

# THE AMERICAN MOTHS OF THE GENUS *DIATRAEA* AND ALLIES

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## INTRODUCTION

The genus *Diatraea* contains a considerable number of species of moths, and is distributed throughout the world, especially in the tropical portions. The larvae are borers in the stems of various grasses, and several species have attracted attention from an economic point of view by their depredations upon sugar cane and Indian corn.

We consider here the American species only; but we have not confined ourselves strictly to the limits of the genus *Diatraea*. This genus belongs to the family Pyralidae, subfamily Crambinae, and to that section of the subfamily in which vein 7 of the fore wing arises from the discal cell. Among the genera so characterized are some in which vein 11 of the fore wing anastomoses with vein 12, which group includes *Diatraea*; we herewith treat this whole group, although recognizing that it is not a natural one, the anastomosing of veins 11 and 12 having occurred twice in different lines of descent. In addition to these, we include observations on certain more distantly related forms whose position requires correcting, or the larvae of which have been reported from cane or corn.

Ten genera and 56 species are treated in this paper, of which 5 genera and 12 species are described as new. Ten names are added to the synonymy and three species described in *Diatraea* are unrecognized and omitted from our keys. They are briefly treated at the end of the paper. Five species which have been described in or referred to *Diatraea* we are transferring to other genera.

The genera allied to *Diatraea* may be separated as follows:

KEY TO THE GENERA HERE CONSIDERED

- Fore wing with vein 7 from cell; vein 11 anastomosing with vein 12
1. Ocelli absent ----- 2
  - Ocelli present ----- 6
  2. Vein 10 stalked with veins 8-9 ----- *Iesta* Dyar (p. 4) 4
  - Vein 10 from cell ----- 3
  3. Fore wing with veins 4-5 stalked; antennae of male pectinate.
    - Trinidadia* Dyar and Heinrich (p. 5) 5
    - Fore wing with veins 4-5 not stalked; male antennae simple ----- 4
  4. Hind wing with veins 4-5 connate or short stalked ----- 5
  - Hind wing with veins 3, 4, and 5 separate at end of cell.
    - Hemiplatytes* Barnes and Benjamin (p. 28) 28
  5. Labial palpi short, not exceeding the maxillary.
    - Xanthopherne* Dyar and Heinrich (p. 29) 29
    - Labial palpi very long ----- *Diatraea* Guilding (p. 6) 6
  6. Hind wing with vein 6 arising below apex of cell, remote from veins 7-8.
    - Silveria* Dyar (p. 31) 31
    - Hind wing with vein 6 arising from apex of cell, close to veins 7-8 ----- 7
  7. Wings trigonate, normal ----- *Haimbachia* Dyar (p. 32) 32
  - Wings long and narrow ----- *Alamogordia* Dyar and Heinrich (p. 38) 38

GENITALIC CHARACTERS

The genitalia of the Crambinae offer excellent characters for the separation of species and to some extent (especially in the males) of genera. The generic characters, however, are more in habitus than definable structural differences; and are further obscured by the fact that in the genus *Chilo* most of the types of the other allied genera are repeated. We are unable to give any genitalic description that will hold for all the members of the *Diatraea* group and exclude genera with veins 11 and 12 of fore wing free or with 7 stalked with 8 and 9. The following general characters apply to the Crambinae as a whole:

Male genitalia with vinculum enlarged ventrally and strongly chitinized. Harpe simple and elongately triangular or divided and with costa produced as a free strongly chitinized arm, lobe, or hook; costa most strongly chitinized part; cucullus not differentiated from median area, both areas weakly chitinized and finely haired; sacculus much reduced, rather weakly chitinized and without hair tufts or strong spines, never produced as a free arm. Uncus strongly chitinized, stout, broad at base; articulation to tegumen strongly marked. Gnathos strongly chitinized; closely hinged to base of uncus; movable; produced into a strong hook or tongue; never divided. Uncus and gnathos, together, cheliform in appearance. Socii absent. Transtilla absent; or represented only by its divided

elements (slight projections from costal bases of harpes). Anellus a flattened or semitubular plate, often with strongly developed lateral arms and sometimes a central projection; sometimes hinged to harpes (*Argyria*, *Silveria*); frequently divided, with one element represented as a triangular or oval plate (juxta) lying between the bases of the sacculi of the harpes. Aedoeagus straight or but slightly bent, moderately long; with slight blind sack; cornuti usually present, variously developed but never deciduous.

Female genitalia with ductus bursae normally straight; rarely sigmoid (*Ommatopteryx*); short or moderately long, and chitinized at or toward genital opening. Ovipositor never aculeate, rarely telescopic. Genital plate when present simple, often absent.

In preparing slides of crambid male genitalia it is usually necessary to dissect the several parts and mount them in different positions. The characters of harpe, vinculum, and anellus show best, as a rule, spread and viewed ventrally; while the tegumen, uncus, and gnathos must often be viewed laterally or from a three-quarters projection to show distinguishing characters to the best advantage. We have therefore figured the male organs as dissected rather than complete; giving such views of the several parts as will best display their characters. The peculiarities of position in each case are stated in the explanation of plates.

In description of the parts we have followed the terminology proposed by Busck and Heinrich<sup>1</sup> and used by them in previous papers dealing with lepidopterous genitalia.

#### LARVAE

Only six of the 56 species here treated are represented by larvae in the National Collection. These are all in the genus *Diatraea* (*saccharalis*, *zeacolella*, *canella*, *grandiosella*, *magnifactella*, *lineolata*); and two of these (*magnifactella* and *lineolata*) are of doubtful determination. It is not possible therefore to give anything in the way of a larval classification; nor even a satisfactory specific description which will certainly identify any of the represented species. In another place<sup>2</sup> the junior author has given descriptions of the larvae of our two economically most important North American species (*saccharalis* and *zeacolella*); but these descriptions will only serve to distinguish the forms described from each other. The various *Diatraea* larvae vary so little from species to species and the seasonal dimorphism is so marked within each species that it is necessary to have more material before specific characters can be determined.

<sup>1</sup> Proc. Ent. Soc. Washington, vol. 23, June, 1921, pp. 145-152.

<sup>2</sup> Bull. 746. U. S. Dept. Agr., 1919.

## DESCRIPTIONS OF GENERA AND SPECIES

## Genus IESTA Dyar

*Iesta* DYAR, Proc. Ent. Soc. Washington, vol. 11, 1909, p. 29.—FORBES, Journ. New York Ent. Soc., vol. 28, 1920, p. 224.

*Diatraerupa* SCHAUS, Ann. Mag. Nat. Hist., ser. 8, vol. 11, 1913, p. 240. (Type *guapilella* Schaus.)

Essentially as in *Diatraea*, differing only in the stalking of vein 10 in fore wing. Front flat, smooth. Labial palpi porrect and down-curved, extending over twice the length of the head. No ocelli. Antennae filiform, somewhat thicker in the male than the female. Fore wing with vein 3 from long before end of cell; 4 and 5 shortly stalked; 6 below apex of cell; 7 at apex; 8-10 stalked from before apex of cell. Hind wing with vein 3 before end of cell; 4 and 5 rather long-stalked; the cross-vein inwardly strongly oblique; 6 from apex of cell, running close to the stalk of 7 and 8, which separate only near apex of wing.

The genitalia offer no generic characters to distinguish from *Diatraea*.

Male with vinculum elongately triangular. Harpe undivided; elongately triangular; costa with a large, smooth basal projection, excavate beyond, only moderately chitinized.

Female with ductus bursae short, weakly chitinized in type, more strongly so in other species. Bursa large, elongate; without signum. Ovipositors and supporting rods normal.

Abdomen of male with pair of lateral tufts on second segment.

*Genotype*.—*Iesta lisetta* Dyar.

## KEY TO THE SPECIES OF IESTA

- |   |                                   |
|---|-----------------------------------|
| 1. Fore wing whitish straw color with two parallel outer lines, discal and terminal dots..... | <i>lisetta</i> Dyar (p. 4)        |
| Fore wing rusty-brown shaded.....   | 2                                 |
| 2. A distinct outer line.....   | <i>morobe</i> Dyar (p. 5)         |
| This line obsolete.....   | <i>gaupilella</i> (Schaus) (p. 5) |

## IESTA LISETTA Dyar

Figures 28, 47

*Iesta lisetta* DYAR, Proc. Ent. Soc. Washington, vol. 11, 1909, p. 29.—BARNES and McDONNOUGH, List Lepid. Bor. Amer., No. 5435, 1917.

*Iesta cancellalis* DYAR, Proc. U. S. Nat. Mus., vol. 47, 1914, p. 320.

*Iesta adulcia* DYAR, Proc. U. S. Nat. Mus., vol. 51, 1916, p. 37.

A small species with distinct *Diatraea* markings; the larva and life history unknown. We are unable to distinguish *cancellalis* from Panama or *adulcia* from southern Mexico and Guatemala from *lisetta* from southern Florida, and have consequently placed them together as one species.

Genitalia figured from specimens from Lakeland, Fla. (male), and Orlanda, Fla. (female).

*Types*.—In National Collection.

*Type localities*.—Dade City, Fla. (*lisetta*); Corozal, Canal Zone, Panama (*cancellalis*); Teapa, Tabasco, Mexico (*adulcia*).

#### IESTA MOROBE Dyar

##### Figure 46

*Iesta morobe* DYAR, Proc. U. S. Nat. Mus., vol. 51, 1916, p. 37.

Only the female type is before us, differing from *guapilella* in the presence of a distinct outer line.

Male, larva and life history unknown. This may prove to be a varietal form of *guapilella* with which it agrees in genitalia.

Genitalia of type figured.

*Type*.—In National Collection.

*Type locality*.—Teapa, Tabasco, Mexico.

#### IESTA GUAPILELLA (Schaus)

*Diatraerupa guapilella* SCHAUS, Ann. Mag. Nat. Hist., ser. 8, vol. 11, 1913, p. 240.

Only the female type is before us.

Male, larva and life history unknown.

Female genitalia similar to those of *lisetta* except for a stronger chitinization of the ductus and neck of bursa.

*Type*.—In National Collection.

*Type locality*.—Guapiles, Costa Rica.

#### TRINIDADIA, new genus

Front slightly bulging, smooth. Labial palpi porrect and down-curved, extending over twice the length of the head. No ocelli. Maxillary palpi triangularly dilated with scales. Antennae long, pectinate-pubescent in the male, filiform in the female. Fore wing with vein 3 from well before end of cell; 4 and 5 stalked; 6 well below apex of cell; 7 from apex of cell; 8 and 9 long stalked from apex; 10 from before the apex; 11 anastomosing with 12. Hind wing with vein 3 from well before end of cell; 4-5 long stalked; 6 from apex of cell; 7 anastomosing with 8.

The genitalia show no characters to distinguish the genus from *Diatraea* or *Iesta*. The genitalia of the type, however, easily distinguish it specifically from anything in either of these genera; and the hind wing venation and strongly pectinate antennae readily separate the genus.

*Genotype*.—*Diatraea minimifacta* Dyar.

## TRINIDADIA MINIMIFACTA (Dyar)

Figures 29, 48

*Diatraea minimifacta* DYAR, Ent. News, vol. 22, 1911, p. 202.

A small species with *Diatraea* markings. The males have the fore wings whitish, with the usual lines well relieved but running into a brown shade costally where they seem to join. In the female the fore wing is heavily overspread with brown.

*Expanse*.—Male, 14–17 mm.; female, 16–19 mm.

Three males and three females are before us; from Trinidad; from St. Jean and Cayenne, French Guiana.

The larva and life history are unknown.

Genitalia figured from specimens from the type locality.

Abdomen of male without tufts on second joint.

*Type*.—In National Collection.

*Type locality*.—Trinidad, British West Indies.

## Genus DIATRAEA Guilding

*Diatraea* GUZDING, Trans. Soc. Encour. Arts, vol. 46, 1832, p. 143.—ZELLER, Hor. Ent. Ross., vol. 16, 1881, p. 161.—HAMPSON, Proc. Zool. Soc. London, vol. 60, 1895, p. 953.—FERNALD, Cramb. N. Amer., Bull. Mass. Agr. Coll., 1896, p. 73.—DYAR, Ent. News, vol. 22, 1911, pp. 199–297.—FORBES, Journ. New York Ent. Soc., vol. 28, 1920, p. 224; Mem. 68, Cornell Univ., Agr. Exp. Sta., 1923, p. 590.

Front either flat and smooth, bulging, tuberculate or strongly cone shaped. No ocelli. Labial palpi porrect and down-curved, smooth, beaklike, extending over twice the length of head. Maxillary palpi triangularly dilated with scales. Antennae somewhat thickened and minutely pubescent in the male, filiform in the female. Fore wing with vein 3 before angle of cell; 4 and 5 separate at origin; 6 below apex of cell; 7 at apex; 8–9 stalked from before end of cell; 10 arising shortly basally thereof; 11 anastomosing with 12. Hind wing with veins 4–5 connate or very shortly stalked from the sharp angle of the cell; 6 from apex of cell, close to the stalk of 7–8.

Male genitalia with vinculum rounded or triangular. Harpe undivided, elongately triangular; costa simple or with variously modified basal or subbasal (or both basal and subbasal) projections. Uncus normally triangular, with apex pointed or broadened; sometimes greatly broadened. (Figs. 15, 22.) Gnathos normally triangular (beak like), with more or less spining toward apex; greatly broadened toward apex only when uncus is similarly modified. Tegumen often with basal or subbasal lateral lobes. Anellus a flattened or but slightly curved plate with well-developed lateral arms, and sometimes with a central projection; divided, with one element a small triangular or oval plate (juxta) lying between the bases of

sacculi of harpes; never hinged to vinculum or rigidly attached to harpes.

Female genitalia with ductus bursae very short, chitinized. Bursa copulatrix large; chitinized at juncture with ductus (heavily so in a few species), the chitization covering upper half of bursa in *strigipennella* Dyar and the oriental *venosata* Walker; in the former there is also an internal median girdle of serrate chitinous ridges (fig. 23); without signum. Ovipositor and supporting rods normal.

Abdomen of male with or without a pair of lateral hair tufts (*X*, fig. 1) on caudal margin of second segment.

*Genotype*.—*Phalaena saccharalis* Fabricius.

## KEY TO THE SPECIES OF DIATRAEA ON COLORATION AND STRUCTURE OF THE FRONT

- |  |   |
|--|---|
| 1. Fore wing straw-colored or brownish with two oblique lines, more distinct in the male than the female; veins not lined..... | 2   |
| Fore wing straw-colored, brownish, or gray; veins conspicuously lined; cross marks absent or subordinated.....                 | 15  |
| 2. Oblique lines dotted, subparallel.....  | 3   |
| Oblique lines shaded or obscurely rounded and confluent costally.....  | 12  |
| 3. Front without a tubercle.....   | 4   |
| Front with a tubercle.....   | 8   |
| 4. Large; light straw-colored; dots of lines distinctly separated.   |   |
| instructella Dyar (p. 10)  |   |
| Smaller; brownish straw-colored; dots of lines not distinctly separated..  | 5   |
| 5. Hind wing nearly white.....   | 6   |
| Hind wing fuscous brown shaded with traces of outer line.....  | 7   |
| 6. Male without hair tufts on the tibiae.....  | saccharalis (Fabricius) (p. 11)           |
| Male with hair tufts on hind tibiae.....   | {pedibarbata Dyar (p. 12)                 |
|  | {? incomparella Dyar and Heinrich (p. 13) |
| 7. Hind wing paler than fore wing.....   | zeacolella Dyar (p. 19)                   |
| Hind wing as dark as fore wing.....  | postlineella Schaus (p. 20)               |
| 8. Fore wing gray-brown, reddish suffused.....   | 9   |
| Fore wing yellow-brown.....  | 10  |
| 9. Wing broad, marks distinct; inner line less distinct than outer.  |   |
| canella Hampson (p. 20)  |   |
| Wing narrow; marks blurred.....  | {amnemonella Dyar (p. 21)                 |
|  | {castrensis Dyar and Heinrich (p. 28)     |
| 10. Large; male 30–33 mm.; hind wing darker than fore wing.  |   |
| magnifactella Dyar (p. 14)   |   |
| Smaller; male 17–28 mm.; hind wing paler than fore wing.....   | 11  |
| 11. Male with inner line blotched below end of cell.....   | guatemalaella Schaus (p. 14)              |
| Male with inner line not so blotched.....  | tabernella Dyar (p. 15)                   |
| 12. Front without a tubercle.....  | 13  |
| Front with a tubercle.....   | 14  |
| 13. Large; female 29 mm.....   | centinens Dyar (p. 15)                    |
| Smaller; female 16–18 mm.....  | gaga Dyar (p. 18)                         |
| 14. Outer line denticulate, leaving clear yellow area at tornus.   |   |
| maronialis Schaus (p. 23)  |   |
| Outer line shaded; no discolorous tornal area.....   | umbrialis Schaus (p. 23)                  |
| 15. Front without a tubercle.....  | 16  |
| Front with a tubercle.....   | 18  |
| 16. Ground color whitish; veins strongly contrasted.....   | 17  |
| Ground color brown; veins not strongly contrasted.....   | evanescens Dyar (p. 18)                   |

17. Small; 15-18 mm.; discal dot distinct.....	<i>venosalis</i> (Dyar) (p. 22)	
Large; 25-36 mm.; discal dot not contrasted.....	<i>grandiosella</i> Dyar (p. 25)	
18. Dotted cross lines present.....		19
Cross lines absent.....		20
19. Cross lines almost normal, though dominated by the vein linings.		
	{ <i>fuscella</i> Schaus (p. 22)	
	{ <i>indigenella</i> Dyar and Heinrich (p. 13)	
Cross lines formed by intensified vein-streaks....	<i>bellifactella</i> Dyar (p. 26)	
20. Ground color yellow or yellow-brown.....		21
Ground color grayish.....	{ <i>strigipennella</i> Dyar (p. 27)	
	{ <i>cayennella</i> Dyar and Heinrich (p. 27)	
	{ <i>anathericola</i> Dyar and Heinrich (p. 21)	
21. Markings rather contrasted and mottled.....	{ <i>pallidostricta</i> Dyar (p. 16)	
	{ <i>schausella</i> Dyar and Heinrich (p. 24)	
	{ <i>busckella</i> Dyar and Heinrich (p. 16)	
Markings generally uniform.....		22
22. Ground color light yellow.....	{ <i>lineolata</i> (Walker) (p. 24)	
	{ <i>moorella</i> Dyar and Heinrich (p. 17)	
	{ <i>muellerella</i> Dyar and Heinrich (p. 25)	
Ground color dark brownish shaded.....	<i>angustella</i> Dyar (p. 17)	

## KEY TO THE SPECIES OF DIATRAEA ON CHARACTERS OF THE GENITALIA—MALES

1. Tegumen with lateral lobes.....		2
Tegumen without lateral lobes.....		7
2. Harpe with knob-like projection from base of costa.....		3
Harpe without costal projection.....	<i>evanescens</i> Dyar (p. 18)	
3. Lateral lobes with apices broadly rounded.....		4
Lateral lobes with apices pointed.....		5
Lateral lobes with apices truncate.....	<i>magnifactella</i> Dyar (p. 14)	
4. Lateral lobes broad, as broad as long.....	<i>saccharalis</i> (Fabricius) (p. 11)	
Lateral lobes narrow, longer than broad.....	<i>tabernella</i> Dyar (p. 15)	
5. Lateral lobes subtriangular and bluntly pointed.		
	<i>busckella</i> Dyar and Heinrich (p. 16)	
Lateral lobes triangular and rather sharply pointed.....		6
6. Basal costal lobe of harpe finely scobinate.....	{ <i>angustella</i> Dyar (p. 17)	
	{ <i>moorella</i> Dyar and Heinrich (p. 17)	
Basal costal lobe of harpe coarsely scobinate....	<i>guatemalaella</i> Schaus (p. 14)	
Basal costal lobe of harpe somewhat roughened, but not scobinate.		
	<i>pedibarbata</i> Dyar (p. 12)	
7. Anellus with well developed central projection.....		8
Anellus without central projection.....		11
8. Uncus bilobed and with broadened apex.....	<i>bellifactella</i> Dyar (p. 26)	
Uncus beak-like, with apex pointed.....		9
9. Central projection of anellus finely spined; a single projection from costa of harpe.....	<i>strigipennella</i> Dyar (p. 27)	
Central projection of anellus smooth; a double projection from costa of harpe.....		10
10. Hook-like projection from extreme base of costa of harpe, broad, flattened and serrate.....	<i>cayennella</i> Dyar and Heinrich (p. 27)	
Hook-like projection from base of costa, narrow, rounded and smooth		
	<i>castrensis</i> Dyar and Heinrich (p. 28)	
11. Lateral arms of anellus greatly broadened toward apices.		
	<i>lineolata</i> (Walker) (p. 24)	
Lateral arms of anellus not broadened toward apices.....		12



12. Lateral arms with subapical spur.....	13
Lateral arms without subapical spur.....	15
13. Apex of uncus broadened.....	<i>grandiosella</i> Dyar (p. 25)
Apex of uncus bluntly pointed.....	14
14. Gnathos as long as uncus; with a strong inner spur before apex	
.....	<i>muellerella</i> Dyar and Heinrich (p. 25)
Gnathos shorter than uncus; without inner spur	
.....	<i>schausella</i> Dyar and Heinrich (p. 24)
15. Harpe with a smooth digitate, subbasal projection from costa.....	16
Harpe without subbasal projection from costa.....	17
16. Costal projection of harpe over three times as long as broad.	
.....	{ <i>canella</i> Hampson (p. 20)
.....	{ <i>anathericola</i> Dyar and Heinrich (p. 21)
Costal projection of harpe less than twice as long as broad.	
.....	<i>amnemonella</i> Dyar (p. 21)
17. Gnathos decidedly broadened toward apex.....	<i>fuscella</i> Schaus (p. 22)
Gnathos terminating in a strong, up-curved hook.....	18
Gnathos beak-like (slender and tapering to extremity).....	19
18. Uncus with lateral flaps and dilated at apex.....	<i>zeacolella</i> Dyar (p. 19)
Uncus without lateral flaps and bluntly pointed at apex.	
.....	<i>postlineella</i> Schaus (p. 20)
19. Harpe with a slight triangular projection from base of costa.	
.....	<i>maronialis</i> Schaus (p. 23)
Harpe without triangular projection from base of costa.....	20
20. Gnathos with little or no spining near apex.....	<i>gaga</i> Dyar (p. 18)
Gnathos with appreciable spining near apex.....	<i>venosalis</i> (Dyar) (p. 22)

## FEMALES

1. Genital opening with a chitinous shield projecting from its lower margin, or a strong chitinization in the depressed area immediately behind it, or with genital opening itself greatly widened.....	2
Genital opening otherwise; sometimes with a thin broken ring about mouth, or with lateral edges of mouth very slightly raised and chitinized, but normally simple; genital opening of normal size.....	12
2. Genital opening greatly widened.....	<i>guatemalaella</i> Schaus (p. 14)
Genital opening of normal size.....	3
3. Bursa copulatrix with half of one side toward ductus strongly chitinized and with an internal median girdle of serrate ridges.	
.....	<i>strigipennella</i> Dyar (p. 27)
Bursa copulatrix normal (with strong chitinizations absent or in neck only).....	4
4. Area immediately back of genital opening unpigmented and weakly chitinized.....	5
Area immediately back of genital opening darkly pigmented and strongly chitinized.....	9
5. On each side of genital opening, a saucer-like chitinized depression the posterior edge of which is raised into a roughened ridge.	
.....	{ <i>saccharalis</i> (Fabricius) (p. 11)
.....	{ <i>pallidostricta</i> Dyar (p. 16)
.....	{ <i>tabernella</i> Dyar (p. 15)
.....	{ <i>incomparella</i> Dyar and Heinrich (p. 13)
.....	{ <i>angustella</i> Dyar (p. 17)
Area on each side of genital opening flattened or, if slightly depressed, without the raised posterior ridge.....	6



Female genitalia with a shallow very slightly chitinized depression on each side of genital opening, forming a slight shield in front of genital opening. Figured from type.

No male is before us, only the single female type being known.

The life history is unknown.

*Type*.—In National Collection.

*Type locality*.—Popocatepetl Park, Mexico (8–10,000 feet).

DIATRAEA SACCHARALIS (Fabricius)

Figures 1, 2, 54

*Phalaena saccharalis* FABRICIUS, Ent. Syst., vol. 3, pt. 2, 1799, p. 238.

*Chilo obliteratellus* ZELLER, Mon. Chil. et Cramb., 1863, p. 8.

*Crambus leucaniellus* WALKER, Cat. Lepid. Heter. Brit. Mus., pt. 27, 1863, p. 161.

*Crambus lineosellus* WALKER, Cat. Lepid. Heter. Brit. Mus., pt. 27, 1863, p. 162.

*Chilo comparellus* FELDER, Reise Novara, Lepid., 1874, pl. 137, fig. 5.

*Chilo erambidoides* GROTE, Can. Ent., vol. 12, 1880, p. 15.

*Diatraea saccharalis* (Fabricius) HAMPSON, Proc. Zool. Soc. London, 1895, p. 953.—FERNALD, in Dyar List, Bull. 52, U. S. Nat. Mus., No. 4624, 1903.—BARNES and McDUNNOUGH, List Lepid. Bor. Amer., No. 5436, 1917.—FORBES, Journ. New York Ent. Soc., vol. 28, 1920, p. 224.

*Diatraea saccharalis grenadensis* DYAR, Ent. News, vol. 22, 1911, p. 200.

*Diatraea pedidocta* DYAR, Ent. News, vol. 22, 1911, p. 201.

*Diatraea saccharalis crambidoides* (Grote) HOLLOWAY, Journ. Agr. Res., vol. 6, 1916, p. 621.—HOLLOWAY and LOFTIN, U. S. Dept. Agr., Bull. No. 746, 1919 (Bibliography).

Size variable. Forewing yellowish brown, frequently more brown than yellow, especially in the male; lines generally distinct in both sexes, the outer dotted, the inner bent, parallel; discal dot and terminal dots blackish. Hind wing sordid brownish in the male, white in the female. Front gently bulging, without tubercle. Hind tibia of male with a slight whitish tuft of hairs.

*Expanse*.—Male, 18–28 mm.; female, 27–39 mm.

Male genitalia with lateral lobes rising from above base of tegumen; lobes broad and rounded (nearly as broad as long). Harpe with a densely scobinate knoblike projection from base of costa. Uncus with apex pointed. Gnathos strongly spined for half its length from apex. Lateral arms of anellus with a few faint scattered scobinations near their apices, otherwise simple; moderately long. Penis with a single strong cornutus. Figured from reared specimen from Baton Rouge, La.

Female genitalia with a saucerlike chitinous depression on each side of genital opening, roughened above and fusing beneath to form a centrally and irregularly excavate shield in front of genital opening. Ductus bursae broad and chitinized. Bursa moderately

large, about as broad as long. Figured from reared specimen from Audubon Park, La.

Abdomen of male with a pair of hair tufts on second segment.

Well distributed throughout tropical America from the Gulf coast of United States to Mexico and Argentina, including the Antilles. We are unable to distinguish any racial forms. The above synonymy is taken from Hampson in respect to the Walker, Zeller, and Felder species. This is a well-known enemy of the sugar cane in the larval stage.

The Holloway and Loftin bulletin, cited above, gives a complete account of the insect, with figures and detailed descriptions. In that paper there is an error in the larval description and the figures (pl. 4) of the head capsule of *saccharalis* and *zeacolella* for which the present junior author (Heinrich) is responsible, and which we would correct here. The frontal punctures on the epicranium are described as "well separated; distance between punctures considerably greater than distance from puncture ( $F^a$ ) to frontal seta ( $F^1$ )"; and the figures of the head capsules of both *saccharalis* and *zeacolella* show them so. In reality the punctures lie very close together and immediately between the frontal setae in all species of *Diatraea*.

*Chilo crambidoides* Grote, which we retain here as a synonym, will doubtless prove to be actually an earlier name for *Diatraea zeacolella* Dyar. However, we have not examined the type.

*Types*.— ——— (*saccharalis*); Vienna Museum (*obliteratellus*); British Museum (*leucaniellus*, *lineosellus*); Tring Museum (*comparellus*); National Collection (*pedidocla*); ——— (*crambidoides*).

*Type localities*.—"Americae meridionalis" (*saccharalis*); Brazil (*obliteratellus*); San Domingo (*leucaniellus*); Honduras (*lineosellus*); Bogota, Colombia (*comparellus*); Kansas (*crambidoides*); Cordoba, Mexico (*pedidocla*).

*Food plants*.—Sugar cane, corn, broom corn, Kafir corn, Milo maize, Sorghum (*Sorghum halepense*), Soudan grass (*Andropogon sorghum soudanensis*), Para grass, vitiver (*Andropogon muricatus*), feather grass (*Lectochloa mucronota*), rice (?).

#### DIATRAEA PEDIBARBATA Dyar

##### Figure 4

*Diatraea pedibarbata* DYAR, Ent. News, vol. 22, 1911, p. 202.

A medium-sized species. Fore wing brownish straw, rather darkly shaded; veins faintly lined in brown; transverse lines dotted as in allies, the inner subcontinuous; discal dot small. Hind wings in male lightly dusky shaded. Front bulging, smooth, without tubercle. Hind tibia in male with a large blackish brown shaded hair tuft.

*Expanse*.—Male, 22–24 mm.

Male genitalia with lateral lobes of tegumen triangular and bluntly pointed. Basal projection from costa of harpe, large, irregular, roughened, but not scobinate or dentate. Gnathos spined for half its length from apex. Arms of anellus smooth.

Female genitalia similar to those of *instructella*, except that bursa is longer.

Two males only before us, the type and one other specimen, the latter from Platanon Skeldon, British Guiana, October, 1914 (H. W. B. Moore). Also five females, doubtless referable here, from French Guiana (Dognin Collection).

Mr. Moore's specimen was bred from a larva in sedge. We have no further data on the life history.

*Type*.—In National Collection.

*Type locality*.—St. Laurent, Maroni River, French Guiana.

*Food plant*.—*Cyperus* species.

#### DIATRAEA INDIGENELLA, new species

Figure 51

Similar in general appearance to *fuscella*; larger; lighter in color, brownish straw; the markings narrower and less contrasted. Hind wings in the female, brown. Front with a pointed tubercle.

*Expanse*.—Female, 25–38 mm.

Female genitalia similar to those of *continens* and *instructella*; distinguished by the strong chitinous ring about the neck of bursa.

Described from female type and four female paratypes, all from the type locality, 1895 and 1897 (Dognin Collection).

The life history is unknown.

*Type*.—Cat. No. 29,426, U.S.N.M.

*Type locality*.—Popayán, Colombia.

#### DIATRAEA INCOMPARELLA, new species

A medium-sized species similar to *rufinella*, but with the fore wing of a bright yellowish brown straw; veins faintly dark lined; discal dot small or absent; small terminal black dots between the veins. Hind wing white (female). No males are before us, but it is probable that the wing markings are more distinct, and possibly there is a hair tuft on the hind tibia. Front strongly bulging, though without tubercle.

*Expanse*.—Female, 26–31 mm.

Female genitalia as in *saccharalis*.

Seven females are before us, three from Taperinha, Amazons, Brazil, and four from Rio Maderia, Amazons, July–August (Fassl), from the Schaus and Dognin Collections.

Life history unknown.

*Type*.—Cat. No. 29,427, U.S.N.M.

*Type locality*.—Taperinha, Amazons, Brazil.

## DIATRAEA MAGNIFACTELLA Dyar

Figures 3, 52

*Diatraea magnifactella* DYAR, Ent. News, vol. 22, 1911, p. 201.

A large species. Fore wing brownish straw, darker in the male than in the female; cross lines distinct in the male, less so in the female, blackish like the terminal and discal dots, the outer line dotted. Hind wing brown in the male, largely sordid-tinted in the female. Front with a tubercle. Hind tibia of the male without hair tuft.

*Expanse*.—Male 32 mm.; female, 36–47 mm.

Male genitalia distinguished by the truncate (almost square) lateral lobes of tegumen and the irregularly shaped and spined projection from costal base of harpe. Arms of anellus finely scobinate at apices. Gnathos finely spined for about half its length from apex. Figured from paratype from Orizaba.

Female genitalia distinguished by the coarse granulation in area behind genital opening and the greatly elongated bursa. Figured from paratype from Oaxaca.

Two males, eight females before us from Mexico; Villa Union, Sinaloa, Cuernavaca, Jalapa, Orizaba, Oaxaca (the Villa Union specimens reared by T. E. Holloway).

*Type*.—In National Collection.

*Type locality*.—Orizaba, Mexico.

*Food plant*.—Sugar cane.

## DIATRAEA GUATEMALELLA Schaus

Figures 6, 55

*Diatraea guatemallella* SCHAUS, Proc. Ent. Soc. Washington, vol. 24, 1922, p. 138.

Resembling *tabernella*, but somewhat larger, the hind tibia of the male without hair tuft. Lines as in *tabernella*, but the inner accompanied centrally by a shaded blotch, which shows, more or less, even in the female. Male fore wing brownish straw; of female more yellowish; the lines faint but not wholly obliterated. Hind wing of male strongly and uniformly brown shaded; of female white. The front is produced with central tubercle.

*Expanse*.—Male, 21–30 mm; female, 30–40 mm.

Male genitalia distinguished by the coarse and dense dentation of the basal costal projection of harpe, the triangular, sharply pointed lateral lobes of tegumen, and the almost smooth gnathos (spined only very weakly toward apex).

Female genitalia distinguished by the very wide genital opening; bursa greatly elongated.

Abdomen of male with pair of lateral hair tufts on second segment.

Genitalia figured from specimens from the type locality.

Eleven males and 13 females before us, from various localities in Guatemala, the majority from Cayuga (Schaus and Barnes).

The life history unknown.

*Type*.—In National Collection.

*Type locality*.—Cayuga, Guatemala.

#### DIATRAEA TABERNELLA Dyar

Figure 7

*Diatraea saccharalis tabernella* DYAR, Ent. News, vol. 22, 1911, p. 200.

A medium-sized species, variable in size. Fore wing brownish straw color; the veins not lined; two outer lines oblique, parallel, dotted; discal dot small, black. In the male the lines are distinct, the hind wing tinged with brownish. In the female the lines are faint or obliterate, the ground color lighter, more yellowish, while the hind wings are white. In the male the hind tibia has a large tuft of erect, curving, blackish hairs. The front of the head is conically produced with a central tubercle.

*Expanse*.—Male, 18–28 mm.; female, 25–39 mm.

Male genitalia similar to those of *saccharalis* except: Lateral lobes of tegumen narrower (much longer than broad); basal costal projection of harpe differently shaped; gnathos spines weaker and extending for only about a third its length from apex. Figured from type.

Female genitalia as in *saccharalis*.

Abdomen of male with a pair of lateral tufts on second segment.

Twenty-nine males and 16 females are before us, mostly from various localities in Panama; three of the females from Sixola River and Juan Vinas, Costa Rica, from Doctor Schaus's collecting; one male is from Nicaragua without further data.

The life history is unknown.

*Type*.—In National Collection.

*Type locality*.—Tabernilla, Canal Zone, Panama.

#### DIATRAEA CONTINENS Dyar

Figure 50

*Diatraea continens* DYAR, Ent. News, vol. 22, 1911, p. 202.

Fore wing light ocher, the veins narrowly dark lined; transverse lines parallel, shaded and continuous, ending in a dark oblique brown apical shade; terminal dots small, round; discal dot slight. Hind

wing white (female). The front is nearly flat, but has a central tubercle.

*Expanse*.—Female, 29 mm.

Female genitalia as in *instructella* but somewhat more strongly chitinized in front of genital opening.

Only the single female type is before us.

The life history is unknown.

*Type*.—In National Collection.

*Type locality*.—Castro, Parana, Brazil.

#### DIATRAEA PALLIDOSTRICTA Dyar

*Diatraea pallidistricta* DYAR, Ent. News, vol. 22, 1911, p. 205.

Fore wing pale yellowish straw color, the veins lined in brown; a distinct ray through cell and beyond; terminal dots absent; discal dot very small, brown. Hind wing white, a little dusky apically.

*Expanse*.—Female, 38 mm.

Genitalia as in *saccharalis*.

Only the single female type is before us.

The life history is unknown.

*Type*.—In National Collection.

*Type locality*.—São Paulo, Brazil.

#### DIATRAEA BUSCKELLA, new species

Figures 5. 53

A medium-sized species. Fore wing light yellowish straw color, paler in the female than in the male; veins conspicuously lined in brown, the linings on median vein and vein 1 heavier than the others; in the male fainter lines also between the veins; discal dot round, blackish; terminal intervenular dots small, distinct; beyond the cell a clearer ray above vein 5. Hind wing white in both sexes. Male hind tibia with a large blackish tuft which reaches the end of the joint. Front conical, with a small tubercle.

*Expanse*.—Male, 25 mm.; female, 32 mm.

Male genitalia with lateral lobes of tegumen subtriangular, bluntly pointed, in shape between those of *gautemalella* and *tabernella*. Projecting lobe from base of costa of harpe coarsely spined. Gnathos spined for a little less than half its length from apex. Arms of anellus scobinate toward apices. Cornutus weak. Figured from type.

Female genitalia similar to those of *magnifactella*, but with heavier shield below (in front of) genital opening, and with shorter broader bursa. Figured from paratype.

Abdomen of male with a pair of lateral hair tufts on second segment.



Male type and female paratype before us from the type locality, April 17-24, 1912 (A. Busck).

The life history is unknown.

*Type*.—Cat. No. 29428, U.S.N.M.

*Type locality*.—Porto Bello, Panama.

DIATRAEA ANGUSTELLA Dyar

Figures 8, 56

*Diatraea angustella* DYAR, Ent. News, vol. 22, 1911, p. 205.

Fore wing narrow and dull dark brownish, the veins conspicuously lined; discal dot small or obsolete; a distinct yellow ray from the cell outward. Hind wing slightly brownish tinged in male, white in female.

*Expanse*.—Male, 29 mm.; female, 32-35 mm.

Male genitalia with broadly triangular lateral lobes on tegumen. Basal costal projection of harpe rather finely scobinate. Gnathos spined for over one-third its length from apex.

Female genitalia as in *saccharalis*, except ductus and area about genital opening less strongly chitinized.

Abdomen of male with a pair of lateral tufts on second segment.

Two males and five females before us, all from the type locality.

The life history is unknown.

*Type*.—In National Collection.

*Type locality*.—Castro, Parana, Brazil.

DIATRAEA MOORELLA, new species

Very similar to *angustella*; smaller, the ground of fore wing more yellowish, the discal dot generally more distinct. Front with a tubercle. Hind tibia without hair tuft.

*Expanse*.—Male, 20-26 mm.; female, 28-30 mm.

Male genitalia like those of *angustella*.

Female genitalia as in *instructella*.

Abdomen of male with a pair of lateral tufts on second segment.

Three males and six females before us, British Guiana and Brazil: Estate "Die Kinderen," British Guiana (H. W. B. Moore, No. 111); "All Estates," British Guiana (H. W. B. Moore, No. 81); Castro, Parana, Brazil.

Mr. Moore's No. 111 was bred from larva in stem of *Antherum bicorne* (= *Andropogon*); his No. 81 from larva in stems of razor grass (*Paspalum* species). Both sexes of No. 81 are before us, but of No. 111 we have only a male, the genitalia of which are here less distinct than usual.

Compare also *anathericola*, bred from the former food plant, but a gray, not yellowish, species.

*Type*.—Cat. No. 29429, U.S.N.M.

*Type locality*.—Georgetown, British Guiana.

*Food plants*.—*Andropogon*, *Paspalum*.

DIATRAEA GAGA Dyar

Figure 9

*Diatraea gaga* DYAR, Proc. U. S. Nat. Mus., vol. 47, 1914, p. 319.

*Diatraea solipsa* DYAR, Proc. U. S. Nat. Mus., vol. 47, 1914, p. 319.

A small species resembling an *Iesta*. Fore wing light pale straw color, a yellowish ray beyond the cell; discal and terminal dots rather large, blackish; veins strongly lined in brown, but narrowly and without contrast; cross line distinct, strigose, not dotted, roundly confluent below costa. Hind wing a little touched with brown at apex in male; white in female.

*Expanse*.—Male 13–18 mm.; female 16–18 mm.

Male genitalia with tegumen simple (without lateral lobes). Costa of harpe simple. Gnathos slender, with only the faintest trace of spines near apex. Arms of anellus smooth. Cornutus absent. Figured from type.

Female genitalia as in *evanescens* except for somewhat smaller bursa.

Abdomen of male with pair of lateral hair tufts on second segment. Seventeen males and 12 females before us from various localities in Panama.

The life history is unknown.

*Types*.—In National Collection.

*Type localities*.—Corozal, Panama (*gaga*); Porto Bello, Panama (*solipsa*).

DIATRAEA EVANESCENS Dyar

Figs. 10, 57

*Diatraea evanescens* DYAR, Ins. Ins. Mens., vol. 5, 1917, p. 84.—FORBES, Journ. New York Ent. Soc., vol. 28, 1920, p. 224.

*Diatraea sobrinialis* SCHAUS, Proc. Ent. Soc. Washington, vol. 24, 1922, p. 140.

A species generally below medium size, sometimes small. Fore wing dull dark wood brown, the veins distinctly darker; a rounded discal dot, but no cross lines. Hind wing in the male almost as light as in the female, a little brownish shaded apically. Front without a tubercle. Hind tibia in the male without a tuft.

*Expanse*.—Male, 11–20 mm.; female, 21–30 mm.

Male genitalia with lateral lobes of tegumen arising from its extreme base, narrow, rounded. Costa of harpe simple. Arms of anellus smooth. Cornutus not distinguishable. Figured from specimen from Audubon Park, La.

Abdomen of male with pair of lateral tufts on second segment.

Specimens are before us from Louisiana and Mississippi, and a series of four males and four females from Cayuga, Guatemala, the latter running larger than those from the Gulf coast.

Louisiana specimens were bred from *Paspalum*.

*Types*.—In National Collection.

*Type localities*.—Audubon Park, La. (*evanescens*); Cayuga, Guatemala (*sobrinalis*).

*Food plant*.—*Paspalum larranagae*.

#### DIATRAEA ZEACOLELLA Dyar

Figures 11, 59

*Diatraea zeacolella* DYAR. Ent. News, vol. 22, 1911, p. 203.—HOLLOWAY, Jour. Agr. Res., vol. 6, 1916, p. 624.—BARNES and McDUNNOUGH, List Lepid. Bor. Amer. No. 5437, 1917.—HOLLOWAY and LOFTIN, U. S. Dept. Agr., Bull. No. 746, 1919.—FORBES, Mem. 68, Cornell Univ. Agr. Exp. Sta., 1923, p. 591.

*Diatraea tripsasicola* DYAR, Ins. Ins. Mens., vol. 9, 1921, p. 193.

A medium to large sized species, resembling *saccharalis*. The species can generally be distinguished by its larger size, and the faint subterminal line on the hind wings of the male.

*Expanse*.—Male, 26–36 mm.; female, 29–42 mm.

Male genitalia resembling those of *postlineella*, but differing markedly in the shape of the uncus (compare, figs. 11, 12). Harpe very broad at base, otherwise simple. Uncus heavy, with lateral flaps and a broadened apex. Gnathos very stout, hooked and strongly spined. Anellus with arms short, pointed and smooth. Penis without cornutus. Figured from reared specimen from Richmond, Virginia (Webster No. 13146).

Female genitalia with no extra chitinization in area surrounding genital opening. Ductus bursae rather weakly chitinized. Bursa large with a broad semicircular, partially scobinate collar in neck. Figured from paratype from Tryon, N. C.

Abdomen of male with a pair of lateral hair tufts on second segment.

The larvae are fully described in the Holloway and Loftin bulletin cited above. Here also we would note the same correction to the description as in *saccharalis* (see p. 12).

Specimens are before us from the Southern States, Virginia, North Carolina, and Florida, also recently a specimen from Kansas.

*Types*.—In National Collection.

*Type localities*.—Tryon, N. C. (*zeacolella*); Miami, Fla. (*tripsasicola*).

*Food plants*.—Indian corn, *Tripsacum* (larvae boring in the stems).

It is probable that *Chilo crambidoides* Grote, referred to the synonymy of *saccharalis*, is an earlier name for this species. *C. crambi-*

*doides* was described from Kansas, whence we have received a specimen of *zeacolella*, but we have never seen *saccharalis* from north of the Gulf coast region.

**DIATRAEA POSTLINEELLA** Schaus

Figure 12

*Diatraea postlineella* SCHAUS, Proc. Ent. Soc. Washington, vol. 24, 1922, p. 138.

A rather large, darkly shaded species, known in only the single male type. Fore wing dark brown, the lines and discal dot darker, not strongly contrasted. Hind wing almost as dark as fore wing, showing near the margin a shaded darker band. Front prominently bulging, but without tubercle. Hind tibia of male without tuft.

*Expanse*.—Male, 27 mm.

Male genitalia as in *zeacolella*, but with uncus bluntly pointed and without lateral flaps. Figured from type.

Abdomen of male with pair of lateral tufts on second segment.

The life history is unknown.

*Type*.—In National Collection.

*Type locality*.—Quirigua, Guatemala.

**DIATRAEA CANELLA** Hampson

Figures 13, 60

*Diatraea canella* HAMPSON, Ann. Mag. Nat. Hist., ser. 6, vol. 16, 1895, p. 349.

A readily recognizable species, broad winged, reddish gray, the cross lines distinct, outer one dotted, inner excurved around the discal dot; sparsely black irrorate. Hind wings soiled white in the male, sometimes soiled slightly apically in the female. Front with a conical tubercle. Hind tibia of the male without hair tuft.

*Expanse*.—Male, 19–30 mm.; female, 25–34 mm.

Male genitalia with a slender subbasal digitate projection (three times as long as broad) from costa of harpe. Anellus with a few serrate projections on lateral edges and with long, slender, pointed, smooth lateral arms. Penis with a single short pointed cornutus. Figured from specimen from Georgetown, British Guiana.

Female genitalia distinguished by the irregular shape of the genital opening and the small chitinous patch in the neck of bursa. Figured from specimen from British Guiana (G. E. Bodkin.)

Abdomen of male without hair tufts on second segment.

From the Guianas, Trinidad, and Grenada.

*Type*.—In British Museum.

*Type locality*.—Grenada.

*Food plant*.—Sugar cane (larvae boring in the stems).

## DIATRAEA ANATHERICOLA, new species

Fore wing gray, irrorate on a whitish ground, a whitish streak beyond the cell; veins obscurely lined in brown, yet contrasting; a whitish ray beyond cell, beneath which and median vein is a brown shading; discal and terminal dots small, blackish. Hind wing white in both sexes. Front with a pointed tubercle. Hind tibia of the male hairy, pale.

*Expanse*.—Male, 32 mm.; female (dwarfed), 25–30 mm.

Genitalia (male and female) as in *canella*.

Abdomen of male without tufts on second segment.

Male, São Paulo, Brazil (Schaus Collection); two females, Die Kinderen Plantation, British Guiana (H. W. B. Moore).

The British Guiana specimens were bred from larvae in the stems of *Anatherum bicornis* (= *Andropogon*), according to Mr. Moore's determination. Compare *moorella*, bred from the same plant, but a yellowish, not a gray species.

*Type*.—Cat. No. 29,430, U.S.N.M.

*Type locality*.—São Paulo, Brazil.

## DIATRAEA AMNEMONELLA Dyar

Figures 14, 62

*Diatraea amnemouella* DYAR, Ent. News, vol. 22, 1911, p. 203.

Fore wing narrow. Hind wing emarginate discally. Fore wing reddish gray, sparsely black irrorate, forming traces of cross lines. Hind wing white, a little touched with dusky shading apically in the male. Front with a tubercle. Hind tibia of male without hair tuft.

*Expanse*.—29 mm., both sexes.

Male genitalia similar to those of *canella* except with shorter digitate subbasal projection from costa of harpe (less than twice as long as broad). Figured from type.

Female genitalia with small scobinate signum in bursa and a pair of chitinized ridges in neck of bursa. Otherwise as in *canella*. Figured from paratype.

Abdomen of male without hair tufts on second segment.

Only the male and female types from the type locality are before us.

The life history is unknown.

*Type*.—In National Collection.

*Type locality*.—Castro, Parana, Brazil.

## DIATRAEA FUSCELLA Schaus

Figures 15, 61

*Diatraea fuscella* SCHAUS, Proc. Ent. Soc. Washington, vol. 24, 1922, p. 139.

Similar to *bellifactella*, distinctly darker, with broad intervenular streaks; cross lines indicated by discoloured blackish dots on the veins, of the same color as the discal and terminal dots. Hind wing brown, about as dark in the female as in the male. Front with a pointed conical tubercle. Hind tibia of the male without hair tuft.

*Expanse*.—Male, 23 mm.; female, 23–32 mm.

Male genitalia with tegumen greatly developed, semitubular. Uncus and gnathos very stout and broad toward their extremities. Harpe with a slight, strongly haired hump at base of costa, otherwise simple and much as in *zeacolella* and *postlineella*. Anellus with lateral arms moderately long and smooth. Penis without distinguishable cornutus. Figured from type.

Female genitalia resembling those of *canella*, but with an unwrinkled genital opening and with a slightly different chitinization in the neck of the bursa. Figured from specimen from Chejel, Guatemala.

Abdomen of male with a pair of lateral hair tufts on second segment.

Easily distinguished by the peculiarly shaped tegumen, uncus, and gnathos of the male genitalia.

One male and three females before us: Carillo and Guapiles, Costa Rica; Chejel, Guatemala.

The life history is unknown.

*Type*.—In National Collection.

*Type locality*.—Carillo, Costa Rica.

## DIATRAEA VENOSALIS (Dyar)

Figures 16, 58

*Haimbachia venosalis* DYAR, Ins. Ins. Mens., vol. 5, 1917, p. 87.

*Diatraea* (?) *venosalis* FORBES, Journ. New York Ent. Soc., vol. 28, 1920, p. 221.

A very small species, distinctly marked. Ground of fore wing whitish; veins and interlines more faintly brown; discal dot large; brown terminal dots small. Hind wing white in both sexes. Front without a tubercle. Hind tibia of the male without a hair tuft.

*Expanse*.—Male, 15–19 mm.; female, 21 mm.

Genitalia similar to those of *gaga*, distinguished only by the somewhat stronger spining on gnathos of male and a slightly heavier chitinization at the juncture of ductus and bursa (in female).

Abdomen of male with pair of lateral hair tufts on second segment.

Four males and one female before us, all from the type locality.

The life history is unknown.

*Type*.—In National Collection.

*Type locality*.—Audubon Park, La.

DIATRAEA MARONIALIS Schaus

Figures 17, 64

*Diatraea maronialis* SCHAUS, Proc. Ent. Soc. Washington, vol. 24, 1922, p. 139.

Ground color of fore wing light straw yellow; discal and terminal dots distinct, blackish; median area broadly shaded with brown, limited by the outwardly placed outer line, which reaches the margin above vein 5, leaving the tornal area broadly clear. Hind wing soiled whitish in the male, somewhat soiled also in the female. Front with a sharp-pointed tubercle. Hind tibia of the male without hair tuft.

*Expanse*.—Male, 20–25 mm.; female, 26–31 mm.

Male genitalia distinguished by their extremely slender uncus and gnathos, the abruptly pointed, smooth arms of anellus, and the slight smooth projection from costal base of harpe. Figured from type.

Female genitalia distinguished by the slight chitinous ring about the genital opening. Figured from specimen from the type locality.

Abdomen of male with pair of lateral hair tufts on second segment.

Two males and three females are before us: St. Jean and Cayenne, French Guiana; Rio Tapajoz, Amazons, Brazil (Dognin Collection).

The life history is unknown.

*Type*.—In National Collection.

*Type locality*.—St. Jean, Maroni River, French Guiana.

DIATRAEA UMBRIALIS Schaus

*Diatraea umbrialis* SCHAUS, Proc. Ent. Soc. Washington, vol. 24, 1922, p. 139.

Fore wing whitish straw, all the veins and intervenules lined with concolorous brown; no discal or terminal dots or other discolorous markings; outer line a broad ill-defined shade from before tornus to apex. Hind wing whitish, soiled at apex in female. Front with a sharp-pointed tubercle.

*Expanse*.—Female, 25–29 mm.

Female genitalia as in *maronialis*.

Two females are before us, St. Jean and St. Laurent, French Guiana.

The life history is unknown.

*Type*.—In National Collection.

*Type locality*.—St. Jean, Maroni River, French Guiana.

## DIATRAEA LINEOLATA (Walker)

Figures 18, 63

*Leucania lineolata* WALKER, Cat. Lepid. Heter. Brit. Mus., pt. 9, 1856, p. 100.

*Crambus impersonatellus* WALKER, Cat. Lepid. Heter. Brit. Mus., pt. 27, 1863, p. 163.

*Chilo culmicolellus* ZELLER, Mon. Chil. et Cramb., 1863, p. 7.

*Chilo neuricellus* ZELLER, Mon. Chil. et Cramb., 1863, p. 8.

*Diatraea lineolata* (Walker) HAMPSON, Proc. Zool. Soc. London, 1895, p. 953.

A medium sized to large species, variable in size. Fore wing ground color light straw yellow; veins lined with brown, the interlines absent or faint and ill-defined; discal dot variable in size and distinctness, it and the terminal dots brown, concolorous with the vein linings. Hind wing soiled white in the male, white in the female. Front with a pointed tubercle. Hind tibia of male without hair tuft.

*Expanse*.—Male, 20–31 mm.; female, 26–40 mm.

Male genitalia at once distinguished by the broadened, double-pointed apices of the long lateral arms of anellus, and the greatly lengthened, pointed uncus and gnathos. Figured from specimen from Purulha, Guatemala.

Female genitalia with ductus greatly reduced (the neck of the bursa coming almost to genital opening). The area behind and caudad of genital opening smooth and rather strongly chitinized. A dark, narrow, heavily chitinized, semicircular band in neck of bursa. Bursa greatly elongated. Figured from specimen from Avangarez, Costa Rica.

Abdomen of male without hair tufts on second segment.

Specimens are before us from Mexico, Costa Rica, Guatemala, Panama, Colombia, the Guianas, Cuba, and the Bahamas.

*Types*.—In British Museum (*lineolata*, *impersonatellus*, *neuricellus*?); "Mus. Berol." (*culmicolellus*).

*Type localities*.—Venezuela (*lineolata*, *impersonatellus*, *neuricellus*); Colombia (*culmicolellus*).

*Food plant*.—Corn (larvae in the stalks and cobs).

## DIATRAEA SCHAUSELLA, new species

Figure 19

A species similar to *lineolata*, distinguished by the intensification of the markings, and the black (not concolorous-brown) discal and terminal dots. Fore wing yellowish straw color, the veins brown-lined somewhat irregularly, being streaked on inner margin and between veins 4 and 5. Hind wing soiled whitish, rather distinctly



dark tinted. Front with a pointed tubercle. Hind tibia of male without a hair tuft.

*Expanse*.—Male, 28–31 mm.

Male genitalia as in *grandiosella* except: Uncus bluntly pointed; gnathos rather short (considerably shorter than uncus), terminating in a scobinate bluntly rounded end with a short, sharp spur beneath; cornutus weakly chitinized but distinguishable.

Abdomen of male without tufts on second segment.

Two males are before us from the type locality, dated August (Schaus and Barnes).

The life history is unknown.

*Type*.—Cat. No. 29431, U.S.N.M.

*Type locality*.—Chejel, Guatemala.

DIATRAEA MUELLERELLA, new species

Figure 20

Superficially indistinguishable from *lineolata* Walker. Separable on details of the genitalia.

*Expanse*.—Male, 28 mm.; female, 30 mm.

Male genitalia as in *grandiosella* except that gnathos has a strong, projecting inner spur before apex. Figured from type.

Female genitalia as in *lineolata* except that chitinous band in neck of bursa is a trifle stouter.

Abdomen of male without tufts on second segment.

A male and a female are before us: Male, Guerrero, Mexico, July, 1920 (R. Müller); female, Iguala, Guerrero, Mexico, June, 1906 (W. Schaus).

The life history is unknown.

*Type*.—Cat. No. 29432, U.S.N.M.

*Type locality*.—Guerrero, Mexico.

DIATRAEA GRANDIOSELLA Dyar

Figures 21, 68

*Diatraea grandiosella* DYAR, Ent. News, vol. 22, 1911, p. 205.

*Diatraea lineolata* BARNES and McDUNNOUGH (not Walker), List Lepid. Bor. Amer., No. 5438, 1917.

A rather large, light colored species. Fore wing pale, whitish, with slight yellow tint; veins and intervenular lines brown; discal and terminal dots small, blackish. Front without a tubercle. Male hind tibia without a tuft.

*Expanse*.—Male, 15–30 mm.; female, 30–38 mm.

Male genitalia with harpe simple except for a slight hairy protuberance from base of costa. Uncus and gnathos broadened (spatu-

late) at their tips. Anellus with long, slender, lateral arms, each with a short subapical spur (a type of anellus reproduced in *muellerella* and *schausella*). Penis without cornutus. Figured from specimen from Colima, Mexico.

Female genitalia of the *lineolata* type. With ductus bursae extremely short. Area behind genital opening chitinized, this chitinization continuing in a narrow somewhat wrinkled band almost to ovipositor. A heavily chitinized semicircular band in neck of bursa. Figured from type.

Abdomen of male without hair tufts on second segment.

From southwestern Texas, southern New Mexico, and Arizona to Mexico—Los Mochis and Venadio, Sinaloa; Colima, Guadalajara, Tehuacan.

Superficially resembles *lineolata* Walker, but the front is without a tubercle.

*Type*.—In National Collection.

*Type locality*.—Guadalajara, Mexico.

*Food plant*.—Corn (larvae boring in the stalks and roots).

#### DIATRAEA BELLIFACTELLA Dyar

Figures 22, 67

*Diatraea bellifactella* DYAR, Ent. News, vol. 22, 1911, p. 205.

A rather large species near *lineolata* and *schausella*, but showing indications of the transverse lines by thickening of the vein linings. Discal and terminal dots discolorous with the vein linings. Front with a conical tubercle. Hind tibia of male without a hair tuft.

*Expanse*.—Male, 28 mm.; female, 32 mm.

Male genitalia with two projections from costa of harpe, a haired, subbasal one and a small sparsely spined basal knob. Uncus broad and bilobed. Gnathos proportionately broadened, unspined. Anellus with a smooth, pointed, central projection, and with slender, pointed, smooth rather long lateral arms. Cornutus an irregular chitinization on surface of penis. Figured from type.

Female genitalia with ductus short, strongly chitinized, and broadening markedly toward bursa. Bursa greatly elongated, with a semicircular chitinous band in neck. Genital opening with a protruding semitubular, strongly chitinized mouth. Area behind and for a short distance caudad of genital opening corrugated and strongly chitinized. Figured from paratype from Castro, Parana, Brazil.

Abdomen of male with a pair of lateral hair tufts on second segment.

Easily recognized from its characteristic genitalia.

From Brazil, São Paulo and Castro; only the male and female types before us.

Life history is unknown.

*Type*.—In National Collection.

*Type locality*.—São Paulo, Brazil.

DIATRAEA STRIGIPENNELLA Dyar

Figures 23, 66

*Diatraea strigipennella* DYAR, Ent. News, vol. 22, 1911, p. 206.

Indistinguishable in coloration or frontal structure from *anathericola*; separable on details of the genitalia.

*Expanse*.—Male, 27 mm.; female, 25–28 mm.

Male genitalia with a strongly chitinized, subbasal, somewhat roughened and serrate projection from costa of harpe. Uncus and gnathos pointed. Anellus with a bluntly pointed, finely spined, central projection and long slender, lateral arms, the latter finely serrate toward their extremities. Cornutus a heavy bush of coarse serrations, about two-thirds as long as aedeagus.

Female genitalia with ductus moderately long, strongly chitinized, broadening toward genital opening and produced beneath into a shield before genital opening. Area behind genital opening unpigmented and smooth. Bursa of moderate size with half one side toward ductus strongly chitinized and wrinkled, and with an internal, median girdle of serrate ridges.

Abdomen of male without lateral tufts on second segment.

One male, four females before us, from the type locality (Schaus Collection).

The life history is unknown.

*Type*.—In National Collection.

*Type locality*.—Castro, Parana, Brazil.

DIATRAEA CAYENNELLA, new species

Figures 24, 65

Indistinguishable from *strigipennella* and *anathericola* in color and frontal structure. Separable by details of the genitalia.

*Expanse*.—Male, 26 mm.; female, 28 mm.

Male genitalia with two strongly chitinized projections from costa of harpe, an irregularly serrate, pointed subbasal one, and a broad flat, serrate, hooked, basal one. Uncus and gnathos pointed. Anellus with a smooth, pointed, central projection, and moderately long, tapering, sharply pointed, lateral arms, the latter rather strongly serrate toward their apices. Figured from type.

Female genitalia with ductus strongly chitinized, projecting beneath into a cleft shield. Area just behind genital opening, and cephalad of it on ventral surface, rather strongly chitinized and pigmented. Ductus of moderate size, with a complete and strongly chitinized ring in neck. Figured from paratype.

Abdomen of male without tufts on second segment.

A male and female are before us, both from the type locality, February, 1904 (W. Schaus).

The life history is unknown.

*Type*.—Cat. No. 29433, U.S.N.M.

*Type locality*.—Cayenne, French Guiana.

#### DIATRAEA CASTRENSIS, new species

##### Figure 25

Very similar to *amnemonella*; the color a little less brown, though still distinctly brown tinted. Separable on details of the genitalia.

*Expanse*.—Male, 26 mm.

Male genitalia similar to those of *cayenella* except that hooklike projection from extreme base of costa of harpe is smooth and narrower. The male abdomen also has a pair of lateral tufts on second segment. This species, *strigipennellus*, *cayenella*, and *bellifactella* all have a central projection from anellus; but each has quite distinctive genitalia otherwise.

Described from single male type (Schaus Collection).

Life history unknown.

*Type*.—Cat. No. 29434, U.S.N.M.

*Type locality*.—Castro, Parana, Brazil.

#### Genus HEMIPLATYTES Barnes and Benjamin

*Hemiplatytes* BARNES and BENJAMIN, Cont. Nat. Hist. Lepid. N. Amer., vol. 5, 1924, p. 192.

Front flat and smooth. No ocelli. Labial palpi porrect and down-curved, slender, extending three times the length of head. Maxillary palpi triangularly dilated with scales. Male antennae slightly thickened; female, filiform. Fore wing with vein 3 near angle of cell, which is rounded; 4 and 5 separate at origin; 6 below apex of cell; 7 at apex; 8-9 stalked from before apex; 10 approximate to the stalk of 8-9; 11 anastomosing with 12. Hind wing with 3 and 4 separate from angle of cell; 5 from much above the angle; the cross-vein between 4 and 5 retreating; 6 from apex of cell, shortly separated from the stalk of 7-8.

Male genitalia with vinculum narrowly and elongately triangular. Harpe undivided; irregularly and elongately triangular, broad at

base and abruptly narrowed at middle where costa is sharply emarginate to the apex; costa finely spined on basal half. Uncus moderately broad, with apex bluntly rounded; a somewhat broadened hook. Gnathos unspined. Anellus with produced lateral arms; juxta detached.

Female genitalia with ductus bursae unchitinized except slightly at genital opening. Bursa moderately sized; unchitinized; signum absent. Ovipositor and chitinous supporting rods normal.

Abdomen of male without lateral tufts on second segment.

*Genotype*.—*Diatraea epia* Dyar.

#### HEMIPLATYTES EPIA (Dyar)

Figures 30, 82

*Diatraea epia* DYAR, First Rep. Laguna Marine Lab., 1912, p. 165.

*Chilo epia* (Dyar) BARNES and McDUNNOUGH, List Lepid. Bor. Amer., No. 5434, 1917.

*Platytes damon* BARNES and McDUNNOUGH, Cont. Nat. Hist. Lepid. N. Amer., vol. 4, 1918, p. 172.

A small species, the male dark brown with nearly black hind wings; the female whitish with only a trace of the brown markings and whitish hind wings. A white marking at end of cell, with detached rays beyond, persists in both sexes.

*Expanse*.—Male, 16 mm.; female, 18–21 mm.

Genitalia figured from specimens from San Diego, Calif. (K. R. Coolidge, No. 199).

Specimens before us from the coastal region of southern California. Life history unknown.

*Types*.—In National Collection (*epia*); collection Barnes (*damon*).

*Type localities*.—Laguna Beach, Calif. (*epia*); San Diego, Calif. (*damon*).

#### XANTHOPHERNE, new genus

Front gently bulging and smooth, or strongly cone-shaped and tuberculate. No ocelli. Labial palpi porrect, short, of the same length as the maxillary palpi, which are heavily dilated with scales. Antennae thickened, shortly squarely serrate and pubescent in the male; filiform in the female. Fore wing with vein 3 from before angle of cell; 4 and 5 approximate from the angle; 6 shortly below apex of cell; 7 from apex; 8–9 stalked from before the rounded apex; 10 from the cell near stalk of 8–9; 11 obliquely anastomosing with 12. Hind wing with 4–5 connate from the sharp angle of cell; 6 from apex of cell; 7 leaving apex of cell for a rather short anastomosis with 8.

Male genitalia with vinculum rounded. Harpe undivided, elongately triangular. Uncus laterally compressed and greatly devel-

oped. Gnathos hook-like and very heavy; unspined. Anellus a slightly curved plate with strongly developed lateral arms. Aedoeagus stout.

Female with ductus bursae short, strongly chitinized (the differentiation of ductus and bursa in this genus and *Doratoperas* is rather difficult and in both we identify the bursa as beginning at the end of the chitinization of the ductus). Bursa copulatrix long and considerably enlarged at extremity; without signum. Ovipositor and supporting rods normal.

Abdomen of male without lateral hair tufts on second segment.

For purposes of comparison we give, in addition to the figures of *Xanthopherne*, figures (26, 77) of the male and female genitalia of *Doratoperas atroparsellus* Walker, the type of Hampson's genus.

We have taken two species out of *Doratoperas* Hampson to form this genus on account of the anastomosis of veins 11-12 of fore wing. Otherwise the species agrees with *Doratoperas*, from which they are doubtless derived.<sup>3</sup>

*Genotype*.—*Doratoperas biumbrata* Schaus.

#### KEY TO THE SPECIES OF XANTHOPHERNE

1. Fore wing with discal and terminal dots and faint outer line; front flat.  
fulvescens (Hampson)  
 Fore wing without dots; outer line broad, shaded, widening below; front  
 strongly cone shape----- *biumbrata* (Schaus)

#### XANTHOPHERNE FULVESCENS (Hampson)

##### Figure 27

*Doratoperas fulvescens* HAMPSON, Ann. Mag. Nat. Hist., ser. 4, vol. 4, 1919, p. 61.

We possess a single male of this species from the type locality. It has the general appearance of a light colored *Doratoperas*. The hind wings are nearly white.

*Epanse*.—42 mm.

Male genitalia figured.

The life history is unknown.

*Type*.—In British Museum.

*Type locality*.—Yahuarmayo, Peru.

#### XANTHOPHERNE BIUMBRATA (Schaus)

##### Figure 75

*Doratoperas biumbrata* SCHAUS, Proc. Ent. Soc. Washington, vol. 24, 1922, p. 145.

The single female type is before us, collected by Doctor Schaus and Mr. Barnes.

<sup>3</sup> *Doratoperas xanthoterma* Hampson is unknown to us in nature and may or may not be found referable to *Xanthopherne*.

*Expanse*.—65 mm.

Female genitalia figured.

*Type*.—In National Collection.

*Type locality*.—Volcan de Santa Maria, Guatemala.

#### Genus SILVERIA Dyar

*Silveria* DYAR, Ins. Ins. Mens., vol. 18, 1925, p. 10.

Front gently convex, smooth. Ocelli present. Labial palpi long, porrect, slender, extending over twice the length of the head. Maxillary palpi triangularly dilated with narrow scales. Antennae of male slightly thickened; of female filiform. Fore wing with vein 3 from before angle of cell; 4 and 5 separate, from the angle; 6 from well below apex of cell; 7 from apex; 8 and 9 long stalked, from before apex; 10 close to the stalk of 8-9; 11 anastomosing with 12. Hind wing with 4 and 5 approximate, from angle of cell; 6 from the cross-vein below apex of cell; 7 from the apex, anastomosing with 8 for over half its length.

Male genitalia with vinculum triangular. Harpe undivided; triangular; costa simple, rather weakly chitinized. Uncus and gnathos hooklike; gnathos unspined. Anellus consisting of a detached juxta, and a flattened plate hinged to bases of harpes and set at right angle with aedoeagus, and with a pair of greatly produced slender arms arising from the plate and lying along underside of aedoeagus. Aedoeagus very long and flattened.

Female genitalia with ductus bursae short and heavily chitinized. Bursa copulatrix narrow and greatly elongated; without signum. Ovipositor and supporting rods normal.

Abdomen of male without tufts on second segment.

The peculiarly developed aedoeagus and anellus are the distinguishing genitalic characters. They are approached in *Chilo phragmitellus* Hübner of Europe; but that is to be expected, for in *Chilo* one finds nearly all the Crambid genitalia types reproduced.

*Genotype*.—*Silveria hexhex* Dyar.

#### KEY TO THE SPECIES OF SILVERIA

1. Black irrorations of fore wing evenly scattered.

*chiriquitensis* (Zeller) (p. 31)

Black irrorations forming lines on the veins..... *hexhex* Dyar (p. 32)

#### SILVERIA CHIRIQUITENSIS (Zeller)

Figures 43, 44

*Eromene chiriquitensis* ZELLER, Hor. Ent. Soc. Ross., vol. 13, 1877, p. 72.

*Silveria adelphilia* DYAR, Ins. Ins. Mens., vol. 13, 1925, p. 11.

This species is before us from Mexico and Guatemala.

*Expanse*.—Male, 11-12 mm.; female, 15-18 mm.

There are not genitalic differences of any kind between specimens from the two localities.

Male genitalia figured from type of *adelphilia*; female from specimen from Venadio, Mexico.

Life history unknown.

*Type*.—In collection Staudinger (*chiriquitensis*); National Collection (*adelphilia*).

*Type locality*.—Chiriqui, Mexico (*chiriquitensis*); Colima, Mexico (*adelphilia*).

#### SILVERIA HEXHEX Dyar

##### Figure 45

*Silveria hexhex* DYAR, Ins. Ins. Mens., vol. 13, 1925, p. 11.

The male and female types are before us from the type locality; no other specimens. The species is readily distinguishable from *chiriquitensis* by the black irrorations lying along the veins.

*Expanse*.—Male, 14 mm.; female, 18 mm.

In the female the genitalia are distinguished from those of *chiriquitensis* by their differently shaped (narrower and straighter) ductus bursae. Unfortunately the abdomen of the type of *hexhex* was damaged and the genitalia missing so no comparison could be made with the male genitalia of *chiriquitensis*.

Female genitalia figured from paratype.

Life history unknown.

*Type*.—In National Collection.

*Type locality*.—Colima, Mexico.

#### Genus HAIMBACHIA Dyar

*Haimbachia* DYAR, Proc. Ent. Soc. Washington, vol. 11, 1909, p. 28.—

FORBES, Journ. New York Ent. Soc., vol. 28, 1920, p. 221; Mem. 68, Cornell Univ. Agr. Exp. Sta., 1923, p. 593.

Front convex, smooth. Ocelli present. Palpi long, porrect, slightly down-curved, extending over twice the length of head. Antennae slightly thickened in the male; filiform in the female. Fore wing with vein 3 from before angle of cell; 4 and 5 separate, from the angle; 6 from below apex of cell; 7 from apex; 8-9 long stalked; 10 free and near the stalk of 8-9; 11 anastomosing with 12. Hind wing with veins 4 and 5 approximate at origin but divergent; 6 from apex of cell with 7, which anastomoses rather shortly with 8.

Male genitalia with vinculum greatly enlarged; oblong or approximately square beneath and normally with posterior ventral margin incurvate. Harpe divided, with costa produced as a hook with broad lobed base. Uncus stout, stubby, with apex rounded and a short pointed subapical spur beneath. Gnathos short, stout, and sharply



hooked (uncus and gnathos in profile resembling a pair of short nipper jaws). Anellus semitubular and without lateral arms; no detached juxta.

Female genitalia with ductus bursae moderately long, chitinized only toward genital opening. Bursa copulatrix moderately large; normally with two signa, rarely with single signum (*discalis*). Supporting rods of ovipositor markedly dilated. Collar of eighth segment fused and with tongue projecting from anterior ventral margin and curving back behind genital opening.

Abdomen of male without tufts on second segment.

The genitalic characters given above at once distinguish *Haimbachia* from all other genera in the group with vein 11 of forewing anastomosing with 12; but many of the characters are duplicated in genera of other groups, the chitinous tongue from a fused collar of the eighth segment to the genital opening occurring in *Xubida*, *Eoreuma*, and *Chilo* (examples, *loftini* Dyar and *forbesellus* Fernald), and the dilated ovipositor rods and characteristically shaped vinculum in *Eoreuma densellus* and *Chilo loftini*. However, in both *Eoreuma* and *Chilo*, where the vinculum is like that of *Haimbachia*, there is much more marked asymmetry in the harpe than occurs in any species of *Haimbachia*. One species (*prosenes*) which we have referred here does not exhibit any of the female genitalia characters characteristic of the genus. It probably needs a new generic designation; but as we have no male, and as it otherwise agrees with *Haimbachia*, we have been compelled to place it there.

*Genotype*.—*Crambus placidellus* Haimbach.

COLOR AND PATTERN KEY TO THE SPECIES OF HAIMBACHIA

- |  |  |
|--|--|
| 1. Fore wing with one or more cross lines.....                     | 2  |
| Fore wing without cross lines.....                                 | <i>prosenes</i> (Dyar) (p. 37)   |
| 2. Central line of fore wing straight (yellow).....                | <i>gloriella</i> Schaus (p. 34)  |
| Central line of fore wing bent or oblique, sometimes obsolete..... | 3  |
| 3. Central line broad, angeled out in cell (yellow).               |  |
|  | <i>placidella</i> (Haimbach) (p. 35)   |
| Central line narrow or obsolete.....                               | 4  |
| 4. Whitish gray species.....                                       | } <i>squamulella</i> (Zeller) (p. 35)<br><i>quiriguella</i> Schaus (p. 35)       |
| Brownish species.....  |  |
| 5. Without discal dot on fore wing.....                            | } <i>dumptalis</i> Schaus (p. 36)<br><i>maroniella</i> Dyar and Heinrich (p. 36) |
| Discal dot present on forewing.....                                |  |

KEY TO THE SPECIES OF HAIMBACHIA ON CHARACTERS OF THE GENITALIA—MALES

- |  |  |
|--|--|
| 1. Apex of aedoeagus curved, hooklike..... | } <i>gloriella</i> Schaus (p. 34)<br><i>discalis</i> Dyar and Heinrich (p. 37) |
| Apex of aedoeagus not curved.....          |  |

- |  |                                      |   |
|--|--------------------------------------|---|
| 2. Harpes asymmetrical-----                                  | {squamulella (Zeller) (p. 35)        |   |
|  | {quiriguella Schaus (p. 35)          |   |
| Harpes symmetrical-----                                      |                                      | 3 |
| 3. Projecting costal lobe of harpe approximately triangular. |                                      |   |
|  | placidella (Haimbach) (p. 35)        |   |
| Projecting costal lobe of harpe rounded-----                 |                                      | 4 |
| 4. Vinculum with deeply excavate posterior margin--          | dumptalis Schaus (p. 36)             |   |
| Vinculum with straight posterior margin.                     |                                      |   |
|  | maroniella Dyar and Heinrich (p. 36) |   |

## FEMALES

- |  |                                      |   |
|--|--------------------------------------|---|
| 1. With projecting tongue from 8th segment collar, curving back behind genital opening; supporting rods of ovipositor greatly dilated----- |                                      | 2 |
| Without such projecting tongue; ovipositor rods simple.  |                                      |   |
|  | prosenes (Dyar) (p. 37)              |   |
| 2. Projecting tongue forked at apex-----   |                                      | 3 |
| Projectng tongue unforked (scarcely incurvate) at apex.  |                                      |   |
|  | maroniella Dyar and Heinrich (p. 36) |   |
| 3. Bursa with single signum-----   | discalis Dyar and Heinrich (p. 37)   |   |
| Bursa with two signa-----  |                                      | 4 |
| 4. Signa large, thornlike-----   | quiriguella Schaus (p. 35)           |   |
| Signa developed as two irregular patches with a short sharp spine arising from each-----   | gloriella Schaus (p. 34)             |   |
| Signa two-minute scobinate patches-----  |                                      | 5 |
| 5. Ductus chitinized for less than half its length-----  | dumptalis Schaus (p. 36)             |   |
| Ductus chitinized for a trifle more than half its length.  |                                      |   |
|  | squamulella (Zeller) (p. 35)         |   |

## HAIMBACHIA GLORIELLA Schaus

Figures 36, 71

*Haimbachia gloriella* SCHAU, Proc. Ent. Soc. Washington, vol. 24, 1922, p. 137.

A species generally similar to *squamulella* Zeller, but with less disparity in the size of the sexes.

*Expanse*.—Male, 12–15 mm.; female, 15–16 mm.

The male genitalia are chiefly distinguished by the backwardly curved hooklike apex of aedoeagus (found elsewhere in the genus only in *discalis*) and the almost square vinculum.

In the female the most striking character is the shape of the signa of the bursa; these are developed as two irregular weak chitinous patches with a very short, sharp spine arising from each.

Genitalia figured from specimens from the type locality.

Specimens before us from Venadio and Guadalajara, Mexico.

Life history unknown.

*Type*.—In National Collection.

*Type locality*.—Venadio, Sinoloa, Mexico.

## HAIMBACHIA PLACIDELLA (Haimbach)

Figure 39

*Crambus placidellus* HAIMBACH, Ent. News, vol. 18, 1907, p. 44.*Chilo placidellus* (Haimbach) KEARFOTT, Proc. U. S. Nat. Mus., vol. 30, 1908, p. 392.*Haimbachia placidella* (Haimbach) DYAR, Proc. Ent. Soc., Washington, vol. 11, 1909, p. 28.—BARNES and McDUNNOUGH, List Lepid. Bor. Amer., No. 5401, 1917.

Larger than *squamulella*, yellowish and differently marked. Only males are before us, from Connecticut and New Jersey.

*Expanse*.—Male, 15–17 mm.

Male genitalia distinguished by the slender costal hook and the nearly triangular projecting, costal lobe of harpe. Figured from specimens from Essex County Park, N. J.

Life history unknown.

*Type*.—In National Collection.*Type locality*.—Wenonah, N. J.

## HAIMBACHIA SQUAMULELLA (Zeller)

Figures 37, 74

*Chilo squamulellus* ZELLER, Hor. Ent. Soc. Ross., vol. 16, 1881, p. 158.—FERNALD, Cramb. N. Amer., Special Bull. Mass. Agr. Coll. 1896, p. 79; in Dyar List, Bull. 52, U. S. Nat. Mus., No. 4630, 1903.*Platytes squamulella* (Zeller) BARNES and McDUNNOUGH, List Lepid. Bor. Amer., No. 5426, 1917.

Wings chalky white, sprinkled with black atoms, the markings mostly terminal.

*Expanse*.—Male, 11–13 mm.; female, 20 mm.

Male genitalia with harpes asymmetrical; costal hook of left harpe sinuate (twice bent); that of right harpe evenly curved.

Female genitalia with ductus chitinized for nearly half its length. Sigma developed as two minute spines.

Genitalia figured from specimens from Washington, D. C. (male), and Texas (female).

Specimens before us from Texas, North Carolina, District of Columbia.

Life history unknown.

*Type*.—(?)*Type locality*.—Bosque County, Tex.

## HAIMBACHIA QUIRIGUELLA Schaus

Figures 38, 73

*Haimbachia quiriguella* SCHAUS, Proc. Ent. Soc. Washington, vol. 24, 1922, p. 137.*Haimbachia prestonella* SCHAUS, Proc. Ent. Soc. Washington, vol. 24, 1922, p. 138.

Entirely similar to *squamulella* in color and markings and in the disparity of the sexes, but differing in details of the genitalia. We take *quiriguella* from Guatemala and Costa Rica to be the female and *prestonella* from Mexico the male of one species.

*Expanse*.—Male, 11 mm.; female, 17–18 mm.

Male genitalia as in *squamulella*, except with broader costal hook on left harpe. Figured from type of *prestonella*.

Female genitalia at once distinguished by the large thornlike signa of bursa. Figured from type of *quiriguella*.

*Type*.—In National Collection.

*Type localities*.—Quirigua, Guatemala (*quiriguella*); Venadio, Sinloa, Mexico (*prestonella*).

#### HAIMBACHIA DUMPTALIS Schaus

Figures 41, 69

*Haimbachia dumptalis*, SCHAU, Proc. Ent. Soc. Washington, vol. 24, 1922, p. 137.

Fore wing narrow, crambiform, the markings obscure. The sexes are similar in size.

*Expanse*.—15 mm.

Male genitalia as in *placidella*, except that projecting basal costal lobe of harpe is semicircular rather than triangular.

Female genitalia similar to those of *squamulella*, but with ductus bursae less chitinized. Bursa with two signa developed as minute, scobinate patches.

Genitalia figured from specimens from Cayuga, Guatemala.

We have two males, including the type, and two females, all from Guatemala (Schaus and Barnes).

*Type*.—In National Collection.

*Type locality*.—Cayuga, Guatemala.

#### HAIMBACHIA MARONIELLA, new species

Figures 35, 70

Entirely similar in color and size to *dumptalis* Schaus, but differing in locality and genital structure.

The male genitalia are distinguished by the tapering vinculum with rather narrow, straight posterior margin; and the female by the unforked (scarcely incurvate) apex of the tongue from the 8th segment collar; signa developed as two small scobinate patches.

Genitalia figured from type and paratype.

Three males and a female are before us, all from the type locality, August, 1904 (W. Schaus).

*Type*.—Cat. No. 29435, U.S.N.M.

*Type locality*.—"Sixty miles up the Maroni River," French Guiana.

## HAIMBACHIA DISCALIS, new species

## Figure 72

Wings broader and more normally shaped than in *dumptalis* and *maroniella*. The whitish ground or fore wing is thickly strewn with black atoms; a large rounded black discal dot, between which and the inner margin is a faint yellow band, emphasized there by a blackish spot, less distinct costally; a narrow outer white line, indicated by double oblique brown streaks on costa, curves sharply outward and runs near the margin; a terminal black line; at tornus three black spots in a yellow area; fringe plumbeous interlined. Hind wing whitish, more or less pale fuscous suffused.

*Expanse*.—Male and female, 13–18 mm.

Male genitalia as in *gloriella* Schaus.

Female genitalia distinguished by the (spined) single signum of bursa. Figured from paratype.

Ten old specimens from Jalapa and Orizaba, Mexico, collected by Doctor Schaus many years ago.

*Type*.—Cat. No. 29436, U.S.N.M.

*Type locality*.—Jalapa, Mexico.

## HAIMBACHIA (?) PROSENES (Dyar)

## Figure 76

*Diatraea proscenes* DYAR, 1st Ann. Rept. Laguna Mar. Lab., 1912, p. 165.

*Chilo proscenes* (Dyar) BARNES and McDUNNOUGH, List Lepid. Bor. Amer., No. 5433, 1917.

A rather large species; white; the median line absent; subterminal line single and brown (not white) and bordered as usual.

*Expanse*.—Female, 20–23 mm.

Female genitalia figured from specimen from La Puerta Valley, Calif.; different from anything else in the genus and exhibiting none of the typical characters; no chitinous tongue from collar of 8th segment; bursa very small and without trace of signa; supporting rods of ovipositor not dilated.

This species does not belong strictly to *Haimbachia*; but without male we can make no other reference. Specimens before us from southern California.

Life history unknown.

*Type*.—In National Collection.

*Type locality*.—Laguna Beach, Calif.

SPECIES REFERRED FROM DIATRAEA<sup>4</sup>

The following species have been described in or referred to *Diatraea*, but differ from the generic definition we have adopted and

<sup>4</sup> *Platytes dentilineatella* Barnes and McDunnough is mentioned and figured here only because it is an important enemy of sugar cane. We are referring it to the genus *Xubida*.

require new generic names. All (except *parallela*) have veins 11 and 12 of fore wing separate, and all (except *alleni*, *parallela*, and *berthellus*) are without ocelli. The only existing genus with these characters is *Doratoperas* Hampson; but this has short labial palpi:

*Diatraea parallela* Kearfott. We make this the type of the new genus *Alamogordia*.

*Diatraea differentialis* Fernald. We make this the type of the new genus *Diatraenopsis*.

*Diatraea idalis* Fernald. Referred to *Diatraenopsis*.

*Crambus comptulatalis* Hulst. We make this the type of the new genus *Occidentalia*.

*Diatraea alleni* Fernald. Referred tentatively to *Platytes*. Its genitalia are more like those of *Diatraenopsis*; but on other characters it agrees better with *Platytes*.

*Diatraea berthellus* Schaus. Referred to *Chilo* (sens. lat.).

#### ALAMOGORDIA, new genus

Front flat and smooth. Ocelli present. Labial palpi long, porrect, down-curved, extending for twice the length of the head. Maxillary palpi slender, slightly tufted with linear scales. Male antennae slightly thickened. Fore wing long and narrow; vein 2 from long before angle of cell, the vein angled; 4 and 5 separate, from angle of cell; apex of cell rounded; 6 from below it; 7 appearing also below; 8 and 9 stalked from apex; 10 approximate; 11 anastomosing with 12. Hind wing with 3 not far before angle of cell; 4-5 rather shortly stalked; 6 from apex of cell; 7-8 anastomosing.

Male genitalia with vinculum narrowly and elongately triangular. Harpe undivided, elongately triangular, evenly tapering to apex; costa finely spined on basal half, otherwise simple. Uncus moderately broad, with apex bluntly rounded (a somewhat broadened hook). Gnathos unspined. Anellus a flattened heart-shaped plate with a central incurvation, but without produced lateral arms; juxta detached.

Female genitalia unknown.

Abdomen of male without lateral tufts on second segment.

In genitalia most closely resembling *Hemiplatytes*, from which it differs in the shape of the harpe and the anellus, characters that are of hardly more than specific value. The genus, however, is readily distinguished from *Hemiplatytes* by its hind wing venation and the presence of ocelli. From *Haimbachia*, which it most resembles otherwise, it is separable on wing shape and genitalia.

*Genotype*.—*Diatraea parallela* Kearfott.

## ALAMOGORDIA PARALLELA (Kearfott)

## Figure 32

*Diatraea parallela* KEARFOTT, Proc. U. S. Nat. Mus., vol. 35, 1908, p. 391.—  
BARNES and McDUNNOUGH, List Lepid. Bor. Amer., No. 5439, 1917.

Fore wing yellow, with a longitudinal white ray through the cell from base to margin.

Male genitalia figured from type.

We have only males of the type series, from New Mexico.

Life history unknown.

*Type*.—In National Collection.

*Type locality*.—Alamogordo, New Mexico.

## DIATRAENOPSIS, new genus

Front nearly flat and smooth. No ocelli. Labial palpi porrect, moderate, not extending twice the length of the head. Maxillary palpi heavily tufted with linear scales. Antenna of male slightly thickened; of female filiform. Fore wing with veins 4-5 separate at origin; 6-7 from the cell; 8-9 stalked; 10-11 from the cell, 11 free. Hind wing with vein 6 from apex of cell.

Male genitalia with vinculum rounded beneath, much enlarged. Harpe divided, with costa developed as a free curved hook with a very broad base. Uncus triangular tapering to a blunt hook. Gnathos a heavy semicircular band terminating in a short hook; unspined. Anellus a simple flattened plate with a detached juxta and without lateral arms.

Female genitalia with ductus bursae rather long, chitinized only toward genital opening. Bursa moderately large; without signum. Ovipositor and supporting rods normal.

Abdomen of male without tufts on second segment.

*Genotype*.—*Diatraea differentialis* Fernald.

## DIATRAENOPSIS DIFFERENTIALIS (Fernald)

## Figures 34, 79

*Diatraea differentialis* FERNALD, Ent. Amer., vol. 4, 1888, p. 120.—FERNALD, in Dyar List, Bull. 52, U. S. Nat. Mus., No. 4626, 1903.—BARNES and McDUNNOUGH, List, Lepid. N. Amer., No. 5441, 1917.

A very large species with the male fore wing blackish brown, the female lighter brown.

The male genitalia (figured from type) are strikingly like those of *Platytes* (?) *alleni* Fernald, the only appreciable difference being in the shape of the uncus and gnathos.

The female genitalia (figured from paratype) are easily recognized by the heavy and corrugated chitinization surrounding the genital opening and extending to the lower tips of the ovipositor lobes.

Three specimens are before us from the type locality.

*Type*.—In National Collection.

*Type locality*.—Florida.

**DIATRAENOPSIS IDALIS (Fernald)**

Figure 78

*Diatraea idalis* FERNALD, Cramb. N. Amer., Special Bull. Mass. Agr. Coll., 1896, p. 76.—FERNALD, in Dyar List, Bull. 52. U. S. Nat. Mus., No. 4627, 1903.—BARNES and McDUNNOUGH, List Lepid. Bor. Amer., No. 5442, 1917.—FORBES, Mem. 68, Cornell Univ. Agr. Exp. Sta., 1923, p. 591.

The female type has a conical tuberculate front, but otherwise falls here. There are no ocelli.

The female genitalia (figured from type) are so different from those of the preceding species as to suggest a possible generic separation. There is no armature about the genital opening except the smoothly chitinized tube of the ductus, and the latter has a couple of small chitinized earlike flaps just at its juncture with the bursa. The supporting rods of the 8th segment collar are also longer than in *differentialis*.

*Type*.—In National Collection.

*Type locality*.—New Jersey.

The specimen referred as the male of this species by Fernald has ocelli and may be placed in *Chilo*. We are proposing for it the name *Chilo fernaldalis*.

**CHILO FERNALDALIS, new species**

Figure 31

*Diatraea idalis* FERNALD (male not female), Cramb. N. Amer., Special Bull. Mass. Agr. Coll., 1896, p. 76.

Palpi long, porrect and down-curved. Antennae of male thickened subserrate. Fore wing broad; apex acute but not as pointed as in *idalis*; uniform gray, irregularly dusted with blackish; a shaded outer blackish line; a faint dark mark at end of cell. Hind wing pale gray.

*Expanse*—22 mm.

Male genitalia with vinculum narrow, rounded. Harpe undivided; elongately triangular; costa with a smooth projection from base. Uncus moderately broad, with apex bluntly rounded. Gnathos hook-like, unspined. Anellus a plate with long, slender, lateral arms;



juxta detached. Aedoeagus with a long scobinate tongue attached to under side near base. Figured from type.

One specimen before us from collection C. V. Riley (A. Oemler, collector); referred by Fernald as the male of *Diatraenopsis idalis*; two others from the C. H. Fernald Collection, labeled "Georgia" and "414, 433," and by Fernald "*Chilo*," probably all from the same source.

*Type*.—Cat. No. 29437, U.S.N.M.

*Type locality*.—Wilmington Island, Ga.

CHILO BERTHELLUS (Schaus)

*Diatraea berthellus* SCHAU (in Dyar), Ent. News, vol. 22, 1911, p. 206.

OCCIDENTALIA, new genus

Front strongly conically produced and tuberculate. Labial palpi porrect and down-curved, not extending twice the length of the head. Antennae filiform. Venation as in *Diatraenopsis*. The wings rounded apically; in the female disproportionately small for the heavy abdomen, but form otherwise slender.

Male genitalia with vinculum produced beneath into an extended tongue. Harpe undivided, but with costa stoutly and broadly chitinized at base and produced into a short stout subbasal hook. Uncus a somewhat flattened and broadened hook (as in *Alamogordia* and *Hemiplatytes*). Gnathos unspined. Anellus semitubular without produced lateral arms (as in *Haimbachia*); no detached juxta.

Female genitalia with ductus bursae chitinized for a short distance from genital opening; rather long. Bursa copulatrix moderately sized and without signa. Ovipositor reduced. Supporting rods of ovipositor and eighth segment collar very long. Eighth to tenth segments greatly elongated and telescopic.

Abdomen of male without hair tufts on second segment.

*Genotype*.—*Crambus comptulatalis* Hulst.

OCCIDENTALIA COMPTULATALIS (Hulst)

Figures 42, 81

*Crambus comptulatalis* HULST, Trans. Amer. Ent. Soc., vol. 13, 1886, p. 167.

*Chilo comptulatalis* (Hulst) FERNALD, in Dyar List, Bull. 52, U. S. Nat. Mus., No. 4631, 1903.—BARNES and McDUNNOUGH, List Lepid. Bor. Amer., No. 5431, 1917.

*Diatraea comptulatalis* (Hulst) FORBES, Memo. 68, Cornell Univ. Agr. Exp. Sta., 1923, p. 591.

Sexually dimorphic, the males brown, the females more yellowish and with a distinct outer line.

*Expanse*.—Male, 21–25 mm.; female, 22–30 mm.

Genitalia figured from specimens from Denver, Colo. (male), and Provo, Utah (female).

Specimens before us from Quebec (Canada), Minnesota, Colorado, Utah, Washington.

The life history was observed by Riley; under No. 471<sup>x</sup> is the note: "Pyralid in stems of *Juncus*, Minnetonka Lake, Minn., August, 1877."

*Type*.—(?).

*Type locality*.—Vancouver Island.

PLATYTES (?) ALLENI (Fernald)

Figure 33

*Diatraea alleni* FERNALD, Ent. Amer., vol. 4, 1888, p. 120.—FERNALD, in DYAR List, Bull. 52, U. S. Nat. Mus., No. 4625, 1903.—BARNES and McDUNNOUGH, Check List Lepid. Bor. Amer., No. 5440, 1917.

Fore wing with creamy white ground, showing rather broadly along inner margin, otherwise overspread with dark brown irroration, leaving the veins rather broadly pale; a round, blackish discal dot; terminal line fine, black, tending to form dots between the veins, though not positively broken; fringe pale. Hind wing pale creamy, brownish shaded.

*Expanse*.—Male, 24–29 mm.

Male genitalia similar to those of *Diatraenopsis differentialis*; differing chiefly in the shape of the uncus and gnathos (compare figs. 33, 34). Figured from type.

Abdomen of male without hair tufts on second segment.

Four males before us; Maine and Connecticut.

Female and life history unknown.

*Type*.—In National Collection.

*Type locality*.—Orono, Me.

XUBIDA DENTILINEATELLA (Barnes and McDunnough)<sup>5</sup>

Figures 40, 80

*Platytes dentilineatella* BARNES and McDUNNOUGH, Cont. Nat. Hist. Lepid. N. Amer., vol. 2, 1913, p. 138; List. Lepid. Bor. Amer., No. 5423, 1917.

Very similar to *Xubida dentilineella* Schaus.<sup>5</sup>

Genitalia figured from reared specimen from Potrero, Mexico.

*Type*.—In Barnes Collection.

*Type locality*.—Palmerlee, Ariz.

<sup>5</sup>(Proc. Ent. Soc. Washington, vol. 24, 1922, p. 141.) type of the genus *Xubida* Schaus. The names are unfortunately similar, though not identical. We notice the species *dentilineatella* because its larvae bore in sugar cane. The habits of *dentilineella* are unknown.

## SPECIES UNRECOGNIZED

The following species, described in *Diatraea*, are unknown to us except by description:

*Diatraea obliqualis* HAMPSON, Ann. Mag. Nat. Hist., ser. 9, vol. 3, 1919, p. 543. From Argentina. Possibly referable to *Trinidadia*.

*Diatraea endothermalis* HAMPSON, Ann. Mag. Nat. Hist., ser. 9, vol. 3, 1919, p. 544. From Peru.

*Diatraea lentistriatalis* HAMPSON, Ann. Mag. Nat. Hist., ser. 9, vol. 3, 1919, p. 546. From Argentina.

## EXPLANATION OF PLATES

The drawings accompanying this paper were made under the authors' supervision by Miss Eleanor T. Armstrong, of the Bureau of Entomology. They were not drawn to scale, but to show structural differences.

## EXPLANATION OF SYMBOLS APPLIED TO GENITALIA

## MALE

*an*=anellus.

*clh*=basal projection (lobe) from costa of harpe.

*cn*=cornutus (or cornuti) of penis.

*gn*=gnathos.

*j*=detached juxta of anellus.

*ll*=lateral lobes of tegumen.

*spg*=spining at apex of gnathos.

*tg*=tegumen.

*u*=uncus.

*vm*=vinculum.

## FEMALE

*bc*=bursa copulatrix.

*db*=ductus bursae.

*go*=genital opening.

## PLATE 1

Abdominal tufts and male genitalia (*Diatraea*)

FIG. 1. Basal segments of male abdomen showing tufts (*X*) on caudal margin of second segment (*Diatraea saccharalis*).

- Diatraea saccharalis* (Fabricius), dissected genitalia: *A*=tegumen, uncus and gnathos (lateral view); *B*=aedeagus; *C*= harpes, vinculum and anellus (ventral view).
- Diatraea magnifactella* Dyar: *A*=tegumen, uncus and gnathos (lateral view); *B*=harpes, vinculum and anellus (ventral view); *C*=aedeagus.
- Diatraea pedibarbata* Dyar: *A*=tegumen, uncus and gnathos (lateral view); *B*=harpes, vinculum and anellus (ventral view); *C*=aedeagus.

## PLATE 2

Male genitalia (*Diatraea*)

- FIG. 5. *Diatraea busckella* Dyar and Heinrich: A=tegumen, uncus and gnathos (three-quarters view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.
6. *Diatraea guatemalella* Schaus: A=tegumen, uncus and gnathos (three-quarters view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.
7. *Diatraea tabernella* Dyar: A=tegumen, uncus and gnathos (lateral view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.
8. *Diatraea angustella* Dyar: A=tegumen, uncus and gnathos (lateral view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.

## PLATE 3

Male genitalia (*Diatraea*)

- FIG. 9. *Diatraea gaga* Dyar: A=tegumen, uncus and gnathos (lateral view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.
10. *Diatraea evanescens* Dyar: A=tegumen, uncus and gnathos (lateral view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.
11. *Diatraea scacolella* Dyar: A=tegumen, uncus and gnathos (three-quarters view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.
12. *Diatraea postlineella* Schaus: A=tegumen, uncus and gnathos (three-quarters view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.

## PLATE 4

Male genitalia (*Diatraea*)

- FIG. 13. *Diatraea canella* Hampson: A=tegumen, uncus and gnathos (lateral view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.
14. *Diatraea amnemonella* Dyar: A=tegumen, uncus and gnathos (lateral view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.
15. *Diatraea fuscella* Schaus: A=tegumen, uncus and gnathos (lateral view); B=same (three-quarters view); C=same (ventral view); D=harpes, vinculum and anellus (ventral view); E=aedoeagus.

## PLATE 5

Male genitalia (*Diatraea*)

- FIG. 16. *Diatraea venosalis* (Dyar): A=tegumen, uncus and gnathos (lateral view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.
17. *Diatraea maronialis* Schaus: A=tegumen, uncus and gnathos (lateral view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.
18. *Diatraea lineolata* (Walker): A=tegumen, uncus and gnathos (lateral view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.

## PLATE 6

Male genitalia (*Diatraea*)

- FIG. 19. *Diatraea schausella* Dyar and Heinrich: A=tegumen, uncus and gnathos (three-quarters view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.
20. *Diatraea muellerella* Dyar and Heinrich: A=tegumen, uncus and gnathos (three-quarters view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.
21. *Diatraea grandiosella* Dyar: A=tegumen, uncus and gnathos (lateral view); B=same (three-quarters view); C=harpes, vinculum and anellus (ventral view); D=aedoeagus.

## PLATE 7

Male genitalia (*Diatraea*)

- FIG. 22. *Diatraea bellifactella* Dyar: A=tegumen, uncus and gnathos (three-quarters view); B=same (ventral view); C=same (lateral view); D=aedoeagus; E=harpes, vinculum and anellus (ventral view).
23. *Diatraea strigipennella* Dyar: A=tegumen, uncus and gnathos (lateral view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.
24. *Diatraea cayennella* Dyar and Heinrich: A=tegumen, uncus and gnathos (three-quarters view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.

## PLATE 8

Male genitalia (*Diatraea*, *Doratoperas*, *Xanthopherne*)

- FIG. 25. *Diatraea castrensis* Dyar and Heinrich: A=tegumen, uncus and gnathos (three-quarters view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.
26. *Doratoperas atroparsellus* (Walker): A=tegumen, uncus and gnathos (lateral view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.
27. *Xanthopherne fulvescens* (Hampson): A=tegumen, uncus and gnathos (lateral view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.

## PLATE 9

Male genitalia (*Iesta*, *Trinidadia*, *Hemiplatytes*, *Chilo*)

- FIG. 28. *Iesta lisetta* Dyar: A=tegumen, uncus and gnathos (three-quarters view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.
29. *Trinidadia minimifactor* (Dyar): A=tegumen, uncus and gnathos (lateral view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.
30. *Hemiplatytes epia* (Dyar): A=tegumen, uncus and gnathos (ventral view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.
31. *Chilo fernaldalis* Dyar and Heinrich: A=tegumen, uncus and gnathos (three-quarters view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.

## PLATE 10

Male genitalia (*Alamogordia*, *Platytes*, *Diatraenopsis*)

- FIG. 32. *Alamogordia parallela* (Kearfott): A=tegumen, uncus and gnathos (ventral view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.
33. *Platytes alleni* (Fernald): A=tegumen, uncus and gnathos (lateral view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.
34. *Diatraenopsis differentialis* (Fernald): A=tegumen, uncus and gnathos (ventral view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.

## PLATE 11

Male genitalia (*Haimbachia*)

- FIG. 35. *Haimbachia maroniella* Dyar and Heinrich: A=tegumen, uncus and gnathos (ventral view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.
36. *Haimbachia gloriella* Schaus: A=tegumen, uncus and gnathos (lateral view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.
37. *Haimbachia squamulella* (Zeller): A=aedoeagus; B=genitalia with aedoeagus omitted (ventral view).
38. *Haimbachia quirguella* Schaus: A=tengumen, uncus and gnathos (lateral view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.

## PLATE 12

Male genitalia (*Haimbachia*, *Xubida*, *Occidentalia*)

- FIG. 39. *Haimbachia placidella* (Haimbach): A=tegumen, uncus and gnathos (lateral view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.
40. *Xubida dentilineatella* (Barnes and McDunnough): A=genitalia (ventral view) with aedoeagus omitted; B=aedoeagus.
41. *Haimbachia dumptalis* Schaus: A=tegumen, uncus and gnathos (ventral view); B=harpes, vinculum and anellus (ventral view); C=aedoeagus.
42. *Occidentalia comptulatalis* (Hulst): A=genitalia (ventral view) with aedoeagus omitted; B=aedoeagus.

## PLATE 13

Male and female genitalia (*Silveria*, *Iesta*, *Trinidadia*)

- FIG. 43. *Silveria chiriquitensis* (Zeller): female genitalia (ventral view).
44. *Silveria chiriquitensis* (Zeller): male genitalia: A=lateral view of genitalia with aedoeagus omitted; B=aedoeagus.
45. *Silveria hexhex* Dyar: female genitalia (ventral view).
46. *Iesta morobe* Dyar: female genitalia (ventral view).
47. *Iesta lisetta* Dyar: female genitalia (ventral view).
48. *Trinidadia minimifactor* (Dyar): female genitalia (ventral view).

## PLATE 14

Female genitalia (*Diatraea*)

- FIG. 49. *Diatraea instructella* Dyar: ventral view.  
 50. *Diatraea continens* Dyar: ventral view.  
 51. *Diatraea indigenella* Dyar and Heinrich: ventral view.  
 52. *Diatraea magnifactella* Dyar: ventral view.  
 53. *Diatraea busckella* Dyar and Heinrich: ventral view.

## PLATE 15

Female genitalia (*Diatraea*)

- FIG. 54. *Diatraea saccharalis* (Fabricius): ventral view.  
 55. *Diatraea guatemalella* Schaus: ventral view.  
 56. *Diatraea angustella* Dyar: ventral view.  
 57. *Diatraea evanescens* Dyar: ventral view.  
 58. *Diatraea venosalis* (Dyar): ventral view.  
 59. *Diatraea zeacolella* Dyar: ventral view.

## PLATE 16

Female genitalia (*Diatraea*)

- FIG. 60. *Diatraea canella* Hampson: ventral view.  
 61. *Diatraea fuscella* Schaus: ventral view.  
 62. *Diatraea amnemonella* Dyar: ventral view.  
 63. *Diatraea lineolata* (Walker): ventral view.  
 64. *Diatraea maroniatis* Schaus: ventral view.

## PLATE 17

Female genitalia (*Diatraea*)

- FIG. 65. *Diatraea cayennella* Dyar and Heinrich: ventral view.  
 66. *Diatraea strigipennella* Dyar: ventral view.  
 67. *Diatraea bellifactella* Dyar: ventral view.  
 68. *Diatraea grandiosella* Dyar: ventral view.

## PLATE 18

Female genitalia (*Haimbachia*)

Ovipositors and collars of eighth segment shown in lateral view; seventh segment flattened somewhat to give ventral or three-quarters view of genital opening.

- FIG. 69. *Haimbachia dumptalis* Schaus.  
 70. *Haimbachia maroniella* Dyar and Heinrich.  
 71. *Haimbachia gloriella* Schaus.  
 72. *Haimbachia discalis* Dyar and Heinrich.  
 73. *Haimbachia quiriguella* Schaus.  
 74. *Haimbachia squamulella* (Zeller).

## PLATE 19

Female genitalia (*Xanthopherne*, *Haimbachia*, *Doratoperas*)

- FIG. 75. *Xanthopherne biumbrata* (Schaus): ventral view.  
76. *Haimbachia prosenes* (Dyar): three-quarters view of ovipositor and collar of eighth segment, ventral view of seventh segment and genital opening.  
77. *Doratoperas atroparsellus* (Walker): ventral view.

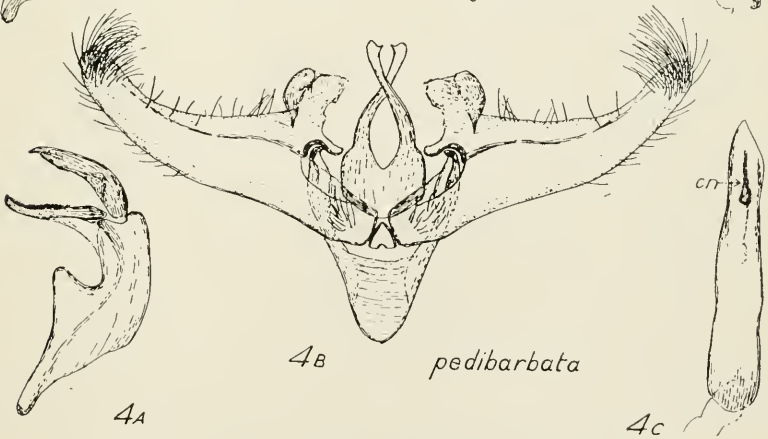
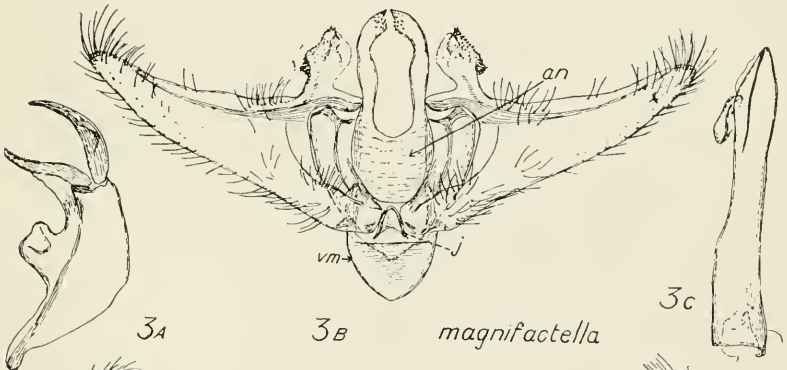
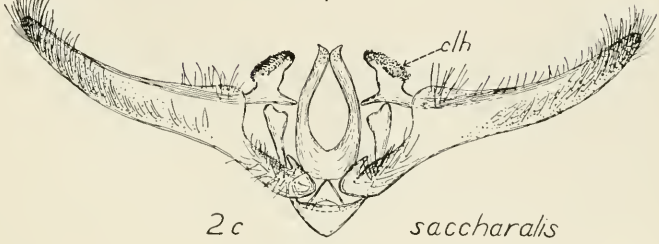
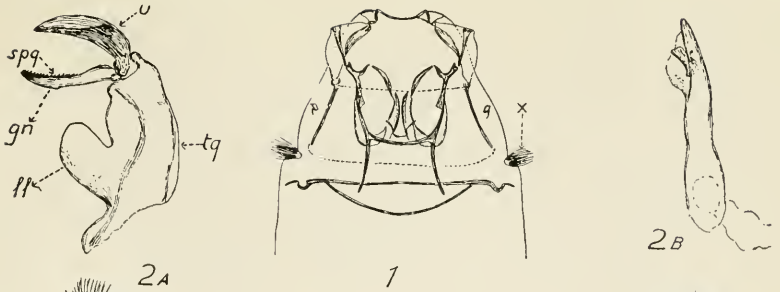
## PLATE 20

Female genitalia (*Diatraenopsis*, *Xubida*, *Occidentalia*, *Hemiplatytes*)

- FIG. 78. *Diatraenopsis idalis* (Fernald): showing ovipositor and collar of eighth segment in lateral view; seventh segment and genital opening in ventral view.  
79. *Diatraenopsis differentialis* (Fernald): lateral view.  
80. *Xubida dentilineatella* (Barnes and McDunnough): lateral view.  
81. *Occidentalia comptulatalis* (Hulst): ventral view.  
82. *Hemiplatytes epia* (Dyar): ventral view.

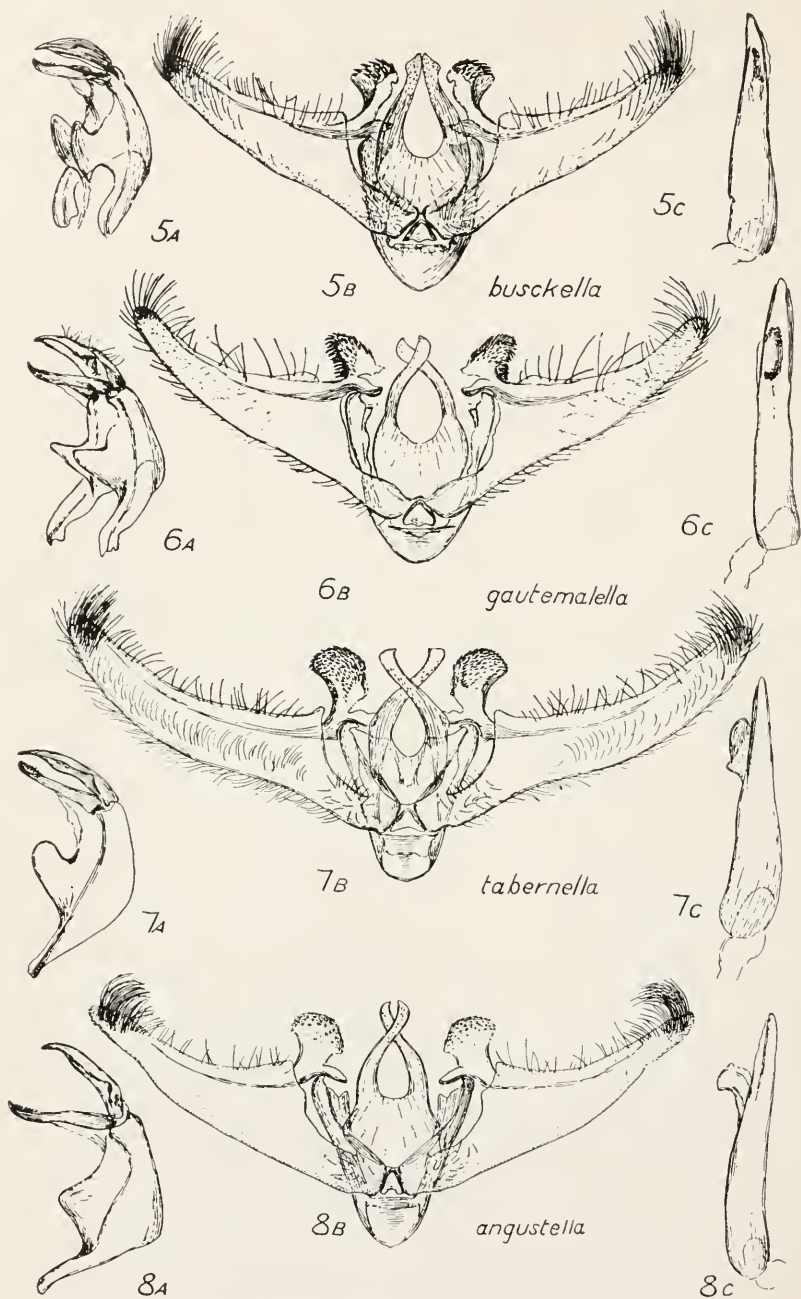






ABDOMINAL TUFTS AND MALE GENITALIA OF DIATRIAEA

FOR EXPLANATION OF PLATE SEE PAGE 43

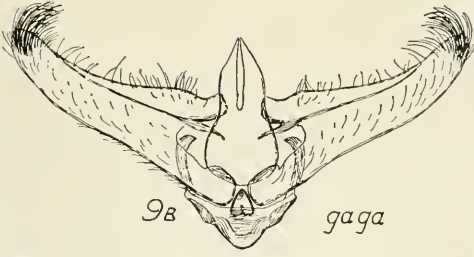


MALE GENITALIA OF DIATRAEA

FOR EXPLANATION OF PLATE SEE PAGE 44



9A



9B

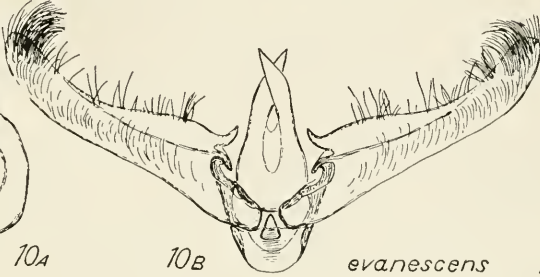
*gaga*



9C



10A



10B

*evanescens*



10C



11A



11B

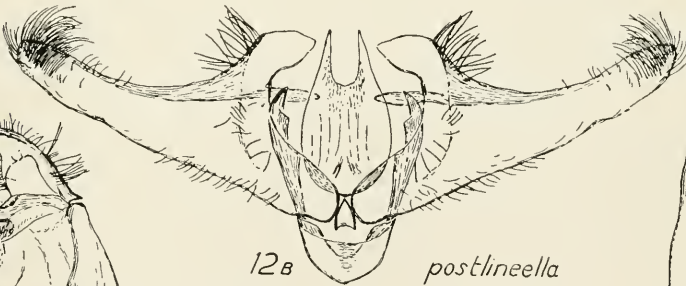
*zeacolella*



11C



12A



12B

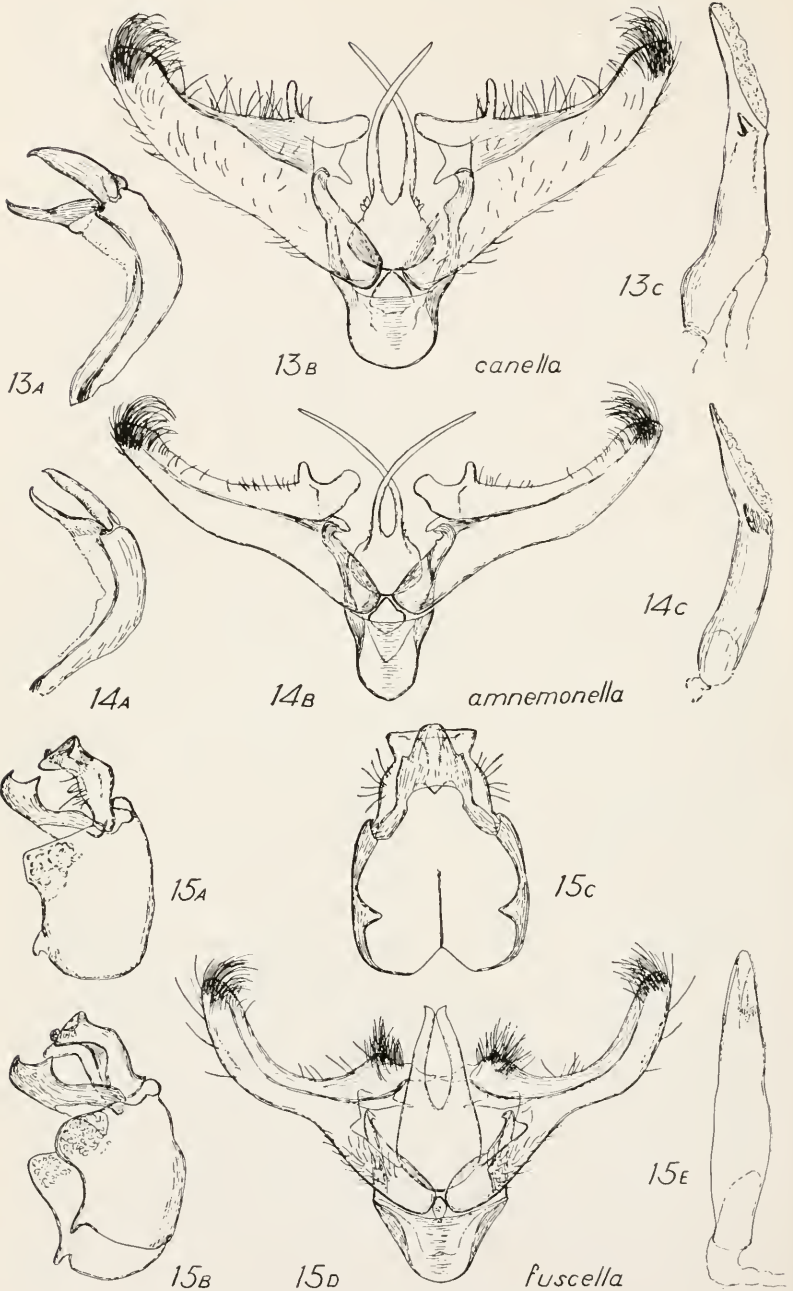
*postlineella*



12C

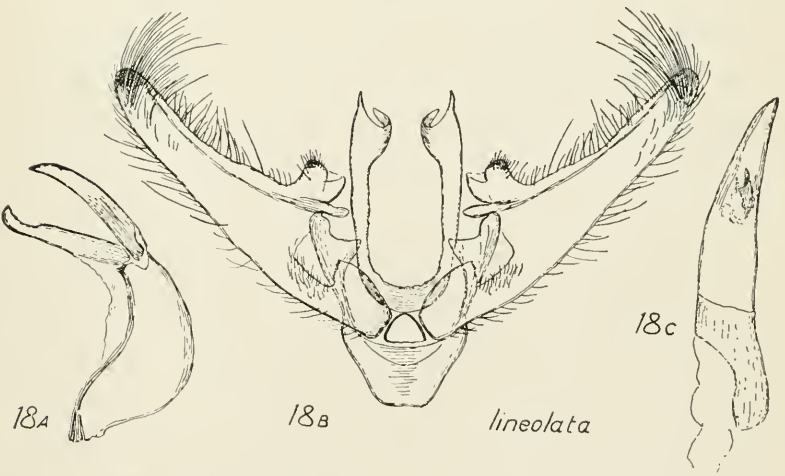
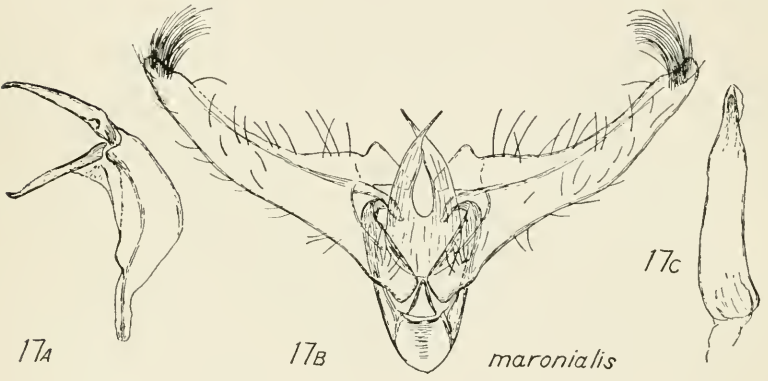
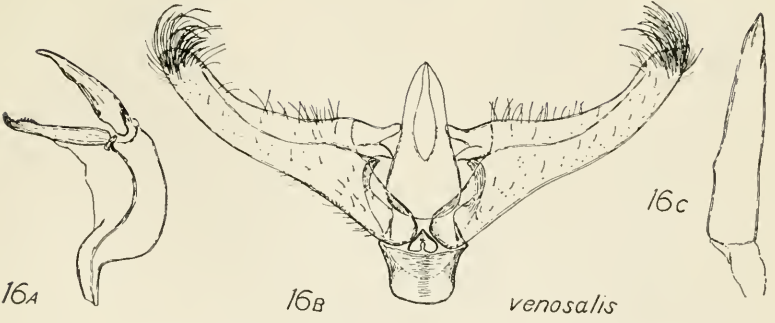
MALE GENITALIA OF DIATRAEA

FOR EXPLANATION OF PLATE SEE PAGE 44



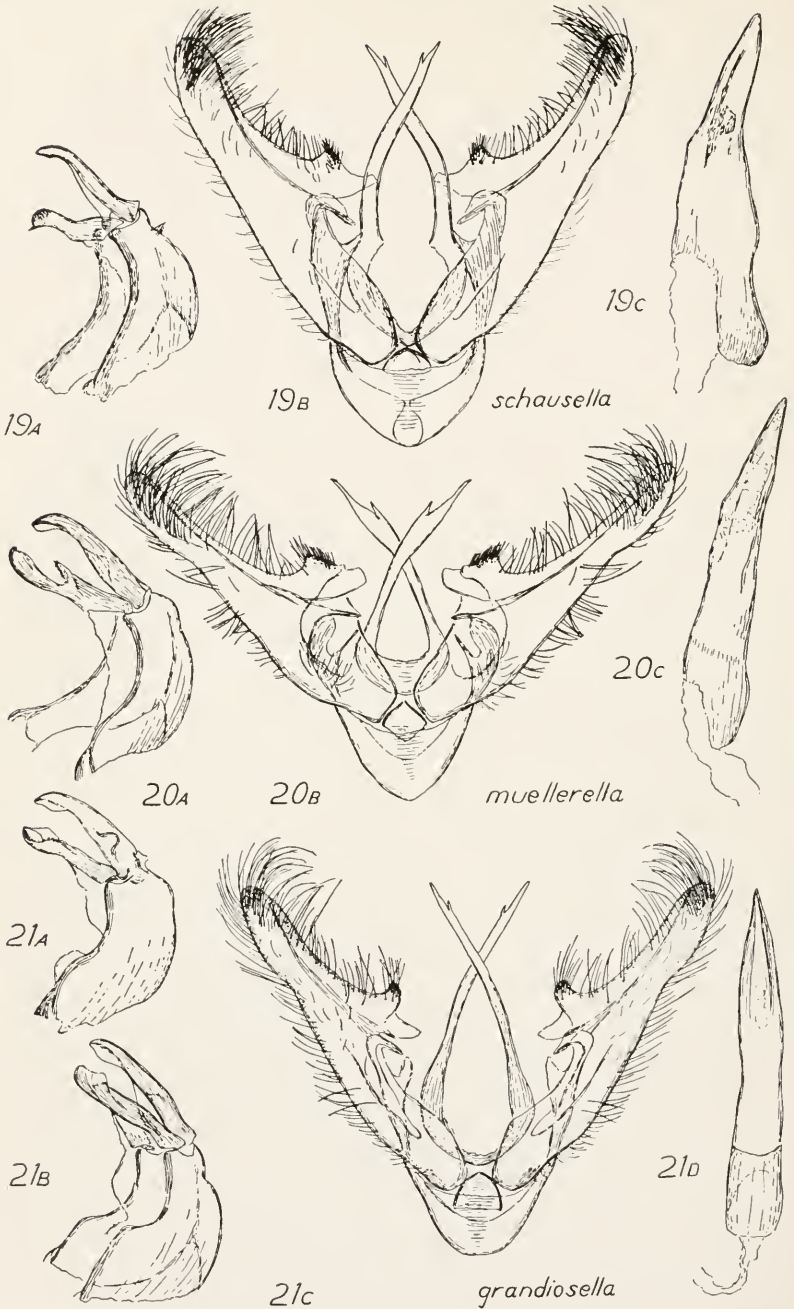
MALE GENITALIA OF DIATRAEA

FOR EXPLANATION OF PLATE SEE PAGE 44



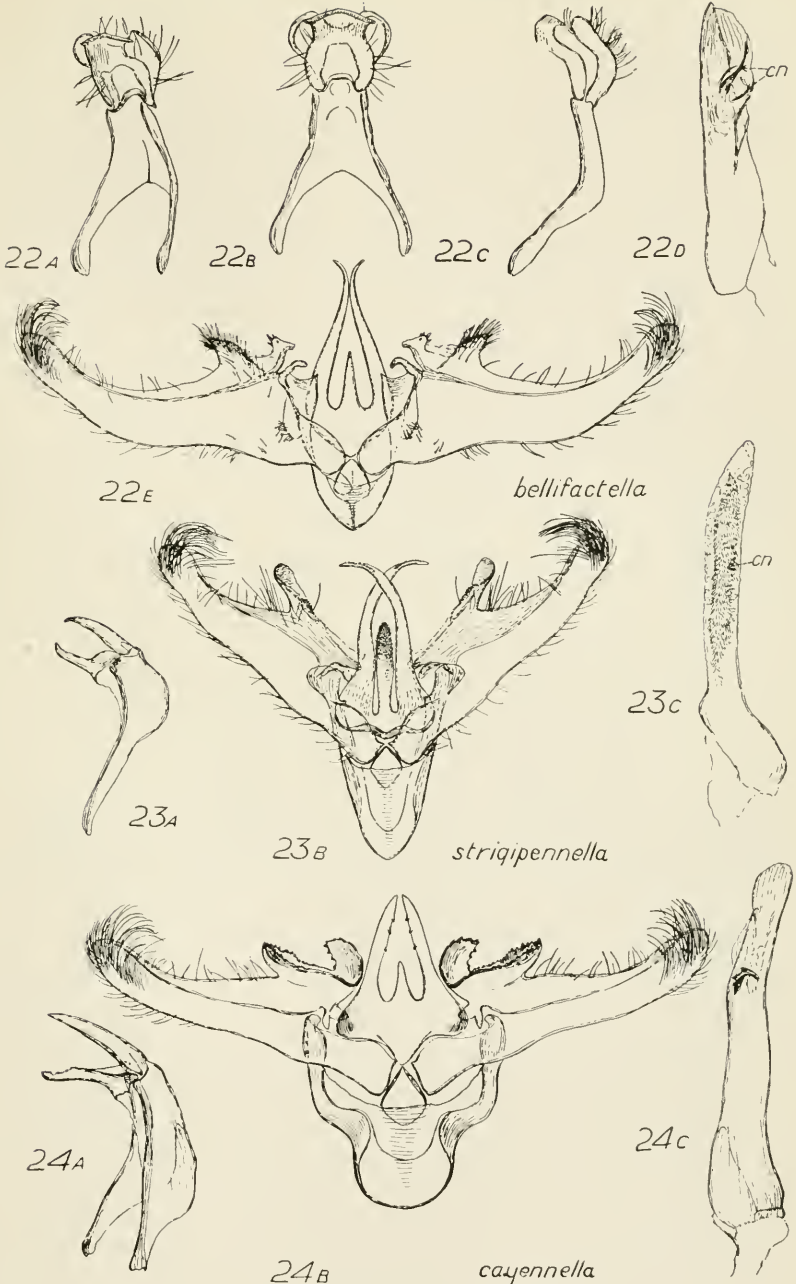
MALE GENITALIA OF DIATRAEA

FOR EXPLANATION OF PLATE SEE PAGE 44



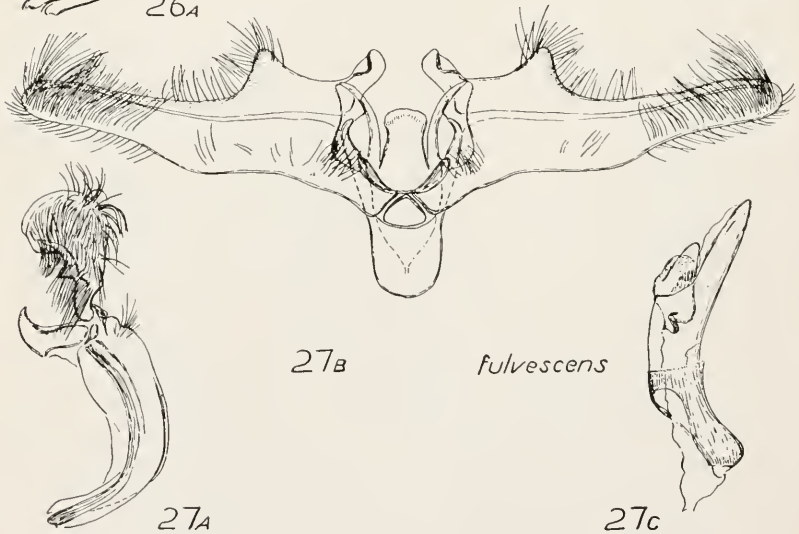
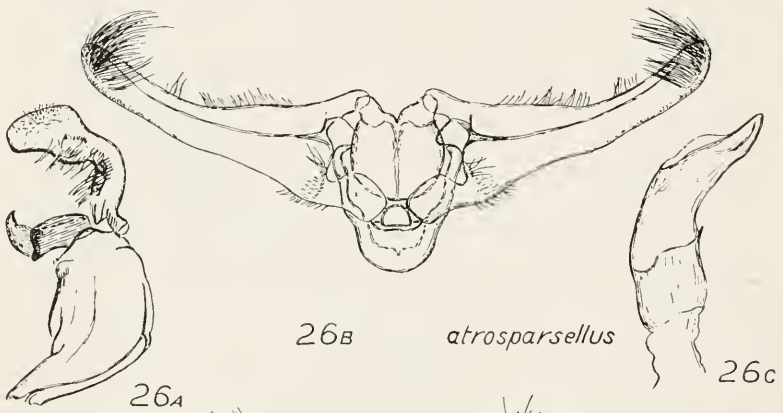
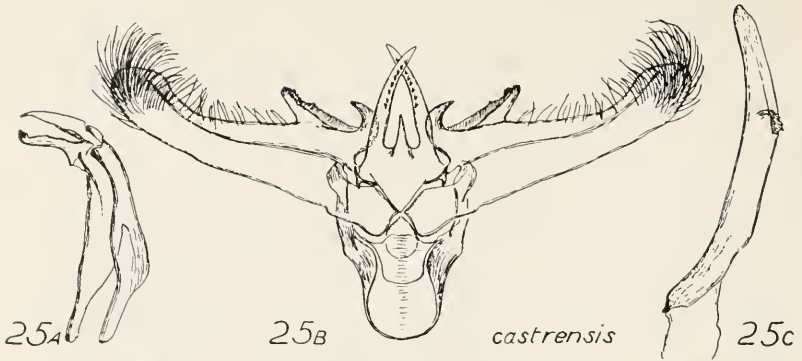
MALE GENITALIA OF DIATRAEA

FOR EXPLANATION OF PLATE SEE PAGE 45



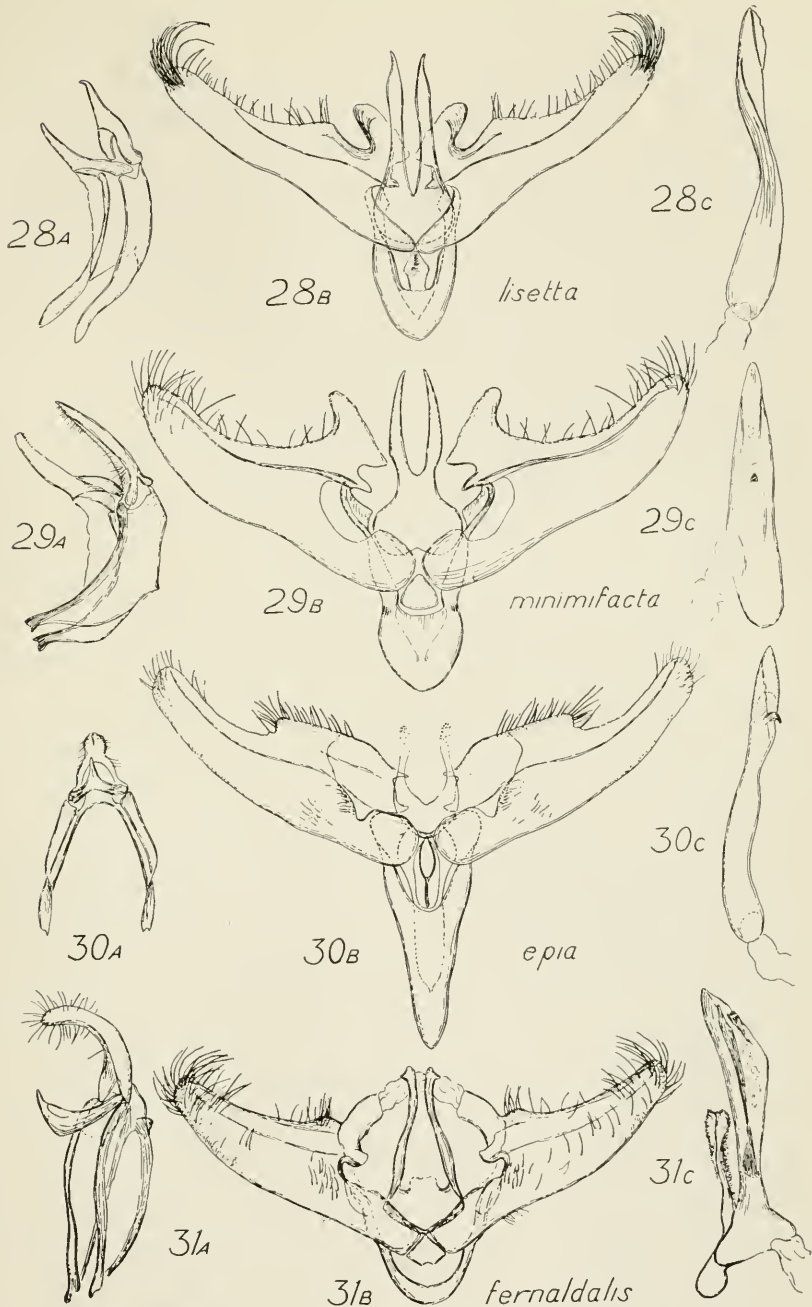
MALE GENITALIA OF DIATRAEA

FOR EXPLANATION OF PLATE SEE PAGE 45



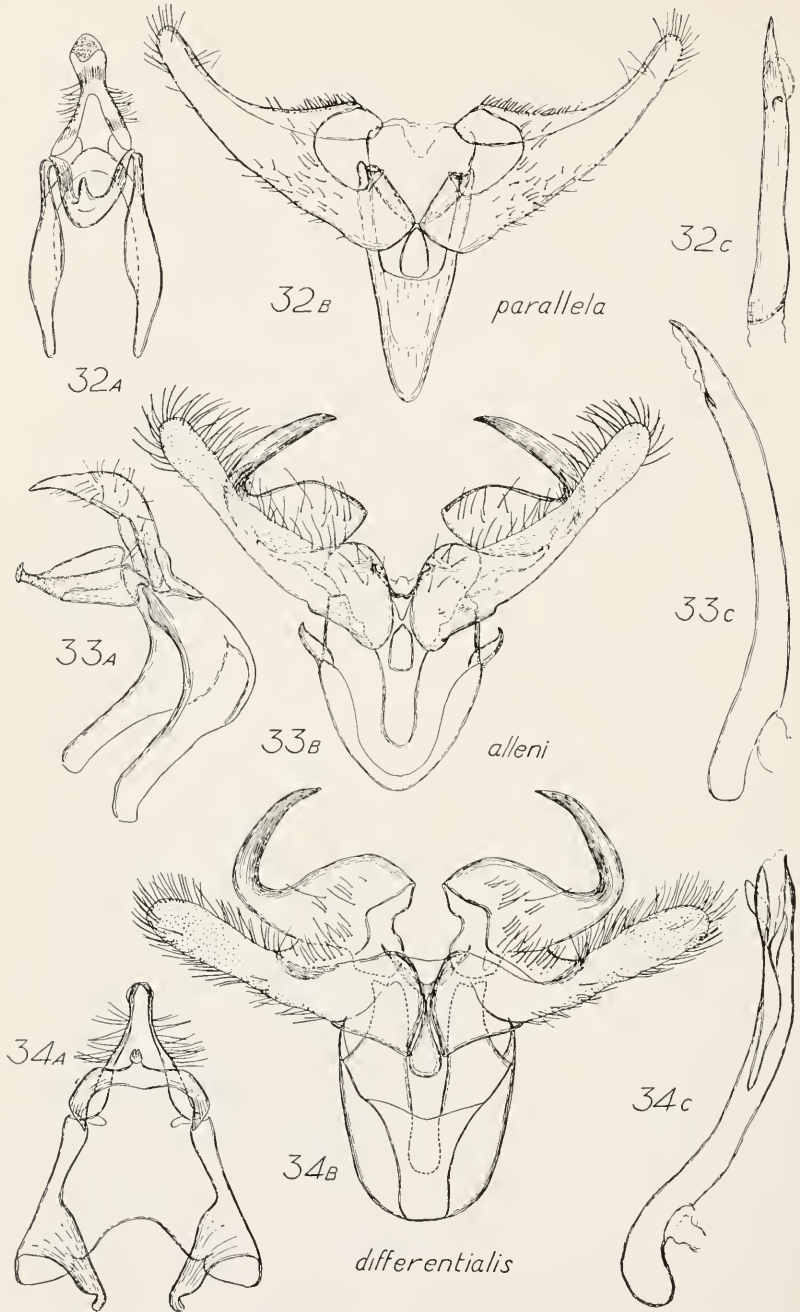
MALE GENITALIA OF DIATRAEA, DORATOPERAS, AND XANTHOPHERNE





MALE GENITALIA OF *IESTA*, TRINIDADIA, HEMIPLATYTES, AND CHILO

FOR EXPLANATION OF PLATE SEE PAGE 45

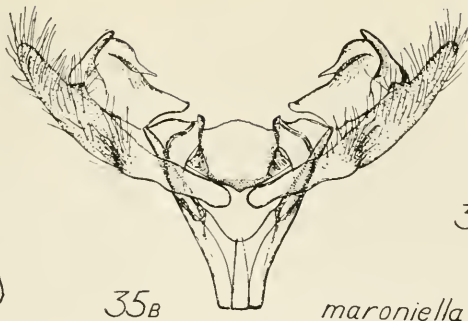


MALE GENITALIA OF ALAMOGORDIA, PLATYTES, AND DIATRAENOPSIS

FOR EXPLANATION OF PLATE SEE PAGE 46



35A



35B

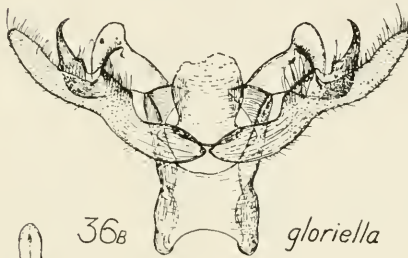
*maroniella*



35c



36A

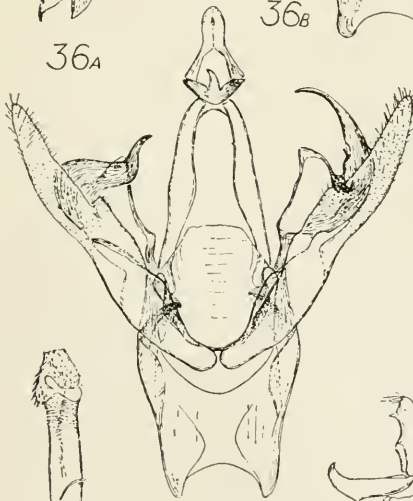


36B

*gloriella*

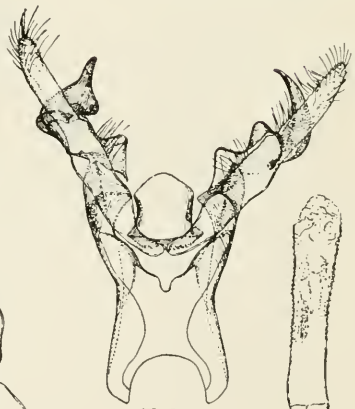


36c



37B

*squamulella*



38B

*quiriguella*



37A



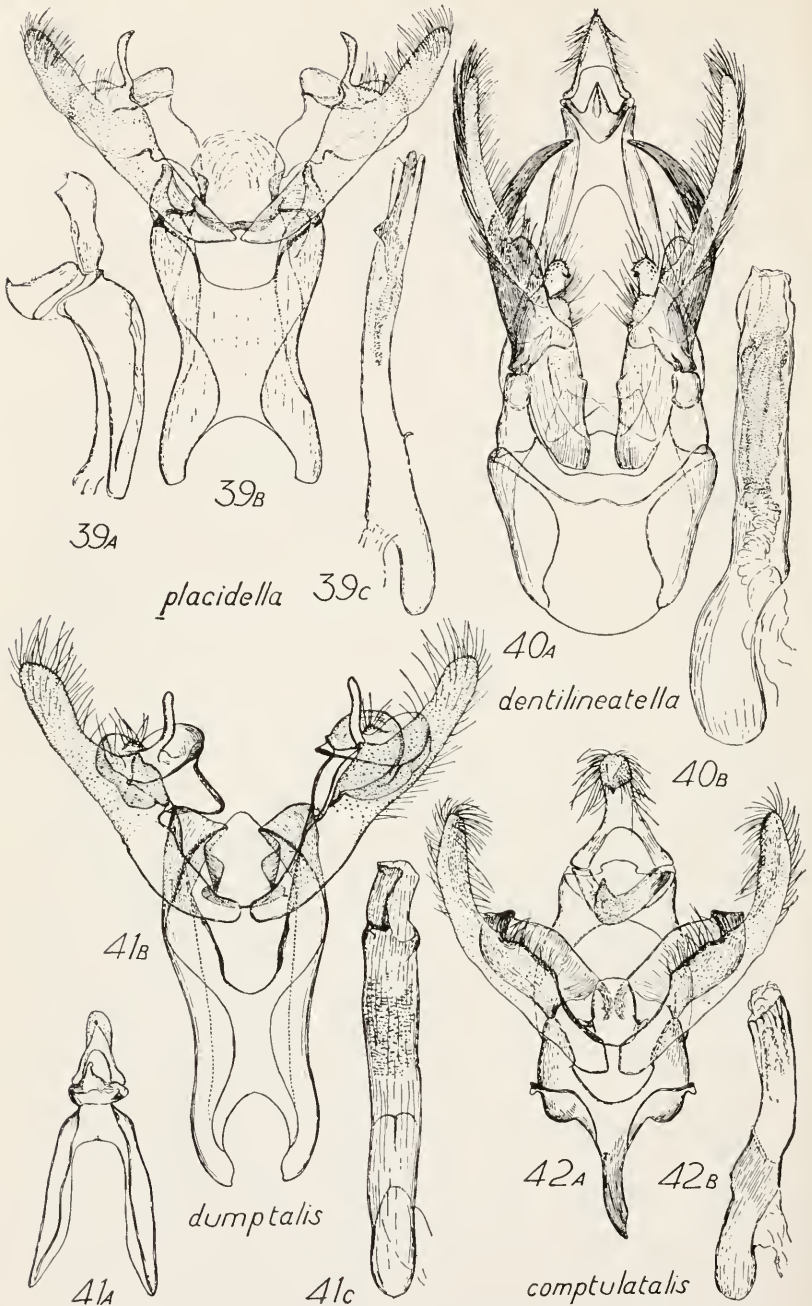
38A



38c

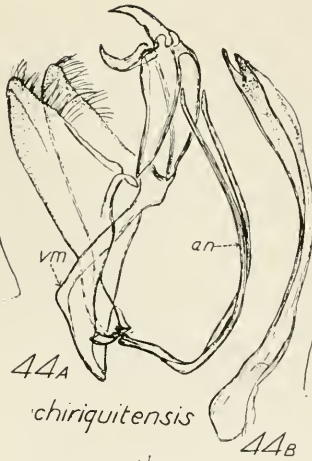
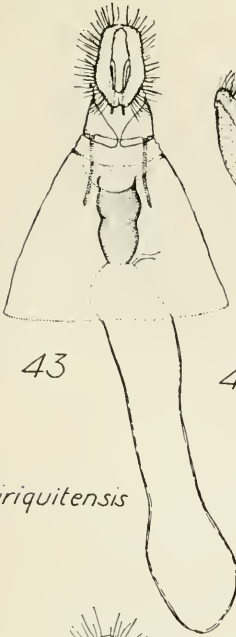
MALE GENITALIA OF HAIMBACHIA

FOR EXPLANATION OF PLATE SEE PAGE 46



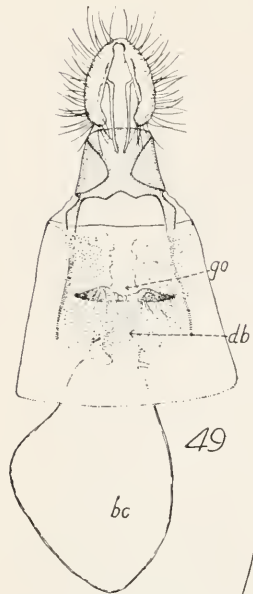
MALE GENITALIA OF HAIMBACHIA, XUBIDA, AND OCCIDENTALIA

FOR EXPLANATION OF PLATE SEE PAGE 46

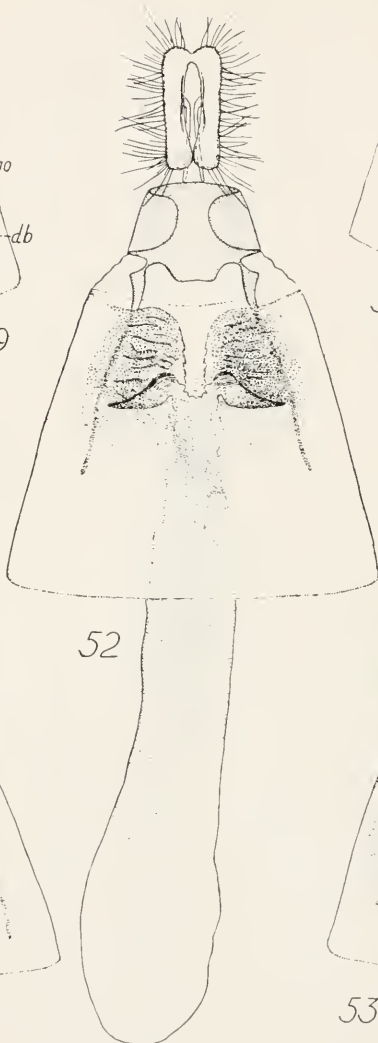


MALE AND FEMALE GENITALIA OF SILVERIA, IESTA, AND TRINIDADIA

FOR EXPLANATION OF PLATE SEE PAGE 46



*instructella*



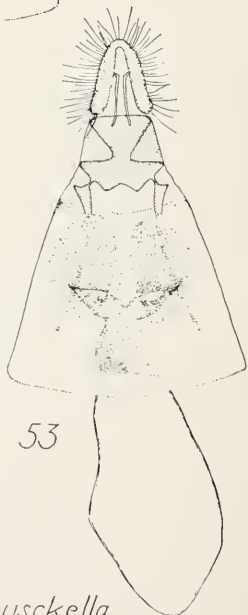
*magnifactella*



*continens*



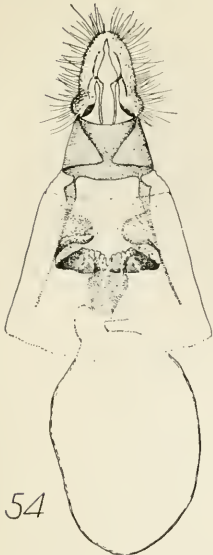
*indigenella*



*busckella*

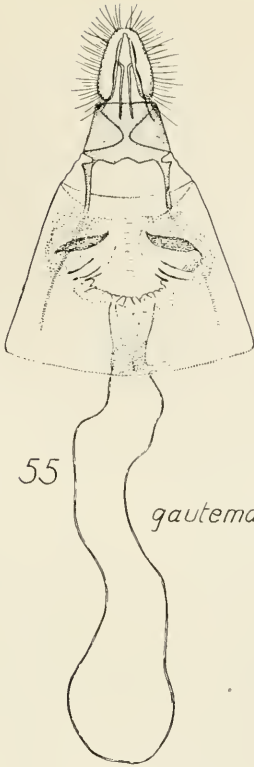
FEMALE GENITALIA OF DIATRAEA

FOR EXPLANATION OF PLATE SEE PAGE 47



54

*saccharalis*



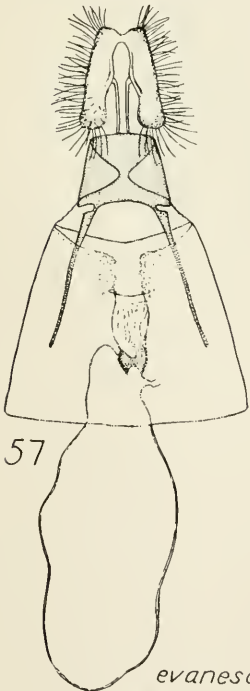
55

*gautemalella*



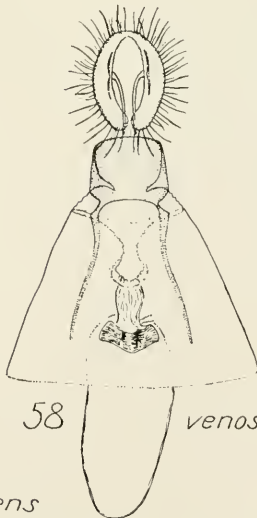
56

*angustella*



57

*evanescens*



58

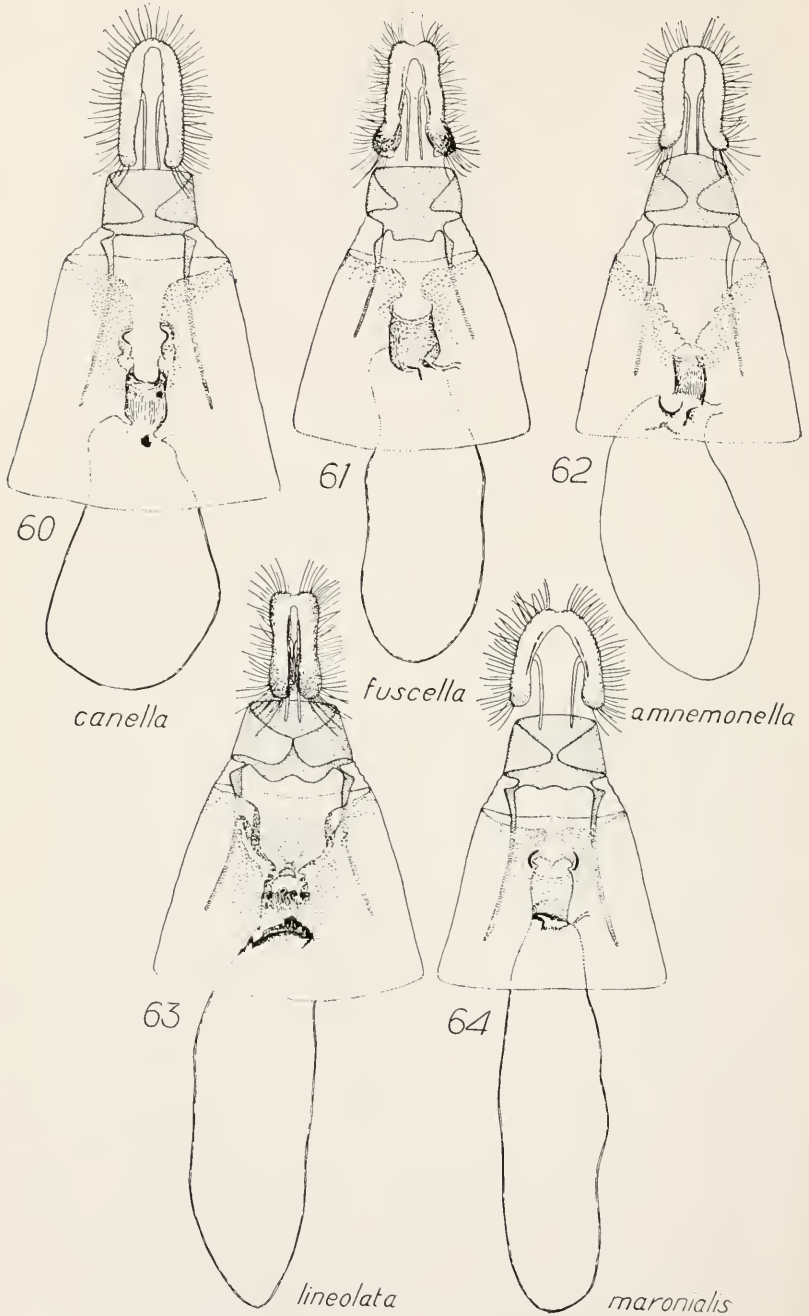
*venosalis*



59

*zeacolella*

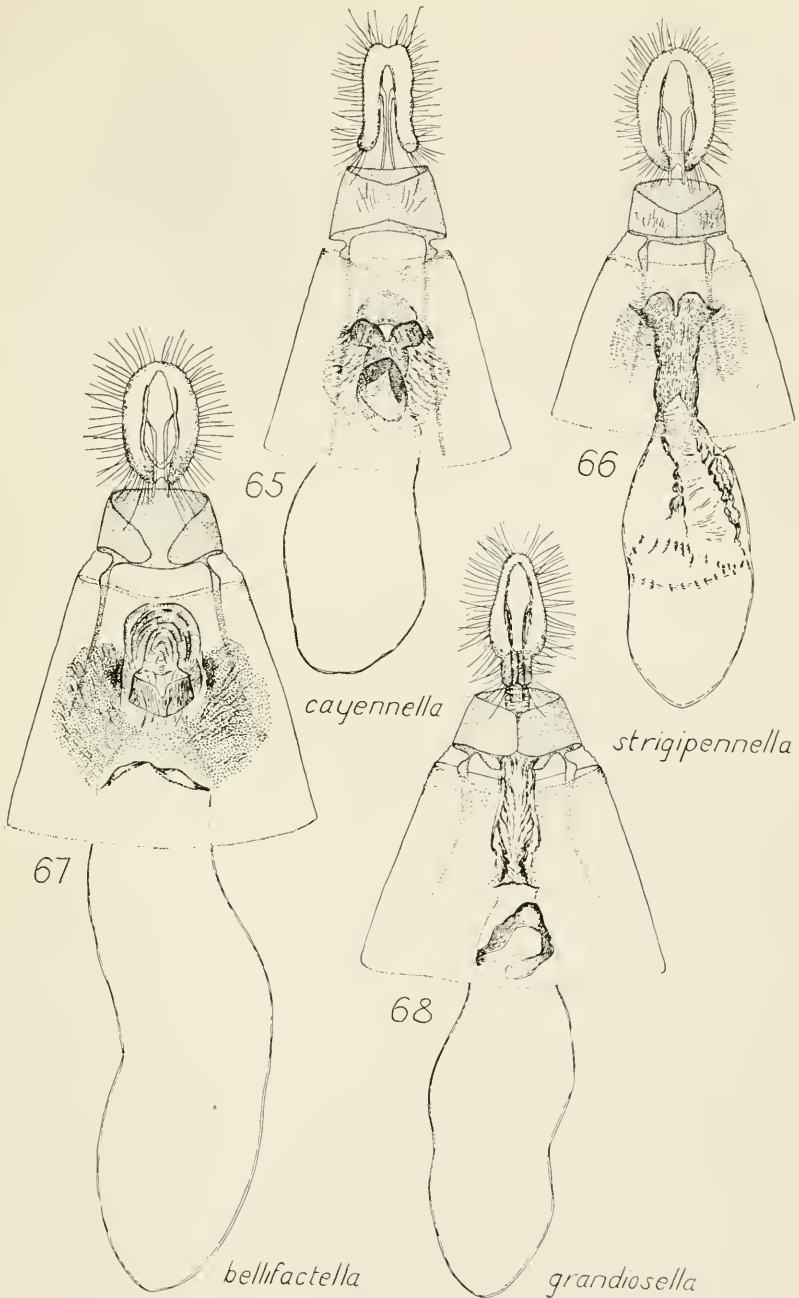
FEMALE GENITALIA OF DIATRAEA



FEMALE GENITALIA OF DIATRAEA

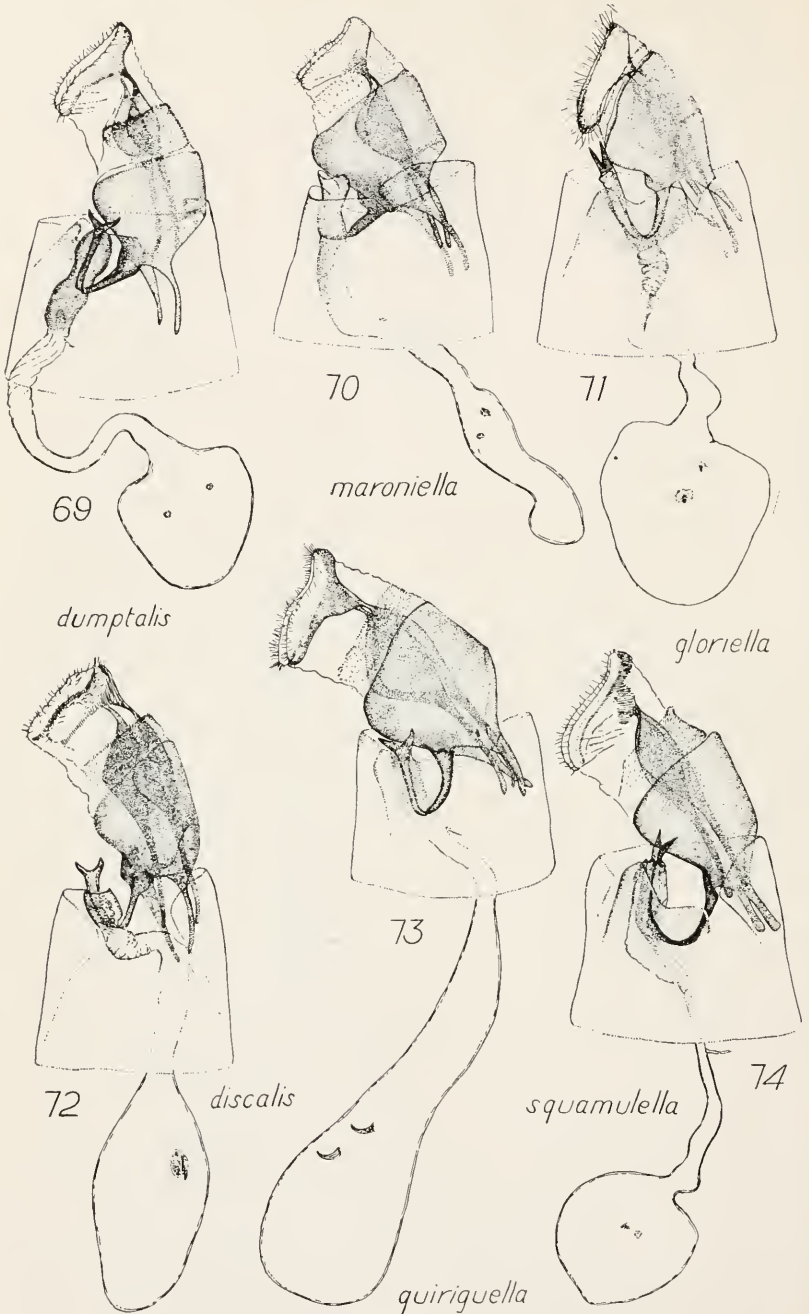
FOR EXPLANATION OF PLATE SEE PAGE 47





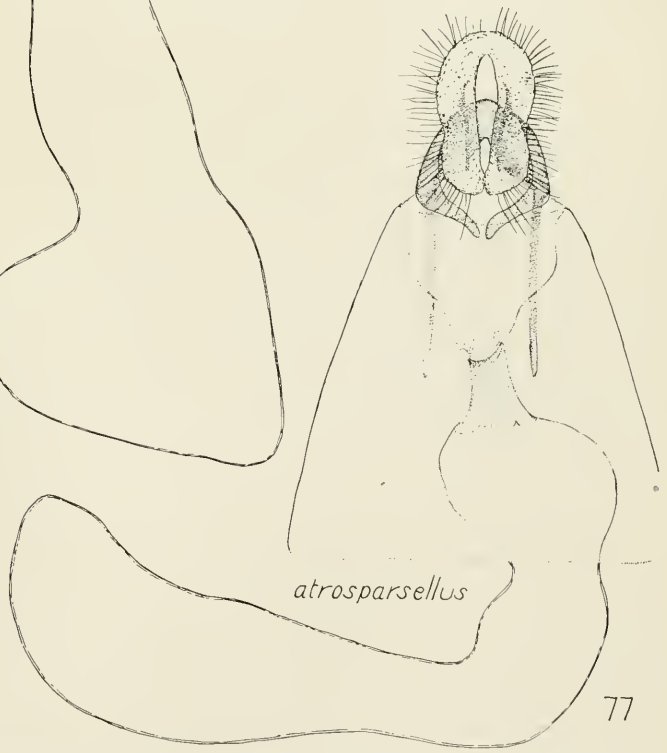
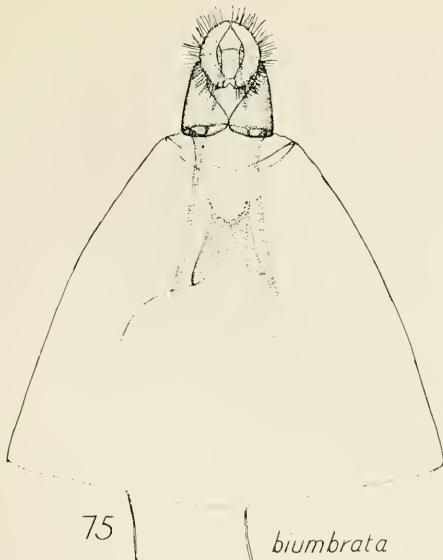
FEMALE GENITALIA OF DIATRAEA

FOR EXPLANATION OF PLATE SEE PAGE 47



FEMALE GENITALIA OF HAIMBACHIA

FOR EXPLANATION OF PLATE SEE PAGE 47



FEMALE GENITALIA OF XANTHOPERNE, HAIMBACHIA, AND DORATOPERAS

FOR EXPLANATION OF PLATE SEE PAGE 48



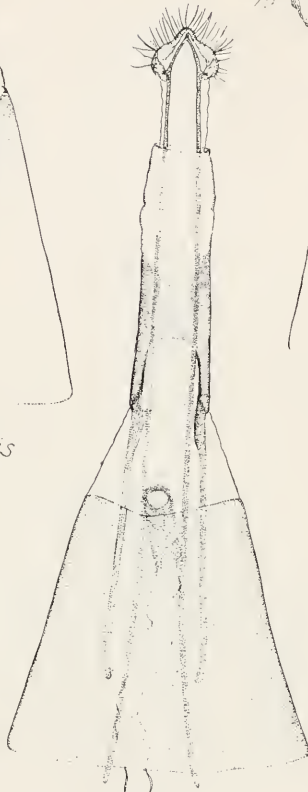
78

*idalis*



*differentialis*

79



81

*comptulatalis*



80

*dentilineatella*



82

*epia*

FEMALE GENITALIA OF DIATRAENOPSIS, XUBIDA, OCCIDENTALIA, AND HEMIPLATYTES