

# NEW GENERA AND SPECIES OF NORTH AMERICAN NOCTUIDÆ

By JOHN B. SMITH.

The following descriptions of Noctuidæ represent in part the new material examined and studied in the preparation of a monograph of the Noctuidæ on which Professor Riley and myself have been for some time engaged. Some of the descriptions have been in manuscript for over two years, and it has been deemed advisable to publish the descriptions now, in advance of the monograph, which has been delayed more than expected, the more as some of the generic and specific terms have gained currency without descriptions to authorize them.

Fuller comparisons, tabular statements, and more detailed structural statements will be reserved for the monograph. It might be added also that many of the species described from single specimens have been since received in larger numbers.

## Genus **AGROTIS** Tr.

An unexpected variation in structure has been found in this genus, no less than twenty-six more or less sharply-defined groups being recognized. A few of these will probably take generic rank; but all are here referred to under the old generic term.

### Group **EXSERTISTIGMA**.

Under the term *exsertistigma* I have found three distinct species confounded by Mr. Grote, and in fact all the species of the group are hopelessly mixed in collections. Thus Mr. Graef has the type of *exsertistigma* Morr.; Mr. Tepper has *exsertistigma* determined by Mr. Grote, and this is like *observabilis* in collection Neumoegen, also determined by Mr. Grote, and neither is the same as the type: a second specimen, associated with the *observabilis* of Mr. Neumoegen's collection, is unlike either of the others. The *discoidalis* of Mr. Hulst's collection is the *observabilis* of Mr. Graef's collection, and the *discoidalis* of Mr. Edwards' collection is different from either. So the *facula* of Mr. Neumoegen's collection is entirely different from the same species in Mr. Edwards' collection. I have had, therefore, three distinct species labelled *exsertistigma* by Mr. Grote, and at the same time three specimens, undoubtedly the same species, with three different names. Careful comparisons with the descriptions and the actual types in most instances has enabled me to separate the species as follows:

Collar broadly black at tip.

Smoky brown; costa, transverse lines, and outer margin luteous. . . . . **EXSERTISTIGMA**.

Dark purplish or grayish brown, transverse lines distinct. Body robust; primaries short, obtuse. . . . . **FORMALIS**.

Red-brown; transverse lines feebly marked; t. p. hardly traceable. Body less robust; primaries more elongate and somewhat produced at apex. **BINOMINALIS**.

Collar not tipped with black.

Robust; abdomen short, plump; primaries short, obtuse; dark blackish brown; lines faint ..... FACULA.

Less robust; abdomen more slender; primaries longer; less obtuse.

T. a. line crossing the costal space, which is not strongly contrasting in color.

Dull luteous, powdered with black; s. t. space not darker than median space; orbicular open ..... OBSERVABILIS.

Color as before; s. t. space darkest; orbicular tending to become complete superiorly ..... DISCOIDALIS.

Deep purplish-brown; s. t. space evidently paler than median space.

CRENULATA.

T. a. line not crossing the broadly pallid costa.

Bright red-brown; costa and collar yellow ..... CONFUSA.

The structural characters common to the group are, smooth front, unarmed, non-spinose anterior tibia; simple male antenna; subdepressed form; thorax with distinct anterior and posterior divided tufts. The palpi project straightly forward, and form a short snout, less distinct, however, than in the *cupida* group. The maculation is after one general type. The orbicular is always V-shaped, opening to the costa, which is generally paler than the rest of the wing, and the cell between and around stigmata is usually darker and often black. In addition to the color characteristics given above, the males show obvious differences in the form of the genitalia, well authorizing the species newly created. These differences need not now be detailed, and only in the new species will they be referred to.

**A. binominalis** Smith, sp. nov.

Primaries red-brown; costa and collar inferiorly yellowish; collar tipped with black; cell around the ordinary spots black. Transverse lines geminate; t. a. line not crossing costal pale space, else distinct; t. p. line punctiform, barely traceable; s. t. line pale, interrupted, powdery. Stigmata pale-ringed, orbicular invaded by costal pale space; reniform slightly cinereous; claviform faintly outlined in pale. Abdomen and secondaries smoky fuscous. Side pieces of ♂ short and broad, superiorly prolonged into a cylindrical finger-like process; inferiorly into a short acute spur. The clasper consists of a single curved hook from the superior portion of side piece. Expands 1.5 inches (38<sup>mm</sup>).

*Habitat*.—California, Washington Territory.

This is the *exsertistigma* of the Edwards collection, and like one specimen so labeled in Mr. Tepper's collection. The typical *exsertistigma* is, as Mr. Morrison described it, much like *alternata* in color and appearance.

**A. crenulata** Smith, sp. nov.

Primaries deep dark brown; basal and s. t. space slightly paler, powdered with gray; costal space paler red brown; ordinary spots powdered with gray; claviform outlined with pale yellow scales. Transverse lines distinct; t. a. lines geminate, included space pale; t. p. line crenulate, course as in the preceding species; s. t. line distinct, pale

yellowish, punctiform. Basal black dash distinct; cell black. Side pieces of  $\delta$  as in the preceding species; but the projections at upper and inferior angles are longer, and there is an additional curved slender projection from upper margin. The clasper is lacking, but is replaced by a quadrate corneous plate. The additional projection of side piece probably serves the same purpose as the clasper of preceding species. Expands 1.4 inches (36<sup>mm</sup>).

*Habitat*—California.

This is the *facula* of Mr. Neumoegen's collection, so named by Mr. Grote. The differences are so obvious, that there seems scarcely an excuse for the error. The difference in the  $\delta$  genitalia is very decided also. A single  $\delta$  specimen only in Mr. Neumoegen's collection.

*A. confusa* Smith, sp. nov.

Bright red-brown; costa and collar broadly pale yellow; cell before and between the ordinary spots black; ordinary spots concolorous, narrowly annulate with pale yellow; claviform outlined in same way. T. a. line distinct, not crossing costal pale space, but incurved to base; t. p. line punctiform, indistinct, geminate, included space paler; s. t. line pale yellow, narrow, powdery, emphasized by the somewhat darker brown s. t. space. Secondaries fuscous.  $\delta$  genitalia essentially as in *crenulata*. Expands 1.5 inches (38-39<sup>mm</sup>).

*Habitat*.—Washington Territory.

This is the form labeled *exsertistigma* by Mr. Grote in collection Graef and Neumoegen, and Mr. Tepper also had a specimen associated with *binominalis* under the same title. The superficial resemblance between *binominalis* and *confusa* is very close, but the species are undoubtedly distinct. The black collar of *binominalis* is distinctive and the difference in the genitalia is strongly marked. Four specimens of  $\delta$  and  $\eta$  from Messrs. Graef, Tepper, and Neumoegen examined.

The following species belong to other groups, as indicated in each instance:

*A. tepperi* Smith, sp. nov.

Anterior tibia sparsely spinose; front smooth; palpi equal throughout, second joint not clavate at tip. Body somewhat depressed, thorax untafted. Primaries white, sparsely irrorate with black scales; transverse lines single, fuscous. T. a. line oblique, slightly and rather evenly curved outwardly. T. p. line sinuate, perceptibly angulate over the cell. S. t. line broad, diffuse, unusually remote from but nearly parallel to outer margin. A row of distinct terminal dark spots. Ordinary spots indefinite, concolorous. Orbicular small, round; reniform moderate, of normal form, rather small, the outer and inferior margin black. Secondaries whitish, darker outwardly. Beneath white, powdery. Thorax concolorous, collar tipped with black. Expands 1.35 inches (34<sup>mm</sup>.)

*Habitat*.—Montana.

A very distinct species, readily recognized by the pale color, the evident transverse lines and black tipped collar. The primaries are trigonate. The species is related to *atrifrons* and *lubricans* in structure, and the male will undoubtedly be found to have simple antenna and a single, curved hook-like clasper. The unique ♀ type is in Mr. Tepper's collection.

*A. sorror* Smith, sp. nov.

Anterior tibia spinose, armed at tip with four short claw-like spines. Front with a short, acute, conical projection. Thorax depressed; abdomen flattened; primaries elongate, narrow, subequal, obtuse. Color of primaries gray, a more or less evident fuscous tint in median and terminal space; in the former not invading the costal region or hind margin, and leaving a gray dash through submedian space. All between and before the ordinary spots blackish. A black sub-basal spot. T. a. line geminate, dark, included space gray, not crossing costal space, outwardly curved between veins. T. p. line single, crenulate, parallel with outer margin. S. t. line gray, sinuate, marked by the dark terminal space, and a preceding dark shade. Claviform very faintly outlined, concolorous. Ordinary spots gray with dusky center, outlined in black; moderate in size, normal in form. Head and thorax gray; collar with a black line. Secondaries fuscous, veins dark marked. Beneath gray, powdery. Expands 1.4 inch (36-37<sup>mm</sup>).

*Habitat*.—Montana.

Two ♀ specimens from Mr. Hulst furnish the types. The male characters will undoubtedly be found to be much like those of *auxillaris* and *introferens*, to the latter of which the new form is closely allied. In this group, however, of which *auxillaris* is typical, the species seem to present absolutely no variation, and the apparent contrary shown in some collections arises simply from the fact that two and sometimes three species are very generally mixed. The maculation and habitus is nearly alike, but structurally the species differ very decidedly in the form of the ♂ genitalia.

*A. proclivis* Smith, sp. nov.

Anterior tibia strongly spinose, terminal armature consisting of two rather long claw-like spines. Front broad, not much inflated; rough, granulate rather than tuberculate. Antenna of ♂ simple, finely ciliate. Primaries wide, apices rectangular. Thorax with low, divided fore and aft tufts. Side pieces of ♂ long and rather narrow, the tip rounded and inwardly furnished with a row of spinules. Clasper with a short, acute inferior projection and a long, curved corneous superior hook, somewhat enlarged at tip. Primaries dark smoky brown, with a purplish gloss. Costal region broadly tinged with red brown; a reddish suffusion accompanying the t. p. and s. t. line. T. a. line geminate, indistinct, upright to veins, then with a wide outward curve to hind margin. T. p. line crenulate, narrow, single; its course parallel with outer margin.

S. t. line faint, irregular, punctiform. Two longitudinal black dashes cross the line opposite the cell and terminate at outer margin. Claviform dark, short, indefinite. Ordinary spots indefinite, concolorous with costal region, centered with dark scales; orbicular irregular oval. Secondaries dark fuscous, toward base paler. Beneath smoky, powdery, a distinct dark discal spot; secondaries paler at base. Head and thorax concolorous with costal region of primaries. Expands 1.5 inches (38-39<sup>mm</sup>).

*Habitat*.—Arizona.

One ♂ (Tepper) and one ♀ (Neum.). The species is very distinct from all others with the same structural characters, and is nearest to *aclivis* Morr. At first sight there is a suggestion of *heretis* in the habitus of the species which may mislead. The simple ♂ antennæ are distinctive.

*A. albicosta* Smith, sp. nov.

Structural characters as in *proclivis*, the terminal armature of fore tibia heavier. The side piece of ♂ is long, narrow, oblique at tip, the upper angle long drawn out, the inner side closely spined. The clasper is short, stout, dilated at middle, and with a short beak-like curve at tip. Primaries very dark smoky brown; basal dash and cell, except ordinary spots, black. Costal space and ordinary spots pale luteous. T. a. line indicated between median and s. m. vein, else obsolete. T. p. line obsolete. S. t. line indicated only by a few indefinite black marks opposite the cell. Orbicular round, small, with punctiform dark center. Reniform normal, annulate with somewhat paler yellow. Secondaries pearly white with smoky outer border. Beneath, primaries blackish, secondaries pearly white. Thorax concolorous with primaries, somewhat purplish. Expands 1.25 inches (31-32<sup>mm</sup>).

*Habitat*.—Arizona.

A neatly marked and easily recognized species. There is nothing like it with the same structural characters. A male specimen from Mr. Neunmoegen furnished the type; others ♂ and ♀ from various collections, in single specimens, have been since seen, and agree with the type specimen.

*A. oblongistigma* Smith, n. sp.

Anterior tibia spinose, moderately armed at tip; clypeus with a small, roughened protuberance depressed in the center. Tuftings of thorax small, indefinite; collar with a narrow black line. Primaries smoky brown or blackish, cell between ordinary spots darker; costal region and ordinary spots dull ash gray; an oblique subapical gray shade; a sub-median gray shade from center of wing nearly to hind angle. Median vein marked with white; on veins 3 and 4 two sagittate pale rays cross the s. t. space and indent the s. t. line. Transverse lines wanting; s. t. line pale, distinct, tolerably even, except on veins 3 and 4, preceded by distinct black sagittate dashes. A narrow black basal dash; claviform long, concolorous, narrowly outlined in black. Orbicular oblique, oblong, superiorly opening into the pale costal region. Reniform upright,

narrow, slightly indented at outer side. Secondaries dirty whitish gray. Beneath grayish, powdery. Expands 1.20-1.25 inches (30-32<sup>mm</sup>).

*Habitat*.—Montana, Black Hills.

Four ♀ specimens from collections Neunmoegen, Graef, and Hulst. No ♂ specimens seen, but the antennæ will undoubtedly be found to be serrate and bristled, and the clasper bifurcate. In appearance the species resembles *idahoensis*, which, however, belongs to another group. The present species belongs to the group *quadridentata*, and is closely related to *ovalis* and *plagigera*, differing, however, from all others in the group by the evenly gray costal margin and ordinary spots.

**A. flavidens** Smith, n. sp.

Anterior tibia spinose, moderately armed at tip; clypeus with an ovate projection, depressed in the center; antennæ of ♂ serrate and bristled, ♂ side piece and clasper as in *tetrica*. Thorax quadrate, collar narrowly lined, patagiæ margined with black, the low, divided fore and aft tufts paler. Primaries blackish brown, s. t. space paler, costal region to t. p. line discolorous, yellowish; a clear yellow dash through submedian space, reaching the s. t. line; a subapical whitish patch; on veins 3 and 4 two sagittate white dashes cross the s. t. space and indent the s. t. line. T. a. line geminate, included space pale, not crossing pale costa, outwardly curved below median vein to v. 1, and then obliquely to the hind margin. T. p. line simple, lunulate, parallel with outer margin. S. t. line narrow, pale, even except on veins 3 and 4. Basal black dash present. Claviform long, concolorous, outlined in black. Ordinary spots complete, outlined in black, then with a clear yellow annulus; center umber brown; orbicular oval, slightly oblique; reniform, kidney shaped. Secondaries dusky, paler towards base. Beneath dusky, powdery. Expands 1.35-1.50 inches (35-38<sup>mm</sup>).

*Habitat*.—Arizona, Colorado.

Two ♂ and one ♀ in collection Graef and Neunmoegen. This is the largest and best marked species in the group *4-dentata*, and it bears a considerable resemblance in marking to the *subgothica* group, having, however, the structural characters of the first-mentioned group.

**A. brevipennis** Smith, sp. nov.

Structural characters like those of *oblongistigma* and *flavidens*, and like them belonging to the *4-dentata* group. Primaries ash gray, with somewhat darker shadings through center and in terminal space. Orbicular oblique, open superiorly; reniform oblique, elongate, somewhat constricted at middle. Both the ordinary spots are defined by a narrow black line and a paler interior ring; else concolorous. Claviform very distinctly outlined. Transverse lines faint, in one specimen entirely obsolete. T. a. line geminate, visible only in submedian space. T. p. line obsolete. S. t. line white, indefinite, indented to half the extent of terminal space on veins 3 and 4, by the pale sagittate marks peculiar to this group. Apex pale. Secondaries white, with blackish terminal

line. Beneath white, primaries rather densely, secondaries sparsely powdered with black scales. Head and collar inferiorly, paler; thorax concolorous with primaries. Expands 1.45-1.50 inches (36-38<sup>mm</sup>).

*Habitat*.—California, Colorado, Nevada.

This species is remarkable for its plump form and somewhat retracted head; the abdomen, too, is short, and that gives the insect an unusually robust appearance. The white secondaries ally it with *recula*, *eicatricosa*, *4-dentata*, and *niveilinea*, from all of which it is abundantly distinct. Types ♂ and ♀ in collections A. W. P. Cramer and B. Neumogen.

*A. flavicollis* Smith, sp. nov.

Structural details as in *flavidens*. Primaries rather dark red brown, s. t. space somewhat paler; costa to t. p. line and a broad line through submedian space, yellow; median vein white. Two sagittate pale dashes crossing s. t. space and indenting the s. t. line on veins 3 and 4. T. a. line geminate, black; included space concolorous; not crossing the pale costal space and evenly outwardly curved between veins. T. p. line lunulate, parallel with outer margin. S. t. line pale, distinct, even; preceded by evident, black sagittate marks. Terminal space powdered with black. A black spot at base. Claviform somewhat darker, moderate in size, distinctly outlined in black. Ordinary spots pale, yellowish, powdered with white. Orbicular round, reniform kidney-shaped. Secondaries smoky fuscous. Beneath, fuscous, powdery. Thorax concolorous, collar inferiorly yellow. Expands 1.25 inches (32<sup>mm</sup>).

*Habitat*.—Montana.

One ♀ specimen from Mr. Tepper's collection. A well-marked form, peculiar by the yellow collar and in addition by the obtuse primaries, and rather unusually ample secondaries. Possibly, when the ♂ is discovered it may prove not referable to this group, with which, however, the ornamentation would seem to place it.

*A. obesula* Smith, sp. nov.

Structural characters as in the species of the *4-dentata* group. Primaries rather dark luteous gray, irregularly mottled with darker fuscous points and short lines. Ordinary spots very indefinite, dusky fuscous; a fuscous patch indicating the punctiform s. t. line. Transverse lines distinct, punctiform, interrupted. Basal line distinct, geminate; t. a. line upright, curved between veins. T. p. line crenulate, parallel with outer margin. S. t. line punctiform, even, fuscous. Terminal space more densely irrorate with dark atoms. Secondaries white. Beneath, white, powdery; disc of primaries darker; a common dark extra discal line, crossing primaries but not extending beyond middle of secondaries. Expands 1.5 inch (38<sup>mm</sup>).

*Habitat*.—Montana.

The ♂ antennae are unusually thick, the body robust, head broad, primaries obtuse. As a whole this species is the most plump of the

*muraenula* group to which it belongs. A single ♂ specimen in good condition from Rev. George D. Hulst. Others since seen agree; 1 specimen in the Museum collection.

*A. sponsa* Smith, sp. nov.

Anterior tibia spinose; tip armed with four longer stout spines. Front with an ovate protuberance depressed in the center. Thorax with indefinite fore and aft tufts. Primaries proportionately short, stumpy. Apices rectangular. Head, thorax, and primaries uniform dark ash gray. The ordinary maculation obsolete, and only a faint trace of the geminate transverse lines visible. Collar with a black line. Secondaries fuscous. Beneath dark gray, powdery, with dusky discal spots, and exterior common line. Expands 1.25 inches (38<sup>mm</sup>).

*Habitat*.—Washington Territory.

A small species closely allied to *bicollaries*, and with it belonging to the *pitychrous* group. Mr. Grote's association of *bicollaris* with *cupida* and allies is misleading and unwarranted. Of the present species I know the ♀ only. The ♂ will probably have serrate and bristled antenna and bifurcate clasper. One ♀ specimen collection U. S. Nat. Mus.

*A. finis* Smith, sp. nov.

Structural characters as in the species described in the *4-dentata* group. Primaries sordid brownish fuscous, a more distinctly crimson brown shade in sub-basal and s. t. space. Transverse lines geminate, variably distinct, but evident in all observed specimens. T. a. line oblique, outwardly curved between veins; t. p. line even, slightly crenulate, parallel with outer margin. S. t. line pale, narrow, very slightly and irregularly sinuate. Claviform concolorous, short, evidently outlined. Ordinary spots rather large; orbicular round, reddish gray, powdery; reniform of normal form, narrowly annulate with yellow, the latter color somewhat encroaching in the middle, outwardly. Secondaries dull yellowish fuscous, paler toward base, the veins and a discal lunule dusky. Beneath powdery, more perceptibly so toward apices; an exterior distinct dusky line and dusky discal spot. Head and thorax concolorous; collar with a transverse brown line, the pategiæ at base tipped with ferruginous. Expands 1.35 inches (34<sup>mm</sup>).

*Habitat*.—Montana, "Black Hills."

The species is narrow winged, the apices of primaries rather obtuse. In the arrangement of species for convenience of determination this species comes into the group *pitychrous*, with *pastoralis* as its nearest ally, but probably it will be found eventually that the species is closer to *tessellata* than to the forms with which it is associated. Two specimens from collection U. S. Nat. Mus. and George D. Hulst.

*A. luteola* Smith, sp. nov.

Structural characters as in *tetrica* and *serricornis*. Primaries luteous, with a reddish shade, somewhat irrorate with black. A darker shading to outer portion of median space; entire terminal space dark.

Transverse lines geminate. Basal line distinct. T. a. line slightly oblique outwardly, hardly curved between veins. T. a. line with outer line distinct near costa only; inner line distinct, fine, evenly crenulate. S. t. line concolorous, preceded by a dusky shade, its course very even; the line itself narrow and somewhat remote from outer margin. Claviform obsolete; orbicular small, round, concolorous; reniform somewhat indefinite, inferiorly shaded with dusky. Secondaries dirty white, outwardly dusky. Beneath pale, powdery; a reddish tint along costa; a common dark line and distinct discal spot. Head and thorax concolorous. Expands 1.25 inches (31<sup>mm</sup>).

*Habitat*.—Arizona.

A narrow winged, sordid, and indefinitely marked form. Distinct from the nearly allied forms by the narrow primaries; from *infracta* it differs by the very even t. p. and s. t. lines; from the *personata* form of *pitychrous* it differs by the concolorous ordinary spots and small round orbicular. The median space is not darker, and the s. t. line is further from the margin than in *pitychrous*. One ♀ specimen in Mr. Neumogen's collection.

*A. serricornis* Smith, sp. nov.

Structural characters as in *tetrica*. Reddish ochreous, powdery; s. t. line with a distinct preceding dark shade; terminal space incompletely dusky. Basal and t. a. lines geminate; the latter slightly oblique, outwardly curved between veins. T. p. line punctiform, geminate, the dots venular, small. S. t. line very distinct, slightly paler, but emphasized by the preceding dark shade; its course irregularly sinuate. Claviform wanting; orbicular obsolete, very faintly indicated by a pale ring; reniform dusky, lunate, obsoletely pale ringed. Secondaries whitish, outwardly dusky. Beneath pale, powdered with reddish and gray; an undefined discal spot on each wing. Head and thorax concolorous. Expands 1.30 inches (32<sup>mm</sup>).

*Habitat*.—Southern California.

Belongs to the *pitychrous* group and obviously distinct from its allies by the reddish shade to the primaries, the very distinct s. t. line, and lunate dusky reniform. The primaries are rather shorter and broader than in most other species of the genus. Its nearest ally is *tetrica*.

*A. tetrica* Smith, n. sp.

Anterior tibia spinose, rather strongly armed at tip. Clypeus full; an obvious central projection which is oval, and somewhat depressed at tip. The antennæ of the ♂ are serrate, the serrations furnished with stiff bristles. Side pieces of ♂ oblong, obliquely truncate at tip. The inner side of tip closely set with short spinules; elasper lengthily bifurcate. Thorax with divided anterior and indistinct posterior tuft. Primaries reddish luteous, powdered with grayish white; very evenly colored. Maculation hardly contrasting. Basal dash and claviform wanting. Basal line evident. T. a. line geminate, vertical, slightly

bisinate. T. p. line even, parallel with outer margin, geminate, the outer line punctiform. S. t. line very indefinite, pale, irregular. Ordinary spots concolorous, outlined by a few dark scales. Orbicular round. Reniform somewhat constricted at middle, inferiorly a little dusky. Secondaries dusky, outwardly darkest. Beneath, grayish, powdery; primaries darker, with a blackish extra discal line and discal spot. Expands 1.3-1.4 inches (32-35<sup>mm</sup>).

*Habitat.*—Nevada.

♂ and ♀ from collection of Dr. Bailey, and a darker ♀ in collection of Tepper. The specimen in Mr. Tepper's collection is rather darker than the others, and the maculation is obsolete. The species has rather broad, trigonate primaries and is distinct from its allies of the *pitychrous* group, to which it belongs.

*A. medialis* Smith, sp. nov.

Structural characters of *tetrica* and *serricornis*. Whitish gray to ocher yellow, more or less irrorate with black scales. The transverse lines diffuse, dark, powdery, geminate, even. S. t. line also rather broad, diffuse, even. A diffuse dusky shade line through outer portion of median space. Ordinary spots indefinite, dusky. Secondaries of ♂ white, of ♀ dusky. Beneath white, sparsely powdered with gray; indefinite gray discal spots and extra discal common line. Expands 1.5-1.6 inches (38-41<sup>mm</sup>).

*Habitat.*—Texas.

An easily recognized species belonging to the *messoria* group; but most nearly allied to *caenis* and *fenesica*. It is easily recognized by the pale color and even diffuse transverse lines. Several specimens, ♂ and ♀, in collection U. S. Nat. Mus.

*A. extranea* Smith, sp. nov.

Structural characters of *trifasciata*, which this species also resembles in maculation. Primaries dark ash gray, the transverse lines distinct. Basal line evident. T. a. line faintly geminate, upright, scarcely lunate between veins. T. p. line even, outwardly curved over cell, inwardly slightly sinuate to hind margin. The terminal space is somewhat darker shaded, relieving the concolorous, very irregular s. t. line. A distinct diffuse median band, outwardly shaded so as to reach the t. p. line and thus darken the outer third of median space. Ordinary spots concolorous, distinctly outlined; orbicular small, round; reniform elongate, upright, rather narrow. Secondaries ♀ pale fuscous (? ♂ white). Beneath, fuscous-luteous, powdery; an indefinite common line and discal lunule, darker. Expands 1.5 inches (38<sup>mm</sup>).

*Habitat.*—Montana.

A single ♀ specimen from Mr. Tepper. It is readily distinguished from its near allies by the dark gray color and outwardly darker median space. Its place is between *fenesica* and *trifasciata*. It has a casual resemblance to the species of *Ammaconia*.

*A. trifasciata* Smith, sp. nov.

Anterior tibia spinose and moderately armed at tip; clypeus with cylindrical projection, depressed at tip. Primaries crimson brown, somewhat powdered with white. Basal line evident. T. a. line single, rather broad, black preceded by a few pale scales, slightly oblique and somewhat irregular. T. p. line sub-lunulate, single, slightly sinuate, followed by pale scales. S. t. line punctiform, incomplete; points pale. A broad dark shade line through median space, from costa between ordinary spots, then beneath reniform, parallel and close to t. p. line. Claviform very short, concolorous. Ordinary spots large, concolorous, of the usual shape expressed by their names, outlined by black scales and narrow yellow annuli. Thorax concolorous. Secondaries dull fuscous. Beneath, fuscous with crimson and gray powderings. Expands 1.60 inches (40<sup>mm</sup>).

*Habitat*.—“Mt. Hood.”

One ♀ specimen from Mr. Tepper's collection. The species is very simply marked and easily recognized. Its near allies are *bostoniensis* and *caenis*, of which *muscosa* is a synonym. The primaries are fully as much pointed as in *caenis*.

*A. bifasciata* Smith, sp. nov.

Anterior tibia spinose, moderately armed at tip. Clypeus with nipple-shaped projection. Antenna of ♂ serrate and bristled; side pieces obliquely truncate and inwardly spined at tip; clasper lengthily bifurcate. Thorax a rather luteous brown, primaries of same color at base, powdered with black and becoming outwardly darker. Transverse lines single, broad, black. T. a. line upright, straight. T. p. line with a single wide outward curve and unusually close to t. a. line. S. t. line concolorous, indefinite, interrupted. A transverse dark shade from the inception of t. p. line on costa, straight across the wing to the termination of t. p. line at hind margin. Ordinary spots indefinite, small, close together. Orbicular concolorous, marked by a slightly paler annulus. Reniform shaded with blackish. Fringes concolorous; a paler line at base. Secondaries dull fuscous. Beneath fuscous, powdery; an incomplete common extradiscal line. Head with a ferruginous tint. Expands 1.45 inches (36<sup>mm</sup>).

*Habitat*.—Arizona.

A single ♂ specimen in collection U. S. Nat. Mus. The species is very distinct and allied to *comosa* and *trifasciata*.

*A. orbicularis* Smith, sp. nov.

Structural characters of the preceding species. Luteous gray; transverse lines distinctly geminate, dark fuscous; stigmata defined, paler. Basal line defined, marked by black points beneath median vein. T. a. line upright, denticulate, the included space marked with gray. T. p. line even, very narrowly crenulate, its course parallel to outer margin, to which it is unusually close, making the median space very

broad. S. t. line narrow, somewhat paler, its course sinuate. A terminal row of black dots. The median shade is not well marked and is central to the median space. Claviform concolorous, not distinctly outlined. Orbicular round, pale gray. Reniform moderate, kidney-shaped, annulate with gray, centered with ground color. Secondaries pale yellowish fuscous. Beneath, whitish, powdered; a darker discal lunule. Head and thorax concolorous. Expands 1.25 inches (31<sup>mm</sup>).

*Habitat.*—Nevada.

A well-marked species with rather narrow wings belonging to the *messoria* group. It is easily distinguished by the widely separated median lines and paler orbicular. A single ♀ is in Mr. Tepper's collection.

*A. rufula* Smith, sp. nov.

Anterior tibia spinose, heavily armed at tip; clypeus with a circular protuberance depressed in center; thorax obsoletely tufted. Antenna ♂ strongly serrate and bristled; clasper lengthily bifurcate. Primaries somewhat yellowish red brown; median space less yellowish; cell between ordinary spots dark. Transverse lines geminate, included space pale. T. a. line oblique, outwardly curved between veins. T. p. line finely and evenly crenulate, parallel with the outer margin. From this line, which, like the basal space, is very pale yellowish red, the color becomes evenly darker to the outer margin; nowhere, however, as dark as the median space. S. t. line narrow, pale, interrupted, sinuate. A row of terminal dark lunules. Claviform moderate, incompletely outlined, pale. Ordinary spots pale, with whitish annuli, moderate in size; the orbicular sub-oval, not completely closed superiorly. Head and thorax concolorous, secondaries blackish. Beneath, rusty, powdery, with broad, diffuse common line and distinct discal spots on all wings. Expands 1.25 inches (31<sup>mm</sup>).

*Habitat.*—New Mexico; 7,000 feet.

A single ♂ specimen in good condition from Prof. F. H. Snow. The species is very distinct and easily recognizable by the pale basal and evenly darker median space. It is close to *islandica* Stgr. (not *opipera* Morr., which is a very different species), but has more the appearance at first sight of the *carnea* section of the genus.

*A. pallipennis* Smith, sp. nov.

Anterior tibia spinose, armed with longer terminal spines at tip. Front with an ovate projection depressed at tip. Thorax indefinitely tufted. Antenna ♂ serrate, serrations bristled; ♂ genitalia as in *flavidens*. Primaries very pale luteous gray, powdered with fuscous; terminal space darker. Transverse lines geminate; t. a. slightly oblique, but little curved between veins; t. p. line lunulate, outwardly bent on costa over cell, then obliquely in a rigid line to hind margin. S. t. line denticulate, narrow, pale, marked by a preceding dark shade. A very faint median shade. Claviform obsoletely indicated. Ordinary spots

moderate in size; normal in shape, incompletely outlined; cell between, dusky. Secondaries pure white. Beneath white, powdery toward apices; an incomplete, imperfectly marked common line. Head and thorax concolorous with primaries. Expands 1.25-1.30 inches (31-33<sup>mm</sup>).

*Habitat*.—Colorado.

An easily recognized form, allied to *silens* and *tessellata*, but paler than either, with pure white secondaries. The median shade is never very evident and sometimes obsolete, while the cell between stigmata varies from concolorous to black. Specimens are with Messrs. Hulst, Graef, and Tepper.

*A. solitaria* Smith, sp. nov.

Structural peculiarities of the preceding species. Primaries somewhat yellowish rust red, powdered with blackish scales; most densely so in the median space. Transverse lines pale gray, even, not well defined. S. t. line also gray, but little sinuate. Terminal space powdered with black. Claviform obsolete. Ordinary spots distinct, moderate, yellowish. Orbicular round; reniform normal. Color between the spots darker brown. Secondaries blackish. Beneath, deep smoky gray, powdery; discal lunules evident. Head pale, thorax caraceous gray. Expands 1.32 inches (33<sup>mm</sup>).

*Habitat*.—Labrador.

A single ♀ specimen from Mr. Moeschler, ticketed “? var. *conflua*.” Typical *conflua* does not occur in America, so far as I have been able to discover. The present species is certainly not *conflua*, and agrees with no other form known to me. It has the wing form and nearly the color of *basalis*, from which it differs in smaller size, neatly defined stigmata, and lack of basal pale space.

#### MAMESTRA Ochs.

The genus *Mamestra* is characterized by hairy eyes, unarmed tibiæ, more or less evidently tufted thorax and abdomen, rather coarse, rough, frontal vestiture, and usually more or less trigonate wings. The males have the antennæ simple, ciliate or serrate, not pectinate. In the group containing the noctuids with hairy eyes, the genera are very indefinite and great caution is requisite in referring some species. The line dividing this genus from *Xylomyges* and *Taniocampa* is so attenuated that some species can be as readily referred to the one as the other. As an example may be cited the fact that when Mr. Grote discarded the genus *Dianthæcia* he referred part of the species, before classed as such, to *Mamestra*, and the balance to *Taniocampa*; that is, he separated insects theretofore considered congeneric, and the two genera between which they were divided stand now widely separated in our lists.

*M. subapicalis* Smith, n. var. of *rubrica*.

Primaries gray, powdery, with a rufous tint. Transverse lines geminate, but rather indistinct. Basal line present, geminate, black.

T. a. line upright, lunate between the veins. T. p. line of the usual shape. S. t. line very distinct, somewhat yellowish, inwardly margined with rich, velvety brown, its course slightly sinuate. A row of lunate terminal spots. Apex paler; terminal space dusky. Veins flecked with white. Claviform of good size, broad, concolorous, outlined in black. Orbicular somewhat paler than ground color, well sized, black margined. Reniform large, with a dusky shade; outwardly incomplete and invaded by a yellowish or reddish shade which reaches to the pale apical spot. Inferiorly this pale shade is distinctly marked by a black margin. Secondaries pure white, with a narrow, dusky, marginal line. Beneath, pale, powdery, with common dusky line and discal spot, the former incomplete. Head and thorax concolorous dark gray, with black irroration. The ♂ antennæ are serrate and furnished with lateral tufts of hair. Side pieces of ♂ genitalia are rather suddenly and acutely narrowed and curved toward the tip; the clasper consists of a long, curved corneous hook, attaining the end of side piece. Expands 1.52–1.60 inches (38–40<sup>mm</sup>).

*Habitat*.—Washington Territory, California.

The variety is readily distinguished from the type form by the darker color, the subapical pale shade, and the well-marked s. t. line. It is a fine form, and it was not without reluctance that I reached the conclusion that it was only a form of *rubrica*, which has the habitus of a *Tæniocampa* while *subapicalis* would hardly be referred anywhere but to *Mamestra*.

**M. lepidula** Smith, sp. nov.

Primaries bright, somewhat ferruginous brown, darker in median and terminal space. An oblique bright brown streak inferiorly in basal space. Transverse lines distinct, single, margined with pale violet blue. Basal line brown. S. t. line distinct, yellow, irregularly sinuate and dentate; apex of wing violet. Claviform small, pointed, velvety brown. Orbicular oval or rounded, concolorous, defined and irrorate, with blue scales. Reniform moderate, whitish, somewhat marked with brown and irrorate with blue scales. Terminal space also more or less irrorate with blue scales. Secondaries of ♂ white, of ♀ dusky. Beneath pale, with yellowish irroration and common external line. Head and thorax concolorous with primaries. Abdomen fusco-luteous with distinct dorsal tufts; that on fourth segment most prominent. Antennæ of ♂ distinctly serrate, the serrations bristled. The side piece of ♂ is moderate, but little dilated at tip, and rounded. The clasper is simple, stout, rather short, curved, and somewhat irregularly enlarged at tip. Expands 1 inch (25<sup>mm</sup>).

*Habitat*.—Texas. 1 ♂ and 1 ♀.

This is one of the prettiest of our species; its bright colors, the bluish transverse lines, yellow s. t. line, and pale reniform rendering it easily recognizable. The fringes to primaries are long, even, cut with obscure violet. It is utterly unlike any other species with serrate antennæ.

The type is with Mr. Hy. Edwards, a second specimen, collection U. S. Nat. Mus. (Smith coll.).

*M. prodeniformis* Smith, sp. nov.

Primaries fuscous gray, with a paler tinge in basal space, and a distinct pale bluish shade through s. t. space. T. a. line single, upright or slightly oblique *inwardly*, black, not attaining costa. T. p. line barely traceable, upright or very slightly sinuate, blackish, single. S. t. line, yellowish, well marked; preceded by black sagittate dashes; a prominent **W** formed by long outward dents, on veins three and four. Claviform narrow, outlined in black, a fine black line from its apex crossing to t. p. line. A pale shade surmounts this spot and crosses the median space. Orbicular narrow, oblique, pale ringed. Reniform lunate, superiorly a little paler; inwardly marked with black. Cell between these spots dusky. Secondaries white, with soiled outer margins. Beneath powdery without markings. Antennæ of ♂ ciliate. Genitalia very like those of *M. liquida*. The clasper is a little more prominent, and the tip of side piece is a little more drawn out, else there is an absolute agreement. Expands 1.20 inches (30<sup>mm</sup>).

*Habitat*.—Southwestern Arizona.

A single ♂ specimen in Mr. Neumægen's collection. It resembles the figure of *Admetovis oxymorus* in miniature, but is very different in coloration. It is easily recognizable by the pale secondaries and distinct bluish white shade through s. t. space. In thoracic structure it resembles *M. insolens*.

Long after the above description was written, I received from Professor Snow for identification a ♀, which expands 1.50 inches (37<sup>mm</sup>), but agreed perfectly with the ♂ in maculation. This specimen was from New Mexico.

*M. canadensis* Smith, sp. nov.

Primaries dull, sordid, fuscous brown; a pale, more yellowish red shade at base superiorly, in median space beyond claviform, and from reniform outward. Transverse lines evident; geminate. Basal line obscured by the pale shade, which is inferiorly limited by a fine black longitudinal line. T. a. line lunate, the included space marked with white scales. T. p. line sinuate, parallel with the very oblique outer margin, not very distinctly marked. S. t. line narrow, white, somewhat interrupted, the **W** mark prominent; both sides of this line are irregularly marked with black scales and dots. The claviform is concolorous, large, broad, extending almost across the median space. Orbicular oblique, ovate, black ringed, paler than ground color. Reniform very large, outwardly indefinite and invaded by a pale shade, which extends toward and is lost in the ground color before it reaches the apex. The head and the collar inferiorly are pale; collar superiorly and thorax of ground color of primaries. Secondaries dirty gray. Beneath obscure fuscous gray, powdery. The genitalia are similar to those of *atlantica*. The

side piece is modified toward tip into a long, slender, curved hook; three smaller corneous spurs of various shapes arise from the inner side of the piece, the one nearest base longest. Expands 1.45 inches (37<sup>mm</sup>).

*Habitat*.—New Brunswick.

A single specimen, not perfect, from Mr. Thaxter, marked July 27, 1871. The species is like *subjuncta* in wing form, but lacks the line crossing the median space. The genitalia ally it to *atlantica*, than which it has narrower wings. The anal angle of primaries is distinctly retracted.

*M. olivacea* Morr.

This is perhaps our most variable species of the genus, hardly yielding to *vicina* in this respect. The species is common and well known, and extends from the Atlantic to the Pacific. From Mrs. Fernald we have received a specimen which can hardly be specifically distinct, but merits a varietal name, the more so as specimens from the White mountains agree with it. I propose the name *M. obscurior* Smith, n. var. It is very even dark gray, with a green suffusion, and lacks all contrasts of color so prominent in the type form. The lines are velvety black, and there is a red shade on the t. p. line inferiorly. The ordinary spots are as in the type.

I have at different times seen specimens of this form, unnamed in collections, and it is to call attention to its connection with *olivacea* that a name is proposed.

*M. rectilinea* Smith, sp. nov.

Primaries dark fuscous brown, with a deep crimson brown shading, which is variably distinct, and a mossy green shade over all. T. a. line geminate, with a wide, rather irregular outward curve. T. p. line geminate, angulate on costa, then rigidly oblique to hind margin. Basal line distinct. S. t. line pale, rarely distinct; its course sinuate. Usually it is more or less lost in the powdery irroration of the outer portion of the wing. Ordinary spots essentially as in *olivacea*; but the reniform is not so contrasting. Secondaries varying from fuscous to blackish, paler toward base. Beneath dark gray, powdery, with variably distinct outer line and discal dot. Head and thorax concolorous with primaries; pategiæ sometimes with white disc. Expands 1-1.10 inches (25-28<sup>mm</sup>).

*Habitat*.—California, Vancouver, Oregon, California.

Essentially like *olivacea*, from which it differs primarily in the very evenly oblique t. p. line, and more irregular t. a. line. The maculation is more powdery, and there is no contrast in color; there is usually a prominent paler patch in the s. t. space near the hind angle, which forms an obvious feature in the appearance of the insects. The abdomen of the ♀ exceeds the secondaries and is rather prominently tufted. Several specimens of each sex, coll. div. It is barely possible that this is a

race of *olivacea*; but a series of 26 specimens of the latter species—many of them western—do not show any tendency to invalidate the characters upon which this species is based. The ♂ genitalia are like those of *olivacea*.

*M. vau-media* Smith, sp. nov.

Primaries dark smoky gray; paler, with a reddish tinge beyond the t. p. line. Basal line indistinct. T. a. line geminate; unusually remote from base, outwardly oblique, even, very slightly curved. T. p. line obsoletely geminate, slightly curved, and inwardly oblique, reaching hind margin close to the t. a. line. S. t. line pale, irregular, hardly traceable; a pale spot near internal angle. Ordinary spots concolorous, subequal, almost lost in the dusky ground color. Claviform indicated by a dusky blotch on the t. a. line. Secondaries blackish outwardly, with paler base. Beneath fuscous gray, powdery. Head and thorax concolorous with primaries. Expands .90 inch (23<sup>mm</sup>).

*Habitat*.—Colorado.

This little species is easily recognized by the V-shaped median space, beyond which the wing is paler and with a reddish tint inferiorly. The ordinary spots are practically obsolete. It is the smallest and one of the ugliest of our species. The type is with Mr. Cramer, and was collected by Mr. Bruce.

*M. incurva* Smith, sp. nov.

Primaries dark ash gray, median space somewhat darker. Transverse lines geminate, black, not prominent; included space of ground color. Basal line present, geminate, ending in a short basal black dash. T. a. line with a slight outward curve; but little sinuate or lunate. T. p. line with a deep sinuation below reniform. S. t. line of ground color, accompanied by a dusky defining shade; its course irregularly sinuate. Claviform concolorous, black lined. Ordinary spots defined; of the pale ground color. Orbicular moderate, irregularly rounded; reniform rather broad and short, its inferior margin absorbed in t. p. line. Near the hind angle the s. t. line is marked by a distinct white spot, emphasized by a blackish dash crossing the line at that point. Secondaries pure white. Beneath powdery, especially along costa; without line or dots. Head and thorax like primaries; collar with a black line. Abdomen distinctly tufted. Antennæ of ♂ simple. Expands 1 inch (25<sup>mm</sup>).

*Habitat*.—Arizona.

A single ♂ specimen from Mr. Neumoegen.

A well marked species, with a strong resemblance to *anguina*. The course of the lines is almost identical, and so is the ground color. The ordinary spots, however, are of a different shape and much smaller, and the secondaries of the ♂ are white. The genitalia, though imperfect, are plainly like those of *laudabilis* and *4-lineata*, and the species is not illy associated with dark forms of the latter. The course of the t. p. line is very different from the same line in *4-lineata*, which also has

white secondaries. A little care will be requisite in determining this species where the genitalia cannot be examined.

*M. variolata* Smith, sp. nov.

Primaries luteous, somewhat olivaceous, prominently maculate with white. Basal space superiorly white half way to t. a. line; crossed by the dark geminate basal line; thence black to t. a. line. Inferiorly it is of ground color with a white patch on internal margin on t. a. line. T. a. line geminate, upright, irregularly lunate. T. p. line black, lunulate or crenulate, obsoletely geminate, marked with white on costa, and near hind margin; its course about parallel with outer margin. S. t. line white, irregular, interrupted with a feeble W on veins 3 and 4; preceded by a series of irregular black spots. A row of black terminal lunules. Claviform faintly and incompletely outlined; concolorous. Orbicular large, white, irregular; immediately below is a large, irregular white blotch. Reniform narrow, lunate, rather irregular; white, centered with yellow scales; black ringed. Through the median space there is a broad, yellow shade, starting between the ordinary spots, bordering the white patch below orbicular, and below that point marked on inner side with two black lunate spots and outwardly by t. p. line, S. t. space irregularly black marked; near hind margin filled by a white blotch. A large apical white patch. Fringes cut with white. Secondaries fuscous. Beneath fuscous, powdery, with broad outer line and large discal spot. Head and thorax concolorous with primaries; collar with a black line. Pategiæ and dorsum with white blotches. The side piece of the  $\delta$  is suddenly narrowed and rectangularly bent near tip; the lappet-like tip is small, and inwardly fringed with spines. The clasper is very stout and heavy, blunt, not curved, extending to the angulation of the side piece. Expands 1.20 inches (30<sup>mm</sup>).

*Habitat*.—Washington Territory.

Type with Mr. E. L. Graef. One  $\delta$  and one  $\text{♀}$  examined.

This species is hardly to be confounded with any other. The blotchy, white maculation, yellow median shade, and the peculiar genitalia form an assemblage of characters combined in no other form known to me.

*M. minorata* Smith, sp. nov.

Primaries dark fuscous gray or brown; transverse lines distinct, geminate. Basal line distinct, geminate. T. a. line upright, rigidly even to internal vein, where it is slightly curved and marked with white. T. p. line unusually close to outer margin; lunulate; rather evenly curved outwardly over reniform, and then oblique to hind margin. At costa, and toward hind margin marked with white. S. t. line white, distinct, irregular, with a tolerably well marked W. Apex white, powdery; s. t. space white marked toward hind angle. Claviform obsolete; but its place indicated by a blackish shade extending across the median space. Orbicular large, round, white, with small dusky center. Reniform large, normal in shape, white marked. At its outer inferior margin is a large

dark patch extending to t. p. line. Secondaries dull smoky fuscous. Beneath, fuscous; powdery; a distinct outer line and large discal spot. Head and thorax concolorous with primaries, and also white marked. Side pieces of ♂ with the angulated tip dilated and rounded; inwardly spinulose. Hind margin corneous, thickened, somewhat incurved. A short beak-like clasper near base. Expands 1.20 inches (30<sup>mm</sup>).

*Habitat*.—California (♂), Colorado (♀).

Two specimens agreeing in essentials; the ♂ from Mr. Edwards, the ♀ from Mr. Bruce. The species looks like *capsularis*; but lacks the prominent **W** mark. The genitalia are also entirely different, and resemble those of *glacialis* and *variolata* with which I associate this form.

**M. assimilis** Morr.

A specimen received from Mrs. Fernald differed so much from the typical form of this species that I believed it new, until I had compared the genitalia. These being very remarkable and quite agreeing led me to make more careful comparison, and I now describe the specimen as—

**M. pulverulenta** Smith, n. var.

Primaries dark powdery gray, with moderately defined markings, picked out by white scales. The white patch near anal angle is distinct, but less defined and not contrasting; not forming so prominent a feature as in the dead black type form. Beneath there is a total lack of the crimson powderings found in the type form. Expands like the type and otherwise very similar to it. The powdery appearance is so different from the smooth, somewhat shining black of the normal form that they seem hardly to belong together. This may be an aberration rather than a variety.

**M. obscura** Smith, sp. nov.

Primaries dull smoky fuscous, with a brownish tint. Transverse lines obsolete. S. t. line distinct, narrow, pale, marked by a preceding black shade. A pale line at base of fringes. Claviform wanting. Ordinary spots incompletely black margined, concolorous, reniform, with a faint reddish flush. Secondaries even, pale fuscous. Beneath pale, powdery, with dusky outer line and discal spot. Head and thorax concolorous with primaries; collar pale tipped. The side piece of ♂ is rather broad, somewhat abruptly tapering to an acute tip. Clasper moderately long, somewhat irregular, slightly curved and acute at tip. Expands 1.25 inches (33<sup>mm</sup>).

*Habitat*.—Arizona.

A unique ♂ in good condition in collection U. S. Nat. Mus. (Riley collection) is the type. The species is inconspicuous, and yet easily recognizable by the prominently marked s. t. and obsolete median lines. Thoracic and abdominal tuftings distinct but not prominent.

## SCOTOGRAMMA SMITH, gen. nov.

Eyes hairy; tibia unarmed; vestiture loose, somewhat irregular, either hairy or scaly. Antenna of ♂ 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 an indefinite anterior and posterior tuft; abdomen not, or very indefinitely, tufted. This genus has no strong characters, and is almost entirely a negative one. Of only one of the five species (*submarina*) is the ♂ known, and this species is to be considered the type of the genus.

In habitus these species resemble nothing more than themselves. They are obscurely colored and marked, rather loosely put together, and while possessing most of the characters of *Mamestra*, evidently rank much lower in the scale.

*Submarina*, the type of the genus, was described by Mr. Grote as an *Anarta*, but it has round eyes, and such an evidently different appearance and habitus that the reference can not under any circumstances be maintained.

*Phoca*, Mr. Moeschler refers to *Mamestra* rather doubtfully. Mr. Morrison redescribed the species as *M. promulsa*, and Mr. Grote referred the latter to *Anarta*.

The remaining species are new, and while some of them have been in collections for years the impossibility of definite generic reference and want of strong characters has prevented their description.

**S. perplexa** Smith, sp. nov.

Primaries dull, fuscous gray, 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 pale 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 1.5 inches (37<sup>mm</sup>).

*Habitat*.—Colorado.

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

**S. inconcinna** Smith, sp. nov.

Primaries dark fuscous, with black powderings, all the lines and ordinary spots distinct. Basal line geminate, black. T. a. line obsoletely geminate, 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 latter with indistinct fore and aft tufts. Abdomen with a distinct truncate tuft on the basal segment. Expands 1.40 inches (35<sup>mm</sup>).

*Habitat*.—Colorado.

The type from Mr. Hulst is a ♀ in fair condition. 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 rather closely allied to *Mamestra* while differing obviously in habitus from anything in that genus. It agrees with *submarina* in the peculiar modification of the last ventral segment, which is carinate at middle and foveate at each side.

*S. umbrosa* Smith, sp. nov.

Primaries dark, blackish gray, powdered with white scales. All the maculation present, though not prominent. Median and basal lines geminate, the defining lines faintly marked, included space powdered with white. T. a. line outwardly oblique, with inward dentations on veins. T. a. 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 towards base. Beneath variably dark, powdery, with outer dark line and small discal spots. Head and thorax concolorous with primaries. Expands 1.20–1.30 inches (30–32<sup>mm</sup>).

*Habitat*.—Arizona, Colorado.

Three ♀ specimens from as many collections 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.

#### COPIMAMESTRA GRT.

Mr. Grote separates this genus from *Mamestra* by the armed fore tibia. This armature in the hairy-eyed genera is so unusual that it obtains great value, and, added to the very peculiar genital structure of the ♂, which is not paralleled in any species of *Mamestra* examined, it seems to us that the genus is a valid one. The European species *M. brassica* is the type. *C. occidentalis* was collected in New Mexico, and now Mr. Thaxter sends a new species from Maine, very closely allied to *brassica*, but structurally different.

*C. curialis* Smith, sp. nov.

Primaries blackish fuscous, with a reddish tinge through basal and s. t. spaces, slightly marked also through center 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, as a whole, nearly parallel with outer margin; 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 *C. 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. Expands 1.70 inches (43<sup>mm</sup>).

*Habitat*.—Kittery Point, Maine.

The type is a perfect ♂ in Mr. Thaxter's collection. It is passing strange that this peculiar genus should have only two representatives in this country in such widely separated localities.

#### ULOLONCHE SMITH, gen. nov.

Eyes hairy, tibia not spinose or in any way armed. Thorax plump, stout, rather densely clothed with hairy or mixed vestiture, forming a more or less obvious divided anterior crest, and distinct posterior tuft. Abdomen rather elongate, slender, untufted. Head more or less evidently retracted; palpi well developed and reaching middle of front. Primaries rather small, short, trigonate, with marked apices and oblique outer margin. The ♂ genitalia in all the species are practically alike, differing only in minor details. The side piece is narrow, slender, elongate, subequal, terminating in an obliquely-rounded tip, which is inwardly furnished with long spinules. The clasper is long, slender, and curved, nearly equal throughout, and obtuse at tip. The ♂ antennæ are simple.

The species referred to this genus are *Mamestra niveiguttata* Grt., *Taniocampa modesta* Morr., and a new species, *U. fasciata* Smith. The genus differs from *Mamestra* by elongate, untufted abdomen, and from both *Mamestra* and *Taniocampa* in the short, rather broad, trigonate wings, and from the latter in coarser frontal vestiture. The genital structure also is peculiar, and is not paralleled in any other genus.

*U. fasciata* Smith, sp. nov.

Primaries gray; in basal and s. t. space with fuscous powderings; in median space even, with a bluish tint; terminal space darker. 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 the 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<sup>mm</sup>).

*Habitat.*—New Mexico. Prof. F. H. Snow, No. 51.

A single ♂ of this very well marked little species examined. The bright, yellowish reniform in the dark V-shaped portion of median space is characteristic and distinctive.

#### TÆNIOCAMPA Gn.

*T. uniformis* Smith, sp. nov.

Primaries 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 and a distinct discal lunule. Head and thorax concolorous with primaries. Expands 1 inch (25<sup>mm</sup>).

*Habitat.*—Arizona.

One ♂, one ♀. Collection Hulst and Smith. Belongs to the *furfurata* group. The ♂ antennæ are simple, the primaries rather small, apices obtuse, outer margin rounded. The side pieces of the ♂ genitalia are broad, suddenly bent and narrowed near the tip, which is somewhat dilated, lappet-like, and inwardly fringed with spinules. The superior margin of the side piece is thickened and the upper angle of the bend is somewhat prominent; there is no separate clasper. The species is rather closely related to *peredia*, but distinguishable at a glance by the dark color, obsolete maculation, and small size. There is an indistinct tuft behind collar.

*T. columbia* Smith, sp. nov.

Primaries luteous red, powdery, terminal space somewhat darker, veins slightly darker. Median lines single, obsolete, or but little darker. T. a. line outwardly arcuate, inwardly toothed on vein one. 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. Head and thorax concolorous. Expands 1.15–1.25 inches (29–31<sup>mm</sup>).

*Habitat.*—Northwest British Columbia.

Belongs to the group *rufula*. The antennæ of the ♂ are serrate and bristled, the primaries are moderately elongate, with obtuse apices and rounded outer margin. The side pieces of the ♂ are narrowed beyond middle, somewhat dilated at tip, and inwardly fringed with spines. Toward base is a stout strong, corneous hook, which is obtusely terminated. Nearer to tip is another, slender, semi-membraneous, and but slightly curved hook.

This species is one of those collected by Captain Geddes in 1884, and the types, ♂ and ♀, are in Mr. Neumoegen's collection. It is one of those perplexing forms that it is difficult to place. The vestiture consists of flattened hair; there is an incomplete basal tuft on thorax, and in the ♂ a distinct tuft near base of abdomen. The ♂ abdomen is also laterally tufted. The front is clothed with a mixture of scales and hair, and in the ♂ the palpi reach nearly to the middle of the front. All these characters indicate *Mamestra*; but the habitus of the insect is so like *Taniocampa* and the genitalia are so like those of *rufula*, that, provisionally at least, and probably finally, the insect is referred here.

*T. utahensis* Smith, sp. nov.

Primaries 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. Expands 1.20 inches.

*Habitat.*—Utah.

A very distinct species. Its nearest ally is *oviduca*, with which it agrees in wing form and pectinate ♂ antennæ. The pectinations are, however, shorter, the s. t. line is obsolete, and the ordinary spots differ considerably. The side piece of the ♂ is 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 membraneous process, regularly tapering to a point. A single ♂ specimen from the late Capt. D. H. Murdock, U. S. Army, in my collection. (Coll. U. S. N. M.)

#### Group INCINCTA.

As four of the six species of this group are new, a few words defining it may be appropriate. It is less compact than any others of the genus, and the principal characters are the pectinated antennæ of the

male, combined with the wing form—the apices of primaries being distinctly marked and the outer margin oblique, not rounded.

In tabular form the species may be separated 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  $\delta$  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.

*Subfuscula* was described by Mr. Grote as an *anarta*, with which genus it has nothing in common. It is a little aberrant in color for this genus, but otherwise agrees well enough with the forms with which it is here associated.

*T. suffusa* Smith, sp. nov.

Primaries 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 in the cell, and just beyond claviform. T. p. line 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 with a darker line near tip. Expands 1.20–1.28 inches (30–32<sup>mm</sup>).

*Habitat*.—Colorado, Arizona.

Two specimens,  $\delta$  and  $\eta$ . A remarkable species, differing by the delicate tints 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. Side piece of  $\delta$  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, cylindrical, slightly curved hook, obtusely terminated. Closely resembling *T. oviduca* in this particular.

*T. obtusa* Smith, sp. nov.

Primaries 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. Expands 1.10 inches (27<sup>mm</sup>.)

*Habitat*.—Arizona.

A species peculiar by the short broad primaries with oblique outer margin, and by the contrast in color between the two pairs of wings. The antennæ of the  $\delta$  are heavily bipectinate, the vestiture of the 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; the side piece is 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. Mr. Graef has the unique  $\delta$  type.

*T. pectinata* Smith, sp. nov.

Primaries 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; geminate, crenate, interrupted, outer portion 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 with primaries. Expands 1.35–1.40 inches (34–38<sup>mm</sup>).

*Habitat*.—California.

A large, robust species, the peculiar color and powderings making the wings appear thinly scaled. The antennæ of the  $\delta$  are unusually long and very heavily pectinated. The vestiture is rather loose, long, hairy, forming indefinite tufts. The side pieces of the  $\delta$  genitalia are bent, the lappet-like tip larger, oblique, inwardly spinulose. The clasper is a rather long, curved corneous hook; at base of this hook is a short, stout, beak-shaped process.

The male type is with Mr. Edwards. Another specimen, in poor condition, in my own collection (Coll. U. S. N. M.).

*T. terminata* Smith, sp. nov.

Primaries sordid yellowish gray; powdery; s. t. space somewhat darker, terminal space somewhat paler, than the rest of the wing. Median lines faintly marked, pale, interrupted. T. p. line followed by a row of black venular points, which are outwardly limited by pale dots. The s. t. line is defined by the strong contrast in shade between the s. t. and terminal spaces; it is irregularly dentate. A row of distinct black spots close to outer margin. A diffuse, dark, median shade. Or-

biocular 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 with primaries. Expands 1.60 inches (40<sup>mm</sup>).

*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, very near to *Perigrapha*, but has not the wing form of that genus, and the ♂ antennæ are much more shortly pectinated. The side piece of the ♂ genitalia is equal to tip, where the superior angle is somewhat drawn out, and the inferior angle rounded. Clasper corneous, moderately long, slightly curved; at base is another, smaller hook, closely united to, and apparently forming part of, the larger one. The type, a unique male, is in Mr. Tepper's collection.

#### Group ALIA.

Three of the species of this group have been much confused. Gueneè describes *alia* from North America, and considers it distinct from *incerta* Hfn. the European species. Later authors consider them identical, and Mr. Grote in his last check list makes *incerta* the species, with *alia* Gn. and *pacifica* Harv. as synonyms. As a matter of fact *pacifica* is distinct from our Eastern form and *incerta* and *alia* are also very well separated by the structure of the ♂ genitalia. *Alia* has always been considered a very variable species, while as a matter of fact it is one of the most constant, and the difficulty is, that there is a *third* and exceedingly variable species usually confounded with *alia*. It is much more common than *alia*, and I have found specimens in almost every collection I have seen. I have named it—

*T. subterminata* Smith, sp. nov.

Primaries pale yellowish gray, to deep brown red; varying to every possible intermediate shade. Median lines usually very distinct, geminate, rarely sub-obsolete. T. a. line outwardly oblique, waved. T. p. line nearly parallel with outer margin, very even; included space paler, outer line punctiform. S. t. line always very distinct, pale, outwardly shaded with some darker color than rest of 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. Expands 1.4–1.6 inches (35–40<sup>mm</sup>).

*Habitat*.—Northeastern and Middle States.

The most obvious difference between this species is the almost uniformly more distinct maculation, and the very distinct s. t. line which has always a very obvious dark shade *following* it, while in *alia*, on the contrary, the shade, when it is distinct, always *precedes* the line. The median shade and bicolored median space are never found in *alia*, and are almost always more or less, and often prominently, marked in the new species. The antennæ of the ♂ are less distinctly bristled than in *alia* and the genitalia are very different. The side piece is elongate, sides sinuate, subequal, tip oblique and inwardly spinulose. Toward the base are two small corneous beak-like processes, arranged Y shape, that form the clasper. In *alia*, besides the difference in the side piece, the clasper is long, slender, and regularly curved, with an additional small, slender corneous process at the base.

#### PERIGRAPHA LED.

A free translation of Lederer's description of the genus is as follows: "In habitus and the hairy eyes these insects resemble *Taniocampa*; 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 ♀ the pectinations are shorter."

"Primaries ash or brown gray, the ordinary spots unusually large, confluent, somewhat paler than ground color, deep black margined."

In no American species known to me is the antenna of the ♀ pectinated; but otherwise the description fits perfectly to the species I include in this genus. The pectination of the ♀ antenna is so unusual a character in this part of the noctuids that I should be inclined to give it great value, yet until there has been more opportunity for comparison I prefer to leave our species in the European genus. One new species requires describing.

#### *P. inferior* Smith, sp. nov.

Primaries dark ash gray, all the maculation obsolete. Ordinary spots fused, very 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. Expands 1.20 inches (30<sup>mm</sup>).

*Habitat*.—California.

The unique ♂ type is with Mr. H. Edwards. Easily distinguished by the uniformly dark gray color, the fused ordinary spots scarcely paler. The genitalia are nearly as in *muricina*. The side piece is slender, gradually enlarged to an obtuse lappet, which is inwardly sparsely spinulose. Clasper bifurcate; the inferior branch very short, and acutely terminated; superior branch curved, subequal.

## TRICHOCLEA Grt.

*T. edwardsii* Smith, sp. nov.

Primaries 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 brown dot in place of the 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 dots. A row of small black terminal lunules. Orbicular very large, sub-obsolete, marked only by two curved dusky spots ( ), indicating the outer margins. Reniform faintly outlined, inferiorly dusky. Head and thorax concolorous with primaries. 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. Expands 1.4 inches (35<sup>mm</sup>).

*Habitat*.—California.

This species differs very evidently from *decepta* as well in structure as in maculation; but is yet perfectly congeneric. The front is not so full, the body is shorter and more robust; the vestiture is hairy instead of scaly and the primaries are somewhat more pointed. The ♂ genitalia after the same type as *decepta*, but the basal projection is wanting, the slender hook is replaced by a short, beak-like clasper, and the spatulate projection is much larger and more prominent. The unique ♂ type is in the collection of Mr. Hy. Edwards, to whom I take much pleasure in dedicating this pretty species. [Others have since been taken agreeing with the type, and several are in the Museum collection.]

## ORTHODES Gn.

The species of this genus are characterized by the silky vestiture of the cell of primaries beneath, as well as by wing form, habitus, and minor structural characters. Some of the species have a very wide range of variation, and are often difficult to recognize.

The following seems new:

*O. irrorata* Smith, sp. nov.

Primaries red brown, powdery; median lines distinct, accompanied by broad luteous shades. T. a. line wavy, with a wide outward bend at middle. T. p. line crenulate, nearly parallel with outer margin. S. t. line diffuse, pale, preceded by a dusky shade. An interrupted terminal line. Fringes pale, dotted at base. A more or less distinct shade line through outer portion of median space. Orbicular small, indefinite, luteous. Reniform narrow, upright, indefinite, luteous. Secondaries blackish, somewhat varying in shade. Beneath, powdery with a broad,

diffuse outer black shade. A distinct discal spot on secondaries. Expands 1.10–1.20 inches (27–30<sup>mm</sup>).

*Habitat.*—Washington Territory.

Readily recognizable by the pale shades accompanying the transverse lines, as well as by the coarsely powdered primaries. The broad, diffuse outer line of under side seems also characteristic. The ♂ side pieces gradually narrow to an obtuse tip, inwardly fringed with hair. The clasper is concave, somewhat curved at tip, acute. The types are with Messrs. Graef (1 ♀) and Hy. Edwards (1 ♂).