

CONTRIBUTIONS TOWARD A MONOGRAPH OF THE NOCTUIDÆ OF
TEMPERATE NORTH AMERICA. REVISION OF THE SPECIES OF
MAMESTRA.*

BY

JOHN B. SMITH,

Professor of Entomology, Rutgers College.

(With Plates VIII-XI.)

Mamestra Ochs.

Eyes hairy, legs unarmed, tibiæ not spinose, vestiture scaly. Moderate to large-sized species; primaries moderate, varying somewhat in form, usually trigonate and moderately elongate, more rarely stout; stumpy winged; apices from acute to rounded. Front, palpi, and thorax with usually rather coarse vestiture, the latter with a more or less obvious divided crest, sometimes quite prominent anteriorly. Abdomen with more or less obvious dorsal tuftings. Antennæ of the male serrate and bristled, ciliate or entirely simple, rarely in our species pectinated.

It is difficult to distinguish the hairy-eyed genera by separate description; they must be comparatively described, and even then the absolute differences are so small that the same species has been a *Xylomiges* and *Mamestra* or a *Taniocampa* and *Mamestra*, and the references could not in any case be very sharply criticized. The

* LETTER OF TRANSMITTAL.

SIR: I have the honor to transmit for publication the accompanying revision of the genus *Mamestra*, by Prof. John B. Smith. It is a continuation of the "Contributions toward a Monograph of the Noctuidæ of Temperate North America," and was in part prepared while the author was still connected with the Museum, and is based, to a large extent, on the material in the Museum Collection.

The genus *Mamestra* is one of the largest and best characterized genera of the Noctuidæ, and Professor Smith has brought his revision down to date, making it a most valuable contribution to American Lepidopterology. Nearly all the species are represented in the Museum collection, and with few exceptions the types of the new species have been deposited therein, so that the collection in this genus from North America becomes the most complete in the country, if not in the world.

Respectfully,

C. V. RILEY,

Hon. Curator of Insects.

Prof. G. BROWN GOODE,

Assistant Secretary Smithsonian Institution,

In Charge of National Museum.

genera as a rule lack well-marked structural characters, and habitus and comparative features assume a greater importance. It is my purpose to finish up the hairy-eyed genera as soon as may be and to present then a tabular statement of such differences as exist. It will bring out more strongly the thoroughly opinionative nature of the divisions in this part of the Noctuid series.

I have been unable to separate *Dianthæcia* from *Mamestra*, in practice, and have united them or rather left them united, as Mr. Grote proposed years ago. The single distinctive character—the salient ovipositor of the female—seems in our fauna to be inconstant in the same species, *i. e.*, some females of a species will have the ovipositor exerted, others will not. I think this depends somewhat upon whether or not the insect had oviposited.

The work on this genus was first done before 1885, as part of the monographic work then in contemplation by Dr. Riley and myself, and was then based largely upon the New York and Brooklyn collections, as most accessible. Since that time the material has so increased in amount that during January, 1891, I rewrote the whole paper, basing it now upon the collections in the U. S. National Museum, which in fullness of series, if not in the number of species, excels all the other American collections of *Noctuidæ*. Many species unknown to me in 1884 have since come to my notice in one or both sexes, and some new material has needed attention. It is a somewhat interesting fact in this connection that whereas new species of the *Agrotid* and *Heliothid* series are constantly received in all sendings from the western high plateaus, *Hadena* and *Mamestra* are rare, the latter more particularly. On the Pacific coast the species are again more numerous, but they do not compare in numbers either of specimens or species with the Atlantic, or, better, boreal fauna.

I desire here to express my obligation to the owners of the large collections who have so liberally and kindly aided me, and also to Dr. Riley, the Curator of Insects in the National Museum, who has allowed me to make the fullest possible use of the material there. The Museum collection of *Mamestra* has been determined and arranged by me in accordance with the views in this paper, and the specimens are cited in the record of localities.

The species of this genus, though differing greatly when extremes of form are presented, yet afford no strong or evident superficial characters for their division into compact groups, the species of which should be closely allied. There is variation enough in structure and appearance; but it is rather individual than characteristic of groups, and can not serve for other than specific distinction in the majority of instances.

Two wide and very unequal divisions are indicated, though not very sharply separated, and the composition of the first group is not quite as homogeneous as desirable. In A, the antennæ have the joints

marked or serrate, laterally bristle-tufted in the male. In B, the male antennæ are simple, or at most ciliated. The division, as has been indicated, is an arbitrary one, and in A, the species as a whole have no close habitual bond of union; yet in the large pale species, *discaulis*, closely allied as it is to *nimbosa* and *imbrifera*, barely comes within the definition of the group, while *leucogramma* for instance is completely isolated and agrees with itself only! No allied species are disassociated, however, and though perhaps not ideally the best, yet the divisions are practical at least.

Division A contains comparatively few species and no groupings are necessary.

In Division B the species are numerous, and it is possible to separate them into groups, which in most cases associate closely allied forms.

Group *W-maculata* is described in its name, though there is no species so dubbed. The species are all identified at a glance by the prominent W mark of the s. t. line, which is usually white and contrasting, varying somewhat in the length of the angles, but always nearly or quite crossing the terminal space. I should very much have liked to name this group *W-album*; but unfortunately the species has no white W, and, after all, Guenée called his species *U-album*, and meant what he said, for, as he describes it, the reniform is inferiorly outlined in white, making a U. Walker changed it to *V-album* and Mr. Grote made it *W-album*, effectually obscuring the meaning conveyed in the name as originally imposed.

Group *vindemialis* contains a few species of large size and red or black-brown color, the hind angle of primaries not retracted. The body is robust, with dense woolly clothing, and they should be quite readily referred.

Group *latex* also contains species of at least moderate size, never red or black-brown, narrower winged, the hind angle of primaries distinctly retracted. *Lubens* has broader wings than the type of the group and is different in maculation, but can not be referred elsewhere on account of the distinct retraction of the hind angle.

Group *adjuncta* contains rather small or only moderate-sized species, with blotchy white markings on a dark ground. There is a uniformity of genital structure, the harpes being abruptly bent at outer third.

Group *defessa* is negatively characterized and its species have no common bond of union. They are robust, the type with a resemblance to *trifolii*, with rather broad trigonate primaries, distinct apices, and oblique outer margin. The ♂ genitalia have no common character. The species are moderate in size and have no characters which would refer them to any other group.

Group *legitima* is characterized by moderately robust body and broad, comparatively short primaries, which have the apices obtuse and the outer margin rounded. Two rather well marked subgroups are indicated, of one of which *legitima* is typical, and of the other of which *goodelli* form the type.

Groups *renigera*, *olivacea*, and *laudabilis* agree in small size, short, rather obtuse primaries and general form of genitalia. The reniform is usually narrow, pale or white marked, and somewhat constricted medially.

In group *renigera* the harpes are produced into a long curved hook, and the clasper is nearly as long as the hook of the harpes.

In the *olivacea* group the harpes have the tip rounded, lappet-like, and the clasper is shorter cylindrical.

In group *laudabilis* the harpes have a long, narrow piece set at an angle to base, and this is obliquely truncate at tip. The clasper is short, thick, and beak-like.

There is a considerable similarity in the maculation of the species of the three groups, especially noticeable between the *renigera* and *olivacea* forms, and each of the groups forms a small aggregation of closely related and sometimes very variable forms.

Group 4-*annulata* is based on a small species, similar to the preceding in wing form; but the ordinary spots are subequal, white ringed, the transverse lines are obsolete, and there is a long black basal dash looped at the end to form the claviform.

Group *innexa* is also based on a single, rather peculiar species, first described as a *Perigrapha* by Mr. Grote. It is a reddish pearl gray in color, and has pale transverse lines. The primaries are narrow and have a depressed costa and somewhat prominent apices.

Group *pensilis* contains rather narrow-winged forms, with acute or rectangular apices and oblique outer margin. The species are of some shade of gray, very variable, and two of them uncomfortably close in superficial appearance, though perfectly distinct structurally.

Altogether we have an assemblage which differs more at its extremes than do the forms as a whole from a number of other genera.

In tabular form the group scheme separates as follows:

- | | | |
|--|---------|--------------|
| 1. Antennæ of ♂ serrated and furnished with lateral tufts of bristles .. | Dir. A. | |
| Antennæ of ♂ simple, merely ciliated laterally | Dir. B. | 2 |
| 2. S. t. line with a prominent W-mark | Group.. | W-MACULATA. |
| S. t. line without such a mark | | 3 |
| 3. Large red or black-brown species, hind angles of primaries not re- | | |
| tracted | Group.. | VINDEMIALIS. |
| Large or moderate sized species, never evenly red brown, primaries nar- | | |
| rower, hind angles distinctly retracted | Group.. | LATEX. |
| Moderate or rather small species with trigonate primaries, apices marked, | | |
| hind angles not retracted | | 4 |
| Moderate sized species with broad primaries, obtuse apices, and rounded | | |
| outer margin | | 5 |
| Small, stout, stumpy winged species, the costa not depressed | | 6 |
| Small species, less robust, narrow winged, with determinate or somewhat | | |
| produced apices, hind angles not retreating | | 9 |
| 4. Maculation white, often blotchy; harpes abruptly bent at outer | | |
| third | Group.. | ADJUNCTA. |
| Maculation not blotchy; colors usually luteous, resembling <i>trifolii</i> , geni- | | |
| italia various | Group.. | DEFESSA. |
| 5. Wings varying in width, costa sometimes quite strongly arched .. | Group.. | LEGITIMA. |

- 6. Ordinary spots not subequal, reniform usually narrow, pale or white marked, somewhat constricted medially; transverse lines distinct 7
 Ordinary spots small, subequal, white; transverse lines obsolete..... 8
- 7. Harpes of ♂ with a long hook at tip; clasper nearly as long as harpesGroup..RENIGERA.
 Harpes of ♂ with tip rounded, lappet-like; clasper shorter, cylindrical Group..OLIVACEA.
 Harpes of ♂ with a long narrow piece set at an angle to base; obliquely truncate at tip; clasper short, thick, beak-like.....Group..LAUDABILIS.
- 8. A long black basal streak with a loop at tip marking the claviform.....Group 4-ANNULATA.
- 9. Costa depressed, color a reddish pearly gray; lines pale.....Group..INNEXA.
 Costa not depressed; color ash gray or darker; lines dark or blackishGroup..PENSILIS.

DIVISION A.

The species here associated have little in common save more or less distinctly serrated male antennæ. In wing form, in maculation, and in the genital structure of the male, the greatest diversity is found, and but for the fact that no better basis for group divisions could be found, no attention would have been paid to the antennæ at all.

Some slight groupings are possible, though the number of species in any one group is small.

At the head of the series I place four species, agreeing in large size (about 2 inches), pale grayish primaries, in which the apices are rectangular, the outer margin oblique, and in general style of maculation. The male genitalia are after one type, though by no means alike, and are described for each species.

Discalis is known by the comparative indistinctness of maculation, pale primaries, and white secondaries. The male antennæ are very slightly serrated and ciliated only. In the others of this series the secondaries are dusky.

Rogenhoferi is a rather dull, fuscous gray species, with an evident median shade, the s. t. line not well marked, preceded by a row of defining dark spots. The male antennæ are distinctly serrated and ciliated.

Nimbosa is distinctly marked, whitish. The s. t. line is concolorous, irregular. There is no obvious median shade, though a faint dusky line is traceable. The male antennæ are more distinctly serrate than in *discalis*, less so than in *rogenhoferi* and the joints are furnished with lateral bristles.

Imbrifera as compared with the preceding is sordid in appearance, and is strongly flushed with grayish fuscous. The s. t. line is broad, pale, and even. Secondaries blackish. The male antennæ are still more serrate and the lateral bristles stouter.

All of the preceding have very distinct, divided thoracic tufts.

Nearly equaling the preceding in size, but of a fine purplish or lilac gray shade, is *purpurissata*. The median lines are obsolete, the ordi-

nary spots large, the s. t. line very distinct. The secondaries are dusky and the thoracic tufts distinct. The western specimens seen by me have the ordinary spots confluent, and to this form the name *juncimacula* was given by me, with an erroneous generic reference.

Insolens is a moderate sized species with narrower and more pointed wings, of a dirty pale luteous color and still paler maculation. The s. t. line is preceded by a series of trigonate black spots, and the thoracic tufting is not distinct.

Leucogramma is a small species, almost a miniature of *insolens* in color, wing form, and style of markings. The median lines are narrow, white, and even.

Following these is a series of small, stumpy winged forms, not very closely related to each other.

Lepidula is a beautiful, bright red brown species, with a somewhat contrasting, yellowish, reniform, and clean white secondaries.

All the other similar forms have dusky secondaries.

Determinata is a small, wood-brown species, with the median lines distinct, black, and even, all the maculation well marked.

Meditata is a deep, even, vinous brown, with blue powderings, all the maculation faint, powdery, not easily traceable. The species is an obscure one and readily recognized, interfering with nothing else in the series. The antennæ are serrate merely.

Lustralis is a paler, carneous gray, larger than the preceding, and better marked. The median and terminal spaces are more brownish, and the fringes are somewhat unusually long. The male antennæ are shortly pectinated.

Detracta is a broad-winged species, the primaries more ample than in any other species in the series, and this, with the mottled fuscous brown color, distinct median lines, and prominent black claviform, make the species readily recognizable. The ♂ antennæ are pectinated.

Gnata is dark ash gray, with a prominent s. t. line, preceded by a distinct yellowish white spot opposite the anal angle. The wing form is more like the *vicina* series, which indeed the insect much resembles in habitus, differing in the serrate and "brush like" antennæ.

Occupying an isolated position in this series is *distincta*, a pale ash-gray or whitish form, with narrow, subequal primaries, oblique slightly dentate outer margin, and somewhat retreating hind angle. A distinct black dash connects the transverse lines, crossing the median space. The species is not related to any other in this group; but seems to have affinities to *latex* and *passa*.

Crotchii is out of place anywhere, but may be conveniently sandwiched in here, as it has a prominent W-mark in the s. t. line, allying it with the following group. It is a robust species, sordid luteous to fuscous gray, the maculation sub obsolete, ordinary spots usually confluent, and claviform very large. In some specimens the s. t. line is indistinct, and the isolating character somewhat obscured.

In tabular form the species may be separated as follows:

1. Large species, s. t. line paler, without W-mark, preceded by black spots or shades, more prominent at middle and again at hind angle..... 2
 - Moderate in size, s. t. line preceded by a series of equal trigonate spots, wings narrow, apices distinct, rather prominent..... 6
 - Small, or at most moderate-sized, species, the s. t. lines not preceded by dark shades; but the dark shade follows the line, or the terminal space is dusky 7
 - Moderate in size, median lines connected by a prominent black line..... 12
 - Moderate in size, a distinct W-mark in s. t. line..... 13
2. Median lines distinct..... 3
 - Median lines wanting, or merely traceable..... 5
3. Secondaries white, primaries whitish gray.....DISCALIS.
 - Secondaries dusky 4
4. A distinct median shade; sordid fuscous gray.
 - S. t. line not defined.....ROGENHOFERI.
 - No obvious median shade.
 - S. t. line irregular, primaries bright gray.....NIMBOSA.
 - S. t. line even, color sordid, dull gray.....IMBRIFERA.
5. Primaries carneous or purplish gray; ordinary spots large, sometimes confluent.....PURPURISSATA.
6. Color dirty, pale luteous, maculation not prominent.....INSOLENS.
7. Sordid luteous gray, powdery, maculation white marked, confused, wing form of *insolens*LEUCOGRAMMA.
 - Primaries various in color, not luteous gray, more stumpy winged..... 8
8. Secondaries white; primaries bright red-brown, reniform somewhat contrasting, yellowish.....LEPIDULA.
 - Secondaries dusky 9
9. Claviform small or wanting, concolorous..... 10
 - Claviform prominent, black..... 11
10. Pale wood-brown, median lines distinct, single, black, even.....DETERMINATA.
 - Deep vinous brown, with blue powderings, all the maculation faint, powdery, not easily traceable.MEDITATA.
 - Carneous gray, powdery, maculation distinct, median and terminal spaces more brownish.....LUSTRALIS.
11. Costa arched, wings therefore broader and more rounded than usual; mottled fuscous brown, with yellowish shades.....DETRACTA.
 - Wings longer, narrower; dark ash gray; s. t. line prominent, preceded by a distinct yellow-white spot at anal angle.....GNATA.
12. Pale ash gray or whitish, narrow winged, with somewhat retreating anal angleDISTINCTA.
13. Robust, sordid luteous to fuscous gray, the maculation sub-obsolete, ordinary spots usually confluent, claviform very large.....CROTCHII.

Mamestra discalis Grt.

1877. Grt., Bull. U. S. Geol. Surv., III, 797; *Mamestra*.

Grayish white irrorate with black scales; maculation undefined; transverse lines barely traceable; s. t. line irregular, concolorous, marked by the slightly darker terminal space and a preceding interrupted blackish shade; a row of terminal lunules; claviform small, powdered with dark scales; ordinary spots large, concolorous, indistinctly outlined by dark scales, cell between them black. The secon-

daries are whitish, subhyaline, outwardly and on the veins shaded with blackish or fuscous; beneath pale, powdery, secondaries with a discal dot. Head and thorax concolorous with primaries; patagiæ black, marked at outer margin.

Expands 45–50 millimetres (1.80 to 2 inches).

HABITAT.—Colorado, California.

Two specimens are in the Museum collection, both from Colorado, one (Denver) collected by Bruce, the other, collection J. B. S.

The species is easily recognized by its large size, pale color of primaries and white secondaries. The male antennæ are but slightly serrated, laterally ciliated, and somewhat thickened.

The genital pieces together form almost a cylinder. The harpes are rather slender, strongly dilated at the tip, furnished inwardly with a stout spine and numerous spinules. At the middle of the harpes there is also a strong spine. The clasper is strong, corneous, but little curved, and forming the inferior margin of the whole piece.

Mamestra rogenhoferi Moeschl.

1870. Moeschl., Stett. Ent. Zeit., xxxi, 269; *Mamestra*.

Rather sordid, fuscous gray, all the lines marked, obsoletely geminate; ordinary spots moderate, concolorous. In the general course of the lines it agrees with *imbrifera*, but it differs in the less contrasting terminal space and narrower s. t. line, which is marked by a row of dark lunules. The claviform is only faintly indicated. The distinctive feature of the species is the very distinct median shade, and the species is nearer to *nimbosa* than *imbrifera*.

Expands 47 millimetres (1.88 inches).

HABITAT.—Labrador.

No specimens are in the Museum collection. By the courtesy of Mr Moeschler I was enabled to examine the type, which is a male in good condition. The secondaries are uniformly fuscous, and the antennal joints are distinctly serrated and furnished with bristly tufts. The genitalia are very like those of *discalis*, but the tip of the harpes is truncated, not rounded. The single type specimen could not be more satisfactorily examined as to structure, but it is very recognizable, and obviously distinct from the allied forms.

Mamestra nimbosa Gu.

1852. Gn., Sp. Gen. Noct., II, 77; *Aplecta*.

1857. Wlk., C. B. Mus., Lep. Het., XI, 555; *Eurois*.

1873. Grt., Buff. Bull., I, 102; *Mamestra*.

1875. Speyer, Stett. Ent. Zeit., xxxvi, 142; *Mamestra*.

Primaries whitish gray, more or less powdered with black scales transverse lines evident, black, geminate; ordinary spots large, concolorous, outlined by a narrow black line; no distinct basal line; t. a line lunulated between the veins, as a whole but little outcurved, :

blackish shade at inception; t. p. line with inner line lunulate and slightly sinuate; outer line even, shading into the s. t. space, which is dusted with gray, especially at costa; s. t. line narrow, pale, dentate, and sinuate; an indefinite W-mark on veins 3 and 4, inwardly marked and shaded with black; a row of black terminal lunules. Through the median space is an indistinct shade line, darkening the cell between the ordinary spots. Secondaries dusky, with a darker discal spot and median line, the latter paler shaded. Beneath, primaries dusky, with indefinite outer line and pale terminal space; secondaries pale, with dusky discal lunule, outer line, and shaded margin. Head and thorax concolorous, the former with a black line crossing front, the latter with a black line on collar, and patagiæ black margined.

Expands 48-52 millimetres (1.92 to 2.08 inches).

HABITAT.—Canada, Eastern and Middle States.

Six specimens are in the Museum collection, others in the duplicate series, labeled, Kendall, New York (Burnett); Sharon, New York, July and August (O. Meske); Lewis County, New York, August (C. V. R.); Manchester, Vermont, August 3 (J. B. S.).

This is a very distinct and strongly marked species, separated from *liscalis* by the dusky secondaries and more definite maculation, and from *imbrifera* by its cleaner cut maculation, brighter color, and irregular s. t. line. Thorax with a prominent anterior divided tuft. Abdominal tuftings small and dark, easily rubbed off and obliterated. The antennæ of the male are very slightly serrate, the joints each furnished with a long stiff bristle on each side, as well as a bunch of stiff hair. The male genitalia are distinctive. The harpes are dilated at tip, somewhat acutely produced superiorly, furnished at inner side with two strong spines and a mass of strong spinules. A corneous, finger-like process crosses the harpe near base, where it joins the clasper. The clasper is very stout and heavy, broad at base, then suddenly constricted into a stout curved hook, somewhat dilated at tip.

The species seems nowhere common, though taken almost every year in small numbers where it occurs.

Mamestra imbrifera Gn.

1852. Gn., Sp. Gen. Noct. II, 76; *Aplecta*.

1857. Wlk., C. B. Mus., Lep. Het. XI, 555; *Eurois*.

1873. Grt., Buff. Bull., I, 102; *Mamestra*.

1875. Speyer, Stett. Ent. Zeit., XXXVI, 144; *Mamestra*.

Sordid dusky gray; transverse lines evident, geminate, but rather indistinct. Ordinary spots large, concolorous or slightly paler, outlined in black, and with white annuli. Basal half line distinct. T. a. line lunate, outwardly oblique. T. p. line lunulate, incurved as usual below reniform. S. t. line pale, rather broad, tolerably even, inwardly marked by dusky shadings, which, between veins 1 and 2 and 5 and 6, almost cross the s. t. space, which otherwise is paler than the rest of the wing. An indefinite median shade, darkening the cell between the

ordinary spots. Claviform dusky. Secondaries blackish, fuscous, with paler outer margin and a row of terminal black lunules. Beneath as in *nimbosa*. Head and thorax concolorous, with primaries irregularly mottled with gray. The thorax has a divided crest, similar to that of *nimbosa*. The ♂ antennæ are distinctly serrate, or "pyramidal toothed," the joints furnished with lateral long bristles and bunches of stiff hair.

Expands 47–50^{mm} (1.88 to 2 inches).

HABITAT.—Canada, Eastern and Middle States. Six specimens are in the Museum series, labeled as follows: Orono, Maine (C. V. R., J. B. S.); Sharon, New York, July 24 (Meske); Schenectady, New York, July 1 (C. V. R.); Centre, New York, July 5 (Riley).

This is more common than *nimbosa*, and easily distinguished from it by the distinctly serrate antennæ, the darker color, narrow median, and wider s. t. space, and by the pale and rather broad even s. t. line.

The male genitalia consist of the curved harpes, strongly dilated and somewhat securiform at tip, the superior angle furnished with a single stout corneous spine, and the inner surface of tip else rather densely clothed with small spinules. There is also a corneous, finger-like process similar to that in *nimbosa*. Clasper very broad, convex, with the harpes forming nearly half a cylinder. Superiorly there is a long, stout, curved prong or hook, the inner edge of which is somewhat serrate.

The antennal structure of these, our three largest eastern species, is interesting, and shows how little real reliance can be placed upon this feature in grouping. In *discalis* they are nearly simple, the joints only furnished with tufts of hair. In *nimbosa* the joints are scarcely more serrate, but have distinct lateral bristles. In *imbrifera* the joints are distinctly serrate, the lateral bristles longer, and the bunch of hair is more distinct. Yet these species certainly can not be separated in any natural arrangement, and they are therefore associated here, though it is straining the term to speak of the antennæ of *discalis* as serrate.

Mamestra purpurissata Grt.

1864. Grt., Proc. Ent. Soc. Phila., III, 82, Pl. I, f. 5: *Eurois*.

1873. Grt., Buff. Bull., I, 102: *Mamestra*.

var. *JUNCIMACULA* Smith.

1882. Smith, Bull. Bkln. Ent. Soc., v, 67: *Hadena*.

Primaries pale purplish gray, tinged with blackish along costa, and reddish on the discal space. Transverse lines obsolete or but faintly indicated, single, blackish, approximate, irregular. S. t. line irregular, forming an imperfect W near middle; inwardly defined and shaded with purplish black. The ordinary spots are large, outlined by narrow purplish black lines. Claviform obsolete or very small, scarcely traceable. A series of black terminal lunules. Secondaries in the ♂ pale, with soiled outer margin; in the ♀ dusky. Beneath, primaries dusky, in the male with paler terminal space; secondaries pale gray. Head and thorax concolorous with primaries. Collar with a black line. Antennæ of the ♂ thickened, joints serrate and bristled.

Expands 44–53^{mm} (1.76 to 2.12 inches).

HABITAT.—Northern, Eastern, and Middle States; Colorado, Utah.

The variety *juncimacula* has the ordinary spots confluent, else like the type form. How I came to refer the insect to *Hadena*, I can not now understand, since my memoranda show that I knew the eyes were hairy.

The Museum collection has six specimens in the regular series, others in the duplicates; localities as follows: Bar Harbor, Maine, August 27 (J. B. S.); Albany, New York, August 24, September 9 (Meske, C. V. R.). Of the variety there are two specimens, the type from Utah, Fort Thornburgh (J. B. S.); another from Morrison, Colorado, July 27 (C. V. R.).

It is perhaps worthy of note that none of the eastern material I have seen has any tendency to the confluent ordinary spots, while the western specimens show it as a rule.

The thorax is distinctly crested, the crest divided.

The male genitalia consist of a broad harpe, suddenly narrowed and then at tip dilated and inwardly spinulate. The clasper is from the center of the harpe, rather short and moderately curved, simple.

Mamestra insolens Grt.

1874. Grt., Buff. Bull., 11, 65; *Dianthocia*.

1881. Grt., Can. Ent., XIII, 130; *Mamestra*.

♂ *arietis* Grt.

1879. Grt., Bull. U. S. Geol. Surv., v, 207; *Mamestra*.

1881. Grt., Can. Ent., XIII, 130; pr. syn.

carina Morr.

1874. Morr., Proc. Bost. Soc. N. H., XVII, 158; *Tauiocampa*.

Luteous gray, transverse lines pale, margined with black. Ordinary spots large, concolorous or paler, broadly annulate with white. Basal line present. T. a. line outwardly margined with black, somewhat irregularly lunate, outwardly oblique. T. p. line inwardly margined with black, lunulate. T. p. line concolorous, sometimes marked by yellow scales. Terminal space darker, limiting the line outwardly, while inwardly it is marked by a row of black points. A terminal row of black lunules, fringes long, interlined with gray and black. Secondaries pale fusco-luteous, with white fringes. Beneath, both wings pale, with common line and discal dots. Head and thorax concolorous with primaries.

Expands 34–43^{mm} (1.36 to 1.72 inches).

HABITAT.—California.

Four specimens are in the collection, all from California (J. B. S., C. V. R.), two of them from San Francisco County, California, August and October (through C. V. R.). The female has the ovipositor slightly exerted and is usually larger and darker than the male. Antennae of the male serrate, with lateral tufts of bristles to each joint. The male genitalia are distinct. The harpes are broad, curved, and somewhat

angulate, dilated at tip and there inwardly furnished with a single row of spinules. The clasper is a single, rather short, slightly curved, corneous hook. This species is very readily recognized and easily distinguished from all its associates. It does not look like a *Mamestra* at first sight, and has little of the habitus of the genus.

The synonymy is based upon an examination of types and typical specimens. Mr. Morrison's description bears date in October, while Mr. Grote's is dated in May.

It appears from Mr. Grote's most recent list that he never recognized Morrison's species.

Mamestra leucogramma Grt.

1873. Grt., Buff. Bull., I, 140; *Dianthæcia*.

1874. Grt., Buff. Bull., II, 64; *Dianthæcia*.

1881. Grt., Can., Ent. XIII, 130; *Mamestra*.

Sordid luteous gray, terminal space somewhat irrorate, with white scales. Transverse lines denticulate, filled with pale, the marginal lines scarcely discernible. S. t. lines marked with yellow scales and a few darker points. Ordinary spots slightly paler, very indefinite. A row of dark terminal lunules. Secondaries blackish fuscous, paler at base. Beneath, powdery fuscous, secondaries paler, all with an exterior dusky line. Head and thorax concolorous with primaries, the vestiture somewhat divergent. Abdomen with a basal tuft only. Male antennæ serrate and ciliate.

Expands 28^{mm} (1.12 inches).

HABITAT.—California.

There are four specimens in the Museum collection from Los Angeles County, California, dated April, August, and October (through C. V. R.) and these agree with the type in Mr. Hy. Edwards's collection.

This is an ugly, inconspicuous species, not easily confused with any of its allies. The primaries are comparatively small, the outer margin oblique, apex somewhat produced, fringes long. There seems to be little or no variation and the resemblance to *insolens* is marked.

The male genitalia are peculiar. The harpes are narrow toward base, suddenly broader, resembling a cleaver, abruptly truncate at tip and furnished with an acute long spine. The clasper is a rather slender, curved, corneous hook.

The insect is not generally found in collections.

Mamestra lepidula Smith.

1887. Smith, Proc. U. S. Nat. Mus., x, 463; *Mamestra*.

Bright, somewhat ferruginous brown, darker in the median and terminal spaces. An oblique light brown streak inferiorly in basal space. Transverse lines distinct, single, margined with pale violet blue. Basal line brown. S. t. line irregularly sinuate and dentate, distinct, yellow; apex of wing violet blue. Claviform small, pointed, velvety

brown. Orbicular oval or rounded, concolorous, defined and irrorate with blue scales. Reniform moderate, not constricted, whitish, somewhat marked with brownish, and irrorate with blue scales. The terminal space is also more or less irrorate with blue scales. Secondaries of ♂ white, of ♀ pale fuscous. Beneath pale, with yellowish irrorations and a common external line. Head and thorax concolorous with primaries. Abdomen fusco-luteous, with distinct dorsal tufts, that on the fourth segment most prominent. Antennæ of male distinctly serrate, the serrations bristled.

Expands 25^{mm} (1 inch).

HABITAT.—Texas.

The pair from which the species was described is from Mr. Hy. Edwards, to whose kindness I owed one of the specimens, now in the National Museum collection.

This is one of the prettiest of our species; its bright colors, bluish median and yellow s. t. lines, and pale reniform, rendering it easily recognizable. The fringes of primaries are long, even, cut with obscure violet.

The harpes of the male are moderate, but little dilated at tip and rounded. The clasper is simple, stout, rather short, curved, somewhat irregularly enlarged at tip. It is utterly unlike anything else in this series.

Mamestra determinata, sp. nov.

Head and thorax carneous gray, much as in *lustralis*. Primaries pale reddish-gray brown or pale fawn, the median space a deeper shade of same color. T. a. line well removed from base, single, black, outwardly oblique and outcurved between the veins. This leaves a large evenly colored basal space taking up on inner margin fully half of the wing. T. p. line single, black, fine, crenulate, outcurved over cell and thence almost parallel with outer margin. S. t. line indicated only by a dusky costal patch in s. t. space, and by some vague darker shadings in terminal space. An interrupted dark terminal line, and a pale line at base of fringes. Claviform a small eusp attached to t. a. line. Orbicular vague, slightly paler, moderate in size, and entirely indefinite. Reniform large, upright, oval, paler than ground color, blackish, filled interiorly by a somewhat diffuse, angulated, vague median shade. Secondaries smoky, outwardly darker, a yellowish line at base of fringes. Beneath, whitish, powdery, with a blackish extra-discal line and a small discal spot.

Expands 30^{mm} (1.20 inches).

HABITAT.—Foothills, Colorado (Bruce).

A single male specimen in good condition, easily distinct from all its allies. It has more the maculation of *lustralis*, but very much better defined, the ground color also different. In genital structure, on the contrary, the resemblance to *meditata* is striking, and shows the refer-

ence indicated by the antennæ to be in this case a sound one. These antennæ are furnished with short pointed lateral processes, which are tipped with bristle tufts.

Mamestra meditata Grt.

1873. Grt., Buff. Bull., I, 104; *Dianthæcia*.

1881. Grt., Can. Ent., XIII, 130; *Mamestra*.

Reddish fuscous, irrorate with bluish scales, powdery. Transverse lines indistinct, geminate, sometimes relieved by a pale included shade. Basal line not traceable. T. a. line outwardly oblique, wavy. T. p. line more upright than outer margin, slightly dentate on veins. S. t. line indicated by a slight difference between terminal and s. t. spaces. Claviform obsolete. Ordinary spots moderate, concolorous, often barely traceable, usually marked by paler scales. Secondaries dark, smoky, fuscous, paler toward base. Beneath, with a reddish shade, powdery, a broad exterior dusky line. Head and thorax concolorous, tuftings not prominent. The male antennæ serrate, the serrations bristled.

Expands 27 to 35^{mm} (1.08 to 1.40 inches).

HABITAT.—Canada to Virginia, west to the Mississippi.

Eleven specimens are in the Museum series, others in the duplicate material. The localities are, New York (C. V. R., J. B. S.); Northern Illinois (C. V. R.); Holderness, New Hampshire, September (C. V. R.); Washington, District of Columbia, August 8 to September 14 (C. V. R.).

This is a common and obscurely marked insect, related to *lustralis*, with a somewhat similar wing form; but much more obscurely marked.

The genitalia of the ♂ consists of the long harpes constructed near the middle and dilated toward tip, where it is inwardly fringed with spinules. Behind the middle arise two stout corneous hooks, slightly curved, the one projecting upwards, the other downwards.

Mamestra lustralis Grt.

1875. Grt., Can. Ent., VII, 223; *Dianthæcia*.

1881. Grt., Can. Ent., XIII, 127; *Mamestra*.

Lilac gray, median space more reddish. Median lines obsoletely geminate, usually one of the lines only distinct; t. a. line preceded, t. p. followed by a narrow pale shade. Basal line present, fragmentary. T. a. line outwardly oblique and curved between the veins. T. p. line innulate, nearly parallel with the outer margin, a prominent tooth on vein 1. The s. t. line is usually distinct, pale, its course sinuate, always marked near hind angle with a carneous or yellowish blotch. Sometimes the terminal space is strongly irrorate with bluish-gray scales and the line becomes more or less completely lost. Claviform rarely complete, usually only the superior portion outlined and having the appearance of a spur from the t. a. line. Ordinary spots usually paler, narrowly outlined with black, usually with a traceable pale interior

annulus. Orbicular variable in form; reniform rather narrow, somewhat lunate. Secondaries fuscous, paler toward base, sometimes with an extra median darker line. Beneath, powdery, with common exterior line and discal dot. Head and thorax concolorous with primaries. Antennæ of male shortly pectinated, the processes bristled.

Expands 27 to 32^{mm} (1.08 to 1.28 inches).

HABITAT.—Canada to Virginia, west to Wisconsin.

Four specimens are in the Museum collection; localities as follows: Maine; Racine, Wisconsin (C. V. R.); Maryland (J. B. S.). The fringes are long and even, the primaries rather short, broad, and trigonate. The species is rather well marked and not easily confounded with any other.

The male harpes are obtusely angulate, very slightly enlarged toward middle, the tip inwardly spinulose. Clasper stout, corneous, simple, beak-like.

Mamestra detracta Wlk.

1857. Wlk., C. B. Mus., Lep. Het. XI, 752 *Hadena*.
clariplena Grt.

1873. Grt., Buff. Bull., I, 194; *Mamestra*.

1881. Grt., Can. Ent., XIII, 128; pr. syn.

Fuscous brown to blackish, sometimes with a yellow suffusion. In dark specimens the transverse lines are obsolete, ordinarily they are distinctly geminate; t. a. line with an outward curve, lunate between the veins; t. p. line parallel with outer margin, irregularly dentate or lunulate. S. t. line always visible, narrow, pale, irregularly sinuate; a larger pale spot at hind angle, which is, however, often obsolete. Basal line distinct, geminate. An obvious, short, black, basal streak. Claviform moderate, filled with black, always distinct, and forming a prominent feature in the appearance of the insect. Ordinary spots somewhat paler than ground color, black-margined. Orbicular usually round or oval, rarely oblong; reniform large, kidney-shaped. Secondaries dark, smoky brown or fuscous. Beneath variably dark, powdery, a distinct common line and discal dot. Head and thorax concolorous with primaries. Antennæ of ♂ shortly pectinate, the branches setose.

Expands 27 to 35^{mm} (1.08 to 1.40 inches).

HABITAT.—Canada; Eastern, Middle and Central States. Eleven specimens are in the Museum series, others in the duplicate material. The localities are as follows: Sharon, New York, July 15 (Meske); New York; Orono, Maine (J. B. S.); Washington, District of Columbia (C. V. R.).

The primaries are broad, the costa arched, outer margin rounded. The wing form and the distinct black claviform spot will render this species easily recognizable.

The genitalia of the male are peculiar and difficult to describe. The harpes are slender, elongate, curved, broadly and roundly dilated at tip, which is inwardly spinulate. The clasper consists of a chitinous

shell at base, from which proceed a seminembranous, cylindrical, curved hook, enlarged toward base, and a spoon-shaped appendage, furnished at tip with a stout pointed spine.

The species is not uncommon in the more northern part of its range, but seems not often taken southwardly.

Mamestra gnata Grt.

1882. Grt., Can. Ent., XIV, 170; *Mamestra*.

Dark ash gray, with a sordid luteous shade added through center of primaries. The transverse lines are geminate, not very well defined, their course as in the allied species. S. t. line narrow, pale, sinuate, marked more distinctly by the contrast between the dark terminal and paler s. t. space. Basal line present, but imperfectly marked. Ordinary spots moderate, slightly paler, with whitish annuli. Claviform small, concolorous or dark, outlined in black. Between veins 1 and 2 and between the t. p. and s. t. lines there is a defined pale patch, giving the species a characteristic appearance. Secondaries white, with soiled veins and outer margin. Beneath, pale, powdery. Head and thorax concolorous with primaries; a black line crossing collar. Tuftings distinct but not prominent. The antennæ of the male are distinctly serrate and laterally tufted.

Expands 32^{mm} (1.28 inches).

HABITAT.—Arizona, New Mexico.

A single specimen from New Mexico (J. B. S.) is in the Museum collection. Mr. Neumœgen has the male type. The species is easily known by the resemblance to the *vicina* group and the large pale spot near hind angle, a unique combination with the antennal structure. The harpes of the male are broad, nearly equal, and obliquely truncate at tip, where they are furnished with a row of stout spinules. The clasper consists of a simple, small, slightly curved, corneous hook.

Mamestra distincta Hübner.

1810. Hbn., Samml. Ex. Schmett, I, Pl. 194; *Achatia*.

1816. Hbn., Verzeichniss, 219; *Astrapëtis*.

1852. Gn., Sp. Gen. Noct., II, 91; *Hadena*.

1857. Wlk., C. B. Mus., Lep. Het., XI, 583; *Hadena*.

1863. Grt. & Rob., Trans. Am. Ent. Soc., II, 197, Pl. 3, f. 72; *Hadena*.

1874. Grt., Buff. Bull., II, 156; *Mamestra*.

ritis French.

1879. French, Can. Ent., XI, 76; *Dicopis*.

1879. Grt., North Am. Ent., I, 16; pr. syn.

Whitish gray, darker shaded through median space above claviform and in s. t. and terminal spaces. Basal space pale, the half line indefinite. T. a. line geminate, evenly curved outwardly and oblique. T. p. line geminate, lunulate, one-fourth from and nearly parallel with outer margin. Ordinary spots large, paler than the surrounding space, not distinctly outlined. Claviform large, broad, concolorous, from the apex

sending out a broad black mark which reaches the t. p. line and with the claviform connects the median lines. Below this line the median space is pale; above, tinged with fuscous, except that from the reniform a pale shade runs obliquely to apex. Beyond the t. p. line the inner margin and an oblique apical shade are pale, else strongly marked with fuscous. S. t. line obsolete, marked by a few black venular points. Secondaries whitish at base, outwardly fuscous. Beneath, pale, powdery, with common outer line and discal dots distinct black. Head and thorax concolorous with primaries; head with a distinct transverse black line; collar with a transverse dark line, fuscous-tipped and somewhat produced at middle; patagia black margined; tufts not prominent. Abdomen tufted at base only. Antennæ of male slightly but distinctly serrate, the joints with tufts of fine hair.

Expands 37^{mm} (1.50 inches).

HABITAT.—Canada to Texas, Illinois, and Central States.

Six specimens are in the Museum collection from Pennsylvania (Meske); Central Missouri (Murtfeldt); Philadelphia (C. V. R.).

This species is easily recognized among the species with which it is placed by the longitudinal black line through the median space, connecting the median lines. The palpi are very short, straight, and scarcely exceed the front. Among the *Mamestras* it is perhaps nearest to *later* in wing form and appearance, and forms a very decided step toward *Nylomiges*.

The harpes are long, slightly narrowed at middle, dilated and obliquely drawn out at tip, and inwardly spinulated. Clasper short, slightly curved, acutely terminated, beak-like, corneous.

Professor French has described the larva on grape.

Mamestra crotchii Grt.

1880. Grt., Bull. Bkln. Ent. Soc., III, 29; *Mamestra*.

Sordid luteous gray or fuscous, the transverse maculation obliterated. S. t. line marked by sagittate dark dashes, forming a distinct W-mark. A distinct black basal streak, reaching to the large heavily black-marked claviform. Ordinary spots large, usually confluent. A row of dark terminal lunules. Secondaries smoky fuscous. Beneath, pale, powdery, veins marked with blackish; a distinct discal dot. Head and thorax concolorous with primaries. The joints of the male antennæ are serrate and laterally furnished with distinct tufts of hair.

Expands 36^{mm} (1.44 inches).

HABITAT.—Colorado, Oregon, California.

The California specimen from the Museum collection (June, Placer County, red No. 309, through C. V. R.) is darker in shade than the others and has been marked variety *fusculenta* by me.

This singular species is readily known by its robust sordid appearance and peculiar maculation; the confluence of the ordinary spots, the large claviform, and the obsolete transverse lines forming strong dis-

tinctive features. Mr. Grote compared the species to *trifolii*, from which it differs in antennal structure, but which it very strongly resembles in the sexual characters. The harpes are broad basally, then suddenly and obtusely angulated, and this arm again acutely angulated so as to form a V. The tip is rounded and somewhat enlarged, inwardly spinulose. The clasper is stout, corneous, bent at nearly a right angle.

DIVISION B.

This division differs from the preceding only in the simple or merely ciliated antennæ of the ♂. As the groups into which it is divisible have been already defined, nothing more is necessary under this head, and I proceed at once to the treatment of the special groups.

Group W.-MACULATA.

The distinctive feature of this group, as has been already stated, is found in the distinct W-mark of the s. t. line of primaries. The species so associated are readily distinguished, and some of them are really related. Unfortunately, however, as a whole the group is nearly as artificial as the one immediately preceding, and there is a wide range of difference in habitus, color, and sexual structure. For the present purpose of aiding in the identification and arrangement of species and in describing their peculiar sexual and other characters, the association is the best I can devise. At a future time, when abundant material of all the species will enable proper associations to be arrived at, a better sequence may be attained.

A series of four species is separated off by having the median space somewhat darker, the transverse lines distinct, complete.

Farnhami is unique in maculation, and has the habitus of a *Prodenia*. The color is bright, violet brown, and the pale, yellowish streaking through the median space over the claviform gives a distinctive appearance difficult to mistake.

Liquida also stands solitary. It is a smaller species than *farnhami*, and very differently marked and colored. Over the fuscous-brown ground is a bluish irroration, very strongly marked in basal and s. t. space. A very distinct, pale shade of variable width follows the course of vein 2, across the median space.

Capsularis and *vittula* agree in rather broad primaries and unusually short thorax, which gives the insects a rather peculiar appearance. The vestiture is somewhat coarse, and the abdominal tuftings are not distinct. Both are bluish ash-gray in color.

Capsularis is distinguished by the large white orbicular, the upright t. a., and strongly incurved t. p. line.

Vittula is similar in general appearance, but the orbicular is small, centered with dusky. The t. a. line is outwardly and the t. p. inwardly oblique, the median space therefore triangular.

The remaining species of the group have the median space concolorous or not darker than the rest of the wing.

Prodeniformis resembles in wing form and thoracic structure quite strongly the preceding two species, but is obviously distinct. The median lines are incomplete, a pale streak surmounts the claviform, and a broad pale shade runs through the s. t. space. The orbicular is narrow and oblique. This peculiar species somewhat resembles Mr. Grote's figure of *Admetovis oxymorus*, and indeed the description indicates that he had a male of this species associated with the female type which was figured.

Atlantica and *desperata* are red-brown species, broad-winged and with a less oblique outer margin. In *atlantica* the lines are incomplete, but the maculation is clear cut, the colors bright.

In *desperata* everything is vague except a short black basal dash. The median lines are complete but not distinct; the ground color is overlaid by a whitish film, leaving all vague and dull.

Canadensis in wing form is like *subjuneta*, but lacks the connecting black dash between the median lines. The genitalia are like *atlantica*, which in general the species also resembles in maculation, save that the median lines are distinct.

Subjuneta and *grandis* are distinct in having elongate wings, in which the hind angles are somewhat retracted. A distinct black transverse line connects the median lines and additionally distinguishes the species.

Inter se, *subjuneta* is evenly brown in color, while *grandis* has a broad bluish-white shade through subterminal space and is also larger.

Nevadæ seem to belong here, or perhaps nearer to *canadensis*; but I have not seen a specimen.

Differing from all the preceding by sordid, dark, powdery ashen gray color, is *invalida*, in which the wings are trigonate, with well-marked apices, distinct median lines, and a narrow black line through the median space connecting them.

Trifolii has much the wing form of the preceding, but the wings are dirty luteous in color, the lines distinct. This is the only one of the W-marked series in which the color is yellowish, and it is therefore readily distinguished.

In synoptic form the scheme would be as follows:

Median space darker, transverse lines complete.

An oblique pale streak along the course of vein 2, through the median space.

Violet-brown; s. t. space not paler *farnhami*.

Median and terminal space fuscous brown, else bluish white, maculate with brown *liquida*.

No such pale streak.

Orbicular large, round, white; t. a. line upright; t. p. line incurved below reniform *capsularis*.

Orbicular small, dark centered; median lines oblique, regularly narrowing the median space inferiorly *rittula*.

Median space concolorous, not darker.

Lines incomplete, or at least superiorly indefinite.

A pale streak surmounting vein 2; a bluish-white shade through s. t. space; orbicular small, narrow, oblique..... *prodeniformis*.

Even red brown, rarely with pale median and subapical shade; orbicular large, oval, oblique; wings broad, maculation clear and distinct..... *atlantica*.

More powdery, even; the basal dash only black, distinct, all else nearly concolorous..... *desperata*.

Wings narrower; fuscous brown; orbicular moderate, transverse lines more distinct..... *canadensis*.

Lines complete, connected by a black dash.

Brown, even; no pale s. t. shade..... *subjecta*.

Brown; a distinct pale s. t. shade..... *grandis*.

Dark ash-gray; even, powdery, connecting line fine..... *invalida*.

Lines complete, no connecting line.

Color luteous, with more or less definite maculation. Reniform always large, inferiorly darker..... *trifolii*.

Mamestra farnhami Grt.

1873. Grt., Buff. Bull., I, 103, Pl. 3, f. 2; *Mamestra*.

Fuscous brown, basal and s. t. spaces with a distinct violet shade. Lines black, geminate, included space paler. Basal line present. T. a. line upright, angulate between veins. T. p. line forming an obtuse angle opposite the reniform, then scarcely lunulated in an almost rigid oblique line to the margin. S. t. line narrow, yellow, distinct, arising from the pale apical patch, running thence obliquely to hind margin, interrupted on veins 3 and 4 by prominent sharp teeth, which touch the outer margin and form a prominent, sharply cut W. Terminal space somewhat darker; apical pale patch and s. t. line preceded by black, sagittate dashes. Claviform concolorous, large, black-margined. Ordinary spots rather narrow, concolorous, black lined, and with an inner pale annulus. Surmounting the claviform, and from the lower portion of the orbicular, is an oblique, pale, creamy, yellow shade, similar to that in *Prodenia*. There is a row of terminal black lunules. Secondaries fuscous, towards base paler; a dusky, discal lunule, and row of blackish terminal lunules. Beneath, powdery, purplish, with exterior common line and discal dot. Head and thorax purplish violet, the latter with distinct fore and aft tuftings. Abdomen fuscous, basally tufted.

Expands 37-42^{mm} (1.50 to 1.68 inches).

HABITAT.—Colorado.

This uniquely marked species has a strong resemblance to *Eupsephopactes* and *Prodenia*. Its bright colors and unique maculation make it easily recognizable. I have seen only a single female (type) specimen from Mr. Hy. Edwards's collection. Mr. Grote, who had both sexes before him, says the male antennæ are simple, very shortly ciliate beneath. In his specimens the ground color seems to have deeper "blackish, with a dark-green cast," while the violet shadings Mr. Grote calls "purplish."

Mamestra liquida Grt.1881. Grote, Papilio, 1, 58; *Mamestra*.

Fuscous brown, strongly irrorate with bluish gray in basal space, along inner margin, and in s. t. space—the latter is, indeed, chiefly bluish gray, more or less irrorate with the ground color. Transverse lines geminate, included space pale, the defining lines hardly distinct. T. a. line oblique, slightly lunate; t. p. line lunulate, parallel with outer margin. S. t. line broad, yellowish, marked by the dark terminal space and a fuscous preceding shade; its course is areolate, interrupted on veins 3 and 4 with a variably prominent but always distinct W-mark. A row of black terminal lunules. The basal space is powdery, varying in predominating color; sometimes it is more gray, sometimes more fuscous. Usually the basal line is traceable. The median space is fuscous brown, powdered with gray along inner margin; a more reddish shade through center and beyond the reniform, and a distinct but variably broad gray shade along vein 2, which sometimes becomes a very prominent feature. Claviform, with velvety black outline, moderate in size. Orbicular usually oblong, oblique, gray, with sometimes a dusky center. Reniform upright, rather elongate, somewhat constricted at middle, with a reddish shade. S. t. space prevailing blue-gray; a reddish-brown costal shade, narrowing suddenly, and following t. p. line as a faint cloud. Secondaries sordid fuscous, rather paler through the center. Beneath, somewhat ochereous, powdery, with a discal lunule on all wings. Head and thorax concolorous with primaries.

Expands 35–38^{mm} (1.40 to 1.52 inches).

HABITAT.—Washington.

Wanting in the Museum collection. This species is readily recognized by the bluish gray s. t. space and oblique line of the same color through median space. It has a rough, powdery appearance, not easily mistaken, and is very distinct from all its congeners.

The harpes of the male are rectangularly bent at one-half the entire length and strongly dilated at tip. At the outer edge of this dilation is an acute tooth; at the inner face it is spinulated. At the angulation of the harpes is a concave corneous process, forming the clasper, which is difficult to describe, and is more readily understood by a reference to the figure. In the sexual characters the resemblance is strongly to *legitima* and more so to *liquida*, and indeed the superficial appearance is much the same, save for the distinct W in the s. t. line. A thoroughly natural grouping would associate these species, and some day another more easily visible character may enable this to be done.

Mamestra capsularis Gn.1852. Gn., Sp. Gen. Noct., 11, 22, Pl. 8, f. 3; *Dianthocia*.1857. Wlk., C. B. Mus., Lep. Het. XI, 505; *Dianthocia*.1881. Grt., Can. Ent., XIII, 128; *Mamestra*.*propulsa* Wlk.1857. Wlk., C. B. Mus., Lep. Het. XI, 529; *Raphia*.

1868. Grt. & Rob., Trans. Am. Ent. Soc., 11, 78; pr. syn.

Fuscous, with gray shadings and geminate black transverse lines. Basal line present, geminate, inner portion darkest. T. a. line upright, slightly irregular, outer portion of line darker and heavier than the inner, included space concolorous. T. p. line exerted over reniform, strongly incurved below, narrowing the median space by one-half, inner portion of line darkest and broadest. S. t. line narrow, pale, partly obsolete, marked by three preceding and one following sagittate black dashes which define the distinct W. A row of small, terminal dark lunules. Claviform concolorous, outlined in black, extending nearly or quite across the median space. Orbicular large, round, bluish white, with narrow black outline. Reniform moderate, upright, hardly constricted, concolorous. An oblique, bluish-white shade through s. t. space, distinct at apex and hind margin, else obsolete. Secondaries smoky fuscous. Beneath pale, powdery, with exterior common line and discal dots. Head and thorax concolorous with primaries, with white admixture, the collar with a black line.

Expands 32^{mm} (1.28 inches).

HABITAT.—“Middle States,” Maryland, Florida.

A single specimen from Maryland (J. B. S.) is in the Museum collection. Mr. Grote gives Middle States as locality for the species. Guenée and Walker both give Florida as localities for their types. The synonymical reference above follows Mr. Grote, but the description of *Raphia propulsa* disagrees utterly with what I have identified as Guenée's species. I have not seen any specimens labeled by Mr. Grote, and therefore do not know how he has identified it. I have seen a very few specimens agreeing with the figure in drawing and color, and with the brief comparative description as well; but I do not see how even Walker could have made such a description as his from the present species. The reference by Messrs. Grote and Robinson was made after an examination of types, and must be accepted as correct until some one equally competent can make the same comparisons.

The thorax is rather short, not strongly tufted, abdomen almost un-tufted. The primaries have the apices somewhat acute, outer margin obliquely rounded.

The harpes in the male have the tip dilated and obliquely drawn out superiorly. At inner margin, just below tip, is an acute, short, denticiform process. The inner face of the dilated tip is spinulose. The clasper is very stout, rather short, hardly curved, beak-like.

Mamestra vittula Grt.

1882. Grt., Trans. Kans. Ac. Sci., VIII, 48; *Mamestra*.

Ash gray, powdered, median space darker. Transverse lines geminate, black, included spaces pale. Basal line distinct, angulated. Median lines unusually approximated. T. a. remote from base, outwardly oblique, and very slightly irregular. T. p. almost parallel with outer margin, slightly sinuate, but not strongly incurved below reniform.

Orbicular small, round, gray, with dark center. Reniform moderate, pale. Claviform small, barely outlined. S. t. line narrow, pale, hardly defined, with a distinct though not well-defined W on veins 3 and 4. Secondaries white, veins slightly soiled. Beneath, whitish, powdered near costa, with an indefinite common line.

Expands 30^{mm} (1.20 inches).

HABITAT.—New Mexico.

The species is not in the Museum collection, and I have seen only a single male specimen, marked "type" by Mr. Grote. It seems to me much more nearly allied to *capsularis* than to *4-lineata*, to which Mr. Grote compares it, but it is not likely to be confounded with either.

The harpes of the ♂ are long, slender, curved, abruptly and greatly dilated at tip, where it is inwardly fringed with a row of spinules. From base of the harpes arises the rather short, corneous clasper, which divides so that the prongs form a right angle at their point of junction.

Mamestra prodeniformis Smith.

1887. Smith, Proc. U. S. Nat. Mus., ix, 464; *Mamestra*.

Fuscous ashen 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, almost upright or very slightly sinuate, blackish, single; s. t. line yellowish, well marked with a prominent W, preceded by sagittate black dashes. A row of terminal black lunules. Claviform narrow, outlined in black, a fine black line crossing from its tip to the 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 the ordinary spots dusky. Secondaries white, with soiled outer margin. Beneath, powdery, without markings.

Expands 30–35^{mm} (1.20 to 1.40 inches).

HABITAT.—Southwest Arizona, New Mexico.

One specimen, New Mexico (J. B. S.), collected by Professor Snow, is in the Museum collection.

The male of this species was mistaken by Mr. Grote for the male of his *Admetoris oxymorus*, and the generic character based on the difference in length of ♂ and ♀ antennæ has no existence. In type of maculation and in habitus this species bears a very obvious resemblance to Mr. Grote's species, but it lacks the distinct yellowish shades of that species. The present form is easily distinguished by its strong resemblance to *Prodenia*, in color as well as markings.

The sexual structure of the male is remarkably like that of *liquida*. The clasper is a little more prominent, and the tip of the harpes is a little more drawn out—else they agree.

Mamestra atlantica Grt.

1874. Grt., Buff. Bull., II, 12; *Mamestra*.
 1875. Grt., Check List, p. 7; *Mamestra*.
 1881. Grt., Can. Ent., XIII, 128, ? = *dissimilis*.
 1889. Butler, Trans. Ent. Soc. Lond., 335 = *dissimilis*.
W-latinum, Gn.
 1852. Gn., Sp. Gen. Noct., II, 105; *Hadena*.
 1874. Grt., Buff. Bull., II, 12; pr. syn.
dissimilis, var. *discolor*; Speyer.
 1875. Speyer, Stett. Ent. Zeit., 36, 142; *Mamestra*.
 1881. Grt., Can. Ent., XIII, 128; pr. var.
 1882. Grt., New List; pr. syn.

Red or fuscous brown, terminal space darker, costal space paler, often irrorate with whitish. Transverse lines more or less completely obsolete, never entire; t. a. line, when traceable, marked with white scales, lunate between the veins; t. p. line similarly marked, lunulate, and parallel with outer margin; s. t. line distinct, pale or white, with prominent white W on veins 3 and 4, preceded by a dusky shade and black dashes. A row of distinct black terminal lunules. A basal black streak, almost attaining t. a. line. Claviform rather large, concolorous, outlined in black. Orbicular oval oblique, rather large, outlined in black, then with a pale annulus; center concolorous or strongly white marked. Reniform rather large, annulate, and defined like the orbicular, concolorous, inferiorly somewhat dark stained, the shade extending beyond the reniform to the t. p. line. A more or less definite pale shade from apex through s. t. space. Vein 2 is often thoroughly powdered with white through median space. Internal vein often white marked throughout its course. Secondaries fuscous, smoky, paler toward base. A distinct discal lunule. Beneath, reddish, powdery, with distinct common line and discal spots. Head and thorax concolorous with primaries; a distinct black transverse line on collar; patagiæ often marked with black. Thoracic tufts low, but distinct; abdominal tufts small.

Expands 30–35^{mm} (1.20 to 1.40 inches).

HABITAT.—Canada, Atlantic States to Virginia, west to Wisconsin.

Six specimens are in the Museum collection; localities as follows: Wisconsin (Meske); Orono, Maine (J. B. S.); Schenectady, New York, July 28 (C. V. R.); Albany, New York, August 28 (Meske); Adirondack Mountains (U. S. N. M.).

Mr. Grote never really described this species, but I have seen a number of specimens labelled by him, one of them now in the Museum collection. Guenée mentions a form of *W-latinum* as from America, and Mr. Grote (Buff. Bull., II, 12) simply gives the name *atlantica* in his list, with *W-latinum* as a synonym. In the check list of 1875 there are a few lines in note 6, which give none of the characters, and there is nothing else even pretending to a description.

Speyer, in comparing a series of American specimens with the Euro-

pean *dissimilis*, concludes that they are identical, but considers the American form sufficiently distinct to be called *discolor*. Finally, Butler (in the Trans. Ent. Soc. Lond., for 1889) unqualifiedly makes *atlantica*=*dissimilis*. I have not had an opportunity of examining the sexual characters of the European form, and the resemblance, superficially, does not strike me as sufficiently marked to induce me to follow the references made. In this series there is no strong resemblance in the sexual characters, and if the European form on study shows the same structure I should be ready to admit their identity. The insect varies somewhat. One form is almost evenly brown, the maculation, however, obvious; another is very strongly irrorate with white, and decidedly distinct from the normal form while yet retaining its essential characteristics.

The species is not uncommon, and differs from all the preceding in color and maculation. The black basal streak, incomplete transverse lines, and large claviform all are distinctive; so also are the primaries by their somewhat retreating hind angle. The genitalia of the male are distinctive. The harpes are broad, semi-chitinous, curved, at tip formed into a rather small, acute hook. From the superior portion of this piece and near the tip arises a moderate, curved, corneous hook, parallel to but longer than the terminal hook; near the base arises a much stouter and longer corneous hook, curved in the opposite direction, so that the points of the two last-mentioned hooks are opposed to each other. The structure is best shown by a reference to the figure.

Mamestra desperata, sp. nov.

Ground color a somewhat faded red brown, washed with grayish, which is more distinct in the median space. Collar with a prominent black transverse line. Thoracic and abdominal tuftings distinct. Primaries with a short, very distinct basal black dash. Basal half line geminate, inner line black, outer brown, included space gray. T. a. line geminate, distinct, more strongly marked on costa, only a little oblique outwardly and but little outcurved between the veins. T. p. line geminate, included space gray, defining lines not well marked, the inner brown and lunulate. As a whole, well outcurved over the cell and obliquely inward beneath, nearly parallel to outer margin. S. t. line narrow yellowish white, obsolete on costa, but very distinct thence; a prominent W mark on veins 3 and 4. The line is preceded by rusty brown scales, forming an obvious shade in the submedian interspace. A series of brown terminal lunules, fringes ent with yellowish on the veins. A distinct red brown median shade outwardly oblique between the ordinary spots, inwardly angulate on vein 2. Claviform concolorous, small, outlined by black scales. Orbicular irregularly oval, outlined by black scales, annulate with gray, otherwise concolorous. Reniform large, upright, kidney-shaped, black ringed, outwardly shaded with yellowish. Secondaries smoky fuscous with darker discal spot

and pale fringes. Beneath, reddish, powdery, primaries smoky on disc, with an evident outer line and discal spot on all wings.

Expands 37^{mm} (1.50 inches).

HABITAT.—New Hampshire, Maine, Sierra Nevada, California.

Three specimens are in the Museum collection: Maine (J. B. S.); Nevada County, California, red number 341 (through C. V. R.). Mr. Edwards has the species from Sierra Nevada.

Long ago Mr. Thaxter gave me a specimen of this species named *dimmocki*, the determination, as I understood, by Mr. Grote. I have so named it in the collection of the U. S. National Museum, in Mr. Edwards's collection, and perhaps in others. In comparing specimens with the original description I find that it does not agree at all. *Dimmocki* is compared with *subjuneta*, and it is expressly stated that the s. t. line is straight and that there is no W mark.

The present species is allied to *atlantica* in appearance, but is much more even in color, the black basal dash being the only decided marking.

In the sexual characters of the male the species is unique. The harpes are broad, somewhat curved, the tip superiorly prolonged in a finger-like process. The clasper is a broad, flat process, rounded at tip from the middle of the harpe.

The species is not common and is apparently a northern or mountain form. It should not be difficult of recognition from its resemblance to *atlantica*.

Mamestra canadensis Smith.

1837. Smith, Proc. U. S. Nat. Mus., x, 464; *Mamestra*.

Dull sordid fuscous brown; a pale, more yellowish red shade at base superiorly, in median space beyond claviform, and from the 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 to the very oblique outer margin; not very distinctly marked. S. t. line narrow, white, interrupted, the W mark prominent. An irregular dusky shade and spots mark both sides of the line. Claviform concolorous, large, broad, extending almost across the median space. Orbicular oblique, ovate, black ringed, paler than the 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 collar inferiorly are pale; collar superiorly and thorax of ground color of primaries. Secondaries dirty gray. Beneath, obscure fuscous gray, powdery.

Expands 37^{mm} (1.48 inches).

HABITAT.—New Brunswick.

I have seen only a single male specimen, in rather poor condition, from Mr. Thaxter's collection. It is like *subjuneta* in wing form, and

similar to it also in maculation, but still more like the description of *nevadæ*, with which it can hardly be identical. In genital structure it is like *atlantica*. The harpes are modified toward tip into a curved hook, longer than in *atlantica* but of the same shape; three smaller corneous hooks of various shapes arise from the inner face of the harpe, that nearest base the longest.

Mamestra nevadæ Grt.

1876. Grt., Buff. Bull., III, 84: *Mamestra*.

“♀. Smaller than *lubens*; between this species and *subjuncta*. Dark blackish brown, shaded with light red-brown, or leather brown at base above the basal dash and beyond the reniform, and again below vein 2 over subterminal space. Claviform small, concolorous; orbicular pale, small; reniform large, shaded outwardly with light brown. Median lines as usual; subterminal near the margin, distinct, white, with prominent W mark. Hind wings blackish fuscous without marks. Beneath, concolorous blackish fuscous with dot on secondaries. Thorax blackish, tufted. Eyes hairy.”

“Expanse 36^{mm}. No. 4582, Mr. Hy. Edwards, Sierra Nevada, California.”

In Mr. Edwards's collection is an imperfect specimen with this name, and agreeing, so far as the maculation is traceable, with the above description. The specimen, however, has naked eyes, and is an *Hadena* allied to *curvata*. The insect was so determined by Mr. Grote; but as it is not good enough to compare with all the details of the description, it is retained here as unknown. Mr. Butler (in the Trans. Ent. Soc. Lond., for 1889, p. 385) refers this species to *thalassina* Hbn.; but as the reference is not accompanied by a critical comparison of the species, I prefer not to accept it at present. It may be worthy of note that Speyer (in Stett. Ent. Zeit. 36, 140) speaks of a specimen supposed to be American, but without definite locality, expanding 36 millimetres, and differing only in minor details from the European *thalassina*.

Mamestra subjuncta G. and R.

1868. Grt. and Rob., Trans. Am. Ent. Soc., II, 198, Pl. 3, f. 71: *Hadena*.

1873. Riley, 1st Rept. Ins. Mo., 84, Pl. 1, ff. 14-17: *Hadena*.

1873. Grt., Buff. Bull., I, 282: *Mamestra*.

1874. Grt., Buff. Bull., II, 12: *Mamestra*.

1875. Speyer, Stett. Ent. Zeit., XXXVI, 138: *Mamestra*.

Dark fuscous brown; a reddish shade above basal black streak and beyond reniform. T. a. line complete, geminate, narrow, lunate. T. p. line faintly geminate, obsolete superiorly, strongly incurved below reniform, not much more, however, than the incurve of outer margin. S. t. line distinct, with prominent W-mark, the angles marked by black points. A row of terminal lunules. A black basal streak, not attaining t. a. line. Basal line indicated on costa. Claviform large,

concolorous, outlined in black, the line forming its inferior margin prolonged across the median space and connecting the median lines. Orbicular round, moderate in size, reddish, black margined. Reniform kidney-shaped, also narrowly bordered with black; a rufous suffusion and central dusky shade. Secondaries fuscous, basally paler. Beneath, powdery, with common outer line and discal dot; primaries shaded with reddish. Head and thorax like primaries, collar with a black line.

Expands 38–42^{mm} (1.52 to 1.68 inches).

HABITAT.—Canada, Eastern and Middle States, Ohio, Minnesota, Nebraska.

Six specimens in the Museum series, others in the duplicate collections. The localities are: Albany, New York, June 2 (Meske); Ohio, West Point, Nebraska, June (U. S. N. M. Coll.).

Distinct from all others by the uniform coloration, combined with the obvious transverse mark between median lines. The genitalia are essentially as in *liquida*. The harpes are angulate, the angle inferiorly prominent, tip strongly dilated, rounded, inwardly spinulose. Clasper consisting of two small curved hooks, one of them with dilated tip.

Speyer thinks that Guenée had this species before him when he referred to *W-latinum* as American, and professes himself unable to understand what Grote's *atlantica* represents. I think Speyer is right in supposing that Guenée had *subjuncta* before him, and as *atlantica* has not been sanctioned by a proper description it should, strictly, be cited as a synonym to this species. But as the species have become well known under the Grotean terms it would only introduce confusion were they changed now.

Mamestra grandis Boisid.

1840. Boisid., Gen. et Ind. Meth, 120, No. 950; *Hadena*.

1841. Guen., Noct. Ind. Meth., 244; *Hadena*.

1852. Guen., Sp. Gen. Noct., II, 105; *Hadena*.

1857. Wlk., C. B. Mus., Lep. Het. XI, 578; *Hadena*.

1857. Led., Noct. Eur., 90; *Mamestra*.

1883. Thaxter, Papilio III, 17; *Mamestra*.

libera Wlk.

1856. Wlk., C. B. Mus., Lep. Het., IX, 179; *Xylophasia*.

1882. Grt., Ill. Essay, 44; pr. syn.

Fuscous, somewhat reddish brown; somewhat irrorate with bluish gray; a distinct bluish-white shade through s. t. space, the outer margin of which is rigidly oblique; inwardly it shades to the t. p. line. Transverse lines usually completely traceable, indistinctly geminate, the included space pale. T. a. line outwardly scalloped between the veins. T. p. line lunulate, about parallel with the outer margin. A basal dark streak, above which the space to costa is somewhat paler. Median space often with a reddish cast; usually the internal margin somewhat irrorate with bluish gray. Claviform absorbed in a brownish-black streak which connects the transverse lines. Orbicular rather large,

round, somewhat paler than ground color, defined by a narrow black line. Reniform large, normal in shape, paler than orbicular, but with a fuscous median shade. S. t. line very distinct, yellowish, with prominent W-mark, inwardly shaded with amber brown and small black spots to the pale shade, outwardly irregularly shaded with black and brown. Secondaries sordid smoky fuscous. Beneath, with a reddish shade, powdery, with dusky transverse lines and discal spot. Head and thorax concolorous with primaries, tuftings distinct. Abdomen concolorous with secondaries, with distinct dorsal tuftings.

Expands 38–42^{mm} (1.52 to 1.68 inches).

HABITAT.—Greenland, Lapland, Canada, Maine to Pennsylvania, west to Illinois, Wisconsin, Minnesota.

Six specimens are in the Museum series; localities as follows: Wisconsin (Meske); New Hampshire (J. B. S.); Illinois, October 29 (C. V. R.).

The Arctic localities are given by Walker, who, *vide* Grote, re-described the species, giving New York as the locality. Boisduval described the species as European; but Guenée declares this an error, and says the specimen is really American.

In all habital features this species is a close ally of *subjuneta*, than which it is larger, and from which it differs in the pale s. t. shade which forms a prominent feature in the appearance of the insect.

The genitalia also clearly resemble those of *subjuneta*, but the clasper is small, single and acute.

Mr. Thaxter has bred the larva on burdock.

Mamestra invalida, sp. nov.

Dark ashen gray, all the lines distinct. Head darker, more smoky. Collar with a distinct black median line. Patagiæ with a somewhat indefinite black submarginal line. Abdominal tufts prominent. Basal half line geminate, distinct, included space strongly white powdered. T. a. line distinct, geminate; inner line faint; outer line distinct, black, outcurved between the veins, as a whole a little outwardly oblique. T. p. line geminate; outer line vague, diffuse; inner line distinct, black, lunulate, outcurved over reniform and strongly incurved below, narrowing the median space. S. t. line white, distinct, irregular, with a well-defined W-mark on veins 3 and 4. A blackish cloud precedes and follows the line in the submedian interspace and follows it on vein 5. A row of black terminal lunules. Fringes dark, cut with white on the veins. A dusky cloud through the basal space. A distinct median shade line between the ordinary spots, then close to the t. p. line, reaching the inner margin at almost the same point. S. t. space grayish white powdered, decidedly yet not prominently paler than the remainder of the wing, more dusky on costa, veins marked with blackish. Claviform small, black margined, pale powdered, a black line from its outer extremity extending to the t. p. line. Orbicular rather small.

round or oval, concolorous, ringed with whitish. Reniform large, kidney-shaped, pale ringed and with a paler central lunule, else concolorous. Secondaries uniform smoky fuscous, with an evident darker discal lunule; the veins also darker. Beneath, gray, powdery, both wings with a black extra discal line and discal spot.

Expands 44^{mm} (1.75 inches).

HABITAT.—Sierra Nevada, California; Placer County, California.

In the Museum collection are three female specimens marked June, Placer County, California (through C. V. R), red number 308.

From Mr. Edwards I have specimens marked Sierra Nevada, also all females.

The species has somewhat the habitus of *lubens*, and much of its general style of maculation. The distinct white s. t. line with the prominent W-mark affords an easy distinctive character.

Mamestra trifolii Rott.

1776. Rott., Naturf., IX, 131; *Noctua*.
chenopodii Fabr.
1787. Fabr., Mant. Ins., II, 146; *Noctua*.
1791. Oliv., Encycl. Meth., VIII, 303; *Noctua*.
1793. Fabr., Ent. Syst. III, 2, 68; *Noctua*.
1793. Gmel., ed. XIII, Linn. Syst. Nat., 2542; *Noctua*.
1816. Hubn., Verzeichniss, 219; *Diataraxia*.
1852. Gn., Sp. Gen. Noct., II, 97; *Hadena*.
1857. Wlk., C. B. Mus., Lep. Het. XI, 570; *Hadena*.
1881. French, Can. Ent., XIII, 23, larva on *Chenopodium*.
1881. Coq., Papilio I, 7; *Mamestra*.
albifusa Wlk.
1857. Wlk., C. B. Mus., Lep. Het. XII, 753; *Hadena*.
1873. Grt., Buff. Bull., I, 104; *Mamestra*.
1875. Speyer, Stett., Ent. Zeit., XXXVI, 202; pr. syn.
1881. Grt., Can. Ent., XIII, 128; pr. syn.
oregonica Grt.
1881. Grt., Can. Ent., XIII, 230; *Mamestra*.
major Speyer.
1875. Speyer, Stett., Ent. Zeit., XXXVI, 135; *Mamestra*.
1881. Grt., Can. Ent., XIII, 128; *Mamestra*.

Pale to fusco-luteous; color even or irrorate. Transverse lines distinct, geminate. T. a. line with an even outward curve, but little lunate between veins. T. p. line finely lunate, slightly sinuate; more upright than outer margin. S. t. line distinct, pale, irregular, strongly angulate at inception over the somewhat paler apical spot, and with the usual W-mark distinct. Basal line geminate, distinct. Claviform rather variable in size, usually short and rather broad, powdered with black, always distinct. Orbicular moderate, round, concolorous or slightly paler, black-margined. Reniform large, distinctly outlined, dusky, inferiorly darker. S. t. line preceded by more or less evident black, sagittate dashes. A row of black terminal lunules. Antennæ of male moderately ciliated. Secondaries fuscous or yellowish, with darker

outer borders and pale fringes. Beneath, powdery, markings of secondaries more or less distinctly reproduced. A variably distinct outer line and discal spots. Head and thorax concolorous with primaries.

Expands 30 to 37^{mm} (1.20 to 1.48 inches).

HABITAT.—Europe and North America.

The Museum series contains twelve specimens, and others are among the duplicates. The localities are: Albany, New York, May 18, June 16, August 9, 12 (Meske, C. V. R.); Boston, Massachusetts (J. B. S.); District of Columbia, May 22; Central Missouri, May 18, June 2 and 30 (C. V. R.); Denver, Colorado, Bruce (Coll. U. S. N. M.); New Jersey, Iowa, northern Illinois, Arizona.

A widely distributed and very common species, which is readily recognized by the large reniform, which is inferiorly darkish, as well as by the usually gray luteous color of primaries. It can not be confused with any other of the species with prominent W-mark to s. t. line.

The type form is rather pale luteous, very strongly frosted or powdered with gray; the maculation is all present, but is obscure and not contrasting. This is the common eastern form.

Marmorosa is applied to an even luteous form with very distinct maculation, the black dashes preceding s. t. line being especially prominent. It is a European form and occurs again in Arizona. I have not seen it from any eastern locality.

Oregonica is densely powdered with fuscous, the markings hardly relieved; secondaries distinctly yellow tinged. This is from Mt. Hood and may be like *microdon* Gn., which Staudinger cites as an aberratic variety from the Alps and (?) Labrador, and of which he says "multo obscurior."

The genitalia of the male are very strongly marked. The harpes are membranous, broad at base, suddenly and strongly constricted into a narrow, short, curved neck, which dilates at tip into a rounded, concave lappet, fringed inwardly with a row of spinules. The clasper is very stout, chitinous, and of an almost indescribable form. A reference to the figure must serve in lieu of words.

This insect is of economic importance and the life history has been written in economic publications by Dr. Riley and others. I have not included these economic references, nor have I made any attempts at giving the European bibliography.

Group VINDEMIALIS.

The species here associated agree in color and general habitus only, and the group is easily characterized as consisting of rather large red or blackish-brown species which do not by structural peculiarities belong to other groups.

They are all rather robust in build, with moderately large wings, rather roughly clothed and indistinctly tufted thorax, and more or less incomplete maculation. The species are easily distinguished.

U-scripta is darkest, blackish brown in color, the reniform inferiorly outlined in white, forming a distinct U.

Rosea is the only species in which all the lines are present; they are single, darker brown than ground color, and the ordinary spots are concolorous. The thorax is deeper red brown and like the following.

Congermana lacks the transverse lines, but has the s. t. line indicated by white scales, and the ordinary spots, though not defined, yet well marked by white patchy spots.

Vindemialis is almost immaculate rather dark red-brown, a few white scales barely indicating the ordinary lines and spots. Practically the wings may be said to be immaculate.

Picta is an aberrant species, and almost entitled to form a separate group. The wings are more pointed and narrower than in any of the preceding. The primaries are carmine shaded, and the secondaries are white. The transverse maculation is wanting and the ordinary spots are large and very irregular, powdery and not distinctly outlined. The genitalia are also very different from any of the preceding.

In tabular form the species may be separated as follows :

Apices of primaries rectangular; secondaries dusky.

Blackish brown, all the maculation obsolete, reniform inferiorly white lined.

..... U-SCRIPTA
Reddish or red-brown.

Transverse lines darker brown, distinct, single. Ordinary spots concolorous, outlined in dark brown..... ROSEA

Transverse lines obsolete.

Ordinary spots and usually s. t. line indicated by pale blotches or scales.

..... CONGERMANA

Maculation all obsolete.....VINDEMIALIS

Apices of primaries produced; secondaries white.

Crimson brown red; maculation obsolete; ordinary spots indistinctly marked, paler, reniform irregular.....PICTA

Mamestra u-scripta, sp. nov.

Head and thorax dark blackish brown, powdery. Primaries a very slight shade paler, powdered by a few whitish scales along costal and inner margin. Veins black marked, with occasional white scales intermixed, the fringes cut with white, opposite. All the transverse maculation obsolete, except for a black terminal line followed by a yellowish line at base of fringes. Orbicular wanting. Reniform concolorous, the lower edge white marked, forming an irregular U or V. Sometimes a few white scales indicate the upper portions of the spot, but as a rule the upper part is entirely unmarked. Secondaries smoky brown with a small darker discal lunule, and a dark followed by a pale terminal line. Beneath, pale, powdered with black. A dusky outer line and a distinct discal lunule on all wings.

Expands 39–41^{mm} (1.56 to 1.64 inches).

HABITAT.—Sierra Nevada, California; Nevada County, California.

I have received this from Mr. Edwards, and there are two female specimens in the National Museum (through C. V. R.), which bear

the red number 344, indicative of a biological note in Dr. Riley's possession.

The species is robust in habitus, and utterly unlike anything else known to me in this genus. Altogether there are four specimens in the Museum collection, my types being also deposited there. The sexual characters of the male are distinctive, yet show a decided resemblance to *vindemialis*, differing obviously in the shape of the clasper.

Mamestra rosea Harv.

1874. Harvey, Bull. Bull. 11, 119; *Mamestra*.

Reddish testaceous, powdery, rather evenly colored to s. t. space, which outwardly becomes deep red brown, and by its contrast with the evenly ferruginous terminal space marks the course of the very irregular s. t. line. Transverse lines single, brown. Basal line distinct. T. a. line outwardly oblique and irregularly curved and sinuate. T. p. line crenulate, about parallel with the outer margin. An angulated brown shade through the outer portion of median space. Ordinary spots brown ringed; orbicular small, round, concolorous; reniform upright, inferiorly marked with blackish. Claviform brown margined, else concolorous. Secondaries pale, with a faint yellowish red tinge, more reddish fuscous outwardly, fringes pale. Beneath, pale, with carmine powderings outwardly. A common outer line and distinct brown discal lunules. Head, thorax, and basal tuft of abdomen deep red-brown. Abdomen concolorous with primaries. Beneath, vestiture with a carmine tinge.

Expands 40-43^{mm} (1.60 to 1.72 inches).

HABITAT.—Canada, Eastern and Middle States.

Six specimens are in the collection, others in the duplicate series; localities as follows: Center, New York, May 12 and 14 (C. V. R.); same locality, May 24 (Meske); Maine (C. V. R.); New Hampshire (J. B. S.).

Easily recognized by the color and distinct, simple maculation. The harpes are broad at base, constricted and angulated near tip, where it is again enlarged into a circular concave lappet, fringed at inner side with spinules. The clasper consists of a slightly emarginate, broad, corneous process, produced superiorly into a long curved hook. The insect is rather northern in habitat and is not common.

Mamestra congermana Morr.

1874. Morr., Can. Ent., vi, 106; *Hadena*.

1878. Grt., Bull. U. S. Geol. Surv., iv, 187; *Mamestra*.

1880. Grt., Bull. Bkln. Ent. Soc., iii, 39; *Mamestra*.

Yellowish red brown, often with a carmine tinge. Transverse lines obsolete or faintly indicated by small white venular dots. S. t. line more completely indicated by a narrow, irregular, interrupted testaceous shade. Ordinary spots white marked. Orbicular small, round; reniform large, white, with brownish central lines. Secondaries pale

yellow fuscous, outwardly darker, fringes with a carmine tinge. Beneath, pale yellow fuscous with dense carmine powderings toward costal and outer margins. Head, thorax, and basal tuft of abdomen concolorous with primaries. Abdomen like secondaries, often with a carmine tinge.

Expands 33–38^{mm} (1.32 to 1.52 inches).

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

Six specimens are in the Museum collection: New York (J. B. S.); Center, New York, May 15, 26 (Meske); Colorado, from Bruce. The Colorado examples are paler in ground color, more as if a film of white underlaid the normal tinting. The species is easily recognized by the characters given. The harpes of male are narrowed and angulate near tip, where they are, as usual, broadly dilated and spinulated. There seems no distinct clasper, though there is a slight projecting angle of the harpe, which might serve as such.

This species is also quite uncommon in collections.

Mamestra vindemialis Gn.

1852. Gn., Sp. Gen. Noct., 1, 344; *Ceramica*

1857. Wlk., C. B. Mus., Lep. Het., x, 417; *Ceramica*.

1875. Grt., Proc. Ac. Nat. Sci., 418; *Mamestra*.
rubefacta Morr.

1874. Morr., Can. Ent., vi, 251; *Ceramica*.

1880. Grt., Can. Ent., xii, 185; pr. syn.

1881. Grt., Can. Ent., xiii, 128; pr. syn.

Dark red-brown, with a more or less distinct carmine tinge. The veins slightly darker, with sparse white powderings. Transverse lines marked by venular whitish dots. S. t. line marked on costa only by white powderings. Ordinary spots small, dusky, indefinite, with a few white scales. Secondaries pale yellow fuscous with darker outer margin. Beneath, powdered with carmine toward outer and costal margins. Head and thorax concolorous with primaries, abdomen with secondaries.

Expands 37–40^{mm} (1.48 to 1.60 inches).

HABITAT.—Canada, Eastern and Middle States, Florida.

Four specimens are in the collection: New York (J. B. S.); Center, New York, May 14 and 24 (Meske).

The Florida record is by Guenée. I have not seen southern specimens myself.

The species is easily recognized by the uniform deep red-brown color, with all the maculation subobsolete and indicated in the most incomplete manner. In this and all the preceding species of the group, the abdomen is laterally tufted and there is an agreement in stout fascies.

The male has harpes much as in *congermana*, but the inner margin of tip is more drawn out. The superior margin is somewhat rolled, thickened, and produced into a curved hook.

Mamestra picta Harr.

1847. Harris, Rept. Ins. Mass., 329; *Mamestra*.
 1862. Harris, Injurious Insects, Flint ed., 452; *Mamestra*.
 1870. Riley, 2 Rept. Ins. Mo., 112, f. 82; *Mamestra*.
 1872. Liutner, Ent. Cont., III, 137; *Mamestra*.
 1882. Gt., Papilio, II, 99; *Mamestra*.
exusta Gn.
 1852. Gn., Sp. Gen. Noct., I, 344; *Ceramica*.
 1857. Wlk., C. B. Mus., Lep. Het., X, 417; *Ceramica*.
 1874. Gt., Buff. Bull., II, 22; pr. syn.
contraria Wlk.
 1856. Wlk., C. B. Mus., Lep. Het., IX, 78; *Mythimna*.
 1868. Gt. and Rob., Trans. Am. Ent. Soc., II, 77; pr. syn.
 1882. Gt., Ill. Essay, 41; pr. syn.

Deep red-brown toward costal region, with a carmine tinge. Transverse lines obsolete. S. t. line imperfectly indicated by yellowish scales, most strongly marked near hind angle. Claviform imperfectly marked by yellowish scales. Orbicular rather small, rounded, with annulus composed of yellow scales. Reniform large, irregular, variable, usually with the inferior angle produced inwardly, and irrorate with reddish scales. Secondaries white, outer margin slightly powdery, a brownish red terminal line. Beneath, pale, with margins strongly powdered with carmine. Head and thorax concolorous with primaries.

Expands 35-45^{mm} (1.40 to 1.70 inches).

HABITAT.—Canada to Virginia, west to Nebraska, Wisconsin.

Six specimens are in the study collection, others in the duplicate series. The localities are: New York, August 29 (J. B. S.); Evans Center, New Jersey, July, A. R. Grote, collector (C. V. R.); Maine (C. V. R.).

The species is sometimes common and of economic importance, and its bibliography in economic literature is given by Henry Edwards in Bulletin 35 of the U. S. National Museum.

The primaries are narrower and the apices more acute than in any other species in this group, and the white secondaries are also distinctive. The sexual characters of the male are peculiar. The harpes are corneous, broad, drawn out to an acute point, and furnished with a small pad which is densely pubescent. Inferiorly, near the tip, is an obtuse and then an acute dentiform process, while near the base there is a strongly curved, oval, hoop-like process. The figure on plate will be the best explanation of the description.

Mamestra u-album Gn.

1852. Gn., Sp. Gen. Noct., I, 345; *Ceramica*.
 1857. Wlk., C. B. Mus., Lep. Het., X, 417; *Ceramica U-album*.
 1874. Gt., Buff. Bull., II, 22; *Ceramica W-album*.

35 millimetres. Primaries of a violet gray, with the disc and terminal space a deep wine-brown, and the reniform spot neatly cut

inferiorly with pure white filled with gray above; orbicular reduced to a white point. T. a. line distinct, strongly sinuate. T. p. line lost in the brown, except inferiorly, where it forms an angle well marked on the submedian vein. S. t. line distinguished solely by the difference in tints. Secondaries of a deep gray, with the fringe pale rosy. Beneath, glossy, shining, of a pale carneous gray with traces of a line, but without discal spot. Thorax deeper in color.

HABITAT.—Florida (Doubleday).

The above is a free translation of Guenée's description, which I can not at present apply with any certainty. The curious change of name, entirely destroying the meaning the author intended to convey, has been already referred to. The reference to *Mamestra* has been made by Mr. Grote in his lists, assuming that the species is congeneric with *picta*.

Group LATEX.

Rather large species, with rather narrowly trigonate primaries, somewhat produced or rectangular apices, oblique outer margin, and somewhat retreating hind angle. The antennæ are simply ciliated in the male. Body and abdominal tuftings usually distinct and sometimes rather prominent. No very close relationship exists between the forms associated in this group, which in that respect shares the fate of the preceding.

Cristifera, which on Mr. Butler's dictum replaces *lubens*, stands by itself. The dark ground color, contrasting reniform, and bluish irroration in s. t. space, render this species recognizable at a glance.

Assimilis is also singular. Its deep black ground color, the velvety lines and borders to the ordinary spots, and the punctiform, white s. t. line—the spot nearest internal angle most prominent—form an aggregation of characters that is peculiar.

Latex is a very pale form, with large ordinary spots, the reniform red marked, and the s. t. line very irregularly and strongly angulate and sinuate. The male organs have a surprisingly varied assortment of hooks and claspers.

Passa seems allied to *latex*, and is, like it, pale in color, but smaller in size. The even s. t. line readily separates it. The ♀ only has thus far been examined.

In tabular form the species separate as follows:

Outer margin of primaries not distinctly dentate.

Large, dark blackish gray, with a violaceous powdering; reniform upright, pale, contrasting; s. t. space with prominent violaceous shadings.....CRISTIFERA.

Smaller, black; lines fine velvety black, as are also the outlines of ordinary spots; s. t. line white, punctiform, a prominent white spot near hind angle.. ASSIMILIS.

Outer margin of primaries dentate, hind angles more evidently retracted; wings narrower.

Color pale; ordinary spots large, distinct; reniform with a reddish shade; s. t. line very irregularly dentate.....LATEX.

Reniform without the reddish shade; s. t. line even, pale; size smaller....PASSA.

Mamestra cristifera Wlk.

1858. Wlk., C. B. Mus., Lep. Het., xv, 1654; *Acronycta*.
 1882. Grt., Ill. Essay, 38. An *Hadenid*.
 1889. Butler., Trans. Ent. Soc. Lond., 325; *Mamestra*.
lubens Grt.
 1875. Grt., Trans. Am. Ent. Soc., v, 113; *Mamestra*.
 1875. Grt., Proc. Acad. Nat. Sci. Phila., 425; *Mamestra*.
 1875. Morr., Proc. Bost. Soc. Nat. Hist., xviii, 112; *Mamestra*.
 1881. Grt., Can. Ent., xiii, 127; *Mamestra*.
 1889. Butl., Trans. Ent. Soc. Lond., 385; pr. syn.
rufula || Morr.
 1875. Morr., Proc. Acad. Nat. Sci. Phila., 62; *Mamestra*.
 1875. Grt., Proc. Acad. Nat. Sci. Phila., 428; pr. syn.
 1881. Grt., Can. Ent., xiii, 127; pr. syn.
brassica † Grt.
 1873. Grt., Buff. Bull., i, 103; *Mamestra*.
 1874. Grt., Buff. Bull., ii, 12; *Mamestra*.
 1875. Morr., Proc. Acad. Nat. Sci. Phila., 62; pr. syn.

Dark blackish gray, with a variably distinct rufous flush and bluish irrorations, forming a peculiar shade, hard to describe. Transverse lines present, geminate, but not very distinctly visible against the dark ground color. Basal line traceable. Basal space with a distinct rufous tinge. T. a. line with three subequal outward curves; included space bluish. T. p. line lunulate or crenulate, nearly parallel to outer margin. S. t. line yellow, marked with a few violet scales, irregularly sinuate, usually interrupted. An irregularly dentate line crosses median space between the ordinary spots. A row of black terminal lunules. Clavi-form moderate in size, distinctly outlined, concolorous. Ordinary spots distinct, moderate in size, black-ringed. Orbicular round, bluish gray, with darker center. Reniform upright, sometimes slightly constricted at middle, usually oblong, creamy yellow, occasionally with a reddish flush centrally, with a pale shade of ground color. The median space is variably—sometimes not at all—flushed with red, always with blue-gray powderings, which are most evident on costa and at inception of t. p. line. S. t. space most strongly powdered, a distinct patch opposite the cell, and another prominent and distinctive shade at the sinus of the t. p. line near hind margin. A sordid, rusty red shade precedes and marks the s. t. line, which is also marked by a blackish costal patch. Terminal space darker, apex strongly marked with blue scales. Secondaries smoky fuscous. Beneath, with carmine powderings and distinct dark outer line. Head and thorax concolorous with primaries. Dorsal thoracic tufts distinct, divided. Abdominal tufts rather prominent, especially on third and fourth segments.

Expands 40–48^{mm} (1.60 to 1.92 inches).

HABITAT.—Hudson's Bay territory, Canada; Maine to Pennsylvania, west to the Mississippi.

Six specimens are in the study collection, others in the duplicate series. Localities: New York (C. V. R., J. B. S.); Albany, New York, May 30 (Meske); New Hampshire (J. B. S.).

A very well marked species, distinguished by large size, rather rough vestiture, prominent discolorous reniform, the blue patch near hind angle, and the rather prominent abdominal tuftings. It is not uncommon.

Mr. Grote, in 1881 or 1882, examined the type of *Acronycta cristifera* in the British Museum, and says of it (Ill. Essay, 38): "The type from Hudson's Bay is not an *Acronycta*. The abdomen is tufted; the species is dark stone-gray, with kidney-shaped reniform, and seems a Hadenoid form unknown to me."

Mr. Butler, in 1889, comparing the material in the Grote and Walker collections, refers *lubens* to *cristifera* without comment. The species is so strongly marked that error on Mr. Butler's part seems out of the question; but it seems almost equally improbable that Mr. Grote should not have recognized the species, which must be one of the most familiar to him. I have followed Mr. Butler, who has actually compared the species.

The harpes of the male are long, narrowing toward middle and widening toward tip, where it is obliquely drawn out above and truncate. Inwardly the tip is rather densely spinulated. The clasper is a single rather short, curved, corneous hook.

Mamestra assimilis Morr.

1874. Morr., Buff. Bull., II, 119; *Mamestra*.

1881. Goodell, Papilio, I, 15; larva.

v. pulverulenta Smith.

1887. Smith, Proc. U. S. Nat. Mus., x, 468; *Mamestra*.

Glossy black. Transverse lines faintly marked, single. T. a. upright, slightly sinuate. T. p. nearly parallel with outer margin, indistinctly crenulate. S. t. line white, punctiform, the pale points marked with more intensely black shades; a prominent white blotch at hind angle. Ordinary spots outlined in velvety deep black, concolorous, normal in size and form. Claviform variable in size, black lined, concolorous. Secondaries smoky or blackish fuscous, paler toward base. Beneath, powdery, with crimson or carmine scales, and with an outer dark line. Head and thorax concolorous with primaries.

Expands 33-38^{mm} (1.32 to 1.52 inches).

HABITAT.—Canada, Maine, Northern New York, Northern and Eastern States.

Four specimens are in the Museum collection: Kittery Point, Maine, July 17 and 18 (C. V. R., J. B. S.); Orono, Maine; Adirondack Mountains, New York (J. B. S.).

A very easily recognizable species, similar to nothing else in the genus. The variety *pulverulenta* at first seems quite different, being dark, powdery gray, with moderately distinct markings. The white patch is distinct, but seems less prominent because there is less contrast. Beneath, there is a lack of the crimson scales. The identity of this form with *assimilis* was not suspected until an examination of the

genitalia had been made. These, however, are so peculiar that their identity was immediately accepted, and the form described as a variety. The tuftings are distinct, but not as prominent as in *lubens*.

The harpes of male are broad and corneous, somewhat enlarged at tip, where they are produced superiorly into a short, curved beak, inferiorly into a broad thumb-like process which is inwardly spinulose, and at middle into a broad, obtuse tooth. No separate clasper.

Mamestra latex Gu.

1852. Gn., Sp. Gen. Noct., II, 78; *Aplecta*.

1857. Wlk., C. B. Mus., Lep. Het., XI, 556; *Eurois*.

1873. Grt., Buff. Bull., I, 103; *Mamestra*.

demissa Wlk.

1857. Wlk., C. B. Mus., Lep. Het., XI, 728; *Apamea*.

1868. Grt. and Rob., Trans. Am. Ent. Soc., II, 75, pr. syn.

1882. Grt., Ill. Essay, 44, pr. syn.

Grayish white with a faint luteous tinge. A fusco-luteous patch filling superior part of basal space; another, from outer margin of orbicular, embracing the reniform and extending to s. t. line. Terminal space of the same, dusky, shade except at apex. Transverse lines faint, geminate. T. a. line upright, hardly sinuate. T. p. line very faint, crenulate, about parallel with outer margin. Basal half line marked. S. t. line very irregular, marked by the difference in shade between s. t. and terminal spaces. Short black dashes cross the terminal space in whole or in part, opposite cell and in submedian interspace. A row of black terminal lunules. Claviform small, concolorous, outlined by blackish scales. Orbicular large, concolorous, oval, oblique, outlined by dark scales. Reniform large, kidney-shaped, outlined in black, annulate with pale, suffused by the dusky shade and centrally marked with a brick-red spot. Secondaries powdery, luteous gray. Beneath, pale, powdery, outwardly with a reddish shade, with a common sinuous outer line and lunate discal spot. Head and thorax concolorous with primaries, collar with a black line. Thoracic divided crest distinct. Abdominal tufts small, indefinite.

Expands 39-42^{mm} (1.56 to 1.68 inches).

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

Six specimens are in the Museum collection: New Hampshire (J. B. S.); New York (Burnett); Bath, New York, May 15 (Meske); Philadelphia (C. V. R.).

This is a very distinctly marked and easily recognized species. The pale color, dusky shading over reniform, the large size and red shade of that spot, and the very irregular dark terminal space, are characteristic. If, in addition, the male genitalia are examined, no mistake is possible. The harpes are very narrow, slender, enlarged suddenly into a lappet-like tip, which is fringed by a row of spinules. From the broad corneous base which gives rise to the harpe arises also a long, curved, corneous hook, which equals in length or slightly exceeds the

harpe. Below this arises a membranous process, rather obtusely terminated, and about half the length of the harpe. Nearer to base is a stout, twisted, hook-like process, and still nearer is a slender, short, acute, curved hook. This is the most remarkable aggregation of hooks and claws found in the genus.

A close examination of the ♀ abdomen, and of the short, retracted ovipositor, fails to show any peculiarities calling for so complicated an arrangement of grasping organs.

Mamestra passa Morr.

1874. Morr., Proc. Bost. Soc. Nat. Hist., VII, 139; *Mamestra*.

1875. Grt., Can. Ent., VII, 102, ?= *pensilis*.

Pale fusco-luteous, with a reddish flush. Transverse lines indistinct. A longitudinal basal black streak. Basal line visible. T. a. line geminate, rather markedly curved between veins, as a whole, outwardly convex. T. p. line superiorly almost obsolete, below reniform distinct, and strongly incurved. S. t. line white, very even, marked by a preceding dusky shade, most distinct near hind margin. Claviform large, concolorous, black margined. Ordinary spots large, pale, incompletely outlined. Orbicular broadly oval, slightly oblique, open superiorly on costa. Reniform kidney-shaped, inferiorly absorbed in the ground color. Beyond reniform the median space is flushed with luteous reddish. S. t. space strongly powdered with white scales, most marked opposite cell and at sinus of t. p. line. Secondaries fuscous. Beneath, sordid fuscous, powdery, with dusky outer line and lunate discal spot. Head and thorax concolorous with primaries. Collar with a black line.

Expands 34^{mm} (1.36 inches).

HABITAT.—California.

The ♀ type from Mr. Tepper's collection is the only specimen known to me. The species resembles a small *latex* somewhat, but has a very even, pale, s. t. line, which serves at a glance to separate it. With *pensilis* it has nothing in common.

Group **ADJUNCTA**.

Four species are referred here, agreeing in the white blotchy maculation of primaries, the white median lines and obvious though not prominent W-mark in the primaries—never distinct enough to cause a question as to the group to which it should be referred. The wings are trigonate.

Adjuncta differs at once by its black ground color and comparatively large size. The sexual characters also differ from those of the others with which it is here associated.

The other species all have moderately broad, trigonate primaries, with acute apices and obliquely rounded margin, the fringes unusually long. The male antennæ have the joints marked, though not serrate, laterally ciliated and furnished with a longer bristle. The genitalia are peculiar

and essentially alike in the species. The harpes are suddenly narrowed and rectangularly bent, the tip variously dilated and fringed. The hind margin is always thickened and corneous, the claspers various, and separately described for each species.

Variolata is blotchy. The ground color is yellowish fuscous, somewhat olivaceous. The maculation white and contrasting. A yellow shade runs across the wing through median space, and the apex is conspicuously white.

Glaciata is much more even, grayish olivaceous in color, the lines and ordinary spots white marked but scarcely blotchy, as in the preceding. There is a distinct white spot beyond the claviform.

Minorata is smaller, of the same ground color and with essentially the same markings as *glaciata*. It lacks the white spot beyond the claviform, and in its place has a dark shade crossing the median space.

In tabular form the differences show as follows:

| | |
|---|------------|
| Large, black; orbicular small..... | ADJUNCTA. |
| Moderate sized, color variable; orbicular large. | |
| Maculation blotchy, ground color yellowish fuscous, an apical white patch | VARIOLATA. |
| Maculation not blotchy; no apical white patch. | |
| A white spot beyond claviform; t. a. line sinuate and dentate..... | GLACIATA. |
| No such white spot: t. a. line very even, upright..... | MINORATA. |

Mamestra adjuncta Bdv.

1841. Bdv., in Gn. Noct. Ind. Meth., 243; *Miselia*.
 1852. Gn., Sp. Gen. Noct., 1, 199; *Mamestra*.
 1856. Wlk., C. B. Mus. Lep., Het., ix., 234; *Mamestra*.
 1873. Grt., Buff. Bull., 1, 108; *Hadena*.
 1874. Grt., Buff. Bull., II, 309; *Mamestra*.
 1874. Lintn., Ent. Cont., III, 161; *Hadena* larva on *Solidago*.
 1877. Good., Can. Ent., ix, 60; larva on *Pteris aquilina*.
 1884. Bean., Can. Ent., xvi, 68; larva on *Wigelia rosea*.

Blackish, maculation white, contrasting. Basal line double, distinct, white. T. a. line irregularly oblique, geminate, white marked on costa. T. p. line crenulate, nearly parallel with outer margin, white marked over costal space. S. t. line broad, white, very irregularly dentate, with a well marked W on veins 3 and 4. A row of terminal black lunules, inwardly margined with white. A few white venular dots through s. t. space. Reniform large, white, with dark central line. Orbicular round, rather small, with white annulus and concolorous center. Claviform black margined, concolorous. Secondaries blackish fuscous, paler toward base. Beneath, primaries blackish, with white powderings. A dusky extra discal line and a submarginal pale line. Secondaries pale, powdered with dusky, with a dusky lunule, extra-discal line, and submarginal shade. Head and thorax blackish, tuftings and patagia white marked. Abdomen with rather prominent dorsal tufts.

Expands 35 to 40^{mm} (1.40 to 1.60 inches).

HABITAT.—Canada, Northern, Eastern, and Middle States, west to Illinois, Missouri, Minnesota.

Six specimens are in the study series, others in the duplicate material. Localities: Maine, Indiana (J. B. S.); New York (Acc. 14077); Schenectady, New York, August 9 (C. V. R.); Albany, New York, ex larva, May 14 (larva on Solidago); Sharon, New York, August 16 (Meske); Philadelphia (C. V. R.).

A very pretty and strongly marked species, not easily mistaken for any other. The black color and contrasting white maculation are unique.

The harpes of male are chitinous at base, with a broad, irregular, inferior projection, beyond which they become suddenly narrower before the dilated tip, which has the inferior edge acute and is inwardly spinulated. The true clasper is chitinous, rather short, and moderately curved.

Mamestra variolata Smith.

1887. Proc. U. S. Nat. Mus., x, 467; *Mamestra*.

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 at t. a. line. T. a. line geminate, upright, irregularly lunate. T. p. line black, lunulated or crenulated, 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 mark, 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 it 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 by 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. Patagiae and dorsum with white blotches.

Expands 30^{mm} (1.20 inches).

HABITAT.—Washington.

One of the type specimens is in the Museum collection (Coll. J. B. S.), the other is with Mr. E. L. Graef. The species is hardly to be confounded with any other. The blotchy white maculation, yellow median shade, and the peculiar genitalia form a combination of characters not found in any other form known to me.

The harpes of the male have the general shape already described. The lappet-like tip is small, inwardly fringed. The clasper is very

stout and heavy, blunt, not curved, extending to the angulation of the harpe.

The species seems rare.

Mamestra glaciata Grt.

1882. Grt., Can. Ent., xiv, 170: *Mamestra*.

Fuscous or smoky brown, with an olivaceous tinge, more or less powdered with white scales. Transverse lines distinct, geminate. Basal line distinct, geminate, outer part entirely crossing the wing, outwardly marked by a white shade, most distinct toward hind margin. T. a. line upright, white marked, outwardly oblique, lunulate, and with an outward tooth on internal vein. T. p. line crenulate, irregular, incurved below reniform, an outward tooth on vein 1, white marked, most evidently so toward hind margin. S. t. line white, irregular, forming an indefinite W, black marked. A row of black terminal spots. Terminal space with considerable whitish. Clariform outlined, followed by a white spot. Ordinary spots large, white ringed, centered with a pale shade of ground color. A distinct rivulous median shade line. Secondaries blackish fuscous. Beneath, paler fuscous, powdery. Secondaries with a broad outer line and large discal spot. Head and thorax white mottled.

Expands 30^{mm} (1.20 inches).

HABITAT.—Arizona; Colorado.

The male type is very distinct from any other species. A female from Colorado I refer here, though it differs in details of maculation and has less white. In view of the great range of variability in this character I have decided to keep them together until further material authorizes another disposition.

The ♂ harpes are not as broad as in *variolata*, the angulated tip being more prominently spinulated. Along the inferior margin is a thick corneous rim, inwardly toothed near base. A short, broad, concave, corneous clasper near base.

Mamestra minorata Smith.

1887. Smith, Proc. U. S. Nat. Mus., x, 467.

Dark fuscous gray or brown, transverse lines distinct, geminate. Basal line distinct, also geminate. T. a. line upright, rigidly even to internal vein, where it is slightly curved and marked with white. T. p. line unusually near to outer margin, lunulate, rather evenly outcurved 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 margin. Claviform obsolete, but its place indicated by a blackish shade extending across the median space. Orbicular large, round, white, with a 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, distinct outer line and large discal spot. Head and thorax concolorous with primaries, also white marked. Harpes of male with the angulated tip dilated and rounded, inwardly spinulose. Hind margin corneous, thickened, somewhat incurved. A short beak-like clasper near base.

Expands 30^{mm} (1.20 inches).

HABITAT.—California (♂); Colorado (♀).

Not in the Museum collection. I have seen only two specimens, agreeing in essentials; the ♂ from Mr. Edwards, the ♀ from Mr. Bruce. The species looks like *capsularis*, but is not so clearly marked, has not the prominent W mark, and the male genitalia are entirely different.

Group DEFESSA.

Robust species with trigonate, somewhat pointed primaries, oblique outer margin, and gray or luteous colors. The group contains species distinguished by no strong characters and is rather negatively defined. The wing form is the only positive feature, and that varies to some extent. Four species are referred to it, two of them luteous, two of them ash gray, and, so far as known, no agreement in the sexual characters.

They may be separated as follows:

Size larger; color luteous.

Sordid luteous; reniform all stained; s. t. line concolorous, not prominent; wings more pointed DEFESSA.

Bright, paler luteous; reniform large, inferiorly dusky; s. t. line distinct, pale, wings less pointed CHARTARIA.

Size smaller, colors ash gray; reniform moderate, not darker.

Pale, median space darker, fuscous REPENTINA.

Dark ash gray, median space concolorous BRACHIOLUM.

Defessa is a dark, dull species, like a dirty *trifolii*; the lines are black marked; s. t. line not distinct. The secondaries are dull, smoky brown or blackish.

Chartaria resembles a bright form of *trifolii*, but differs in the course of s. t. line. It is the most robust of the species referred here, and the wings are somewhat more rounded.

Repentina is a pale form, with much darker median space. The orbicular is small, the reniform undefined.

Brachiolum resembles *cuneata*, but lacks the yellow marking, and has much more pointed primaries.

Altogether the group is entirely an artificial one, composed of species without other close allies.

Mamestra defessa Grt.

1880. Grt., Can. Ent., XII, 88; *Mamestra*.

“Also allied to *trifolii*, but with the subterminal line irregular and dusky; reniform concolorous, with an inferior black stain. The fore

wings are pale ochery clay color, the lines double, faint; stigmata concolorous, with dark defining lines. Thorax concolorous with primaries; no lines on collar. Hind wings whitish at base, with discal lunule and broad exterior fuscous band. Beneath there is a discal cloud and common extra mesial dotted line, which is joined to the discal spot on primaries by dusky scales along the median nervules. Size of *trifolii*. Two specimens. Santa Clara, California, May 22, collected by Baron Osten-Sacken."

The above is Mr. Grote's characterization. I have seen two specimens, also from California, which agreed well with what there is of the description, except that my specimens seemed darker than described. Both of the specimens are females, and the males may agree better with the description. I have no doubt whatever of the correctness of my identification of this species, which is easily known, first, from its resemblance to *trifolii*, and second, by the character of the s. t. line, which is dark and has no W-mark. It seems a rare form.

Mamestra chartaria Grt.

1873. Grt., Buff. Bull., 1, 138, Pl. 4, f. 12; *Mamestra*.

Pale to dark luteous gray, powdered with white, median lines geminate, distinct. Basal line present, also geminate. T. a. line outwardly oblique, inwardly angulate on vein 1. A white dot, with black shading on vein 1, just within the tooth of t. a. line. T. p. line lunulate or crenulate, nearly parallel with outer margin. S. t. line pale, irregularly sinuate. A row of black terminal lunules. Ordinary spots large. Orbicular round, pale, with concolorous center. Reniform incompletely dark ringed, inferiorly dusky, slightly constricted at middle. Claviform large, concolorous. Secondaries in ♂ whitish, in ♀ fuscous. Beneath, powdery, with dusky outer line and discal spot. Head and thorax concolorous, collar with a black line.

Expands 32 to 37^{mm.}, (1.28 to 1.48 inches.)

HABITAT.—California, Washington.

Three specimens are in the Museum collection: California (J. B. S.); Alameda County, June (through C. V. R.).

The species bears a most deceptive resemblance to *trifolii* in color and maculation, and indeed in general habitus; but it can be always distinguished by the course of the s. t. line, which has not the prominent W-mark, and by the very peculiar harpes of the male, which have not the slightest resemblance to those of *trifolii*. The harpes are irregular, broad, corneous, sending out a finger from upper margin, then narrowing to the tip, which is squarely truncate and furnished with single, long hair. No separate clasper.

The species is not common in collections.

Mamestra repentina Morr.

1875. Morr., Proc. Bost. Soc. Nat. Hist., xviii, 118; *Mamestra*.

Grayish, pale; median space fuscous, median lines distinct, geminate. Basal line distinct, geminate, included space fuscous; t. a. line upright, lunulate; t. p. line strongly incurved below reniform, lunulate; s. t. line yellow fuscous, preceded by a slight dark shade, evenly rivulous. A terminal row of small black lunules; fringes rather long, white tipped; s. t. space marked on costa with a fuscous shade, a faint fuscous shade following t. p. line, grading off into the pale ground color. A strongly dentate dark line crosses the median space between the ordinary spots. Claviform obsolete; orbicular large, pale, round; reniform pale with fuscous shade, somewhat constricted at middle, not defined; secondaries fuscous, paler basally. Beneath, fuscous powdery, primaries with outer margin paler, secondaries with outer margin dusky. Head and thorax concolorous with primaries, collar with a blackish line, patagiæ with blackish submarginal lines.

Expands 33^{mm} (1.20 inches).

HABITAT.—West Hoboken, New Jersey.

The ♀ type from Mr. Meyer's collection is the only specimen examined. The insect is very different from all its congeners and should be easily recognized. It is passing strange that in a locality so well collected over, specimens should not have been found since, and it gives rise to a suspicion that it is not really an American insect. One collector at least, in the good old time, distributed exotics as taken at Hoboken; witness *Sphinx ligustri* and *convolvuli* in my own collection, declared upon the most solemn assurances taken at West Hoboken!

Mamestra brachiolum Harv.

1876. Harv., Can. Ent., viii, 6; *Mamestra*.

Dark ash gray, powdery, median space darker, median lines present, not strongly marked, geminate; basal line visible; t. a. line outwardly oblique, not much curved between veins; t. p. line slightly lunulate or crenate, parallel with outer margin; s. t. line pale, sinuate, interrupted; a narrow black terminal line; an obsolete, irregular black line crosses median space between ordinary spots; claviform faintly indicated or wanting; ordinary spots moderate, pale; orbicular round; reniform kidney-shaped; secondaries smoky fuscous, paler at base; beneath, powdery gray, with common outer line and discal spot; head and thorax concolorous with primaries, collar with a dark line.

Expands 27^{mm} (1.08 inches).

HABITAT.—Texas, Arizona.

Bears a resemblance to *cuneata* in maculation, and compared with that species by Dr. Harvey. It is, however, less distinctly marked than that species, though much after the same style. In wing form this species differs also in having the primaries somewhat narrower and

more pointed. It lacks all yellow shading, so prominent in the Californian species.

The genitalia are distinctive and simple. Harpes narrowing toward tip, where they are curved and subacute, not spinulated. The clasper is moderately long, slender, curved, with acute tip.

The species seems not common and is not represented in the Museum collection.

Group LEGITIMA.

The species referred here, agree in rather plump build, usually distinctly though not prominently tufted thorax, and in large, broad wings in which the apices and outer margin are rounded.

Two rather well marked divisions are indicated, the first embracing those species in which the primaries have a predominating reddish or violet gray shade, and the second, those in which the color is a sordid fuscous brown.

Beanii is the largest species in the group, and heads the first division. It is evenly colored, all the normal markings present, not contrasting. The claviform is very small.

Legitima agrees in having the claviform very small, but is brightly and not evenly colored, and is smaller sized.

Lilacina is more gray than the preceding, and the claviform is large. The s. t. line is sinuate.

Rugosa is smaller, but very similar in color and maculation. The s. t. line, however, is very even and preceded by cuneiform blackish marks. The reniform is narrow.

All the species agree in the general style and form of the ♂ genitalia (*beanii* of which only the ♀ has been examined, perhaps excepted) and none of the species in the next series agree with them in this respect.

Of the series with fuscous or dull blackish brown primaries, *novareca* is easily distinguished by its rather narrower wings, which are also somewhat paler than any of the others, and the conspicuous black basal mark, which is wanting in all the other species.

Goodelli is very even in color, and has no contrasting maculation save that the reniform is usually paler than the rest of the wing. There are no black shades or marks preceding the s. t. line as are in all of the rest of the series. The species is eastern.

Quadrata is rather easily distinguished by the small W in the s. t. line, by the paler patch in the s. t. space opposite anal angle, and by the quadrate black spot following claviform to t. p. line. The latter, however, is a variable quantity and not always distinct. The species is Californian.

Obseura resembles the preceding, but has none of its specific characteristics. The s. t. line is even, but not prominent; there is no observable claviform, and the s. t. space is evenly colored. It has no obvious peculiarities of its own.

Ectypa is a very pretty species, as its synonym, *bella*, suggests. The maculation is much of the same type as the preceding, but prettily contrasting; the s. t. line unusually prominent, pale; the claviform large and black filled. The only specimens thus far known are: One in the Museum collection (C. V. R.), taken by Mr. Andrews in New Jersey; the type of the species in Mr. Meyer's collection from West Virginia, and the type of *bella* in Mr. Neumoegen's collection, also taken in New Jersey.

In tabular form the species divide as follows:

Primaries with a violet gray or reddish flush.

Claviform very small.

Color very even, size large..... BEANII

Color not even, maculation contrasting, size smaller..... LEGITIMA

Claviform rather large.

Larger, s. t. line sinuate, not preceded by black, sagittate marks..... LILACINA

Smaller, s. t. line very even, preceded by black, sagittate marks..... RUGOSA

Primaries sordid luteous gray to blackish brown.

Rather narrower winged; a distinct, curved, basal black mark to t. a.

line..... NOVERCA

Broader winged; no basal dash or black mark.

S. t. line not preceded by black spots or shades, color very even..... GOODELLI

A somewhat contrasting, pale, s. t. shade in submedian interspace;

a small W in s. t. line..... QUADRATA

S. t. space even; no W in s. t. line. Color even, dull; maculation

obscure; claviform concolorous or wanting..... OBSCURA

Brightly marked; s. t. line unusually distinct, pale; claviform

black; contrasting..... ECTYPA

Mamestra beanii Grt.

1877. Grt., Can. Ent., ix, 87; *Mamestra*.

1879. Grt., No. Am. Ent., i, 12; *Mamestra*.

Dark fuscous, with a reddish violet suffusion, something as in *legitima*. Median lines distinct, though not prominent, geminate. Basal line present. T. a. line with an even outward curve, slightly dentated on the veins, outer line most distinct, included space paler, with a bluish tint. T. p. line very regularly sinuate and lunulate, inner part of line most evident. An incomplete row of pale venular dots through s. t. space. S. t. line narrow, pale, powdery, preceded by a rust-brown shade. A row of black lunate terminal dots. Apex powdered with gray scales. Claviform minute, concolorous, black margined. Orbicular small, oblique, oblong, pale powdered. Reniform rather narrow, upright, superiorly reddish, inferiorly dusky. Secondaries yellowish fuscous. Beneath, powdery, with small discal spots. Head and thorax concolorous with primaries.

Expands 40^{mm} (1.60 inches).

HABITAT.—Illinois, Texas, ? Colorado.

I have had two females only, the one fully agreeing with the type, from Texas; the other, somewhat aberrant in maculation, from Colorado. This latter may eventually prove distinct when males are available, but at present I do not care to separate them.

Mamestra legitima Grt.1864. Grt., Proc. Ent. Soc. Phila. III, 82, Pl. 2 f. 4; *Apamea*.1874. Grt., Proc. Bost. Soc. Nat. Hist., XVI, 241; *Mamestra*.

Blue gray, more or less suffused with bright red-brown. Median lines distinct, though not prominent, obsoletely geminate. Basal line evident. T. a. line with an even outward curve, slightly dentate on the veins. T. p. line about even with outer margin. S. t. line narrow, pale, slightly dentate on veins 3 and 4, marked by the dusky terminal shade and a distinct red-brown preceding shade. Claviform very small, black margined. Orbicular large, gray, not distinctly defined. Reniform large, completely defined, with a narrow, pale annulus, brown red in color, inferiorly dusky. The red shade occupies a variable part of the wing; usually nearly the entire basal space, the median space above claviform, and the costal portion of the s. t. space is of that color. A row of geminate, black venular dots through s. t. space. Secondaries luteo-fuscous, outwardly darker. Beneath, powdered with violet red toward margins. A small discal spot. Head and thorax concolorous with primaries, collar with a black line.

Expands 33-38^{mm} (1.32 to 1.52 inches).

HABITAT.—Canada; Eastern, Middle, and Central States.

Nine specimens are in the Museum collection: New Jersey; Lewis County, New York, June 30, July 4 (Meske); Washington, District of Columbia, August 22, September 9 (C. V. R.).

This is a very pretty species, readily recognizable by its gray and red colors, and small claviform. The antennae of the male are laterally bristled. The harpes are angulated toward tip, the angle superiorly prominent; tip enlarged and superiorly acutely drawn out, inwardly spinulose. Just behind the angulation of the harpe arises the small, beak-like clasper.

Mamestra lilacina Harv.1874. Harv. Buff. Bull., II, 119; *Mamestra*.*illabefacta* Morr1874. Morr., Proc. Bost. Soc. Nat. Hist., XVII, 141; *Mamestra*.

1874. Grt., Buff. Bull., II, 211; pr. syn.

1875. Grt., Can. Ent., VII, 58; pr. syn.

1879. Grt. Can. Ent., XI, 128; pr. var.

Bluish gray, with a dark, somewhat reddish fuscous shade through superior half of wing, interrupted only at apex. Terminal space also dusky. Median lines evident, geminate. Basal line present. T. a. line outwardly oblique, lunate. T. p. line crenulate, parallel with outer margin. S. t. line concolorous, broad, marked by the dark terminal space and a preceding narrow, dusky shade. A row of brown terminal lunules. A narrow transverse shade through median space, rather darkening the cell between the ordinary spots. Claviform moderate in size, darker. Orbicular large, oblique, gray. Reniform rather large, somewhat constricted at middle, black margined, inferiorly dusky.

Secondaries fusco-luteous, darker outwardly. Beneath, powdery, with darker outer line and discal spot. Head and thorax concolorous with primaries, collar with a dark line.

Expands 32–35^{mm} (1.28 to 1.40 inches).

HABITAT.—Canada; Northern, Eastern, Middle, and Central States.

Eight specimens are in the Museum collection: Maine (J. B. S., C. V. R.); Lewis County, New York, July 4 (Meske).

A modestly marked species, rather variable in the amount of dark shading to the primaries. The type of Mr. Morrison's *illabefacta* is a pale specimen, but not entitled to rank as a variety. The rather contrastingly dark terminal space and even s. t. line will serve to identify this species.

The harpes of male are bent toward tip, the angle somewhat produced and corneous, at tip enlarged into a concave lappet, which is somewhat acutely produced at its upper edge. Inwardly it is fringed and densely matted with spinules. At the angle there is a small beak-like process. The clasper is single, rather short, and moderately stout.

Mamestra rugosa Morr.

1875. Morr., Proc. Bost. Soc. Nat. Hist., xviii, 119; *Mamestra*.

Bluish or violet gray. Median space, terminal space, superior portion of basal space, and a costal patch in s. t. space red-brown. Basal line hardly traceable. A short, black longitudinal dash. T. a. line outwardly oblique, somewhat curved, and slightly dentate on the veins, obsoletely geminate. T. p. line parallel with outer margin, even. S. t. line very even, yellowish, marked by the dark terminal space and a preceding row of black spots. Apex pale. Claviform small, narrow, concolorous. Orbicular pale, narrow-ovate, oblique. Reniform constricted at middle, slightly oblique, with yellow annulus, else concolorous. Secondaries yellowish at base, outwardly fuscous. A dark discal lunule. Beneath yellowish, with darker discal dots and outer margin. Head and thorax concolorous with primaries, collar with a dusky line.

Expands 32^{mm} (1.28 inches).

HABITAT.—Maine.

A single specimen, without locality, is in the Museum collection (C. V. R.).

The species is easily recognized by the yellowish secondaries and the very rigid, broad s. t. line.

The harpes are bent near tip, where they are enlarged, as in *legitima*, and furnished at tip with a long, stout spine. Tip with only a fringe of spinules. Clasper very simple, consisting of a slightly curved and rather slender, corneous hook.

Mamestra noverca Grt.

1878. Grt., Can. Ent., x, 230; *Mamestra*.

Fuscous brown, with blackish irrorations. Median lines distinct, geminate, included spaces pale; basal line distinct; a black basal dash,

attaining the t. a. line; t. a. line sinuate, outwardly oblique; t. p. line very even, parallel to outer margin; s. t. line narrow, interrupted, irregularly sinuate, marked by a row of preceding sagittate black dashes. A row of black terminal lunules. A pale line at base of fringes. Claviform wanting. Orbicular small, oval, concolorous or a little paler, black ringed, sometimes connected with the t. a. line. Reniform upright, rather narrow, pale, with sometimes a dark center. Secondaries pale luteo fuscous, outwardly darker. Beneath, somewhat reddish, powdery, with outer line and small discal spot.

Expands 31–33^{mm} (1.24 to 1.32 inches).

HABITAT.—California, Colorado, Arizona, Nebraska.

Two specimens are in the Museum collection: Arizona, Colorado (J. B. S.).

This is a well distinguished form, recognizable by the even, pale t. p. line, and the narrow, upright, pale reniform.

Harpes of male gradually broadening toward tip, where they are superiorly longer, the ends squarely cut off. Clasper rather long, and at base slender, twisted, at tip beak-like.

Mamestra goodelli Grt.

1875. Grt., Can. Ent., VII. 223: *Mamestra*.

Dull sordid fuscous brown, with the lines obliterated or but feebly marked. Sometimes there are local brownish or green shades, not definitely marked, and so variable that they are not describable. The basal line is usually present; t. a. obsolete geminate, outwardly convex, indented on the veins; t. p. line crenulate, parallel with outer margin; s. t. line indefinite, pale, irregular, preceded by a dusky shade. Claviform black filled, but usually indefinitely limited and somewhat variable in size. Ordinary spots concolorous or somewhat paler, black ringed, moderate or small in size, and somewhat variable in shape. Cell usually a little darker between these marks. Secondaries paler, smoky fuscous. Beneath, variable in shade, with a common outer line and discal spot, which are also variably distinct.

Expands 28–34^{mm} (1.12 to 1.36 inches).

HABITAT.—Canada; Northern, Eastern, and Middle States, west to Nebraska.

Five specimens are in the Museum collection: Holderness, New Hampshire, July 16 (C. V. R.); New Hampshire, July 20 (U. S. N. M.); Sharon, New York, August 4 (Meske); Lewis County, New York, July 10 (C. V. R.); New York (J. B. S.).

An obscure species, decidedly variable in size and maculation. It varies in the distinctness of the median lines, the shade of the ground color, the prominence of the claviform, which is sometimes barely traceable, though usually black and contrasting, and also in the amount of black around the ordinary spots. The form from Nebraska is more sordid and evenly marked than the eastern specimens, but seems other-

wise the same. The vestiture is somewhat loosely applied, hence perfect specimens are rare.

The male harpes are strong, gradually tapering to an obtusely rounded tip. The clasper is short, thick, curved, jaggedly truncate at tip: Just below the base of this clasper is a broad pad, densely clothed with small teeth or spinules.

Mamestra quadrata, sp. nov.

Dull fuscous brown, collar with a distinct black transverse line narrowly margined with reddish scales. Primaries varying somewhat in shade, obscurely marked, yet all the maculation traceable. Basal line geminate, defining lines blackish brown, included space somewhat paler, especially in the submedian interspace, where it is reddish; t. a. line upright, with three rather even outcurves between the veins, geminate, the defining lines blackish brown, incomplete, interrupted, included space lightened by a few reddish scales; t. p. line rather evenly bisinuate, not greatly outcurved over reniform, geminate, the inner line only distinct, the outer rarely traceable in the somewhat paler s. t. space; s. t. line rather evident, narrow, pale, forming a small **W**-mark on veins 3 and 4, additionally marked by a variably evident series of preceding sagittate dashes, which are sometimes entirely wanting, and by the darker terminal space. A narrow, dark, terminal line. Fringes with a pale line at base, cut with yellowish opposite the veins. These latter are more or less obviously marked with white and black scales, rendering their course traceable. The s. t. space is paler than the rest of the wing, becoming somewhat contrasting in the submedian interspace, and forming in some specimens the only prominent feature. Claviform concolorous, moderate in size, more or less completely defined by black scales, sometimes barely traceable. Beyond this is sometimes a quadrate black patch extending to the t. p. line, and contrasting strongly with the following pale patch in s. t. space; but this is sometimes reduced to two parallel black lines, and more rarely wanting altogether. The ordinary spots are concolorous or very slightly paler; a little powdery. Orbicular oval, scarcely defined. Reniform slightly constricted, better defined by an annulus of pale scales. Secondaries, even smoky brown, with a faint discal lunule. Beneath, dull brown, powdery, with a darker discal lunule and a dusky outer line, which may be distinct on both wings, wanting on primaries only or entirely absent.

Expands 31 to 33^{mm} (1.24 to 1.32 inches).

HABITAT.—June and July, Placer County, California. (Through C. V. R.)

There are eight good specimens in the Museum collection, some of which bear the red number 247, indicating biologic notes in Dr. Riley's possession.

The species is broad winged, and in this and the general vagueness of its maculation it resembles *desperata*. The small indentations of the

s. t. line are not enough marked to refer the species to the *W-album* group.

The genital structure of the male is characteristic. The harpes are upcurved beyond the middle, and then abruptly, nearly rectangularly bent, and produced into a narrow spur, broadening lappet-like at tip, and there inwardly spinulose. From this bend, superiorly, arises the stout somewhat twisted and irregular corneous clasper, not reaching the tip of the harpe. The figure will probably explain this structure more satisfactorily.

Mamestra obscura Smith.

1887. Smith, Proc. U. S. Nat. Mus., x, 468; *Mamestra*.

Dull, smoky, fuscous, with a faint brownish tint. Median lines vague or 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, pale fuscous. Beneath, even, pale, powdery, with dusky outer line and discal spot. Head and thorax concolorous with primaries, collar pale tipped.

Expands 33^{mm} (1.32 inches).

HABITAT.—? Arizona, Wisconsin.

The type is in the Museum collection, presumably from Arizona (coll. J. B. S.), and I have associated with it another specimen from Wisconsin (coll. O. Meske), which differs in the more obvious median lines, but seems similar in all other respects. Both are males, and the sexual characters agree, in main features at least, so far as I could examine them. The locality of the type is uncertain. It came to me with a lot of Arizona material, but from a collection containing much from other localities. The thoracic and abdominal tuftings are distinct, but not prominent. The harpes of male are rather broad, somewhat abruptly tapering to an acute tip. The clasper is moderately long, somewhat irregular, slightly curved and acute at tip.

Mamestra ectypa Morr.

1875. Morr. Proc. Bost. Soc. Nat. Hist. xviii, 118; *Mamestra*.
bella Grt.

1883. Grt., Papilio, III, 30; *Mamestra*.

Rather rich, dark, amber brown, with a violet tinge before t. a. and after t. p. line. Basal line distinct, double. T. a. line rather even, outwardly curved, a strong dent on vein 1. T. p. line lunulated, nearly parallel with outer margin; both lines obsolete geminate. S. t. line contrasting, pale yellow, sinuate, marked by preceding dark spots. A row of black terminal lunules. Claviform outlined in velvety black, and followed by a pale shade which extends obliquely upward over the orbicular to costa. Orbicular rather large, oval, oblique, pale ringed, with a somewhat darker center. Reniform rather long, upright or slightly oblique, black margined, concolorous or slightly paler. Second-

aries smoky fuscous. Beneath, powdery, secondaries with double outer lines more or less evident, and dark discal spot.

Expands 27-30^{mm} (1.08 to 1.20 inches).

HABITAT.—New Jersey, West Virginia.

A single, poor specimen from New Jersey is in the Museum collection (C. V. R.).

I have seen the types of both Morrison's and Grote's species and they are identical in specific characters. The species is readily known by the bright coloration and the prominent yellow s. t. line.

The harpes are semi-chitinous, inferiorly with a thickened chitinous margin. The tip is somewhat narrowed, lappet-like. From the corneous inferior margin arises a short, cylindrical, corneous clasper, and behind this a small beak-like process.

Group **RENIGERA.**

The four species that are placed in this group, though very distinct in color and maculation, are yet closely allied in structure. They are all small, rather plump forms, with short, obtuse primaries, fringes rather long and thoracic tuftings distinct. The abdomen is tufted only at base, and that indistinctly, but is furnished in the male with evident lateral tufts. The male antennæ have the joints well defined and ciliated, without being serrated. The male genitalia are after the one type. The harpes are broad at base, suddenly narrowed or deeply emarginate at upper side, leaving an acute, pointed tip, inwardly margined with spinules. The clasper is a long, slender, curved hook.

Renigera is darkest, with prominently marked green reniform. There is a green patch at base and another near hind angle. The claviform is black.

Egens is usually paler, lacks the green patches, but has the reniform outlined in white. The claviform is not at all prominently marked. The darker forms are Mr. Grote's *cinnabarina*, the paler forms have been named *ferrea*, also by Mr. Grote.

Spiculosa is a very pretty species, differing from the preceding by the distinct median lines and neatly outlined ordinary spots. The reniform is not prominently white marked and the veins are pale through median space.

Circumeincta is marked like *egens*, but has the gray color and superficial appearance of *olivacea*, connecting the two groups.

A table is scarcely necessary for the definition of these forms.

Mamestra renigera Steph.

1829. Steph., Ent., Haust., II, 16; *Celana*.

1857. Wlk., C. B. Mus., Het., x, 262=*herbimacula*.

1869. Riley, 1st Rept. Ins. Mo., 86, f. 31.

1874. Grt., Can. Ent., VI, 132; *Mamestra*.

1881. Riley, Suppl. to Mo. Repts., 56; *Mamestra*.

1883. Edwards, Papilio, III, 133; larva on *Cichorium intybus*.

herbimacula Gn.

1852. Gn., Sp. Gen. Noct., I, 223, *Celana*.

1857. Wlk., C. B. Mus., Lep. Het., x, 262; *Celana*.

Dark brown with a variably evident carmine suffusion, often distinct only in the s. t. space, but usually embracing the entire wing. Median lines more or less indistinct, obsoletely geminate. Basal line present. Basal space with a mossy green longitudinal shade, and a black spot at inner margin. T. a. line outwardly oblique, slightly sinuate. T. p. line nearly parallel with outer margin, even. S. t. line irregular, marked by the contrast between the darker terminal and paler s. t. space. Claviform moderate in size, black. Orbicular small, round, black margined, rather paler. Reniform upright, small, narrow, white ringed, mossy green. A black shade surrounds the reniform and is continued through the median space close to the t. p. line. A large patch of mossy green in the s. t. space near hind angle. Secondaries whitish with fuscous powdery outer and costal margins. Beneath, dark fuscous, with carmine powderings. Secondaries paler. Head and thorax concolorous with primaries.

Expands 25–30^{mm}. (1 to 1.20 inches).

HABITAT.—Canada, south to Georgia, west to Nebraska.

The Museum series contains twelve specimens, and others are among the duplicates. The localities represented are: Union County, Illinois, May 25; Missouri; North Carolina; Washington, District of Columbia, June 11–29, August 28, September 9 (C. V. R.); New York (J. B. S.); Sharon, New York, July 27 (Meske); Northern Illinois; Buffalo, New York; Lincoln, Nebraska (Museum collection).

Our most common eastern species, and very easily recognized. It is one of the smallest of the eastern species, and does not vary to any great extent. The dark brownish primaries, mossy green markings, and white marked reniform sufficiently define the species.

Some of the Museum specimens bear the Riley number, 2663, and are bred. The larva has been several times described in economic literature.

Mamestra egeus Wlk.

1857. Wlk., C. B. Mus., Lep. Het., x, 263; *Celona*.

1882. Grt., Ill. Essay, 45; *Celona*.

1889. Butler, Trans. Ent. Soc. Lond., 386; *Mamestra*.

stricta Wlk.

1865. Wlk., Suppl. C. B. Mus., Het., III, 728; *Hadena*?

1889. Butl., Trans. Ent. Soc. Lond., 386; pr. syn.

ferrea Grt.

1875. Grt., Can. Ent., VII, 25; *Mamestra*.

1881. Grt., Can. Ent., XIII, 130; *Mamestra*.

1889. Butl., Trans. Ent. Soc. Lond., 386; pr. syn.

var. *CINXABARINA* Grt.

1874. Grt., Proc. Bost. Soc. Nat. Hist. XVI, 211; *Mamestra*.

Varying from pale rust to dark brown, median and terminal space dark brown. Median lines geminate. Basal line distinct. T. a. line outwardly oblique, curved between veins. T. p. line rather even, outwardly curved over reniform. S. t. line narrow, sinuate, concolorous, usually marked only by the difference in shade between s. t. and terminal space, rarely preceded by a dusky shade; sometimes, in dark

specimens, hardly traceable. Claviform rather small, concolorous. Orbicular small, oblique, slightly paler. Reniform small, upright, with broad white annulus, somewhat constricted at middle. An indefinite dark shade through median space. Secondaries smoky fuscous. Beneath, dusky with reddish powderings. Head and thorax concolorous with primaries, the latter with tuftings distinct. Antennæ and genitalia of male essentially as in *spiculosa*.

Expands 25–27^{mm}. (1 to 1.08 inches).

HABITAT.—California, Oregon, Washington, Vancouver, Hudson's Bay territory.

Of the type form, *ferrea* Grt., seven specimens are in the collection: California (C. V. R.); Washington, Vancouver (J. B. S.).

Of the form *cinnabarina* Grt. there are nine specimens: California (Meske, C. V. R.); Marin County (J. B. S.); Placer County, September; Los Angeles County, October (through C. V. R.); Washington (Meske, J. B. S.)—specimens of each form labeled by Mr. Grote.

This is rather a variable species in ground color, though the maculation is constant and easily recognizable. The white ringed reniform is a conspicuous feature, and this species replaces *renigera* on the Pacific coast.

In the synonymy I have followed Butler, who makes his references with the types under examination, and speaks positively.

Mr. Grote says in the Ill. Essay, 45: "The single specimens representing *Celena punctifera*, *infecta*, and *egens* are really so poor that I do not think the species can be made out with satisfactory certainty."

Mamestra spiculosa Grt.

1883. Grt., Can. Ent., xv, 28; *Mamestra*.

Somewhat luteous brown, all the lines distinct, paler. Median lines geminate. Basal line present. Basal space evenly colored. T. a. line evenly oblique, the defining lines narrow, dark, the included space pale. T. p. line even, outwardly angulate over reniform. Median space somewhat darker than base, the veins yellowish marked. Claviform dusky, rather large in size. Ordinary spots concolorous, pale ringed. Orbicular rather large, oblique. Reniform narrow, upright. Beyond the t. p. line the s. t. space is pale, gradually becoming darker to outer margin. S. t. line pale, distinct, sinuate, curved round the pale apical patch. A row of black terminal lunules. Fringes pale lined at base. Secondaries soiled whitish. Beneath, gray fuscous, powdery, a discal spot on all wings. Head and thorax concolorous with primaries. The male antennæ have the joints well defined, but hardly serrate. The genitalia are those of the group.

Expands 25^{mm} (1 inch).

Readily distinguished by the irregular ordinary spots and the pale median lines. Its close connection with the others of this group is marked by the identity of habitus and wing form.

Mamestra circumcincta, sp. nov.

Head and thorax dark gray with a brownish admixture. Collar inferiorly more brownish, crossed by a black line, white tipped. Patagia black margined. Primaries dark gray, with a variable reddish admixture, obvious always in the s. t. space; median space more blackish. Basal line distinct, geminate, black margined; included space paler, a curved black mark emphasizing its lower external boundary. T. a. line oblique, outcurved between veins, geminate, black, the included space paler. T. p. line geminate, black, outer line less distinct, included space paler, outcurved over cell and evenly oblique below. S. t. line irregular, faint, narrow, marked by a preceding dusky patch in s. t. space on costa, and the darker terminal space, white marked opposite anal angle. An interrupted black line at base of fringes, which are cut with pale. The claviform is small, but distinct and black ringed. Orbicular concolorous or a little paler, irregularly ovate, oblique, incompletely black ringed. Reniform upright, small, centrally constricted, white ringed as in its allies. Secondaries whitish gray, sometimes with a brownish admixture, with a vague dusky discal lunule and a dusky terminal line. A yellowish line at base of fringes. Beneath, whitish, powdered with black, a vague outer line and discal spot on secondaries.

Expands 25-29^{mm} (1 to 1.16 inches).

HABITAT.—Sierra Nevada, California.

Both sexes are from Mr. Edwards's collection. There is a difference in the amount of reddish admixture in the two specimens before me, the female inclining to the *cinnabarina* type, while obviously different by the squamose vestiture and complete black lines, and the male resembling *olivacea* so strongly that I compared it closely at first, expecting a variety of this protean form. The sexual characters, however, refer the species to the *renigera* group.

Group OLIVACEA.

The species of this group agree in small size, rather robust form, in short stumpy primaries and distinctly tufted thorax and abdomen, the latter in the δ also with lateral tufts. In appearance, *i. e.*, wing form and habitus, the species are related to the *renigera* group, from which they differ in the form of the male genitalia. This is alike in all the species referred here. The harpes are broad at base, rather abruptly narrowing and then again gradually widening into a rounded, concave lappet which is inwardly spinulose at tip. The clasper is moderately curved and corneous, half the length of the harpes.

Three species are referred here, separated as follows:

| | |
|--|-------------|
| T. p. line sinuate, incurved below reniform..... | OLIVACEA. |
| T. p. line rigidly oblique from subcostal..... | RECTILINEA. |
| Median lines unusually approximate, curved toward center of wing, and almost touching at inner margin..... | VAG-MEDIA. |

Color can not be used in this group, for there is a most distressing amount of variability in this respect. *Olivacea* especially has an exceedingly wide range of variation, and it requires a long series to adequately show the connection of the extremes.

It would not be a matter of much surprise if eventually all the species here referred proved forms of the same type.

Mamestra olivacea Morr.

1874. Morr., Proc. Bost. Soc. Nat. hist., xvii, 143; *Mamestra*.

1875. Grt., Can. Ent., vii, 27; *Mamestra*.

1877. Grt., Bull. U. S. Geol. Surv., iii, 797; *Mamestra*.

1887. Smith, Proc. U. S. Nat. Mus., x, 465; *Mamestra*.
comis Grt.

1877. Grt., Bull. U. S. Geol. Surv., iii, 85; *Mamestra*.
Var. OBSCURIOR Smith.

1887. Smith, Proc. U. S. Nat. Mus., x, 465; *Mamestra*.

Gray to brown fuscous, median space darkest, basal space paler toward t. a. line, subterminal space pale gray, terminal space variable, but always darker than the subterminal. The whole wing is often more or less completely suffused with mossy green and with a more or less evident pinkish shade in basal and s. t. spaces. Basal line geminate, black; included space paler than ground color, sometimes reddish. A short, often not evident, basal dash. Median lines geminate, the included space pale. T. a. line with an even, somewhat oblique outward curve, rarely with a slight tooth on vein 1. T. p. line even, outwardly curved over reniform and inwardly curved beneath. The outer portion of the line is often indistinct, the included space always pale. S. t. line pale, irregularly sinuate, sometimes marked only by the contrast between the terminal and s. t. spaces, but more usually preceded by a dusky shade. Claviform always outlined but usually very indistinct, lost in the dark ground color. Orbicular small, ovate oblique, slightly paler. Reniform upright, oblong, often with a median constriction, whitish, prominent. The s. t. line is often accompanied by a greenish shade, and there is sometimes a reddish shade near hind margin. On costa the median space is of the ground color. Secondaries smoky fuscous to blackish, paler at base. Beneath, dusky, with outer dark line and discal spot. Head and thorax concolorous with primaries, patagiæ often discolored, white.

Expands 23–26^{mm} (.92 to 1.04 inches).

HABITAT.—Atlantic to Pacific, through northern and middle United States; Canada.

Nine specimens are in the Museum series, others in the duplicates. Localities are: New York (C. V. R., J. B. S.); Sharon, New York, July 28, August 10 (Meske); central Missouri, northern Illinois (C. V. R.); Montana (J. B. S.); Utah (from Department of Agriculture).

This is decidedly the most variable of our species of *Mamestra*. It varies in ground color and in degree of contrast between the pale and dark portions of the wing. Sometimes it is almost evenly gray; often

prettily marked with mossy-green and rose-red, with strongly contrasting white s. t. space; again with a very even yellowish-green suffusion.

The type of *comis* is a very bright, strongly marked specimen, like typical *olivacea*, but so spread that the insect appears more plump, shorter winged, and differently marked.

The variety *obscurior* is from Maine, and is very evenly dark gray with a green suffusion, the lines velvety black, a red shade on t. p. line inferiorly, secondaries blackish.

Variable as is the species in color, it is constant in essential details of maculation. The median lines do not vary to any appreciable extent, and the reniform is always distinctly paler than the ground color. Its range is very wide, but none of the varieties seem to be races.

Mamestra rectilinea Smith.

1887. Smith, Proc. U. S. Nat. Mus., x, 465: *Mamestra*.

Dark fuscous brown, with a deep crimson brown shading which is variably distinct, and a yellowish, somewhat mossy green shading over all. T. a. line geminate, with wide, rather irregular outward curve. T. p. line angulate on costa, then rigidly oblique to hind margin, geminate. Basal line distinct, geminate. S. t. line rarely distinct, pale, its course sinuate. Usually it is more or less lost in the irroration of the outer part of 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, patagiae sometimes with white disc.

Expands 25-28^{mm} (1 to 1.12 inches).

HABITAT.—New York, Colorado, California, Oregon, Vancouver.

Eight specimens are in the Museum collection: New York (through C. V. R.); Vancouver (J. B. S., the types).

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 never so much contrast in the s. t. space. There is usually a prominent, paler patch in s. t. space near the hind angle, which forms an obvious feature in the appearance of the insect. The abdomen of the female exceeds the secondaries, and is rather prominently tufted. 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 the species is based. On the other hand the identity of the male characters indicates a very recent separation from the parent stock.

Mamestra van-media Smith.

1887. Smith, Proc. U. S. Nat. Mus., x, 466: *Mamestra*.

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 the 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 t. a. line. Secondaries blackish outwardly, with base paler. Beneath, fuscous gray, powdery. Head and thorax concolorous with primaries.

Expands 23^{mm} (.92 inch.).

HABITAT.—Colorado. Collected by Bruce.

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.

There is a possibility that even this striking form is only an extreme offshoot from the *olivacea* stock, though I have nothing to indicate that it is at all likely, except the identity of the male sexual characters.

Group LAUDABILIS.

The species referable to this group agree in small size and, except in *lorea*, pale or gray ground color, with more or less yellow or reddish maculation, some forms being very pretty. They are rather stoutly built, the wings are rather small, obtuse; in *cuneata* and *lorea* rather wider than in the others. The thorax and the abdomen dorsally and laterally are more or less evidently tufted. The chief character drawing together the species is in the male genitalia. The harpes are elongate, very slender, and rather gradually dilated at tip. Inwardly the tip is produced somewhat acutely, and, except in *lorea*, it is more or less truncate. The clasper is short, stout, corneous, hook-like. The species are, some of them, very closely related, and judgment is required in placing single specimens where the genitalia are not examined.

Lorea is separable at once by its yellow-red color. In this it is peculiar, and, with its single transverse lines, the t. p. very evenly oblique, it is a readily recognizable form.

Incurva and *4-lineata* are distinguished by white secondaries in both sexes. They are separable by the course of the t. p. line, which, in *incurva*, is drawn in beneath the reniform, and rather even, while in *4-lineata* it is lunulate and oblique. The latter is a decidedly variable species, and in some of its forms is very like *laudabilis* or *marinitincta*; but it is always recognizable by its white secondaries.

The sexual characters are those of the group, the tip of the harpes truncate, very little produced inwardly. The clasper is very stout, somewhat beak-like.

The remainder of the species have fuscous or soiled secondaries.

Laudabilis is always of some shade of green for the ground color, but that is the only character of ornamentation that is constant. The lines vary in situation, in degree of distinctness, somewhat also in course, and the color of the median space is alike in scarcely two specimens of the large series before me. It is a beautiful insect. Besides the green color, the genitalia are constant, and at once distinguish the form. The

harpes are unusually long, the tip sinuate and inwardly prolonged. It is fringed with the usual row of spinules, and has also a small pad of short, stiff bristles at the inside of the extreme tip.

Marinitincta is, comparatively, a very constant species, with always a reddish tint to primaries. This replaces the green tint of *laudabilis* and is the only superficial feature I have been able to discover which will separate the two. The genitalia, however, are different. The harpes are not so long, are only slightly dilated at tip, not sinuate nor so much produced inwardly, and without the pad of spinules. All the specimens with the reddish suffusion have this structure, and all the greenish, no matter how like they may be in details of maculation, have the one before described. There is also a peculiar fascies, impossible of description, which separates the two.

Alboguttata is distinct. The even, fusco-luteous tint, appearing as though there was a layer of dark over the ground layer of yellow scales, and the prominent white median lines, are characteristic. The male genitalia are very like those of *marinitincta*; but the clasper is somewhat thickened before the tip, and the position, though not the shape, of the harpes is different. There is no confusing this with any allied form.

Cuneata is rather larger and broader winged than any of the preceding, with much more constancy in color and maculation. It is rather dark ash-gray, the maculation all distinct, though not contrasting. The s. t. line is marked by a distinct yellow dot near hind angle, and an irroration of yellow scales beyond the reniform is evident in all well preserved specimens. The vestiture is somewhat rough, and the wings are somewhat broader than those of any species save *lorea*, which are referred to this group. It is not easy to mistake, though *brachiolum* of another group may be confounded with it. The genitalia differ from those of the preceding in the more gradual enlargement and larger lappet-like tip, which is truncate and slightly sinuate. The clasper is rather longer and more hook-like; but altogether the species belongs where I have placed it.

The following table will assist in identifying the species:

Secondaries white in both sexes.

Dark gray, evenly colored; t. p. line strongly incurved below reniform, even in course.....INCURVA.

Variable, more or less contrasting; t. p. line lunulate, evenly oblique or sinuate, not incurved below reniform.....4-LINEATA.

Secondaries dusky in both sexes.

Primaries green, gray or blackish.

Median space darker.

Pale gray, with a faint reddish suffusion MARINITINCTA

Green; median space varying from red to black LAUDABILIS.

Median space not darker.

Median lines and ordinary spots contrasting, white marked....ALBOGUTTATA.

Median lines and ordinary spots not white nor contrasting; s. t. line with a yellow spot near hind angle.....CUNEATA.

Primaries reddish yellow or dark luteous; median lines single, brown, distinct; median space usually darkerLOREA.

Mamestra incurva Smith.

1887. Smith, Proc. U. S. Nat. Mus., x, 466; *Mamestra*.

Dark ash gray, median space somewhat darker. Median lines geminate, black but 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, only a little sinuate or lunate. T. p. line deeply incurved below the 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 line crossing the secondaries at that point. Secondaries white. Beneath, powdery, especially along costa, without lines or dots. Head and thorax like primaries, collar with a black line. Abdomen distinctly tufted.

Expands 25^{mm} (1 inch).

HABITAT.—Colorado, Arizona, New Mexico.

A well-marked species, with a strong resemblance to *anguina* in another group. The course of the lines is almost identical and so is the ground color; but the ordinary spots are of a different form and much smaller, and the secondaries in the male are white. The genital structure is that of the group in type, but the harpes have the angle of tip extended as in *leucogramma*, and the clasper is stout, thick, and irregularly twisted, forming two processes from one base. If the maculation were to leave any doubt as to the distinctness of the species, the genitalia would at once dissipate it. With this species *leucogramma* would seem to seek its allies if the sexual characters can be used to associate forms.

Mamestra 4-lineata Grt.

1873. Grt., Buff. Bull., 1, 140, Pl. 4, f. 15 (? *Dianthacia*).

Ground color somewhat bluish ash-gray, median space darker, often with a reddish suffusion. The lines and spots are as in *laudabilis*. At inferior portion of t. p. line there is always a prominent white shade, and on vein 2, crossing the s. t. line, there is a distinct black dash which is characteristic. The secondaries are white in both sexes, the submedian vein strongly marked with blackish toward the margin. Beneath, powdery, with discal spots but no distinct outer line. Head and thorax like primaries, collar with a black line.

Expands 25 to 27^{mm} (1 to 1.08 inches).

HABITAT.—Arizona, California.

Nine specimens are in the Museum series, others among the duplicates: California (J. B. S.); Los Angeles County, California, February, March, April, August, October; Alameda County, California, June, August (through C. V. R.). Red number, 119.

A decidedly variable form, often as distinctly marked as *marinitincta* or even *laudabilis*, with reddish tinted median spaces, and from that form varying to an uniform dark ash-gray with only the white shade on the t. p. line and dark dash on vein 2 distinct. These features, however, seem always present, and in addition to the white secondaries serve to identify the species.

Mamestra marinitincta Harv.

1875. Harv., Buff. Bull., II, 273; *Mamestra*.

1877. Harv., Buff. Bull., III, 6; *Mamestra*.

Ground color pale grayish, with a slight rufous flush; median space darker, blackish fuscous. Lines and spots as in *laudabilis*, from which this species differs only in the ground color and in the sexual characters.

Expands 25–27^{mm} (1 to 1.08 inches).

HABITAT.—Texas.

Five specimens are in the Museum collection, all from Texas, October 9–26 (Belfrage coll., C. V. R.).

A comparatively long series of specimens, compared with a much greater lot of *laudabilis*, demonstrates that there is no feature in the maculation of one which is not paralleled in the other. The only constant superficial character is in the ground color, which in *laudabilis* is always green, in *marinitincta* always with a reddish shade. The median space in all the specimens examined is strongly narrowed inferiorly, and the vestiture is more even and less squamose than in *laudabilis*. It is easy to separate out the species, though it is most difficult to specify wherein the differences consist. The difference in the sexual characters already described is constant.

It is evident, from Dr. Harvey's description, that his type was a form of *laudabilis*. It is equally evident that he considered the form here described as a variety, and in the Belfrage collection this form bears Dr. Harvey's name, and to this form the name must be restricted.

Mamestra laudabilis Gn.

1852. Gn., Sp. Gen. Noct., II, 30, pl. 8, f. 4; *Hecatera*.

1857. Wlk., C. B. Mus., Lep. Het., XI, 511; *Hecatera*.

1874. Grt., Proc. Bost. Soc. Nat. Hist., XVI, 241; *Mamestra*.

1875. Grt., Can. Ent., VII, 27; *Mamestra*.

indicans Wlk.

1857. Wlk., C. B. Mus., Lep. Het., X, 359.

1868. G. & R., Trans. Am. Ent. Soc., II, 78; pr. syn.

var. *ILLAUDABILIS* Grt.

1875. Grt., Can. Ent., VII, 27; *Mamestra*.

1881. Grt., Can. Ent., XIII, 129; *Mamestra*.

Pale sea-green, in cabinet specimens often yellowish; median space varying from reddish brown to black, inferiorly often of ground color. Basal line geminate, black, included space concolorous, sometimes broken, rarely wanting. T. a. line obsoletely geminate, inner part of line often absent, included space whitish. Its course with an outward

tooth above orbicular, inwardly curved over that spot, then outwardly and obliquely curved to hind margin, the curve interrupted by a prominent tooth on internal vein. T. p. line black, lunulate, followed by a more or less evident series of venular dots, indicating the outer part of the line; intervening space paler. The line is outwardly curved over, and inwardly curved beneath reniform. A prominent outward tooth on internal vein. S. t. line pale, punctiform, often hardly traceable, preceded or marked by variably prominent black scales or spots. Sometimes a dusky blotch above hind angle. Fringes cut with black. Ordinary spots distinct, of the green ground-color, outlined in black. Orbicular round, variable in size. Reniform variable in size, constricted at middle. Claviform variable in size and shape. Secondaries whitish to blackish, rather paler at base. Beneath, variable in tint, powdery, with a distinct outer line and discal spots. Head and thorax concolorous with primaries, more or less admixed with black scales.

Expands 25 to 30^{mm} (1 to 1.20 inches).

HABITAT.—Washington, District of Columbia, southward and westward to Florida, Texas, and California.

Thirteen specimens are in the Museum series, others in the duplicate material: Washington, District of Columbia, August 6, 21; Selma, Alabama, September; North Carolina, central Missouri, Texas, April 10 (C. V. R.); Texas (Meske); Florida (J. B. S.); California, Santa Cruz Mountains (through C. V. R.).

This is a very variable form. The typical examples have the median space black or dark; the variety *illaudabilis* has it more or less reddish. All intermediate shades are found. The median lines vary somewhat in course, and are variably approximate inferiorly, sometimes almost contiguous, at others widely separated. The only constant characters are in the ground color and course of the t. a. line, and even this latter is not equally marked in all specimens. The sexual characters of the species have been already described. The species is a very handsome one, and appears to be common enough southwardly. The green color is apt to fade and turn to a dingy yellow in the cabinet.

Mamestra alboguttata Grt.

1877. Grt., Buff. Bull., III, 85; *Mamestra*.

Sordid fusco-luteous, powdery, median lines geminate, included spaces white. Basal line prominently white. A more or less distinct white blotch between this and t. a. line. T. a. line outwardly oblique, curved, slightly irregular. T. p. line lunulate, about parallel with outer margin, not so distinctly white-marked as is the t. a. line. S. t. line broad, white, interrupted. The s. t. space is unusually narrow and irregularly mottled with paler, blotchy maculation. Claviform outlined, moderate, concolorous. Orbicular small, round, rather paler than median space,

sometimes annulate with white. Reniform upright, moderate in size, somewhat constricted at middle, annulate with white, somewhat lighter than ground color. Secondaries fuscous, toward base paler. Beneath, smoky, powdery, no distinct line or spot. Head and thorax concolorous with primaries, white mottled. Patagiae white, margined with black.

Expands 27 to 28^{mm} (1.08 to 1.12 inches).

HABITAT.—New Mexico, Oregon, California.

A single specimen (New Mexico; J. B. S.) is in the Museum collection.

This is a well-marked species, which can not be easily mistaken. The prominent white lines and peculiar sordid ground color are distinctive. *Variolata* bears some resemblance to it, but belongs to another group with very distinctly different genitalia.

Mamestra cuneata Grt.

1873. Grt., Buff. Bull., 1, 139, pl. 4, f. 9; *Mamestra*.

1874. Grt., Can. Ent., VI, 156; *Mamestra*.

Ash gray, with fuscous shadings. Median space distinctly fuscous. Median lines distinctly geminate, included space pale. Basal line present, pale, terminating in a lunate black dash. T. a. line with a rather even, outward curve. T. p. line sinuate, essentially parallel to outer margin. S. t. line defined by the somewhat darker terminal space, more or less marked with yellow scales, and with a distinct yellow spot near hind angle. Through the pale s. t. line is a row of black venular dots and a variably distinct fuscous powdering, forming a dark patch on costa. Beyond the reniform in the median space there is an irroration of yellow scales, variably distinct. Claviform concolorous, distinctly outlined, often spanning the median space and connecting the lines. The ordinary spots are large, black-lined, of the pale ground color, and therefore contrasting to the darker median space. Orbicular oval oblique. Reniform kidney-shaped. A row of terminal black lunules. Fringes unusually long. Secondaries dark fuscous. Beneath, smoky fuscous, powdery, with obsolete lines and discal spots. Head and thorax concolorous with primaries, collar with a black line, patagiae black margined.

Expands 27 to 30^{mm} (1.08 to 1.20 inches).

HABITAT.—California, Washington, Vancouver.

Rather broader winged, more robust than any of the preceding, and not to be confounded with them. The large pale ordinary spots, the distinct yellow spot on s. t. line, and the long fringes, are not easily mistaken.

Nine specimens are in the Museum series, others in the duplicate material: California (C. V. R., Meske, J. B. S.); Vancouver (J. B. S.).

Mamestra lorea Gn.

1852. Gn., Sp. Gen. Noct., I, 126; *Hydræcia*.
 1857. Wlk., C. B. Mus., Lep. Het., IX, 161; *Hydræcia*.
 1874. Grt., Buff. Bull., II, 13; *Mamestra*.
 1879. Grt., Can. Ent., XI, 28; *Graphiphora*.
Hydræcia ligata Wlk.
 1877. Grt., Can. Ent., IX, 28; pr. syn.
dodgei Grt.
 1875. Grt., Can. Ent., VII, 90; *Mamestra*.

Luteous, with a red or brownish suffusion, median space darker. Median lines single. Basal line very indistinct. Basal space to t. a. line unicolorous, immaculate. T. a. line upright, angulate between veins, sometimes more oblique and slightly curved. T. p. line outwardly bent over reniform, then rigidly oblique to hind margin. S. t. line sinuate, and on costa angulose, concolorous, marked by dusky shades. A fine, terminal brown line. Median space darker than the rest of the wing and sharply defined in most specimens. Ordinary spots of the pale ground-color, the reniform inferiorly dusky. This latter is narrow, upright, outlined with whitish scales. Orbicular moderate in size, round or ovate, brown ringed, sometimes with a few white scales. Claviform rarely traceable, small, concolorous. Secondaries smoky, luteous. Beneath, yellowish, powdery, with distinct outer line and discal dot. Head and thorax concolorous with primaries.

Expands 25 to 31^{mm} (1 to 1.24 inches).

HABITAT.—Canada; Eastern, Middle, and Central States, to Nebraska.

A well-marked form, not to be confounded with any in the same group. Color characters have led to its reference to Orthosiid genera, but it seems more properly referable here. *Dodgei*, of which I have seen the type, is a pale variety of this species.

Specimens in the Museum series are: From Long Island, New York, June 21 (J. B. S.); Albany, New York, June 22–26 (Meske); Adirondack Mountains, New York (J. B. S.); Maine; Iowa (C. V. R.).

Group **QUADRANNULATA**.

This group is best characterized in the description of the single species belonging to it.

Mamestra quadrannulata Morr.

1875. Morr., Proc. Acad. Nat. Sci., 1875, 430; *Mamestra*.

Sordid, rather dark brownish fuscous, pale along the costal region and internal margin. The median lines are obsolete. S. t. line consisting of a series of small white dots. A dusky terminal line, interrupted by white scales. A distinct black basal line extending nearly to the middle of the wing, and looped at the end to form the small claviform. Ordinary spots small, subequal in shape and size, rounded,

concolorous, outlined in white. Secondaries rather pale fuscous, darker outwardly. Beneath, somewhat glistening, smooth, smoky brown. Abdomen more luteous.

Expands 30 to 32^{mm} (1.20 to 1.28 inches).

HABITAT.—Nebraska; Texas.

A very peculiar and easily recognized species, bearing no close resemblance or relation to any other in the genus, and therefore elevated to group rank. The long black basal streak, the small white ordinary spots, and obsolete median lines are characteristic.

A single specimen from the Belfrage material (C. V. R.), marked June 8, is in the Museum collection. The species resembles somewhat *Agrotis plecta* in size, form, and color. The harpes of the male are very slender at base, then suddenly and broadly enlarged at tip and greatly produced inferiorly. The inner side of the tip is fringed with a row of spinules as usual. The clasper is a small, curved, acute hook. It is perhaps the last preceding group to which this structure most allies the species.

Group INNEXA.

The wing form, which has been already described, distinguishes this group, which also is best described in the characterization of its single species.

Mamestra innexa Grt.

1874. Grt., Buff. Bull., II, 123; *Perigrapha*.

1874. Morr., Proc. Bost. Soc. Nat. Hist., XVII, 214; *Mamestra*.

1875. Grt., Buff. Bull., II, 309; *Mamestra*.

Reddish fuscous, with blue-gray irroration, all the veins marked with gray scales. Median lines single, narrow, gray. Basal line present. T. a. line upright, with a slight inward tooth on median vein. T. p. line very even, almost rigidly oblique from costa to inner margin. S. t. line very distinct, yellowish, rather close to outer margin, its course slightly sinuate. Orbicular round, pale-margined, rather darker than ground color. Reniform moderate in size, pale-lined, inferiorly dusky. Claviform wanting. Secondaries of male whitish, with narrow, dark outer margin; of female, dusky, paler at base. Beneath, powdery gray, with an outer line and discal dot. Head and thorax concolorous with primaries.

Expands 28 to 30^{mm} (1.12 to 1.20 inches).

HABITAT.—Texas.

Six specimens are in the Museum collection (Meske and C. V. R.), two of them labeled by Mr. Grote, one as *Perigrapha*, the other as *Mamestra innexa*. The specimens from the Riley collection are of the Belfrage material, and are dated March 29, April 29 and 30.

The species is distinct and easily recognizable. The depressed costa, acute apices, and oblique outer margin are distinctive. The basal thoracic tuft and dorsal tufts of abdomen are well marked. The harpes

of the male are broad, emarginate above near tip, which is truncate and inwardly fringed with spines. The elasper is moderate, corneous, and somewhat curved.

Group **PENSILIS.**

Rather narrow winged, ash-gray species, with pointed primaries and evenly oblique outer margins. They are moderately robust in build, the thoracic tuftings are well defined, and the abdomen has dorsal and lateral tuftings, which are most distinct in the male. The male antennæ have the joints somewhat marked and bristled, indicating a relationship of the species to *distincta*, with which they agree in a general way in maculation and habitus.

Two species are rather easily separable from the others by the shape of the claviform, which in *longiclava* really begins at the base of the wing, is discolorous, and reaches the t. p. line. The species is bright gray in color, the margins all darker, the t. a. line not. T. p. line barely traceable below the costa.

In *orbiculata* there is a fine longitudinal black line to the t. a. line, and to this is hooked the concolorous claviform. The t. a. line is indefinite, and the t. p., on the contrary, very distinct, pale, forming a nearly right angle opposite the cell. In color it is dark fuscous gray, the s. t. space darker, giving unusual prominence to the very irregular s. t. line. The ordinary spots are somewhat discolorous, the orbicular narrow, elongate, decumbent.

In the other species the t. a. line is always distinct, and the claviform often extends across the median space, but it does not have any connection with the base of the wing.

Of these *anguina* is at once separable. It lacks all reddish tint, is very dark as a rule, the ordinary spots are large and pale, and the even, strongly-incurved t. p. line is characteristic.

Vicina and *pensilis* are nearly alike in maculation; indeed, I have not succeeded in discovering one constant difference of that nature. *Pensilis* is broader winged, usually paler, the male antennæ are thicker, and the ordinary spots are larger; but all these features are relative.

A permanent and actual difference exists in the form of the male genitalia. These are of the same type in both species, but differ in detail. The harpes are broader at base, then suddenly narrowed and angulated and at tip again enlarged, lappet-like, the inner edge of the tip spinulose. The elasper is short, thick, and corneous. In *vicina* the tip is simply somewhat curved and the inferior edge is acutely prolonged and furnished with longer spines. In *pensilis* the lappet is much more ladle-shaped, the edges all rounded and the tip much more curved than in *vicina*. The difference is at once perceived in examining specimens of both species. The elasper in *vicina* tapers to an abrupt point, giving rise to a short beak-like inferior process at its middle. In *pensilis* the elasper has the same inferior process, but in-

stead of being equal to tip the main shank is greatly inflated and almost squarely cut off. A comparison of the figures will bring out these points much better. This is one of the cases where species hardly distinguishable in color and maculation afford good structural differences.

In tabular form the characters described appear as follows:

Claviform attached to a black basal line.

T. a. line vague or wanting.

Claviform pale, discolorous from base; color pale gray with a paler s. t. space; t. p. line indistinct.....LONGICLAVA.

Claviform concolorous; color dark fuscous gray, s. t. space darker; t. p. line very distinct, even, pale.....ORBICULATA.

Claviform attached to the very distinct t. a. line.

Basal dash not reaching beyond the basal line.

T. p. line strongly incurved below reniform; claviform moderate. Vestiture velvety in appearance.....ANGUINA.

T. p. line normally oblique and sinuate, claviform usually crossing median space. Broader winged, usually paler, ♂ antennae thicker, maculation distinct, ordinary spots larger.....PENSILIS.

Narrower winged, ♂ antennae slighter, maculation often indistinct, ordinary spots smaller.....VICINA.

Mamestra longiclava, sp. nov.

Pale whitish gray with an admixture of yellowish hair and scales. Collar inferiorly more yellowish. Patagiæ margined by black scales, most evident at base of the wings. Primaries with the basal lines marked only as geminate, dusky costal spots. T. p. line indicated by a difference in shade between median and s. t. spaces, showing it to be very strongly incurved below cell. A broad wedge-shaped paler gray space starting at the apex, inwardly marked by a dusky costal patch in s. t. space, then widening evenly so as to take in the whole of the s. t. space to hind margin. S. t. line marked by a series of black and ocher yellow scales, beyond which the terminal space is dusky, and a whitish spot strongly marked with black and ocher scales opposite hind angle. The veins are all marked with black and white scales. A dusky terminal line. Fringes yellowish gray, with a dusky central and terminal line. Claviform discolorous, pale, starting at base and extending to the t. p. line, margined with black. Orbicular irregular, oval, oblique, black ringed, with an interior whitish annulus, center with ocherous scales. Reniform large, outwardly diffuse, merging into the pale s. t. shade, inwardly marked by a curved black line, and a broader whitish lunule which is faintly traceable all around the spot. Secondaries whitish, veins and outer margin soiled. Beneath, white, powdery, with a discal spot on all wings.

Expands 30^{mm} (1.20 inches).

HABITAT.—Colorado (Bruce).

A single male specimen from Mr. Neumøgen's collection. The male genitalia ally this with *anguina*, from which it is widely separated in all other respects. The long discolorous claviform is unique, and the ocher-

ous admixture to the gray scales gives a suggestion of a pink flush which has really no existence. The marginal regions are all darker than the discal.

Mamestra orbiculata, sp. nov.

Grayish fuscous, powdered with black scales. Collar, with an im- prominent transverse line. Primaries with basal line pale, not promi- nent. T. a. line pale marked at costa, below this concolorous, marked by geminate black lines, the outer only distinct, outcurved between veins. T. p. line very distinct, narrow, pale, inwardly margined by a narrow, black line, outwardly defined by the dark s. t. space. In its course it forms a distinct, nearly right angle opposite the accessory cell, then inwardly oblique, slightly sinuate to the hind angle. S. t. space darker, emphasizing the irregular pale s. t. line, which is thrice quite deeply angulated inwardly. A row of black venular marks also pre- cedes this line. Terminal space powdered with white; this powdering also more or less evident along the costal region. An interrupted dark, followed by a pale, terminal line. Fringes concolorous. A somewhat indistinct, median shade line, black on costa, outwardly angulate so as to obscure the reniform inferiorly, then indistinct and fuscous to the hind margin. A fine black basal longitudinal line joined to a spear- pointed black-margined claviform. Orbicular oblong or oval, decum- bent, black margined, pale centered, discolorous. Reniform moderate upright, superiorly discolorous, pale yellowish, inferiorly irregularly dilated, marked by a couple of irregular white dots variably placed. Secondaries whitish basally, with an indefinitely bounded outer black- ish fuscous marginal band. Fringes white, with a fuscous interline. Beneath, white, with fuscous powderings, both wings with a broad, outer line, beyond which there is a blackish shade to the margin.

Expands 29 to 30^{mm} (1.16 to 1.20 inches).

HABITAT.—Colorado (Bruce).

A very distinct species. The distinct pale, angulated t. p. line, the very distinct, unusually irregular s. t. line, and the discolorous ordi- nary spots are not paralleled elsewhere in the genus. The genital structure is very like that of *brachiolum*, but the tip of the harpes is furnished with spinules, and the clasper is differently shaped.

Two males from Mr. Bruce, one of them in the collection of the U. S. National Museum.

Mamestra anguina Grt.

1881. Grt., Can. Ent., XIII, 129; *Mamestra*.

Dark ash-gray, powdery, median space usually somewhat darker, median lines distinct, geminate. Basal line present. T. a. line out- wardly convex, not strongly curved between veins. T. p. line rather even, outwardly curved over reniform, then, with a deep inward curve, narrowing the median space by one-half. S. t. line pale, irregular, sinuate, strongly marked below vein 2, where it is crossed by a dis-

tinnet black streak. Ordinary spots large, pale, with yellowish or fuscous shading. Orbicular round, black ringed. Reniform kidney-shaped, inwardly black marked, outwardly pale gray, its lower margin touching the t. p. line. Claviform concolorous, not distinctly outlined in any specimen I have seen, spanning the median space. Secondaries of ♂, whitish; of ♀, fuscous. Beneath, powdery, with obsolete outer dark line. Head and thorax concolorous with primaries; collar with a dark line. The harpes of ♂ are broad at base, suddenly narrowed from beneath to half their former width, then equal to the rounded tip, which is inwardly fringed with fine spinules. Clasper rather long, very stout and corneous, not greatly curved.

Expands 29 to 32^{mm} (1.16 to 1.28 inches).

HABITAT.—Maine, New Jersey, Illinois, Nebraska, Colorado.

Three specimens are in the Museum collection: Maine, New York (J. B. S.). The specimens differ in the amount of powdery appearance, one of them quite smooth, almost glistening, the others rough. Easily distinguished from the others in this group by the somewhat velvety vestiture, the pale, outwardly somewhat indefinite reniform, and strongly incurved t. p. line. Though placed here with *pensilis*, it would seem more nearly allied to *incurva* of the *laudabilis* group but for the shape of the genitalia.

The species is quite widely distributed, and is, not unlikely, confused with *vicina* in collections.

Mamestra vicina Grt.

1874. Grt., Buff. Bull., II, 156; *Mamestra*.

1877. Grt., Can. Ent., IX, 197; *Mamestra*.
teligera Morr.

1874. Morr., Proc. Bost. Soc. Nat. Hist., XVII, 215; *Mamestra*.

1877. Grt., Can. Ent., IX, 197; ? pr. syn.

1881. Grt., Can. Ent., XIII, 129; pr. syn.
acutipennis Grt.

1882. Grt., Can. Ent., XII, 214; *Mamestra*.

1883. Grt., Can. Ent., XIII, 129; *Mamestra*.

Dark ash-gray with a more or less evident rufous tinge, most marked at base and in median space. A longitudinal fine black basal streak, reaching the indistinct basal line. Median lines usually not well marked. T. a. line even, outwardly oblique, with an inward bend below submedian space. T. p. line somewhat irregular, nearly parallel with outer margin, marked with white in submedian space. S. t. line variably distinct, sometimes obsolete, its course very irregular, always marked in submedian interspace with a whitish spot. Claviform outlined in black, usually extending across the median space and connecting the median lines. Ordinary spots concolorous or slightly paler, black ringed and with a narrow interior ring of pale scales. Orbicular oblique, more or less oval. Reniform somewhat variable, but usually more or less kidney-shaped and oblique. S. t. line sometimes preceded

by a more or less evident row of black spots. Secondaries varying in both sexes from soiled white to fuscous. Beneath, powdery gray, with incomplete, or wanting, outer line and discal spot. Head and thorax concolorous, collar with a dark line.

Expands 30 to 32^{mm} (1.20 to 1.28 inches).

HABITAT.—Maine to Texas to California.

Seven specimens are in the Museum collection: Sharon, New York, July 23 (Meske); Arizona, Colorado (J. B. S.); Nevada County, California (through C. V. R.). The Nevada County specimens bear the red label 307, and are darker than the others, most nearly resembling the Sharon example, which bears Mr. Grote's own label.

The distinctive features of the species have been sufficiently discussed in the introductory remarks to the group.

Mamestra pensilis Grt.

1874. Grt., Pr. Acad. Nat. Sci. Phil., 1874, 199; *Dianthæcia*.

1874. Grt., Can. Ent., VI, 215; *Dianthæcia*.

1881. Grt., Can. Ent., XIII, 129; *Mamestra*.

Like *vicina*, but rather paler, more reddish in ground color with somewhat wider wings; and antennæ of male rather thicker.

Expands 28 to 32^{mm} (1.12 to 1.28 inches).

HABITAT.—Texas, Colorado, California, Washington, Vancouver.

Detailed description seems useless, as it would be simply duplicating the description of *vicina*. The only differences have been pointed out.

Four specimens are in the Museum collection: Vancouver (J. B. S.) and Texas, October 7 and 19 (C. V. R., from Belfrage material).

Mr. Grote gives August, September 11, and November as dates of specimens received from Sanzalito, California.

SPECIES UNKNOWN TO ME.

Mamestra vittula Grt.

1883. Grt., Trans. Kans. Acad. Sci., VIII, 48; *Mamestra*.

“Female allied to the Californian *4-lineata*, the t. a. line not so oblique, and no reddish stain on fore wings; hind wings white, the veins very slightly soiled. Collar gray with blackish edge; thorax blackish gray. Primaries blackish gray. T. a. line scalloped. A black basal dash. Median space shaded with black. Stigmata small, concolorous, dark gray. Terminal field paler gray, preceded by the s. t. line, which is irregular, shaded with black, especially at costa; a black dash at anal angle, before which the s. t. line is bent and heavily marked with black. Beneath, no markings; hind wings white, dusted a little on costa; fore wings pale fuscous. No. 957. Expands 24^{mm}.”

The specimen is from New Mexico, and does not seem to be distinct from *4-lineata*, which is variable in the direction indicated in this description.

Mamestra sutrina Grt.1881. Grt., *Papilio*, 1, 5; *Mamestra*.

"This species is similarly sized with the Californian *cuneata*, but a little slighter body. It is deep brown, cut and lined with white, and wants all yellowish markings, and is thus differently colored from its ally. It differs in markings by the absence of the dots following the t. p. line and by the white lunulate s. t. line. Lines double, filled in with white. Reniform and orbicular subequal, approximate, white ringed. Claviform outlined in black, beyond it a white spot. A dark line upon submedian fold. Median lines lunulate, uneven, approaching inferiorly. Black interspaceal marks precede the white s. t. line. Half-line marked. T. a. line nearly perpendicular, marked by a black outer line and preceding white shade. T. p. line outwardly bent above, drawn in below vein 4, well removed outwardly. Beneath, fuscous. Hind wings irrorate with whitish, with discal dot and transverse line; above, secondaries with darker border and slightly paler base. Eyes hairy. Body tufted. Expanse ♂ 30^{mm}. Colorado."

Mamestra ferrealis Grt.1883. Grt., *Can. Ent.*, xv, 29; *Mamestra*.

"Allied to *Mamestra cinnabarina* var. *ferrea*, but larger, bright brown. Orbicular circular, bright brown, with central dot. Reniform upright, very slightly medially constricted, with a central line hooked into two dots. T. p. line double, black, with white included shade. Subterminal space washed with whitish, leaving a brown patch at costa. Terminal space narrow, brown at apex, afterward blackish. Subterminal line whitish, preceded by a narrow brown shading. A blackish shade between the stigma on cell. A blackish shade on costa over subbasal space. Basal half-line white. A broad shade submedially across median space, deepening before t. p. line, where it is cut by the brown median shade. Hind wings fuscous, with extramesial line. Beneath, primaries purply brown, with a black costal shade outside of the common extramesial line. Thorax rather pale, collar and tegulae with black lines. Abdomen tufted, reddish, fuscous, somewhat brighter beneath. Montana. Mr. H. K. Morrison."

Mamestra dimmocki Grt.1875. Grt., *Proc. Ac. Nat. Sci.*, 1875, 420; *Mamestra*.

"♀. Allied to *subjuncta* G. and R. Of the same blackish-brown color, differing by being darker and more reddish, by the absence of the median dash, and the want of the prominent W mark to the subterminal line. Collar with a black line. Fore wings with a short distinct black basal dash. Median lines blackish, indistinct, lunulate, approximate. Orbicular large, luniform, excavate on the inner side. Reniform large, medially constricted, shaded with blackish over the median

nervules. Claviform merely outlined. Median shade line ferruginous below the reniform. Subterminal line nearly straight, a series of interspaceal cuneiform ferruginous spots surmounted by pale atoms. Hind wings dark fuscous, with pale fringes. Beneath, thickly powdered with blackish, with a slight ruddy stain. Hind wings, with dot and line.

“Expanse 40^{mm}.

“From the White Mountains, New Hampshire. Collected by Mr. Geo. Dimmock, for whom I name the species.”

I have already explained how I came to erroneously identify this species, and have named *desperata* the form heretofore named *dimmocki* by me in divers collections, including that of the U. S. National Museum. As above described, I have not yet recognized the species.

Mamestra condita Gn.

1852. Gn., Sp. Gen. Noct., II, 78, Pl. 8, f. 5; *Aplecta*.

1857. Wlk., C. B. Mus., Lep. Het., XI, 556; *Eurois*.

1874. Grt., Buff. Bull., II, 12; *Mamestra*.

1881. Grt., Can. Ent., XIII, 127 (transl. desc.).

“♀. 35^{mm}. The smallest of the genus (*i. e.*, *Aplecta*). Wings slightly elongate, the primaries nearly entire, rather wide, of a grayish white, much powdered with blackish, which makes them griseous, except the edges of the lines and the two ordinary spots, which remain white and empty. The latter are very regular. The orbicular longitudinally ovate. The three first lines very distinct, dentate, black; the t. p. line sending a sharper tooth in the sinus of the reniform. The subterminal very nebulous, pale, margined anteriorly by a vague shade of pale ferruginous; the upper edge of the claviform alone visible. The two median spots separated by a dark spot surrounded by black. A basal ray crosses the half-line. Secondaries dirty yellowish white, with traces of a discal spot, of a much-twisted median line, and of a subanal blackish spot. Terminal marks thick, contiguous, and better marked. Beneath, with the spot and line well indicated, blackish, thick, the line continuous on the primaries. Abdomen short, with small crests. Palpi ascending, slighter than in the other species (*i. e.*, of *Aplecta*).”

The description is copied from Mr. Grote's translation, which I have compared and which is very close indeed. Judging from the figure and description, the species is not a *Mamestra* at all, but is almost certainly *Agrotis trabalis* Grt. I have no specimen of the latter for comparison at present, but I am convinced that this was the species intended by Guenée.

Mamestra impolita Morr.

1874. Morr., Pr. Bost. Soc. Nat. Hist., XVII, 140; *Mamestra*.

“Expands 35^{mm}. Length of body 13^{mm}.

“Eyes hairy; male antennæ with fine hairy clothing. Collar gray with a median line. Abdomen strongly tufted. In this species the

lines and spots are arranged as in *chenopodii* Albin, but the markings are more broken, and the squamation is rough and uneven. The ground color is white, almost totally obscured, except in the ordinary spots and on the subterminal space by black or gray shades. The nervules and a portion of the basal space are tinged with glaucons. Half line present. The interior line irregular, simple, obsolete below the claviform spot; the latter round, large, whitish, outlined in black. Above is situated the white, oblique orbicular spot, containing a central gray shade. The submedian nervure is plainly blackish. Median shade blackish, suffused and irregular, lost in the dark median space. Reniform spot white, containing a central gray shade, well sized, unsymmetrical, its defining line broken. The exterior line is black, simple, continuous, dentate, much drawn in below the reniform spot, and forming a particularly deep lobe above the submedian nervure. Subterminal space more or less distinctly whitish below the costa, this color culminating in a very conspicuous white spot, filling the median lobe of the exterior line. The terminal line is whitish, distinct, but somewhat broken, forming two short but evident teeth on the second and third median nervules. The line cuts and divides into two portions the black shades which extend over the terminal and latter part of the subterminal spaces. The usual subapical white dots, and a similar series at the base of the fringe. Posterior wings dark fuscous, becoming lighter and partially translucent at the base; a faint discal dot. The fringes are whitish. Beneath, very uniform in coloration; the anterior wings dark gray; whitish scales line the costa; the posterior wings are whitish, with a distinct discal dot; a common line extends over both wings.

“HABITAT.—Quebec, Canada.

“Kindly lent me for identification by my friend, Prof. F. X. Belanger, of the Université Laval.

“The dark, almost black coloration of the anterior wings contrasting with the four white spots in their central portion is characteristic of the species. Of these spots, two, the orbicular and claviform, are comparatively small and well defined; the remaining two, the reniform and the spot in the lobe of the exterior line, are large and irregular.”

The species of Mr. Grote's lists not referred to in this paper do not belong to *Mamestra*, but are better referred elsewhere.

SPECIES NOT IDENTIFIED.

Mamestra obliviosa Wlk.

1858. Wlk., C. B. M., Lep. Het. xv, 16-3, *Mamestra*.

“Mas: Cinereo-fusca, subtus cinerea; abdomen cinereum subcrisatum; alae anticae lineis subobsoletis denticulatis obscurioribus et albidis, orbiculari et reniformi vix determinatis; posticae cinerae, margine lato fuscescente.”

“Male: Cinereous-brown, cinereous beneath. Abdomen cinereous, slightly crested. Forewings with almost obsolete denticulated darker

brown and whitish lines; orbicular and reniform marks very indistinct, like the lines in color. Hind wings cinereous, with broad brownish borders; fringe of the four wings whitish at the base. Length of the body, 8 lines; of the wings, 18 lines."

"*a.* Rocky Mountains. Presented by the late Earl of Derby."

This description might readily be made to apply to several of our Western species.

Mamestra associans Wlk.

1858. Wlk., C. B. M., Lep. Het. xv, 1633, *Mamestra*.

"Mas: Cinerea; thorax postice nigricante-cinereus, fascia antica interrupta nigra; abdomen rufescens, basi cinereum, fasciculo apicali magno; alæ anticæ rufescentes, costa cinerea nigro notata, linea submarginali alba undulata interrupta, orbiculari obsoleta, reniformi nigra sat parva; posticæ pallide cinereæ, marginali fusciscente, subtus apud costam rufescentes nigro subconspersæ."

"Male: Cinereous, paler beneath. Thorax blackish cinereous hindward, with an interrupted black band in front. Abdomen reddish, cinereous towards the base; apical tuft large. Fore wings reddish, cinereous, and with black marks along the costa; submarginal line white, undulating, interrupted; orbicular mark obsolete, reniform black, rather small, somewhat contracted in the middle. Hind wings pale cinereous, with a brownish marginal line; under side reddish, and slightly speckled with black along the costa. Length of the body, 7 lines; of the wings, 16 lines."

"*a.* East Florida. Presented by E. Doubleday, Esq."

Mamestra septentrionalis Wlk.

1865. Wlk., C. B. Mus., Lep. Het., xxxii, 660.

Mas: Fusca; palpi oblique ascendentes, articulo 3^o longi-conico; abdominis fasciculis apicalis ferrugineo rufus; alæ anticæ nigro conspersæ, striga lata obscuriore orbicularem et reniformem cinereas magnas nigro-marginatas includente; lineis septem e lunulis lunulisque marginalibus nigris, spatio marginali nigricante lineam submarginalem cineream undulatam includente; posticæ cinereæ, fusco marginatæ."

"Male: Brown, cinereous beneath. Palpi obliquely ascending, not rising higher than the vertex; second joint hirsute; third joint elongate conical, about one-fourth of the length of the second. Abdomen brownish cinereous, extending a little beyond the hind wings; apical tuft short, ferruginous red. Femora clothed with long hairs. Fore wings thinly black speckled, with a broad dark brown streak which contains the orbicular and reniform marks; these are cinereous, large, black bordered, and of the usual form; some irregular black lines composed of curves, two near the base, two on the inner side of the orbicular mark, and three exterior, of which the first is interrupted by the

reniform mark; marginal space blackish, including a cinereous undulating submarginal line; marginal lunules black. Hind wings cinereous, very slightly hyaline, brown bordered; discal point and veins brown, marginal line blackish, festooned. Length of the body, 10 lines; of the wings, 20 lines."

"Most allied to *M. insulsa*, from which it may be distinguished by the difference in the orbicular and reniform marks, and in the exterior line of the fore wings."

"a. Vancouver's Island."

Mamestra expulsa Wlk.

1865. Wlk., C. B. M., Lep. Het. xxxii, 661, *Mamestra*.

"Foem: Nigricante-cinerea, nigro conspersa; palpi oblique ascendentes, articulo 3° longo-conico; atæ anticæ lineis tribus nigris angulosis duplicatis, orbiculari et reniformi magnis nigro-marginatis, spatio intermedio nigricante, linea submarginali cinerea angulosa; posticæ, cinereæ fuscescente marginatæ."

"Female: Blackish cinereous, black speckled, cinereous beneath. Palpi obliquely ascending, extending rather beyond the head. Third joint elongate-conical, about one-third of the length of the second. Antennæ very minutely setulose. Abdomen cinereous, extending somewhat beyond the hind wing. Forewings with three double zigzag black lines; first line very near the base; second on the inner side of the orbicular mark, which is large and black-bordered, and has a blackish space between it and the reniform; the latter is broad, black-bordered, on the inner side of the third line; submarginal and marginal lines cinereous, the former zigzag; hind wings cinereous, brownish along the exterior border. Length of the body 9 lines; of the wings 18 lines."

"Allied to *M. insulsa*, but the submarginal line is more undulating and less denticulated."

"a. Vancouver's Island."

Mamestra punctigera Wlk.

1865. Wlk., C. B. M., Lep. Het. xxxii, 661, *Mamestra*.

"Mas: Nigra; palpi vix ascendentes, articulo 2° fimbriato, 3° longi-conico; antennæ dense setosæ; abdomen obscure cinereum, orbiculari et reniformi albido punctatis atro marginatis; posticæ cinereæ, lunula venis fasciaque marginali diffusa fusciscentibus."

"Male: Black, cinereous beneath. Palpi very slightly ascending, extending rather beyond the head; second joint fringed beneath; third elongate-conical, about one-fourth of the length of the second. Antennæ stout thickly setose. Abdomen dark cinereous, extending a little beyond the hind wings. Wings with a whitish line on the base of the fringe. Forewings with whitish points along the costa; orbicular and

reniform marks bordered with deep black, containing whitish points; orbicular almost round; reniform of the usual shape. Hind wings cinereous; lunule, veins, and a diffuse marginal band brownish. Length of the body 9 lines; of the wings 22 lines."

"The pale marginal line of the forewings distinguish it from *M. impulsa*."

"*a.* Vancouver Island."

Mamestra vetustra Wlk.

1865. Wlk., C. B. M., Leg. Het. xxxii, 662, *Mamestra*.

"Foem: Cana; caput rufescente notatum; palpi porrecti, extus nigro notati, articulo 3^o lanceolato; pectus rufescens; alæ anticæ latæ, lineis nonnullis e lunulis indistinctis fuscis, linea basali angulata, liturisque costalibus nigris, orbiculari et reniformi albidis magnis nigro submarginatis; posticæ æneo suffusæ."

"Female: Hoary, dingy beneath. Head with a tranverse reddish mark between the antennæ. Palpi porrect, extending a little beyond the head; second joint pilose, partly black on the outer side; third lanceolate, hardly one-third the length of the second. Pectus reddish. Abdomen extending a little beyond the hind wings. Legs black-speckled; spurs whitish, with a black band; tarsi spinose, their joints black towards the base. Wings broad. Forewings with some brown indistinct lines composed of lunules, and with black marks along the costa; a deeply angular black line near the base; orbicular and reniform marks large whitish, incompletely blackbordered; marginal festoon black. Hind wings with an æneous tinge. Length of the body 10 lines, of the wings 24 lines."

"*a.* Vancouver's Island."

Hecatera strigicollis Wallengr.

1860. Wallengr., Wien. Ent. Monatschr., iv, 170.

"Alis anticis supra albidis, spatio basalis ochraceo fuscoque marmorato, spatio intermedio ferrugineo-fusco, maculis cellulæ 2 ordinariis albis, margineque exteriori extra lineam subterminalem undulatam cano; posticis griseis disco pallidiore; collari ferrugineo, linea nigra transversa margineque canescente. ♂."

California. Mus. Holm. Statura *H. serenæ*.

LIST OF SPECIES OF MAMESTRA.

- | | |
|-------------------------|-----------------------|
| 1. discalis Grt. | 6. insolens Grt. |
| 2. rogenhoferi Mæschl. | <i>arietis</i> Grt. |
| 3. nimbosa Gn. | <i>earina</i> Morr. |
| 4. imbrifera Gn. | 7. leucogramma Grt. |
| 5. purpurissata Grt. | 8. lepidula Smith. |
| var. juncimacula Smith. | 9. determinata Smith. |

LIST OF SPECIES OF MAMESTRA—Continued.

10. *meditata* Grt.
 11. *lustralis* Grt.
 12. *detracta* Wlk.
 clariplena Grt.
 13. *gnata* Grt.
 14. *distincta* Hbl.
 ritis French.
 15. *crotchii* Grt.
 var. *fusculenta* Smith.
 16. *farhami* Grt.
 17. *liquidâ* Grt.
 18. *capsularis* Gn.
 propulsa Wlk.
 19. *vittula* Grt.
 20. *prodeliformis* Smith.
 21. *atlantica* Grt.
 W-latinum † Gn.
 discolor Speyer.
 dissimilis † Butl.
 22. *desperata* Smith.
 23. *canadensis* Smith.
 24. *nevadae* Grt.
 25. *subjancta* G. and R.
 26. *grandis* Boisd.
 libera Wlk.
 27. *invalida* Smith.
 28. *trifolii* Rott.
 chenopodii Fabr.
 albifusa Wlk.
 oregonica Grt.
 major Speyer.
 var. *marmorosa* Bkh.
 29. *u-scripta* Smith.
 30. *rosea* Harv.
 31. *congermana* Morr.
 32. *vindemialis* Gn.
 rubefacta Morr.
 33. *picta* Harv.
 crusta Gn.
 contraria Wlk.
 34. *u-album* Gn.
 35. *eristifera* Wlk.
 lubens Grt.
 rufala † Morr.
 brassica † Grt.
 36. *assimilis* Morr.
 var. *pulverulenta* Smith.
 37. *latex* Gn.
 demissa Wlk.
 38. *passa* Morr.
 39. *adjuncta* Bdv.
 40. *variolata* Smith.
 41. *glacata* Grit.
 42. *minorata* Smith.
 43. *defessa* Grt.
 44. *chartaria* Grt.
 45. *repentina* Morr.
 46. *brachiolum* Harv.
 47. *beanii* Grt.
 48. *legitima* Grt.
 49. *lilacina* Harv.
 illabefacta Morr.
 50. *rugosa* Morr.
 51. *noverca* Grt.
 52. *goodellii* Grt.
 53. *quadrata* Smith.
 54. *obscura* Smith.
 55. *ectypa* Morr.
 bella Grt.
 56. *renigera* Steph.
 herbimacula Gn.
 57. *egens* Wlk.
 stricta Wlk.
 ferrca Grt.
 var. *cinnabarina* Grt.
 58. *spiculosa* Grt.
 59. *circumcincta* Smith.
 60. *olivacea* Morr.
 comis Grt.
 var. *obscurior* Smith.
 61. *rectilinea* Smith.
 62. *vau-media* Smith.
 63. *incurva* Smith.
 64. *4-lineata* Grt.
 65. *marinitincta* Harv.
 66. *laudabilis* Gn.
 indicans Wlk.
 var. *illaudabilis* Grt.
 67. *alboguttata* Grt.
 68. *cuneata* Grt.
 69. *lorea* Gn.
 ligata Wlk.
 dodgei Grt.
 70. *quadrannulata* Morr.
 71. *innexa* Grt.
 72. *longiclava* Smith.
 73. *orbiculata* Smith.
 74. *anguina* Grt.
 75. *vicina* Grt.
 teligera Morr.
 acutipennis Grt.
 76. *pensilis* Grt.
 (unknown to me.)
 77. *vittula* Grt.
 78. *strutina* Grt.
 79. *ferrealis* Grt.
 80. *condita* Gn.
 81. *impolita* Morr.

LIST OF SPECIES OF MAMESTRA—Continued.

- | | |
|---------------------------------|----------------------------|
| 82. <i>dimmocki</i> Grt. | 86. <i>punctigera</i> Wlk. |
| 83. <i>strigicollis</i> Wall. | 87. <i>vetusta</i> Wlk. |
| 84. <i>expulsa</i> Wlk. | 88. <i>obliviosa</i> Wlk. |
| 85. <i>septentrionalis</i> Wlk. | 89. <i>associans</i> Wlk. |

EXPLANATION OF PLATES VIII-XI.

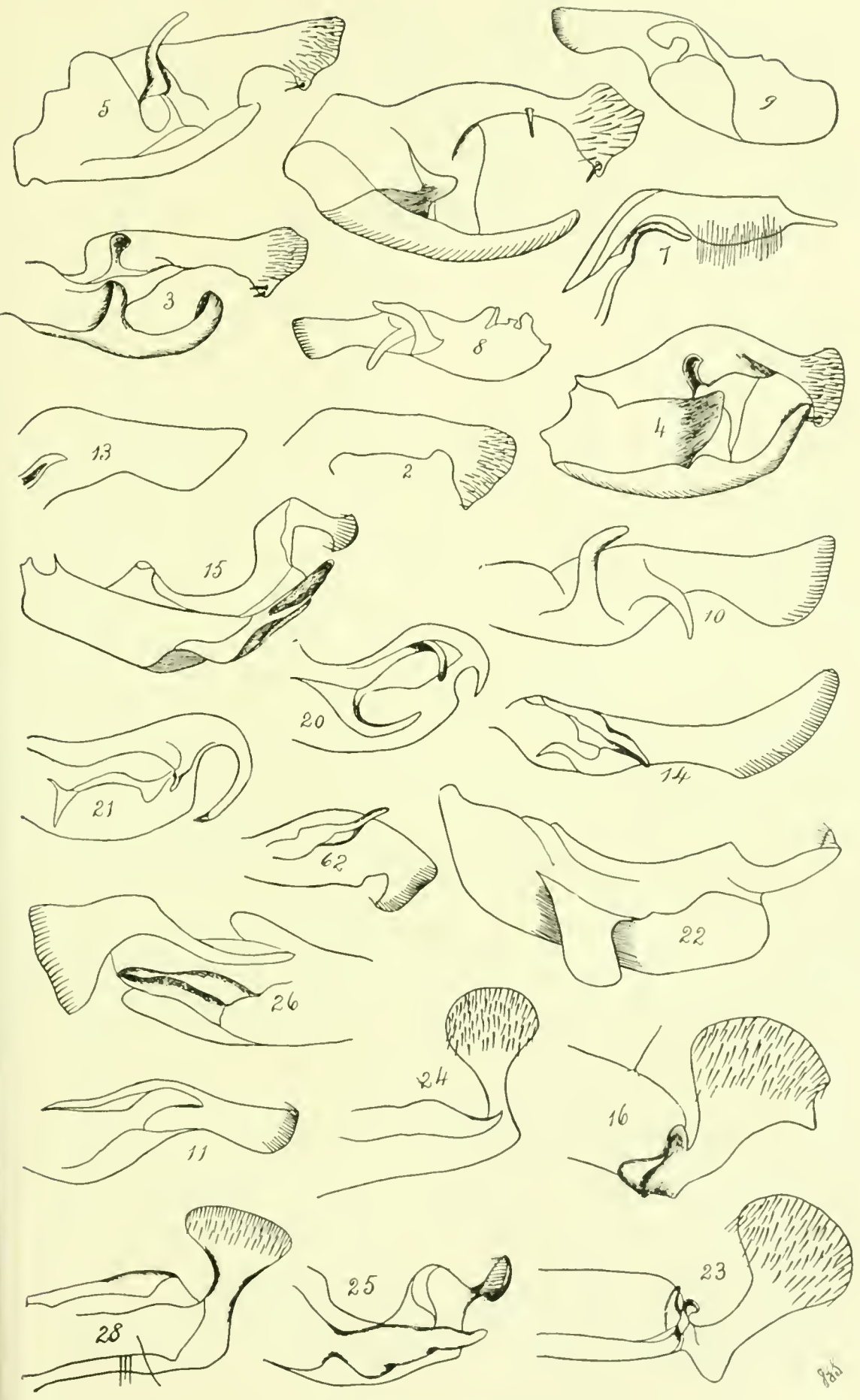
The figures are numbered consecutively, but are not regularly arranged on the plates.

Harpe and clasper of—

1. *M. discalis*.
2. *M. rogenhoferi*.
3. *M. nimbose*.
4. *M. imbrifera*.
5. *M. purpurissata*.
6. *M. insolens*.
7. *M. leucogramma*.
8. *M. determinata*.
9. *M. lepidula*.
10. *M. meditata*.
11. *M. lustralis*.
12. *M. detracta*.
13. *M. gnata*.
14. *M. distincta*.
15. *M. crotchii*.
16. *M. liquida*.
17. *M. capsularis*.
18. *M. vittula*.
19. *M. prodeniformis*.
20. *M. atlantica*.
21. *M. canadensis*.
22. *M. desperata*.
23. *M. subjuncta*.
24. *M. grandis*.
25. *M. trifolii*.
26. *M. desperata*.
27. *M. rosea*.
28. *M. congermana*.
29. *M. vindcmialis*.
30. *M. picta*.
31. *M. cristifera*.
32. *M. assimilis*.
33. *M. latex*.

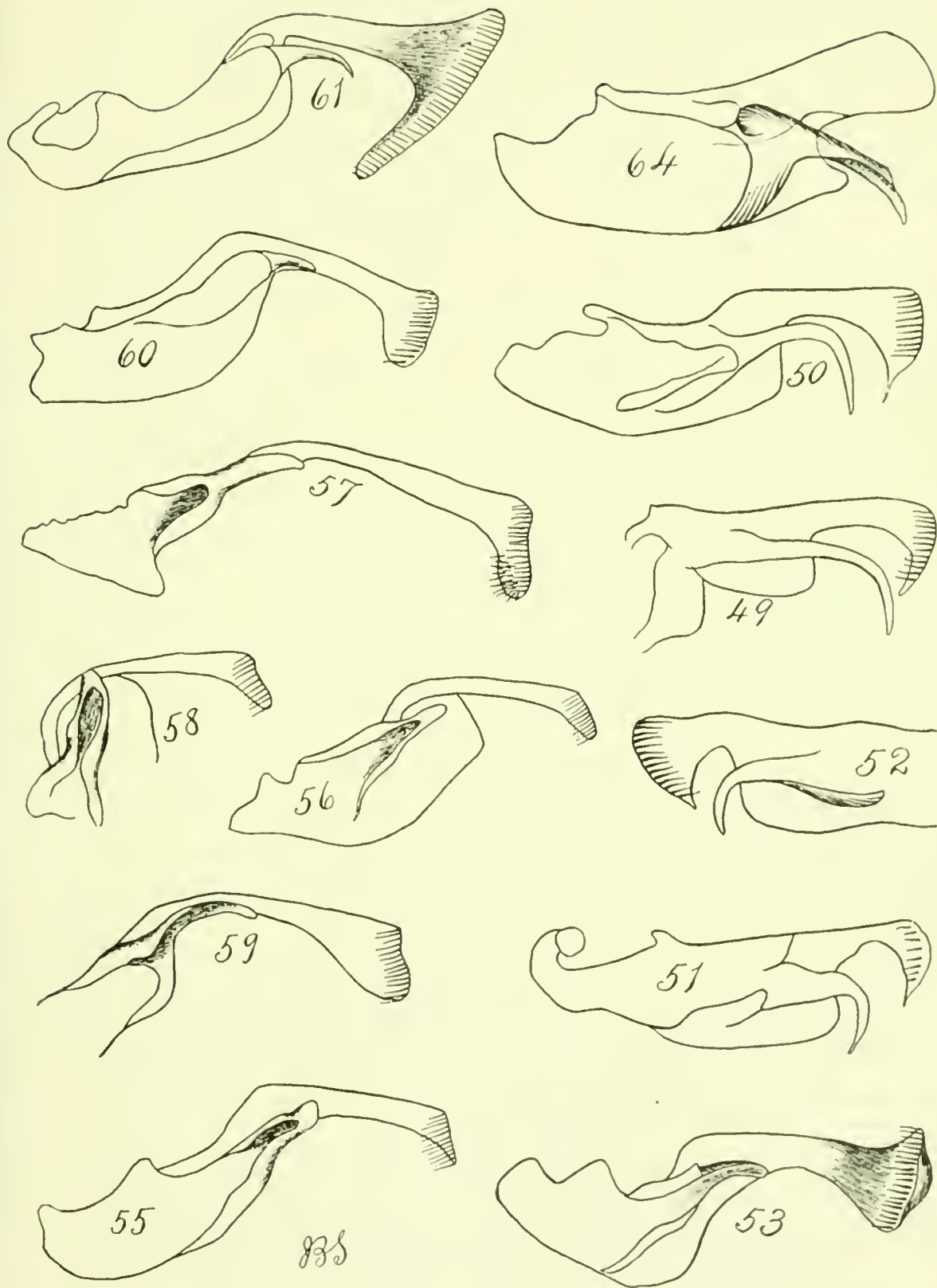
Harpe and elasper of—

34. *M. adjuncta*.
35. *M. variolata*.
36. *M. glaciata*.
37. *M. minorata*.
38. *M. chartaria*.
39. *M. brachiolum*.
41. *M. legitima*.
42. *M. lilacina*.
43. *M. rugosa*.
44. *M. noverca*.
45. *M. goodellii*.
46. *M. quadrata*.
47. *M. obscura*.
48. *M. ectypa*.
49. *M. renigera*.
50. *M. egens*.
51. *M. spiculosa*.
52. *M. circumcincta*.
53. *M. olivacea*.
54. *M. incurva*.
55. *M. 4-lineata*.
56. *M. marinitincta*.
57. *M. laudabilis*.
58. *M. alboguttata*.
59. *M. cuneata*.
60. *M. lorea*.
61. *M. quadrannulata*.
62. *M. innexa*.
63. *M. anguina*.
64. *M. longiclava*.
65. *M. vicina*.
66. *M. pensilis*.

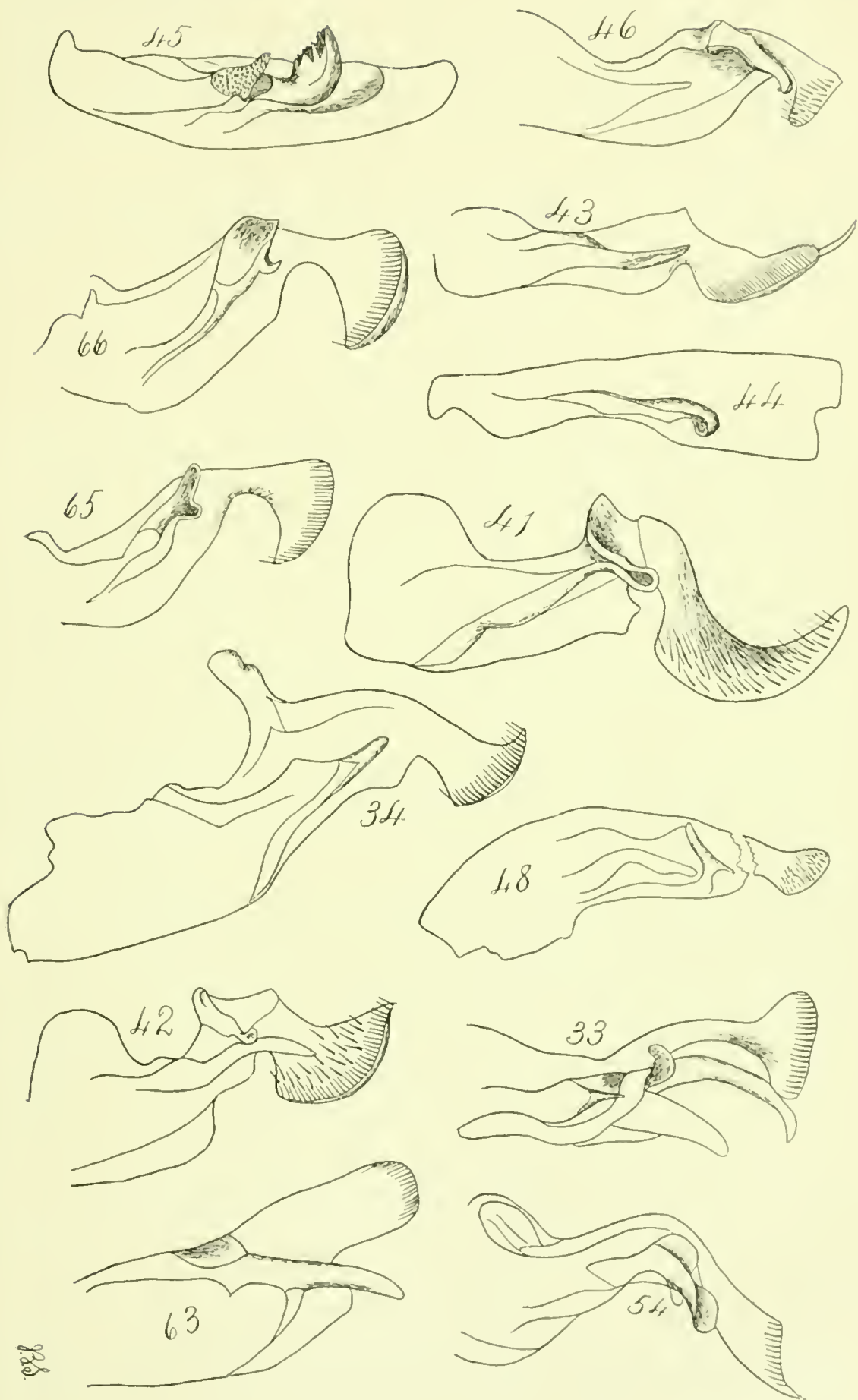


GENITAL STRUCTURE OF MAMESTRA.

865



GENITAL STRUCTURE OF MAMESTRA.



GENITAL STRUCTURE OF MAMESTRA.

