneous, acute. Expands 1.10 to 1.20 inches (27 to 30^{mm}).

HABITAT.—State of Washington.

Readily recognizable by the pale shades accompanying the transverse lines, as well as the coarsely powdered primaries. The broad, diffuse outer line of under side seems also characteristic. The types are with Messrs. Graef (female) and Hy. Edwards (male).

Orthodes puerilis Grt.

Buff. Bull. 1873, 2, 64 (*Mamestra*); C. E., 1879, 11, 26 (*Graphiphora*) *id.*, 1881, 13, 126 (*Tæniocampa*).

Reddish luteous, sometimes with a blackish suffusion, often powdered with white scales. Median lines indistinct, irregular, often entirely wanting. T. a. geminate, variably sinuate, sometimes only a narrow pale line. T. p. geminate, more or less interrupted or punctiform. S. t. line always distinct, pale, tolerably even, preceded by a darker shade. A row of pale terminal spots. Orbicular obsolete or punctiform. Reniform usually white marked, rarely reddish. Secondaries fuscous to blackish, with paler outer margin and fringes. Beneath with a more or less distinct outer shade line; secondaries with discal spot. Head and thorax concolorous. Harpes of male with superior margin irregular, but straight; inferior margin gradually and evenly curved to meet the superior margin in an obtusely rounded angle. Clasper rather long, curved, corneous, acutely terminated. Expands 1 to 1.20 inches (25 to 30^{mm}).

HABITAT.—California.

Easily recognized by the pale colors and the very distinct pale s. t. line. Some specimens of *virgula* approach this species in maculation, but are separable by the spots, which in the former precede the s. t. line. In *puerilis* the line is either distinctly pale through a darker ground or it is preceded by a darker shade. The thorax has an anterior crest and a distinct posterior tuft.

TÆNIOCAMPA Gn.

Essay p. 477; Noct. I 346.

Eyes hairy, tibiæ unarmed, vestiture hairy or mixed, never entirely scaly, on thorax forming loose fore and aft tufts, or smooth, even, without tuftings. Abdomen untufted. Front with fine woolly clothing, palpi usually short, hardly attaining front, drooping; rarely well developed and ascending. Antennæ of male simple, serrate, or pectinate, the species dividing naturally into groups on this character. Primaries ample, or short, obtuse.

The genus *Tæniocampa* as above defined embraces a number of groups easily distinguished, and yet with the same general habitus. The species are usually reddish luteous, or some combination of brown, red, and yellow, and either have rather short, obtuse primaries, or rather large wings with marked apices and oblique outer margin. The groups, though well defined, hardly deserve elevation to generic rank, and can be distinguished by the following table:

Primaries with outer margins rounded, apices obtuse.

Antennæ of ♂ simple Group FURFURATA

Antennæ of ♂ serrate and bristled Group RUFULA

Antennæ of ♂ bipectinate Group OVIDUCA

Primaries with apices marked, outer margins oblique.

Antennæ of ♂ heavily bipectinate Group INCINCTA

Antennæ of ♂ serrate and bristled Group ALIA

By this course tolerably compact groups are formed, all easily united under one generic term, and all confusing or exceptional material is excluded. By the order of groups adopted, the species follow naturally the species classed as *Orthodes*, and as naturally lead to *Perigrapha*, though, perhaps, the opposite method of cataloguing would be more natural.

The species belonging to group *furfurata* agree not only in wing form but in the genital structure. The harpes are broad, suddenly bent and narrowed near the tip, which is somewhat dilated, lappet-like, and fringed with spinules. The angle formed by the bend is usually produced or acute. The species referable to this group are separable as follows:

Vestiture entirely hairy.

Luteous, irrorate with blackish; no median shade.....FURFURATA
Vestiture, with scales intermixed.

Dark red brown.....PERBRUNNEA
More reddish; heavily black marked, orbicular distinct.....PEREDIA
Dark mouse gray; all the maculation obsolete, orbicular wanting.....UNIFORMIS

There is little danger of mistaking these species, and further distinctions here seem unnecessary.

Group *rufula* contains species less closely allied in genital structure than those of the preceding group, but resembling each other so closely in habitus that their relationship is obvious. It joins naturally to the preceding as the table shows.

Vestiture flattened hair, front not evenly clothed.

Median lines narrow, dark, barely visible.....COLUMBIA
Vestiture hairy.

Median lines very distinct, pale, even; t. a. very oblique.
Rather deep luteous gray.....MODIFICA
Very pale yellow.....CONSOPITA
Median lines interrupted, punctiform.....RUFULA

Columbia is at once distinct by the vestiture; it has also an inconspicuous tuft on abdomen, and reverts to the *Mamestra* type.

Modifica and *consopita* are probably races of one species. The maculation is alike, and only the difference in ground color separates them. As no male of *consopita* is available for examination, a final conclusion can not be reached.

Rufula is easily recognized. Mr. Grote has named *perforata*, what is probably a color variety of this species, and which is again referred to hereafter.

Group *oviduca* contains but two species; the type of the group, and *utahensis*, readily distinguishable as follows:

S. t. line subobsolete, pectinations of male antennæ short.

Reniform inferiorly black filled.....UTAHENSIS
S. t. line very distinct, pale; pectinations of male antennæ longer.....OVIDUCA

Though there is no remarkable agreement in genital structure among the species in the two last preceding and the following groups, yet it is worthy of note that there is everywhere, though not in each species,

a tendency to a double clasper, or rather to an additional corneous process, varying from a mere rudiment to a stout spatulate process or large hook. No generalizations are attempted, and the attention of the student is called to the plate, where he can make his own comparisons.

Group *incincta* is less compact than any of the preceding. The antennæ are bipectinate, the primaries with marked apices and oblique outer margin.

Incincta and *suffusa* are comparatively slight species, with elongate, slender abdomen. The former is rather obscure luteous brown, the s. t. line preceded by a dark shade, the stigmata concolorous, rather faint. The latter is more gray, brighter, yet not sharply marked, the s. t. line followed by a dusky shade, the stigmata large, distinct, pale.

The remainder of the species are plump, heavily-built insects, with usually short, conic abdomen.

Obtusa is a small, broad-winged form, very dark gray, maculation obsolete, secondaries white. It fits nowhere, very naturally, and is wedged in here as being most easily recognizable at this point. The other species are large insects with dirty fuscous or luteous secondaries.

Pectinata is reddish-luteous, powdered with black scales, the lines interrupted, pectinations of antennæ very long. It is an easily recognized species, the peculiar color and very regular black speckles giving the appearance of thinly scaled wings.

Terminata is a pale luteous form, with darker s. t. space, which renders the terminal space paler by contrast; it is, however, a shade paler than ground color at any rate.

Subfuscula is aberrant in color, and indeed somewhat in habitus, but is after all best placed here. The primaries are ash gray, the median space somewhat darker, and the transverse lines are distinct, black, dentate. Mr. Grote placed the species in *Anarta*, but it seems to have little in common with that genus. In tabular form the differences appear as follows:

Slender, slight species, abdomen elongate.

S. t. line preceded by a dark shade, ordinary spots concolorous, indistinct. INCINCTA

S. t. line followed by a dark shade, ordinary spots distinct, pale. SUFFUSA

Stout, robust species; abdomen shorter.

Small, primaries short, broad, dark gray, maculation obsolete, secondaries white,

OBTUSA

Large species; secondaries not white.

Reddish luteous, powdered with black; lines interrupted; pectinations of male antennæ very long.

PECTINATA

Pale luteous; s. t. space darkest, relieving and rendering prominent the pale terminal space

TERMINATA

Ash gray, median space darker, transverse lines distinct black, dentate,

SUBFUSCULA

Tailing off the genus is the group *alia* or *incerta*. For a long time *alia* was considered synonymous with the *incerta* of Europe, and so Mr.

Grote catalogues it in his new list, referring *pacifica* also as a synonym. A careful study of the forms has led to the conviction that not only is *alia* distinct from *incerta*, and *pacifica* from *alia*, but there is also a third species closely related but entirely distinct from *alia*. This I name *subterminata*. It is perhaps more common than *alia*, and is very generally confused with it in collections.

The species are separated by the following table:—

Paler species.

S. t. line consisting of a row of black, lunate spots ARTHROLITA

S. t. line continuous, *preceded* by a darker shade.

Line even PACIFICA

Line sinuate ALIA

S. t. line *followed* by a darker shade, median space, with outer portion usually darker SUBTERMINATA

Dark, blackish brown species.

Terminal space paler, collar concolorous GARMANI

Terminal space concolorous, collar reddish, pale PRÆSES

All agree in general habitus and the serrate and bristled antennæ. *Arthrolita* is distinguishable at a glance by the peculiar s. t. line. *Pacifica* is difficult to separate from *alia* on color characters, and reference is made to the detailed descriptions hereinafter contained. *Alia* is a powdery form, with the maculation rather indistinct, except that the terminal line is well marked and preceded by a darker shade. It is a very constant species. *Subterminata* is brighter in color, the maculation distinct, outer portion of median space darker; s. t. line followed by a darker shade. It is an exceedingly variable species. *Garmani* and *præses* are allied to *Perigrapha*; indeed the latter species was described as belonging to that genus. They differ from all the others in the group by the dark-brown ground color. In *Garmani* the collar is concolorous, the terminal space discolorous. In *Præses* the exact reverse is the case. There is thus no difficulty in distinguishing them.

Tæniocampa furfurata Grt.

Pr. Ac. 5, 201, 1874 (*Himella*) Can. Ent. 11, 27, 1879 (*Graphiphora*), New List 1882 (*Tæniocampa*).

Luteous, powdered with blackish scales. Median lines geminate, blackish. T. a. line arcuate, but slightly dentate. T. p. line often more or less interrupted, outer line often punctiform; nearly parallel with outer margin. S. t. line concolorous, slightly sinuate, marked by a preceding dusky shade and the darker s. t. space. Ordinary spots concolorous or somewhat darker, pale ringed. Orbicular rather small, round. Secondaries pale fusco-luteous, lighter toward base. Beneath powdery, with more or less complete outer line, and distinct discal spot. Head and thorax concolorous. The superior angle of the bend of the harpes is rounded, the tip dilated, inwardly spinulose. The clasper is moderate, not much curved, acutely terminated, rather slender. Expands 1 to 1.20 inches (25 to 29^{mm}).

HABITAT.—California, Colorado, Arizona, Illinois, New York.

Widely distributed but nowhere common. It resembles a small *rufula*, but the antennæ are simple in the male. It is the only species in its group with hairy vestiture and luteous color, so that it is readily recognized.

Tæniocampa perbrunnea Grt.

Can. Ent. 11, 28, 1874, *Graphiphora*.

“* * * In color recalling *Hadena fractilinea*, but more reddish. Veins black. Reniform narrow, black, bordered outwardly by a white streak. Median space superiorly shaded with black. T. p. line even, angulated on vein 5, opposite the disk, followed by venular dots. Orbicular indistinct, concolorous, defined by black scales. Fringes black, with white venular dots. Veins broadly marked with black on terminal space. S. t. line shaded anteriorly with brown. Ground of the wing bright reddish brown. Hind wings blackish, with contrasting pale reddish fringes. Thorax reddish brown, abdomen blackish, with reddish lateral and anal hairs. Beneath pale, with distinct exterior common line, even on fore wings, dentate on secondaries, which latter show the discal dot distinctly.” The harpes of male have the superior angle of the bend acutely produced. The tip is but slightly enlarged, inwardly spinulose. The clasper is short, very stout, beak-like and corneous. Expands 1.20 inches (30^{mm}).-

HABITAT.—California.

Mr. Grote's description is transcribed because the specimens before me are not sufficiently perfect to describe from. There is no danger of confusing this with any other species of this group.

Tæniocampa peredia Grt.

Papilio 3, 32, 1883.

Reddish luteous, with carmine and black powderings. Basal line distinct, geminate. T. a. line outwardly arcuate and sinuate, geminate. T. p. line outwardly curved over reniform, inwardly curved beneath; inner line narrow, black, continuous, outer line punctiform. S. t. line tolerably even, concolorous, marked by the somewhat darker terminal space and a faint dusky preceding shade. A distinct dusky shade darkening the outer portion of median space. Orbicular moderate, round, slightly paler. Reniform invaded by the dusky shade, which is inferiorly more distinct; a few white scales serve to define the spot at this point. Secondaries pale, soiled, fusco-luteous. Beneath pale, powdery, with an interrupted outer line, punctiform on secondaries, and a distinct discal dot. Head and thorax concolorous with primaries. The male harpes are inferiorly lobed, superiorly the margin is concave and the angle of the bend strongly and acutely produced; the tip is but little dilated, and rather sparsely spinulose. The clasper is reduced to a flattened obtuse protuberance; the curved, somewhat

thickened, upper margin of side piece serving the same purpose. Expands 1.10 inches (28^{mm}).

HABITAT.—Maine (Kittery Point).

Easily recognized by the distinct round orbicular. The frontal vestiture is rather coarse, scaly, and there is a distinct divided tuft behind collar. This species is closely allied to *Mamestra*, with the balance of characters in favor of *Tæniocampa*.

Tæniocampa uniformis Smith.

Proc. U. S. Nat. Mus., 1887, x, 472.

Rather dark mouse gray, powdery; median lines obsolete, barely traceable. T. p. line marked by a row of venular dots. S. t. line slightly sinuate, concolorous, marked by the somewhat darker terminal space and a preceding dusky shade. Reniform marked by a dusky patch, orbicular wanting. Secondaries soiled white, outwardly darker, an indistinct discal lunule. Beneath with incomplete outer line, a distinct discal lunule. Head and thorax concolorous, with primaries. The harpes have the superior margin thickened, corneous, obtusely produced at the angle of bend, and forming the clasper. The tip is somewhat dilated and densely spinulose at inner side. Expands 1 inch (25^{mm}).

HABITAT.—Arizona.

Closely related to *peredia*, but sufficiently distinct by the dark color, obsolete maculation and small size. In this species the clasper is not separate, but formed of the superior margin of side piece, which is thickened. There is an indistinct thoracic tuft behind collar.

Tæniocampa columbia Smith.

Proc. U. S. Nat. Mus., 1887, x, 472.

Luteous reddish, powdery, terminal space somewhat darker, veins slightly darker. Median lines single, obsolete or but little darker. T. a. outwardly arcuate, inwardly toothed on vein 1. T. p. line parallel with outer margin. S. t. line slightly paler, defined principally by the slightly darker terminal space. Ordinary spots obsolete, or very faintly traceable, the reniform marked by a slightly darker inferior shade. Secondaries dirty fuscous, paler toward base. Beneath rusty, powdery, with a common outer line. Antennæ of male serrate and bristled. Head and thorax concolorous. Harpes of male narrowing beyond middle, somewhat dilated at tip, and inwardly fringed with spines. Toward base is a stout, strong corneous hook, which is obtusely terminated. Near to tip is another, slender, semi-membraneous and but slightly curved hook. Expands 1.15 to 1.25 inches (29 to 31^{mm}).

HABITAT.—Northwestern British Columbia.

This species is one of those collected by Captain Geddes in 1884, and the types, male and female, are in Mr. Neumøgen's collection. It is

one of those perplexing forms that it is difficult to classify properly. The vestiture consists of flattened hairs. There is an incomplete basal tuft on thorax, and in the male a distinct tuft near base of abdomen. The male abdomen is also laterally tufted. The front is clothed with a mixture of scales and hair, and the palpi reach nearly to the middle of the front in the male. All these characters indicate a *Mamestra*, but the habitus of the insect is so like *Tæniocampa*, and the male genitalia are so closely allied to those of *rufula*, that provisionally at least, I refer the species here.

***Tæniocampa modifica* Morr.**

Pr. B. S. N. H., XVII, 1874, 150.

consopita Grt. Papilio 1, 154, 1881, *Graphiphora*.

Luteous to very pale yellow, with darker powderings, median lines very distinct, even, pale, with somewhat darker margin. T. a. line evenly outwardly oblique. T. p. unusually close to, and entirely parallel with, outer margin. S. t. line rarely distinct, not complete in any specimen I have seen, sinuate, pale. A narrow, pale terminal line. Ordinary spots pale ringed, concolorous, or very slightly darker. Orbicular punctiform. Secondaries soiled whitish, or luteous, paler toward base. Beneath powdery, with a complete dark outer line and discal spot on all wings. The male harpes are subequal to the obliquely rounded tip, which is inwardly irregularly set with long, slender spinules. The clasper is a long, slender, rather abruptly bent hook. Near to the inferior margin a short, flattened, obtuse, corneous process. Expands 1.20 to 1.40 inches (30 to 35^{mm}).

HABITAT.—New York, Massachusetts, District of Columbia.

The variety *consopita* Grt. is much paler yellowish, but otherwise precisely like the type form. It is from Arizona.

Since the manuscript of this genus was first completed I have seen a number of specimens from other localities, without, unfortunately, noting them. They prove absolutely the identity of *modifica* and *consopita*, the ground color being not geographical as I had at first supposed. I have left the manuscript as originally written.

***Tæniocampa rufula* Grt.**

Buf. Bul. 2, 64, 1874 (*Dianthoecia*). C. E., 11, 26, 1879 (*Graphiphora*), id. 13, 126, 1881 (*Tæniocampa*).

Pale clay-yellow to brick-red, powdered with white scales. Median lines faint, usually only the pale included space visible. T. a. line outwardly oblique, sinuate. T. p. line sinuate, usually followed by a row of black venular dots. S. t. line distinct, pale, irregularly sinuate, preceded by a darker shade. A narrow, pale, terminal line. Ordinary spots pale ringed, concolorous or but little darker. Secondaries soiled whitish, outwardly darker. Beneath, pale, powdery with distinct discal dots, and incomplete, punctiform outer line. Head and thorax con-

colourous, the latter inconspicuously tufted. Abdomen with indefinite, loose, hairy tufts at base. Male harpes rather abruptly narrowed toward tip, which is somewhat dilated and inwardly spinulose. There are two, moderately curved, rather long corneous hooks forming claspers. Expands 1.20 to 1.25 inches (29 to 32^{mm}).

HABITAT.—California.

This species, though very variable in ground color, is yet tolerably constant in maculation, and readily known by the plump appearance and faint irregular median lines combined with the group characters.

Taeniocampa perforata Grt.

Papilio 3, 73, 1883.

“Of a peculiar grayish-fuscous or stone color, and allied to the Californian *rufula*. The s. t. line is accented by three or four preceding black points opposite the cell; the median space darker than the rest of the wing; the median lines and stigmata illegible; the reniform stained and blackish; claviform outlined. Lines marked by double costal streaks, with paler, inclosed shades. T. p. followed by minute points; fringe a little darker.” * * * “Concolorous gray fuscous, smooth. Hind wings pale at base, with pale fringes and soiled veins. Beneath paler, gray, irrorate, with dark denticulate common line; suffused discal shade on fore wings and blackish discal point on hind wings.” Expands 1.15 to 1.20 inches (29 to 30^{mm}).

HABITAT.—Arizona.

Mr. Grote compares the species to *rufula* and says it may prove a color variety. Three female specimens are before me, and have a somewhat different appearance from *rufula*, but without any marked character to distinguish them. Compared with Californian *rufula* they are darker, the t. a. line is more marked, and the reniform is more distinctly blackish, pale ringed. The claviform is not distinct in Mr. Grote's types, which are females. The male requires study to settle the question.

Taeniocampa oviduca Gn.

1, 357, 1852; Wlk. Cat. B. Mus. x, 429.

capsella Grt. Pr. Ac. 1874, 201. New List (? *oviduca* var).

Somewhat luteous red brown, often with a yellowish-gray suffusion. Median lines narrow, approximate, variably distinct, often subobsolete, sometimes narrow and pale, the defining lines wanting, or geminate with concolorous included space. T. a. evenly arquate, touching orbicular. T. p. outwardly bent over reniform, inwardly curved below that spot. A row of venular dots follows the t. p. line. S. t. line broad, pale, slightly sinuate; usually diffuse outwardly; inwardly limited by a slightly darker shade. Ordinary spots pale ringed, usually darker than ground color; orbicular rather large, and somewhat oblique. Secondaries sordid fusco-luteous. Beneath, powdery with a variably

complete outer line; secondaries with a discal spot. Head and thorax concolorous. Harpes of male suddenly constricted, and slightly bent beyond middle, broadening into an obliquely rounded lappet which is spinulose at inner side. The clasper is double, or rather there are two projections forming the clasper. One is short, stout, somewhat beak-like, pointing downward; the other is longer, dilating toward tip, terminating in an acute point. Expands 1 to 1.20 inches (25 to 30^{mm}).

HABITAT.—Atlantic States to Florida, west to Mississippi.

Rather a variable species, yet easily known by the heavily bipectinate antennæ of the male, combined with the obtuse rather stumpy primaries. The vestiture is mixed scales and hair.

Taeniocampa utahensis Smith.

Proc. U. S. Nat. Mus. 1887, x, 473.

Luteous red brown, with blackish powderings. Median lines indistinct. T. a. very faint, outwardly arcuate. T. p. nearly parallel with outer margin, faintly geminate, the included space marked with pale scales. S. t. line obsolete, barely traceable by a few pale scales. A pale line at base of fringes. Terminal space darker shaded. Orbicular small, round, marked by a few pale scales. Reniform narrowly black marked, defined by a few pale scales superiorly; inferiorly black filled. Secondaries pale, fusco-luteous, outwardly darker. Beneath, powdery with an outer line, punctiform on secondaries; the latter also with a discal spot. The harpes of male are curved, gradually narrowing until dilated into the lappet-like tip, which is inwardly spinulose. Near the base is a long, slender, curved corneous process. Nearer to tip is a thick, more membranous process, regularly tapering to a point. Expands 1.20 inches (30^{mm}).

HABITAT.—Utah.

A very distinct species. Its nearest ally is *oviduca*, from which it is readily distinguished by the shorter pectinations of the male antennæ, by the obsolete s. t. line, the small inconspicuous orbicular, and the inferiorly black filled reniform. The species was collected by Capt. D. H. Murdock, U. S. Army, near Fort Thornburgh, and I have never seen another specimen. The type is in the National Museum.

Taeniocampa incincta Morr.

Pr. B. S., N. H., 1874, xvii, 133, 156 (*Mamestra*); Grt. Buf. Bul. 2, 215, 1874; Can. Ent. 13, 126, 1881 (*Taeniocampa*).

Pale, reddish luteous, with black powderings. Median lines indistinct, geminate. T. a. slightly oblique, outwardly curved between veins. T. p. interrupted, nearly parallel with outer margin, outer line punctiform; the dots venular. S. t. line pale, but little sinuate, preceded by a series of sagittate black spots, longest opposite the cell. A narrow, pale terminal line. Orbicular moderate, concolorous, faintly outlined by a pale shade of ground color. Reniform upright, darker,

faintly pale ringed. Secondaries pale fusco-luteous, darker outwardly, with a distinct discal lunule. Beneath, powdery; a variably distinct outer line; secondaries with a discal spot. Head and thorax concolorous. Harpes of male broad, curved, modified into the usual lappet-like tip, which is inwardly spinulose. A long, moderately stout, curved corneous hook near center of side piece. Near to tip is a thick, semi-membraneous, beak-like process. Expands 1.10 to 1.20 inches (28 to 30^{mm}).

HABITAT.—Massachusetts, Illinois (Morr.), Colorado.

The type from Professor Riley's collection bears a resemblance to *oviduca*; the Colorado specimens, which are unquestionably the same, have longer, more trigonate wings and less distinct maculation. The essential feature of the species is the prominent black shade composed of more or less distinctly sagittate spots, which precedes the s. t. line.

Tæniocampa suffusa Smith.

Proc. U. S. Nat. Mus. 1887, x, 474.

Pale, somewhat carneous gray, blackish powdered. Median lines indistinct. A short black basal streak. T. a. line blackish, traceable only for one-half its course, very oblique. Median space, with a rosy tint most distinct in the cell just beyond claviform. T. p. inconspicuous, nearly parallel with outer margin, marked rather by the paler s. t. space than otherwise. A darker shade on costa in s. t. space. S. t. line marked by the slightly darker terminal space, and further emphasized by a row of black spots *following* the line. An interrupted terminal black line. Fringes interlined. Claviform partly outlined in black. Ordinary spots large, pale, defined by black scales. Secondaries grayish white. Beneath very pale, hardly powdery, with indistinct outer line. Head and thorax concolorous, collar paler, with a darker line near tip. Harpes of male somewhat bent at middle, tip obliquely rounded, with a fringe of spinules at inner side. At middle is a broad, somewhat spoon-shaped corneous process, with an acute point; behind this is a more slender, cylindric, slightly curved hook, obtusely terminated. Expands 1.20 to 1.28 inches (30 to 32^{mm}).

HABITAT.—Colorado, Arizona.

A remarkable species, differing by the delicate tintings of gray and rosy red and by the presence of the claviform from all its allies. The wing form is that of *incincta*, from which this species is additionally separated by the dark shade following, instead of preceding, the s. t. line. The genitalia are very like those of *oviduca*.

Tæniocampa obtusa Smith.

Proc. U. S. Nat. Mus., 1887, x, 474.

Dark blackish gray, powdery, all the lines lost. The narrow claviform is fairly well defined by black scales, and is somewhat yellowish. The orbicular is also yellowish and fairly well defined, small. S. t.

line indicated by faint yellowish dots. A row of small, terminal black points. Secondaries white. Beneath, whitish gray, powdery along the costa and apices of all wings. Head and thorax concolorous. Harpes of male somewhat bent, the tip lappet-like, obliquely rounded, inwardly spinulose. Near the base is a long, curved, moderately slender, tapering, corneous spur, behind which is a stout, short beak-like projection. Expands 1.10 inches (27^{mm}).

HABITAT.—Arizona.

A species peculiar by the short broad primaries, the outer margin oblique, and by the contrast in color between the two pairs of wings. The antennæ of the male are heavily bipectinate, the vestiture of front is rough, and the thoracic vestiture is scaly, dense, forming an indistinct median crest. The palpi are well developed and attain the vertex. The genitalia are like those of its near allies in character. It is a decidedly puzzling species. Mr. Graef has the male type, which is in fair condition except that it lacks the fringes.

Tæniocampa pectinata Smith.

Proc. U. S. Nat. Mus., 1887, x, 475.

Reddish luteous, densely irrorate with blackish powderings. Basal line faintly geminate; rather well marked. T. a. line obsolete. T. p. line rather close to outer margin; crenate, interrupted, outer portion of line punctiform. S. t. line very faintly paler, slightly sinuate. A row of more or less evident black spots just before outer margin. Reniform marked; upright, narrow, either paler or darker than ground color. Orbicular obsolete. Secondaries reddish gray; irrorate; a more or less evident discal spot. Beneath, reddish, powdery, with punctiform outer line and distinct discal spots. Head and thorax concolorous. Harpes of male bent, the lappet-like tip larger, oblique, inwardly spinulose. Clasper a rather long, curved, corneous hook; at base of this hook is a short, stout, beak-shaped process. Expands 1.35 to 1.50 inches (34 to 38^{mm}).

HABITAT.—California.

A large, robust species, with an appearance as though the wings were very thinly scaled. The very heavily pectinated and long antennæ are prominent. The vestiture is loose, long and hairy, forming indefinite tufts. Mr. Edwards has the type, which is somewhat battered but very recognizable.

In the Coll. U. S. Nat. Mus. are a number of fine specimens of this species collected by Mr. Koebele for Professor Riley, and by him donated to the Museum. They vary somewhat in ground color, and with good specimens at hand it is seen that there is a slight angulation at middle of outer margin of primaries, showing a close relationship to *Perigrapha*.

Tæniocampa terminata Smith.

Proc. U. S. Nat. Mus., 1887, x, 475.

Sordid yellowish gray, powdery; s. t. space somewhat darker, terminal space somewhat paler than the rest of wing. Median lines faintly marked, pale, interrupted. T. p. line followed by a row of black venular points which are outwardly limited by a pale dot. The s. t. line is defined by the strong contrast in shade between s. t. and terminal spaces; irregularly dentate. A row of distinct black spots close to outer margin, but not quite terminal. A wavy, pale, terminal line. A diffuse, dark median shade. Orbicular obsolete; reniform marked by a lunate yellow streak, apparently forming the outer margin of the spot. Secondaries blackish, with whitish fringes. Beneath whitish, powdery, with punctiform outer line and distinct discal spots. Head and thorax concolorous. Harpes of male equal to tip, where the superior angle is somewhat drawn out and the inferior angle rounded. Clasper corneous, moderately long, but slightly curved; at the base is another smaller hook, closely united with and apparently forming a part of the larger hook. Expands 1.60 inches (40^{mm}).

HABITAT.—Southern California.

The collar is somewhat produced centrally, there is an obvious though not prominent thoracic crest, and a truncate tuft on basal segment of abdomen. The species is therefore closely allied to *Perigrapha*, but has not the wing form of that genus, and the male antennæ are much more shortly pectinated. The type is a unique male in Mr. Tepper's collection.

Tæniocampa subfuscula Grt.

Pr. B. S. N. H. 16, 244, 1873 (*Anarta*), Buf. Bal. 2, pl. I, f. 7, 1874, *Anarta*; Smith, Proc. U. S. Nat. Mus., 1887, x, 474, *Tæniocampa*.

Ash gray, dark; powdery; median space more or less completely filled by a sordid blackish fuscous shade. Median lines distinct, black, single. T. a. line upright or outwardly oblique, irregularly curved and toothed on veins. T. p. line crenate, parallel with outer margin. Basal line distinct, geminate. S. t. line marked by a preceding irregular dusky shade, more or less interrupted. A row of black terminal spots. A pale line at base of fringes. Claviform rather small, but distinct, black marked; orbicular round, pale, sometimes with a central spot. Reniform upright, more or less obscured by the dusky shade; incompletely black ringed, and with rather a few white defining scales. Secondaries even, smoky fuscous. Beneath dull smoky gray, with variably complete outer line and distinct discal spot. Head and thorax concolorous. Harpes of male narrowing toward tip, which is oblique, with obtusely rounded angles; fringed inwardly with stout spinules. Toward base there is a curved corneous hook, moderate in length; half way to tip is a straight, somewhat flattened, process, broadening

towards tip, where it is truncate. Expands 1.32 to 1.45 inches (33 to 36^{mm}).

HABITAT.—Oregon, Montana.

The thorax is quadrate, the vestiture somewhat flattened, leaving a somewhat prominent collar, and an indistinct basal tuft. The species has nothing in common with *Anarta*, to which Mr. Grote referred it, while it is somewhat aberrant placed here. Yet it agrees better with this genus than any other, and, until it finds closer allies, is better referred here.

Tæniocampa arthrolita Harr.

Buf. Bul. 2, 275, 1874 (*Graphiphora*).

Thorax and primaries are a light brownish drab, with a yellowish shade; the t. a. line is black but faint; the median shade more marked, most distinct just inside the reniform spot on the cell, making two angles, outwardly and inwardly; the t. p. line geminate, above rounded outwardly, below inwardly. The outer component line very distinct and waved; the s. t. and terminal lines a series of black dots; the reniform spot concolorous, with a pale annulus; the orbicular spot hardly perceptible. Beneath dusky, an arcuated line on both wings; a discal spot on the secondaries.

Expands 1.40 to 1.55 inches (34 to 38^{mm}).

HABITAT.—California.

Dr. Harvey's description is copied because the specimen before me, though certainly this species, is somewhat faded. The punctiform s. t. line will serve to at once distinguish the species. The male antennæ are said to be somewhat moniliform, the joints ciliate—my specimen is a female.

Tæniocampa pacifica Harv.

Buf. Bul., 2, 120, 1874 (*Graphiphora*); Grt., Can. Ent., 7, 45=*incerta*; Smith, Proc. U. S. Nat. Mus., 1887, x, 476, an sp. dist.

Obscure luteous gray, with black transverse striga and irroration, maculation obscure, median lines usually obsolete. T. p. line when present, with a defined angle opposite the reniform, then evenly oblique to hind margin. S. t. line concolorous or slightly paler, marked by a darker preceding shade, most evident on costa. A row of small terminal dots. Sometimes there is a distinct median shade parallel with the s. t. line. Orbicular usually obsolete, rarely pale ringed, always concolorous. Reniform large, pale ringed, usually darker, blackish. The secondaries are powdery, pale, with the discal spot of under side faintly reproduced. Beneath pale, powdery, an incomplete outer line and distinct discal spots on all wings. Head and thorax concolorous with primaries, the latter densely clothed with long hair. The harpes of the male narrow abruptly near tip, the inferior angle of tip produced into a rather long, curved process, acute at tip. The clasper is irregularly curved, some-

what dilated beyond the middle and rather obtusely terminated. A very distinct stout supplementary corneous process at base of clasper. Expands 1.40 to 1.60 (35 to 40^{mm}).

HABITAT.—Colorado, California.

This species has been referred as a variety of the eastern *alia*, but incorrectly. It closely resembles it in maculation, but has a more robust thorax and slightly different habitus. The genitalia are also different. More extended comparisons are made further on.

Tæniocampa alia Gn., 1, 354, 1852.

incerta Grt., Lists and Lit.; Dimmock, * Psyche, 1885, iv, 273; *instabilis* Fitch, Tr.

N. Y. Agr. S., 16, 343 (*Orthodes*); Grt., Buf. Bul., 2, 23.

confluens Morr., Pr. B. S. N. H., 1874, 159; Grt., C. E., 12, 187 (*pr. syn.*).

Varies in ground color from pale luteous gray to dark grayish brown. Median lines obsolete or very faint; t. p. line usually punctiform. S. t. line irregular, pale, preceded by a darker shade. A row of black terminal dots. Ordinary spots large, pale ringed, reniform usually darker, at least inferiorly. Secondaries pale fuscous, powdery. Beneath powdery, with more or less complete common line and distinct discal spot. Head and thorax concolorous. The harpes of the male are suddenly narrowed and curved toward tip, which at its inferior angle is produced into a long, straight, acute process. The clasper is long, slender, regularly curved and acutely terminated. At the base there is an additional small, slender corneous process. Expands 1.40 to 1.60 inches (35 to 40^{mm}).

HABITAT.—Northern, Middle, and Eastern States; Missouri.

This species has been confounded with the European *incerta* (*instabilis*) and it closely resembles that species in maculation. It is perhaps possible to match specimens from both continents very closely, but the American form is distinguished by a different habitus, not easily definable, and also by the decidedly different genitalia. In the European form the harpe narrows gradually, and the tip is obliquely cut from each side, leaving the middle slightly projecting. The three species, *pacifica*, *alia*, and *incerta*, are very closely related, but are undoubtedly distinct. Compared with *pacifica*, *alia* is less robust, the thoracic clothing less dense, while the wings are apparently more heavily clothed with scales.

Mr. Morrison's species *confluens* is based on a specimen in which the ordinary spots are confluent, and the primaries have the costa more convex. The type is a female from Missouri and I have been unable quite to match it with a male, though specimens of *alia* with confluent spots are not rare. It is possible, but I think hardly probable, that a good species is covered by Mr. Morrison's name.

*This species is among those found by Mrs. Dimmock on *Betula*,

Tæniocampa subterminata Smith.

Proc. U. S. Nat. Mus., 1857, x, p. 476.

Pale yellowish gray to deep brown red, varying to every possible intermediate shade. Median lines usually distinct, geminate, rarely obsolete. T. a. line outwardly oblique, waved. T. p. line nearly parallel with outer margin, very even; included space paler, outer part of line punctiform. S. t. line always very distinct, pale, outwardly shaded by some darker color than the rest of the wing, in dark specimens with black. Claviform large, concolorous, more or less completely outlined, always traceable. Ordinary spots large, pale ringed, usually concolorous, sometimes paler, rarely darker than ground color. An upright dark shade crosses the median space, beyond which the wing is usually darker to t. p. line. Secondaries as variable in shade as the primaries. Beneath, pale, powdery, with heavy dark outer line and large discal spot on all wings. Head and thorax concolorous with primaries. Harpes of male elongate, sides sinuate, subequal, tip oblique and inwardly spinulose. Toward the base are two corneous beak-like processes, arranged Y-shape, that form the clasper. Expands 1.4 to 1.6 inches (35 to 40^{mm}).

HABITAT.—Maine, New Hampshire, New York.

This very strongly marked species has been heretofore confounded with *alia*, from which it differs so strongly that it is surprising it has not been heretofore described. It is more common than *alia*, and is the form usually in collections as "*incerta*." An obvious difference is that in *alia* the s. t. line is *preceded*, while in the new species it is *followed* by a darker shade. The genitalia differ very markedly.

Tæniocampa garmani Grt.

Can. Ent. xi 28, 1879.

Deep dark brown, irrorate with black, terminal space paler. Median lines faint, pale. T. a. line regularly arcuate, t. p. sinuate. S. t. sinuate, marked by a black preceding shade. Ordinary spots subequal, slightly paler, somewhat indefinite. Secondaries yellowish fuscous, with obvious discal spot. Beneath, reddish luteous, powdery; discal spots distinct. Head and thorax concolorous. Harpes of male slightly curved, subequal, obtusely rounded at tip. Clasper a stout, curved, corneous hook of moderate length. Expands 1.5 inches (38^{mm}).

HABITAT.—Illinois, Iowa.

A robust species, very different from any of the others in this section, and readily distinguished.

Tæniocampa præses Grt.Bull. Surv. 5, 202 (*Perigrapha*).

Dark blackish brown, with a carmine shade, powdered with black. Median lines very faint, slightly paler than ground color. S. t. line somewhat paler, preceded by a darker shade, its course slightly sinu-

ate. Ordinary spots pale ringed; in the specimen before me confluent. Probably this is the exception and not the rule. Secondaries with a carmine tinge, blackish powdery, a distinct discal spot. Beneath powdery, with broad outer line and large discal spot. Head and thorax concolorous, collar paler, yellowish red. Harpes slightly curved, squarely cut off at tip, the angles somewhat prominent. The clasper is a curved, corneous hook of moderate length. Expands 1.40 inches (35^{mm}).

HABITAT.—California.

This species is readily recognized by the discoloured collar. It is closely allied to *garmani* and perfectly congeneric with it. The thorax has a small anterior crest, and there is a truncate posterior tuft, and these probably caused Mr. Grote to refer the species to *Perigrapha*. The same features to a less degree are visible in *garmani*, but neither have the heavily pectinate antennæ of *Perigrapha* nor its wing shape.

SPECIES UNKNOWN TO ME.

Tæniocampa agrotiformis Grote.

Can. Ent., XIII, 14, 1881, *Graphiphora*.

“*Female*.—This form reminds one of *Agrotis collaris* or *versipellis*. Eyes hairy, tibiæ unarmed, tuftings obsolete. Fore wing blackish brown to the continuous, black, upright, uneven subterminal line; beyond with the fringes brownish. Median lines geminate, faint. Orbicular round, paler than the wing. Reniform moderate, outwardly excavate, upright, pale ringed, with dark center. The cell between the spots black shaded. The stigmata are comparatively small. No trace of the claviform. Hind wings pale brownish fuscous, concolorous; fringes a little lighter and more reddish. Beneath secondaries paler, with discal dot and uneven exterior line; fore wings dark fuscous to terminal space, which is pale with the fringes dark. Head and thorax like the fore wings; collar a little paler. Body rather slender; costa of primaries a little depressed centrally. Colorado, expands 34^{mm}. Differs from the described species quite strongly; from *Mamestra* by the untufted body parts.”

Quite a distinct species from the description, and quite unlike anything I have seen. The type of ornamentation would seem to relate it with *garmani*.

Tæniocampa orobia Harv.

Can. Ent. VIII, 154, 1876 *Mamestra*; Grt., Can. Ent. XIII, 126, 1881, *Tæniocampa*.

“Eyes hairy; antennæ pectinate. Thorax and wings grayish fuscous, color of *trifolii*; basal half line white, t. a. line geminate, widely separated; t. p. line consisting of a series of white points; subterminal irregular, terminal line black. Orbicular spot large, white ringed

with dark center; reniform constricted at the center, white margined with a dark filling. Subterminal space shaded light. Beneath of a lighter shade, discal spot and a faint trace of the t. p. line. Secondaries shining fuscous, fringes whitish, beneath lighter, discal spot black, very evident. Expanse 20^{mm}. Texas. (O. Meske.)"

"This species is allied to *trifolii*. The antennæ are pectinate, while in *trifolii* they are simple. In *orobia* the darker costal edge shows the white dots distinctly."

This is not now in the Meske collection. Mr. Grote referred it in 1881 to *Tæniocampa*, Harvey having described it as a *Mamestra*. The pectinated antennæ would seem to ally the species either to *rufula* or to *incincta*, according to the wing form, which is not described.

PERIGRAPHA Led.

Noct. Eur., 1857, 136.

A free translation of Lederer's description of the genus *Perigrapha* is as follows: "In habitus and the hairy eyes these insects resemble *Tæniocampa*; but the collar is excavated at the sides and joined at the middle in a sharp edge; the thorax is somewhat produced at the sides, and behind the collar there is a distinct crest. On the basal segment of abdomen there is a large truncate tuft of hair. Antennæ in both sexes pectinated, in the female the pectinations shorter. Primaries ash or brown gray, the usual spots unusually large, confluent, somewhat paler than ground color, deep black margined."

Except in one particular our species agree perfectly with the essential portions of this diagnosis, *i. e.*, in none of the species known to me are the antennæ in the female pectinated, but serrated in some. The character is an unusual one, and an important one for that reason; but, as otherwise, the species are so close to the European forms they had better be retained as congeneric—for the present, at least.

The head is strongly retracted, the palpi scarcely reaching or hardly exceeding the front. The body is robust, obtaining a somewhat clumsy appearance from the thick, rather loose, vestiture. The abdomen, compared with the large thorax, is small and short; little or not exceeding the hind angle of secondaries. In addition to the large truncate basal tuft, the males are furnished with smaller lateral tufts. The genitalia are various and separately described for each species. The primaries are proportionately rather long and wide, the apices acute, but slightly prolonged; outer margin obliquely rounded, leaving the middle somewhat prominent. The wing shape will serve to at once distinguish the genus.

Two well-marked groups are recognizable in our species; the first, and most typical, with the ordinary spots confluent. In this also the thoracic vestiture has scales and capitate hairs intermixed. The second, with the spots normal, separate and not unusually large. The thoracic

vestiture is entirely hairy or at least with but a few capitate hairs intermixed.

Normalis heads the list in the first group, and is our largest species. It lacks all maculation save the pale, deep black ringed, ordinary spots, and is thus readily recognized. The genitalia are unique.

Inferior is a small species of a dull ash-gray color, densely irrorate with black scales; the ordinary spots are barely defined and hardly paler in ground color.

Plusiiformis is a handsome species, larger than the preceding and paler ash gray in color. The ordinary spots are distinctly outlined and the s. t. line is marked. In genital structure this species agrees in essential characters with *inferior* and *muricina*, the peculiar feature being a broad corneous plate, which at tip is emarginate, the projecting edges variably curved to form the clasper.

Muricina and *Behrensiana* differ from all the preceding by having the terminal space much paler than the other portions of the wing. The former is a pale, grayish brown, the lines obsolete or indistinct. The latter, which is unknown to me in nature, is said to be dark brown, coarsely irrorate with black, costal margin carneous, transverse lines distinct, pale.

The remaining species belong to the second group in which the ordinary spots are not confluent.

Pulchella is very readily recognized by the deep red-brown ground color, and the pale, blue gray terminal space. The transverse lines, so far as traceable, are also pale.

Erythrolita and *transparens* differ in not having the terminal space paler, or discoloured. The former is variable in ground color, and has the s. t. line well marked, though not continuous. *Transparens* is a dull red brown, with the s. t. line wanting and all ornamentation sub-obsolete.

Per. præses Grt. seems to me better referred as a *Taniocampa*.

The species are Western and seem not common usually.

A more comprehensive division of the genus is as follows:

Ordinary spots confluent, large, pale. Vestiture with scales or capitate hairs intermixed.

S. t. space concolorous.

Dark fuscous brown; all lines wanting; ordinary spots, pale ringed, black shaded.

NORMALIS

Ash gray, dark, uniform, maculation obsolete.....INFERIOR

Paler, with a rufous tint; s. t. line marked, ordinary spots outlined.

PLUSIIFORMIS

S. t. space paler.

Pale gray-brown; transverse lines obsolete.....MURICINA

Dark brown, coarsely irrorate with black, costal margin carneous..BEHRENSIANA

Ordinary spots normal, not confluent; vestiture hairy.

Terminal space discoloured, pale.

Deep red-brown; transverse lines and terminal space bluish gray....PULCHELLA

Terminal space concolorous.

Mouse-gray to leather-brown; s. t. line marked.....ERYTHROLITA

Dull red-brown. S. t. line obsolete.....TRANSPARENS

Perigrapha normalis Grt.

Buf. Bul., 1873, 2, 162 (*Acerra*); List, 1875, pl. f. 4; C. E. 1879, 11, 27 (*Graphiphora*), *id.* 1881, 13, 133. (*Perigrapha*.)

Very even mouse-gray, transverse lines obsolete. Basal line faintly indicated. Ordinary spots confluent, very large, nearly equal in size and shape; superiorly open, else with a narrow whitish defining line, outwardly bounded by a blackish shade, which inferiorly shades into the ground color: the whole included in a very faint, pale V, which does not reach the inner margin. A row of small terminal dots, and a paler terminal line. Secondaries evenly fuscous. Beneath powdery fuscous, with a common darker line and discal spot. Head and thorax concolorous; collar slightly paler. The harpes of male are somewhat curved, and narrow regularly to tip, where they are acute. Clasper moderate in length, robust, not much curved, inwardly with an obtuse tooth. Expands 1.45 to 1.50 inches (35 to 37^{mm}).

HABITAT.—California.

This is an easily recognizable form. The lack of all maculation, except the large confluent ordinary spots, forms a distinctive feature.

Perigrapha inferior Smith.

Proc. U. S. Nat. Mus. 1887, x, 477.

Dark ash gray, all the maculation obsolete. Ordinary spots fused, slightly paler, but hardly defined. The primaries are crossed by fine brown strigæ, hardly visible except on close examination. Secondaries uniformly fuscous. Beneath powdery; secondaries with a large discal spot. Head and thorax concolorous with primaries; collar inferiorly with a reddish tint. The male genitalia are most nearly like *muricina*, but the inferior branch of clasper is very short, and acutely terminated. Expands 1.20 inches (30^{mm}).

HABITAT.—California.

Easily distinguished by the almost uniformly dark gray color, the fused ordinary spots scarcely paler. The male type is with Mr. Edwards.

Perigrapha plusiiformis H. Ed.

Pr. Cal. Ac. Sci., v. 267 (*Stretchia*); Grt. New List (*Perigrapha*).

Pale ash gray; ordinary spots slightly paler, confluent; the reniform with a rusty central shade. A short basal black dash. Basal line rather faint, but discernible. T. a. line fine, marked only above the middle. T. p. line punctiform. S. t. line even, narrow, pale, marked by preceding brown scales. Secondaries uniformly brown fuscous. Beneath, somewhat purplish with black irroration; a black discal spot on all wings. Head and thorax concolorous, tegulæ black-tipped, collar inferiorly purplish. Harpes of male broad, at tip trunc-

ate and bisinuate. Clasper as in *muricina*. Expands 1.28 inches (32^{mm}).

HABITAT.—Nevada.

Apparently a close relation of *muricina*, but at once separable by the concolorous terminal space. A single male specimen (the type) is in Mr. Edwards's collection.

Perigrapha muricina Grt.

Buf. Bul., 1875, 3, 85 (*Acerra*); C. E., 1879, 11, 27 (*Graphiphora*); *id.*, 1881, 13, 133 (*Perigrapha*).

Pale brown, with grayish suffusion in basal, s. t. and lower part of median space. Terminal space gray. Ordinary spots confluent in the form of a wide V; whitish gray, reniform with a rusty shade line; outline inferiorly and at sides, black. Basal line distinct, single, brown. A short brown basal dash. T. a. line narrow, single, outwardly curved between veins. T. p. line faint, slightly marked on veins, but hardly traceable except for the faint difference in shade between median and submedian space. S. t. space narrow, sharply defined outwardly by the even gray terminal space. S. t. line irregular, interrupted, brown; best marked at costa and internal margin where it bounds the pale terminal space. A row of slender brown terminal lunules. Secondaries even, fuscous. Beneath reddish, powdery, secondaries with extra discal line. Head and collar brown, the latter with darker tip. Tegulae and tuftings gray, with brown tips. The harpes of male are slender, gradually enlarged into an obtuse lappet, which is inwardly sparsely spinulose. Clasper bifurcate, the inferior branch straight, stout, regularly tapering to tip; the superior branch curved, subequal. Expands 1.30 inches (33^{mm}).

HABITAT.—Oregon.

Readily distinguished by pale brown color, and the contrasting terminal space. The type is with Mr. Edwards.

Perigrapha Behrensiana Grt.

C. E., 1875, 7, 71 (*Graphiphora*), *id.* 1881, 13, 133 (*Perigrapha*).

“ * * * The fore wings are coarsely irrorate with black, of a dull brown ground color, darker to the pale subterminal line, beyond which they are paler, with the veins pale marked. The costal edge is caraneous. The lines are pale, tolerably approximate on internal margin, rather even, with blackish margins. The t. a. line outwardly oblique, the t. p. line flexuous. Ordinary spots large, pale margined, fused, so that there is a resemblance to some species of *Glaea*. Hind wings soiled white, sparsely irrorate, with a discal dot, concolorous fringes and a broken terminal line. Beneath whitish, a continuous line on primaries, dotted on hind wings; discal marks double on fore wings; very distinct on secondaries.”

Expands 35^{mm}.

HABITAT.—California.

This species is unknown to me, but seems allied to *muricina* by the pale terminal space. The impression given by the description is that the ordinary spots are concolorous, which, with the distinct transverse lines, would separate this species from all others with confluent spots.

Perigrapha pulchella Harv.

C. E., 1876, 8, 54 (*Graphiphora*).

Deep red-brown; terminal space bluish gray. Superior portion of basal space, costa between ordinary spots, and a small patch at the inception of t. p. line also gray. T. a. line narrow, pale, upright. T. p. line unusually near to and nearly parallel with outer margin. Gray, with a preceding dusky shade, followed by a row of black venular dots which are outwardly shaded with gray. S. t. line marked only by the contrast between s. t. and terminal space. Ordinary spots slightly darker, narrowly pale lined, moderate in size. Secondaries uniformly fuscous. Beneath reddish, powdery with distinct common line and discal spots. Head and thorax of ground color. Expands 1.40 inches (34^{mm}).

HABITAT.—California.

A single female specimen. The type is in Mr. Edwards' collection. The species is a striking one, and not easily mistaken for anything else. The deep red-brown color and contrasting blue-gray terminal space are characteristic.

Perigrapha erythrolita Grt.

C. E., 1879, 11, 208 (*Graphiphora*); *id.* 1881, 13, 133 (*Perigrapha*).

Mouse-gray to a bright leather-brown; color very even. T. a. line obsolete; t. p. line obsolete, or marked by a geminate row of faint black dots. S. t. line interrupted, yellowish, preceded by a dark brown shade, its course oblique, even. Ordinary spots moderate, very narrowly pale ringed, slightly darker than ground color. Orbicular round, reniform rather narrow, upright. Secondaries smoky, outwardly darker. Beneath gray, powdery, with variably distinct outer line and discal dots. Head and thorax concolorous. The genitalia differ from all of the other species. The harpes are curved and bent, enlarged at tip and terminating in three lobes. The clasper is stout, curved and corneous, single. Expands 1.20 to 1.30 inches (30 to 35^{mm}).

HABITAT.—California.

This is a somewhat variable species in ground color, but readily recognizable always by the even oblique s. t. line, marked by an interrupted brown shade. The male genitalia are distinctive and differ from the other known forms.

Perigrapha transparens Grt.

Bull. Surv., 6, 583.

Even, rather deep red brown at base, with a carmine shade, maculation obsolete. The reniform is slightly darker and fairly well defined. The t. p. line is indicated by a geminate row of faint blackish dots. Secondaries fuscous. Beneath reddish, powdery; secondaries with a discal lunule. Head and thorax concolorous with primaries. Expands 1.50 inches (37^{mm}).

HABITAT.—Washington.

The female type is the only specimen I have seen. There need be no difficulty in identifying this very simply marked form, which seems thinly scaled, and is more powdery than usual, the atoms very fine and not apparent.

PLATE XXII.

1. Harpe and clasper of *Perigrapha normalis*.
2. Harpe and clasper of *Perigrapha inferior*.
3. Harpe and clasper of *Perigrapha plussiiiformis*.
4. Harpe and clasper of *Perigrapha muricina*.
5. Harpe and clasper of *Perigrapha erythrolita*.
6. Harpe and clasper of *Orthodes infirma*.
7. Harpe and clasper of *Orthodes cynica*.
8. Harpe and clasper of *Orthodes enervis*.
9. Harpe and clasper of *Orthodes virgula*.
10. Harpe and clasper of *Orthodes irrorata*.
11. Harpe and clasper of *Orthodes puerilis*.
12. Harpe and clasper of *Himella intractata*.
13. Harpe and clasper of *Cocigrapha normalis*.
14. Harpe and clasper of *Ulolonche niveiguttata*.
15. Harpe and clasper of *Ulolonche fasciata*.
16. Harpe and clasper of *Ulolonche modesta*.
17. Harpe and clasper of *Scotogramma submarina*.
18. Harpe and clasper of *Trichoclea edwardsi*.
- 18a. Fore tibia and tarsal joints of *Trichoclea edwardsi*.
- 19a. Fore tibia and tarsal joints of *Trichoclea decepta*.
19. Harpe and clasper of *Trichoclea decepta*.
20. Harpe and clasper of *Barathra brassicæ*.
21. Harpe and clasper of *Barathra curialis*.
- 21a. Fore tibia of *Barathra curialis*.

PLATE XXIII.

1. *Tæniocampa furfurata*, harpe and clasper.
2. *Tæniocampa perbrunnea*, harpe and clasper.
3. *Tæniocampa peredia*, harpe and clasper.
4. *Tæniocampa uniformis*, harpe and clasper.
5. *Tæniocampa columbia*, harpe and clasper.
6. *Tæniocampa rufula*, harpe and clasper.
7. *Tæniocampa modifica*, harpe and clasper.
8. *Tæniocampa utahensis*, harpe and clasper.
9. *Tæniocampa oviduca*, harpe and clasper.
10. *Tæniocampa incincta*, harpe and clasper.
11. *Tæniocampa suffusa*, harpe and clasper.
12. *Tæniocampa obtusa*, harpe and clasper.
13. *Tæniocampa terminalis*, harpe and clasper.
14. *Tæniocampa pectinata*, harpe and clasper.
15. *Tæniocampa subfuscula*, harpe and clasper.
16. *Tæniocampa incerta*, Hufn. (European) harpe and clasper.
17. *Tæniocampa pacifica*, harpe and clasper.
18. *Tæniocampa alia*, harpe and clasper.
19. *Tæniocampa subterminalis*, harpe and clasper.
20. *Tæniocampa garmani*, harpe and clasper.
21. *Tæniocampa præses*, harpe and clasper.



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